Illawarra Coal
Bulli Seam Operations

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Annual Environmental Management Report

1 July 2013 to 30 June 2014

BSO Project Approval 08_0150 Schedule 6, Condition 4

Title Block

Name of Mine	Appin Mine and West Cliff Colliery		
Titles/Mining Leases	CCL 767, CCL 724, CL 381, CL 388, ML 1382, ML 200, ML 201		
MOP Commnecment Date	October 2012	MOP Completion Date	September 2019
AEMR Commencment Date	01 July 2013	AEMR End Date	30 June 2014
Name of Leasholder	Endeavor Coal P/L		
Name of Mine Operator (if different)	Endeavor Coal P/L		
Reporting Officer	David Gregory		
Title	Environment Specialist		
Signature	25th August 2014		
Date			

General Manager Appin	Dan Teal
Signature & Date	26th August 2014
General Manager West Cliff	Heath Hannigan
Signature & Date	H Hannigan 26/08/14.
Manager West Cliff CPP	Carl Ernst
Signature & Date	25th August 2014.

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1. Introduction

Background

This Annual Environmental Management Report (AEMR) for the Bulli Seam Operations (BSO) details the environment and community performance for the 12 month period ending 30th June 2014 and consolidates the Appin and West Cliff Colliery operations into a single report.

The AEMR is a requirement of the Mining Lease and has been compiled in accordance with the guidelines published by the NSW Department of Trade and Investment, (DTI) *AEMR Guidelines for MOPS prepared to EDG03 Requirements.* This report has also been prepared to meet the requirements of Schedule 6 Condition 4 of the BSO Development Consent.

Overview of Operations

The NSW Government granted approval for the Bulli Seam Operations Project (BSOP) in December 2011. The BSOP combines future mining operations and provides for the continuation of coal mining operations at the Appin Mine and West Cliff Colliery. The Bulli Seam underground longwall mining operations will be transitioned wholly to the Appin areas upon completion of longwall mining activities at West Cliff.

The locations of all sites associated with the BSOP are illustrated in Plan 1.

Appin

Appin Mine consists of the merged Appin and Tower collieries. Appin Mine is owned and operated by Endeavour Coal P/L, a subsidiary company of Illawarra Coal Pty Ltd (ICHPL) which is 100% owned by BHP Billiton. Appin Colliery (located at Appin) commenced operations in 1962 and Tower Colliery (located at Douglas Park) commenced operation in 1978. The underground infrastructure, roadways, conveyor and ventilation systems were joined in 2003 to become the Appin Mine. The original Appin Colliery is located adjacent to Appin Village, approximately 37 kilometres Northwest of Wollongong.

Tower Colliery was officially opened in November 1978. Following the sinking of the access and ventilation shafts, underground development of the mine was undertaken from 1978 through to 1988 when longwall operations were introduced. Tower Colliery completed extraction of 20 longwall blocks between 1988 and September 2002. The mine was redeveloped underground to establish mining operations in the current longwall Area 7 mining domain.

Key areas associated with the current Appin operations include the Appin East pit top site (Plan 2), the Appin West pit top site (Plan 3), the Appin East No.1 and No.2 fan site (Plan 4), the Appin West No.3 fan site (Plan 5), No.6 fan site (Plan 6) and the Douglas Park substation site (Plan 7).

West Cliff

West Cliff Colliery is located 26km northwest of Wollongong, NSW. West Cliff Colliery is operated by Endeavour Coal Pty Ltd, a subsidiary company of ICHPL with BHP Billiton as the parent company. BHP Billiton owns 100% of the West Cliff assets.

Illawarra Coal has conducted underground coal mining operations at West Cliff since 1997. Prior to this, West Cliff was operated by Kembla Coal and Coke Pty Limited (KCC). Longwall mining is currently occurring in West Cliff Area 5. Area 5 consists of part of Consolidated Coal Lease 767 and Coal Lease 381 which were both transferred from Appin Colliery to West Cliff Colliery in 1997.

Key areas of the West Cliff Colliery Site include the pit top (South Site – Plan 8), the West Cliff Emplacement Area and Coal Preparation Plant (CPP) at the North Site (Plan 9) and the redundant North Cliff Mine site within the Dharawal National Park Area (Plan 10).

Consents, Lease and Licences

Table 1: Development Approvals associated with the BSO

Document	Issue Date	Expiry Date
Appin Gas Drainage Project – Initial	October 2009	
Appin Gas Drainage Project – 2010	December 2010	Drilling Feb 2017
Appin Gas Drainage Project – 2012	February 2012	Extraction wells Oct 2019
Bulli Seam Operations Project Approval (NSW Government)	22 Dec 2011	31 December 2041

Introduction continued

Document	Issue Date	Expiry Date
Bulli Seam Operations Project Approval (EPBC Act) (SEWPaC)	15 May 2012	15 May 2042
No. 6 Ventilation Shaft (NSW Government)	4 May 2011	4 May 2041
No. 6 Ventilation Shaft (SEWPaC)	1 April 2011	1 April 2041

Table 2: Mining Leases and Licences associated with the BSO.

Mining Lease / Sub-Lease	Number	Issue Date	Expiry Date
Coal Lease	388	22.1.1992	21.01.2013**
Mining Lease	1382	20.12.1995	19.12.2016
Mining Lease	1433	24.7.1998	23.07.2019
Mining Lease	1574	09.07.2008	30.12.2023
Mining Lease	1678	27.09.2012	26.09.2033
Mining Lease	1698	26.06.2014	26.06.2035
Consolidated Coal Lease	724	4.07.1991	18.12.2031
Consolidated Coal Lease	767	29.10.1991	08.07.2021
Coal Lease	381	24.10.91	24.10.2033
Mining Purposes Lease	200	13.1.1982	13.1.2024
Mining Purposes Lease	201	13.1.1982	13.1.2024
Mining Lease	1473	20.11.2000	29.11.2021
Environment Protection Licence	2504		---
NSW Office of Water Licences	10WA117285	15 Nov 2011	---

***Application for renewal submitted to DRE.**
****Renewal granted by Minister, awaiting documentation**

Table 3: Exploration Leases associated with the BSO.

Mining Lease / Sub-Lease	Number	Issue Date	Expiry Date
199	Area 7, Appin & West Cliff	27 June 1980	27 June 2014*
201	Area 3 & Appin	27 June 1980	27 June 2014*
306	Area 3	19 July 1983	27 June 2014*
312	Area 3, 7, 8, Appin	10 August 1983	10 August 2013 **
370	Area 3 & Appin	8 May 1986	27 June 2014*
395	Area 3 & Appin	23 November 1987	10 August 2018
396	Area 7, 8, 9, Appin & West Cliff	28 June 1988	27 June 2014*
397	Appin & West Cliff	4 August 1987	27 June 2014*
248	Area 7, 9, West Cliff & MacArthur	13 May 1981	19 December 2015

Introduction continued

Mining Lease / Sub-Lease	Number	Issue Date	Expiry Date
4470	Area 7 & MacArthur	5 January 1993	19 December 2015
7249	West Cliff	25 November 2008	25 November 2014

***Application for renewal submitted to DRE.**
**** Instrument of renewal received and returned for Ministerial sign-off**

Mine Contacts

Table 4: Relevant contacts for the BSO.

Position	Name	Contact Number
General Manager West Cliff	Heath Hannigan	(02) 4640 4032
General Manager Appin	Dan Teal	(02) 4629 4519
Manager Production WCCPP	Carl Ernst	(02) 4640 4130
Manager Environment Illawarra Coal	Scott Coleman	(02) 4286 3394

Actions Required at Previous AEMR Review

Table 5: Actions from previous AEMR

Action Required	Where dealt with in this AEMR
Future reports to include a comparison of all monitoring results which are required under the consent over the past calendar year, with monitoring results from previous years and relevant predictions in the EA, and include the identification of any trends in the monitoring results over the life of the project. This should also include a comparison of any complaints made in the past calendar year with those received in previous years. It is also requested that as an accompaniment to the discussion of trends, a graphical representation be provided comparing the current results with those of previous years, including relevant impact assessment criteria and relevant predictions in the EA.	A comprehensive summary of all results, including comparisons against relevant criteria/predictions, previous years etc is provided in the following sections: Air Pollution; Surface Water Pollution; Contaminated Polluted Land; Persoonia hirsuta Offset Monitoring; Operational Noise; Mine Subsidence; Methane Drainage/Ventilation. additional monitoring data is available on the BHPB Regulatory Webpage, BSO 14 Day Report: http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx A detailed complaints analysis has been provided in the section titled Complaints.

2. Operations During the Reporting Period

Exploration

During the reporting period the Bulli Seam Exploration Program totalled 3.2 square kilometres of magnetic survey in CCL767. No exploration was conducted in CCL724.

Plan 11 provides an overview of the locations of the ground magnetic survey campaign during the reporting period. Due to the low impact nature (person walking with a backpack) no rehabilitation was required.

Land Preparation

Mine Safety Gas Drainage

During the reporting period ICHPL continued to extract gas from the Bulli Seam and adjacent strata to provide a safe working environment underground and reduce the greenhouse gas intensity of its operations. Where possible the methane content of this gas is fed to an extraction plant and used to generate electricity at plants operated by Energy Developments Limited (EDL). Where it is not feasible to transport this gas to an energy plant, it is preferentially flared, and finally, where there is high carbon dioxide content or it cannot be flared it is vented.

ICHPL's Mine Safety Gas Drainage activities are undertaken in accordance with project applications 08_0258 and 07_0073 and 08_0150 which have been approved by the Department of Planning & Environment (DOPE) for Appin and West Cliff operations respectively.

Appin Mine Safety Gas Drainage Activities

During 2013/14 gas extraction continued from the medium-radius-drilling (MRD) borehole installed to service Longwall 705. Four vertical wells were utilised to drain gas from the Bulgo Sandstone unit, which is located in strata above the Bulli coal seam. These vertical wells service the finishing end of Longwall 705, and were installed on the same property as the Longwall 705 MRD borehole, between Camden Road and the Southern Rail Line.

Gas extracted from the MRD and vertical wells report to the existing Extraction Plant to enable it to be utilised for electricity generation and the EDL operated plant.

The two mine safety gas drainage sites used to service underground development mining in Appin Area 9 continued to operate with gas flared at the surface. Rehabilitation activities were undertaken progressively for the Appin gas drainage activities during 2013/14, including:

- Rehabilitation of Longwall 704 wells and pads:
    - topsoiling and spray grassing of pads
    - Grouting and sealing of the wells and cutting these off below the surface; and
    - Removing well head infrastructure.

All sites constructed and operated during the reporting period were located in rural paddocks, hence any progressive rehabilitation has been to a standard which minimises aesthetic impacts to the general community and which increases the pasture suitable for cattle grazing.

West Cliff Colliery Mine Safety Gas Drainage Activities

No activities were undertaken.

Emplacement Operations

During the reporting period 1.2 Ha of vegetation was cleared within the Stage 3 Emplacement in accordance with the two-stage clearing process outlined in the *West Cliff Coal Wash Emplacement Area Management Plan*. This area was surveyed during the 2013/14 reporting period. Vegetation and topsoil removed from the cleared area was relocated to the active rehabilitation sites. Plan 12 illustrates the areas that were cleared and rehabilitated during the reporting period.

The rehabilitated emplacement areas are inspected regularly to determine the progress and effectiveness of the rehabilitation. The monitoring program consists of quarterly inspections undertaken by an Illawarra Coal Environmental representative which are supplemented by a more extensive annual monitoring program undertaken by a specialist ecologist. The quarterly emplacement rehabilitation inspections were undertaken on four occasions during the reporting period; September 2013, December 2013 and March 2014 and June 2014. The Annual monitoring program was undertaken in spring 2014. The report is provided in Appendix A – Annual Rehabilitation Report.

Construction

The following construction activities were undertaken:

Operations During the Reporting Period continued

Ventilation Shaft No.6

The VS#6 project is comprised of many pieces of infrastructure in varying phases of construction or operation. As of June 2014 the main pieces of infrastructure had progressed as per the following table:

Table 6: VS#6 construction status as of June 2014

Activity	Status as at 30 June 2014
VS#6 access road, intersection and landscape works	Complete
Shaft construction works, including:	
Construction site works (hardstand, ponds, controls)	Complete
Underbore Douglas North Substation to VS#6	Complete
Fan foundations	Complete
Fan ducting and noise attenuation infrastructure	Under construction
VS#6 shaft drilling	Ongoing (Drilling commenced in January 2013 and had progressed 448m by the end of June 2014)
VS#6 shaft liner construction	Liner construction completed. Liners are stored on site and will be installed in the shaft once drilling is complete
Supply borehole construction:	
Compressed air	Commenced
Communications	Commenced (borehole complete and services to be installed August 2014)
Concrete and ballast	Commenced
Electrical (Douglas North Substation site)	Complete
Electrical infratructure:	
Extension of Douglas North Substation	Complete
Switch yard on VS#6 site	Complete
Water supply from Nepean River	Complete - existing infrastructure upgraded or replaced
Vegetation Offset area	Complete – fencing installed and ongoing maintenance

Operations During the Reporting Period continued

Figure 1: An elevated view of the VS#6 precinct showing the shaft drilling activities (foreground on right), fan and ducting construction (green structure behind drill rig), shaft liners (background on right), and electrical substation (centre on left).

Brennans Creek Dam outlet pipework modifications

In order to provide a better quality of water (higher dissolved oxygen content) to the environment changes were made to the water pipework at Brennans Creek. The changes to the pipework have enabled the discharge waters to be fed from either the floating off-take (primary) or the dam scour line. The operational water supply can now also be fed by either the the floating off-take or the dam scour line (primary).

All of the pipework associated with the environment discharge line was also changed out from 150mm Galvanised pipe to Poly pipe in order to reduce the potential for metals contamination in the released waters.

AE/West Cliff Underbore

An underbore running from Appin East mine site to the West Cliff site was required for Optic fibre communication purposes. During construction of the underbore the hole was reamed out to accommodate a 150mm water pipe as well as the optic fibre cable. This pipework allows for transfer of Sydney Water from Appin East to the Westcliff Mine area which is part of the overall BSOP water strategy. Pipe work is 90% complete with the remainder to be installed in FY15.

Slurry Pond Installation – Stage 3 Emplacement

Two drying dams were constructed from sandstone material with coalwash filter walls away from the heavy equipment activity areas. The purpose of this new drying dam is to receive mining related drill fines and other wet materials in a safe manner by reducing interaction with other heavy machinery.

Installation of PUG Mill

Following a successful trial, a PUG mill has now been installed on a full time basis. The PUG mill allows recycled Coal-wash to be cominbed with cement material for use as a road surfacing around the site. This material was succesfully trialed on a section of road shoulder along Wedderburn Road in order to improve drainage and possibly reduce dust tracking.

AW Used Machinery Park-up Area

Mining machinery from underground operations returning to the surface for servicing now has a dedicated parking area. A hard surface concrete area was extended and graded back to a central storm water drain which reports to a newly installed oil separator. This parking area can manage up to 10 pieces of potential oil leaking machinery.

Operations During the Reporting Period continued

AW Waste Yard Dust Mitigation

A concrete pad installed in front of the waste yard within the machine activity area minimises the likelihood of dust generation. Two dust suppression sprinklers were also installed in front of the waste yard servicing this pad, along with two mobile sprinklers which cover the general equipment storage area.

Mining

Longwall Status

Appin and West Cliff extract coal from the Bulli Seam within the Southern Coalfield. During the reporting period, Appin Mine completed Longwall 705 on the 27th of March 2014 with extraction commencing in Longwall 706 on the 23rd of April 2014. As of the 30th of June 2014 Longwall 706 had extracted 367m.

West Cliff Mine completed Longwall 35 on the 20th of July 2013. Longwall 36 started on the 10th of August and was completed on the 17th of May 2014.

Longwall 37 extraction began on the 10th of June 2014 and as of the 30th of June 2014, had extracted 139m.

Longwall Production

Appin Mine extracted 3.3 million tonnes of 'Run of Mine' (ROM) coal via roadway development and longwall extraction methods for the reporting period, an increase of approximately 14% when compared to the 2012/13 reporting period. The ROM production levels from FY09 through to the current reporting period are provided in Figure 2.

West Cliff Colliery extracted 2.8 million tonnes of 'Run of Mine' (ROM) coal via roadway development and longwall extraction methods for the reporting period, a decrease of approximately 6% when compared to the 2012/13 reporting period. The ROM production levels from FY09 through to the current reporting period are provided in Figure 2.

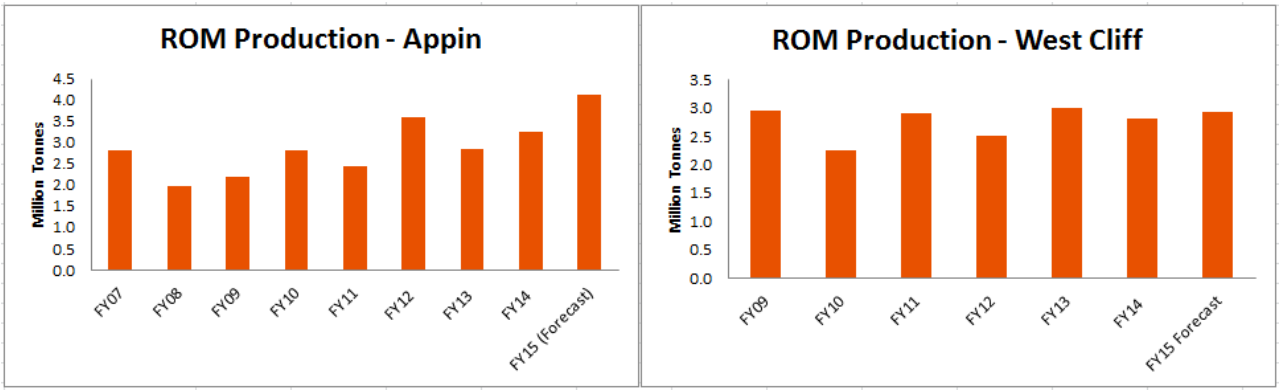

Figure 2: ROM production - BSO

The average ield for the Bulli Seam operations for the reporting period was 72%.

The production and waste summary for the reporting period is provided in Table 7.

Operations During the Reporting Period continued

Table 7: Production and Waste Summary

		Cumulative Production		
		Start of Reporting Period	**At end of Reporting Period**	**End of next reporting (estimated)**
Topsoil stripped (ha)	Appin[1]	13.53	13.53	13.53
	West Cliff	38.4	39.6	45.6
Topsoil used/spread (ha)	Appin[2]	3.54	3.54	3.54
	West Cliff[3]	40.3	45.3[4]	53.9
Waste rock		N/A	N/A	N/A
Ore		N/A	N/A	N/A
Preocessing waste	Appin	N/A	N/A	N/A
	West Cliff[5]	1.5MT	1.9MT	2.5MT
Production (ROM Tonnes)[6]	Appin	2.8MT	3.3MT	4.1MT
	West Cliff	3.0MT	2.8MT	3.0MT
Product (Clean Coal)[7]	Total	4.2MT	4.1MT	5.4MT

Mineral Processing

Mineral processing facilities include the West Cliff Coal Preparation Plant (CPP), the West Cliff Emplacement Area and the Dendrobium CPP (located at the Port Kembla Steelworks). The majority of ROM coal from Appin and West Cliff is directed to the West Cliff CPP for processing. The Emplacement Area is used to emplace coal wash from the West Cliff CPP and Dendrobium CPP.

ROM Coal is transported to West Cliff CPP by coal trucks from the Appin East site, along Appin and Wedderburn Roads. ROM Coal from Appin Mine is also directed to the Dendrobium CPP on an 'as required' basis to maintain work continuity and maintain reduced stockpile sizes at the Appin Site. ROM coal is transported via Mt Ousley to the Dendrobium CPP (located within the BlueScope Steel complex). Clean coal from the West Cliff CPP is trucked to BlueScope Steel (Port Kembla Steel Works) coal handling facilities or to the Port Kembla Coal Terminal for distribution.

Daily road haulage volumes associated with both the Appin and West Cliff sites is available on the BHP Billiton website, accessible via the link below:

http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx

Waste Management

General Waste

General waste is segregated on all sites to maximise reuse and recycling opportunities in accordance with the *BSO Waste Management Plan.* The waste streams applicable to the BSO are specified in the table below.

[1] Ventilation Shaft No.6 Construction Works only, does not include Mine Safety Gas Drainage Works
[2] Ventilation Shaft No.6 Construction Works only, does not include Mine Safety Gas Drainage Works
[3] Emplacement operations only – Does not include exploration or Mine Safety Gas Drainage works
[4] 3 Ha stockpiled onsite
[5] Total processing waste produced at West Cliff CPP (includes Appin Coal Wash) for AEMR period only – does not include coal wash produced at Dendrobium CPP
[6] ROM total for the AEMR period only
[7] Clean coal total for the AEMR period only

Operations During the Reporting Period continued

Table 8: The main waste streams for the BSO

Waste Stream	Treatment
Timber	Recycled off site
Cardboard and paper	Recycled off site
Printer Cartridges	Recycled off site
Oil	Recycled off site
Oily waters	Recycled or disposed off-site
Steel and Scrap Metal	Recycled off site
Sewage effluent (treated)	West Cliff – Treatment and irrigation (in conjunction with WCCPP) on site during normal operation. Treated off site when STP in pump-out mode. Appin East and West – Treatment and irrigation onsite
Industrial filters	Off-site treatment and disposal
Bathhouse water	West Cliff - Spray irrigated to land on site Appin West - Spray irrigated to land on site Appin East – Transported to licensed sewage treatment facility
Particulate filter	Off-site treatment and disposal
Hazardous waste	Off-site treatment and disposal
General Waste	Landfill

Waste volumes generated at the BSO (including the Appin West, Appin East and West Cliff sites) for the reporting period are provided below:

Table 9: Waste breakdown – BSO

Main Waste Streams	Landfill Disposal		Recycled			
	General Waste	Industrial Waste (Filters)	Timber	Metal	Cardboard	Commingle
Quantity (Tonnes) FY13	1069	157	403	1182	26	10
Quantity (Tonnes) FY14	1189	285	399	1629	31	16

Approximately 20% more waste was disposed as landfill for the reporting period when compared to the previous financial year.

Waste Sorting

There are waste sorting facilities located at the Appin West, Appin East and West Cliff. These facilities have increased the reuse of materials and recycling since commissioning in 2010.

Coal Wash

Coal wash is a by-product of processing ROM coal. During the reporting period, a total of 2.5 million tonnes of coal wash (includes Dendrobium, Appin and West Cliff) was emplaced at the West Cliff Emplacement Area. Illawarra Coal received approval to expand the West Cliff Emplacement Area (i.e. Stage 3) from the DoP (now DoPE) on the 20 December 2007. Construction works associated with the water management system and associated infrastructure for Stage 3 were

Operations During the Reporting Period continued

finalised during the 2009/10 reporting period. The Stage 3 Emplacement Area will provide an additional 33.5 million tonnes of coal wash emplacement (refer to table below) with an expected emplacement life of 13 years (based on projected coal wash volumes).

Illawarra Coal received approval for Stage 4 of the West Cliff Emplacement Area on the 22nd December 2011. The Stage 4 Emplacement Area will provide an additional 59.4 million tonnes of coal wash emplacement (refer to table below) with an expected life to 2041. Table 10 outlines the capacity and status of each of the West Cliff coal wash emplacement areas.

Table 10: West Cliff Emplacement Area – Capacity and status

Emplacement Stage	Estimated Capacity	Emplacement Status
1	4.6	Complete
2	20.8	Current
3	33.5	Current
4	59.4	Not Yet Commenced

During the reporting period, Illawarra Coal diverted 171kt of coal wash for beneficial uses such as engineered fill with over 1Mt diverted since 2009. Illawarra Coal continues to research, develop and implement alternative uses for coal wash and hence minimise the volume emplaced at the West Cliff site. Illawarra Coal is a member of 'Sustainability Advantage', a business support service.

One of the projects from the 'Sustainability Advantage' is a road base mixture which utilises coal wash with other materials such as fly ash and lime to produce a material suitable for a variety of applications. StabilCo have constructed roads in the Central West and Hunter regions that incorporate between 85% and 93% coal wash reject, together with other wastes, to produce 98% to 100% recycled construction materials.

In April/May of 2013 Illawarra coal and StabilCo began a trial to explore the use of Dendrobium coal wash in road and pavement materials. Two sites were targeted, Port Kembla Copper for pavement/capping material and West Cliff CPP (for application to unsealed roads to reduce nuisance dust).

In late 2013 the Roads and Maritime service commissioned a trial road in Kangaroo Valley in the Shoalhaven to test the material with the intent of gaining insight as to whether this would be accepted across NSW as conforming road base material. To date the RMS has advised that they will be publishing their acceptance of this material which is a big step forward for this project. Illawarra Coal expects this to occur in Q1 of FY15.

Other sustainable projects that look to incorporate coal wash which have yielded positive results also include cement making and brick making. We expect to see results for these projects in 2014/15.

Sewage

During the reporting period, ongoing monitoring and inspections were conducted on all three BSO sewage treatment plants.

Appin East

Bathhouse waters (grey waters) and sewage effluents (black waters) are separated at the Appin East Site. Black water is treated via an Envirocycle System and is irrigated on site via Licenced Discharge Point (LDP) 20. Grey waters are transported to the Wollongong sewage treatment system by a licensed waste contractor.

The operation of the sewage treatment and disposal system is incorporated within Environmental Protection Licence (EPL) 2504. The Appin East pit top site to the Appin town sewage scheme has been approved by Sydney Water in principal and construction is planned for the next Reporting Period.

Monitoring of the Envirocycle effluent (i.e. Point 20) has been undertaken on a monthly basis during the reporting period in accordance with EPL 2504. Results of the monitoring are reported on an annual basis to the Environment Protection Authority (EPA) via the EPA Annual Return and are made available to the public via the web based environmental monitoring report which is issued every 14 days: http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx

Appin West

There is a Smith and Lovelace Sewage Treatment Plant (STP) on the Appin West site that discharges into two maturation ponds. The treated effluent is irrigated on site via LDP 22.

Operations During the Reporting Period continued

Monitoring of the STP effluent was undertaken on a monthly basis in accordance with conditions contained with EPL 2504. Results of the monitoring are reported on annual basis to the EPA via the EPA Annual Return and are made available to the public via the web based environmental monitoring report which is issued every 14 days.

West Cliff

There is a Smith and Lovelace Sewage Treatment Plant (STP) at West Cliff with the effluent directed to two maturation ponds (Dam 1 and Dam 2), which are located adjacent to the treatment plant. Treated effluent is pumped to a network of sprinklers at a dedicated spray irrigation area. A total of 11.4 ML of sewage effluent was irrigated during the reporting period which equates to an average daily volume of 31 kL per day.

The sewage treatment and disposal system is incorporated within EPL 2504. Monitoring of the Sewage Treatment Plant and associated irrigation effluent (i.e. Point 4) has been undertaken on a monthly basis during the reporting period in accordance with conditions contained with EPL 2504. As stated above, results of the monitoring are reported on annual basis to the EPA via the EPA Annual Return and are made available to the public via the web based environmental monitoring report which is issued every 14 days.

A waste water maintenance contractor is periodically used to assist with the operational aspects of the Appin and West Cliff Sewerage treatment systems to minimise the likelihood of any issues occurring.

Appin WAC Disposal

Weak Acid Cation Regenerate (WAC), a waste stream from the Appin water treatment plant, is transported offsite to a licensed Waste Management Facility. The total volume of WAC transported off-site during the reporting period was 3.9ML, an increase of 0.2 ML when compared to the previous reporting period.

Appin Backwater Treatment Sludge

The Appin backwash treatment plant was commissioned in April 2009. One of the by-products of the Backwash Treatment process is an organic sludge. The total weight of sludge transported offsite during the reporting period was 371 tonne.

Ore and Product Stockpiles

No coal is stockpiled at the Appin West Site as ROM coal is transported underground to the Appin East Site. The Appin West coal storage bins are currently on care and maintenance.

The Appin East mine site has a total raw coal stockpiling capacity of up to 50,000 tonnes. The stockpile is recovered with front-end loaders directly into the coal haulage trucks for transport by road to either the West Cliff or Dendrobium CPP's.

West Cliff operates six primary coal stockpiles for both clean coal and raw coal. The stockpile capacities at West Cliff outlined in Table 11.

Table 11: West Cliff stockpile capacities.

Area	Capacities
No.1 Stockpile	650,000t nominal capacity - 600,000t coking coal , 20,000t jig coal, 30,000t Middlings coal (Note: The capacity of this stockpile has been temporarily reduced to allow space for a temporary lay down area as part of the RCRIP)
No.2 Stockpile	150,000t nominal capacity – generally coking coal
No.3 Stockpile	600,000t nominal capacity – generally coking coal
No.4 Stockpile	800,000t nominal capacity – generally Appin ROM coal
No.5 Stockpile	90,000t nominal capacity – generally Appin ROM coal
No.6 Stockpile	90,000t nominal capacity – Generally West Cliff ROM

A *Stockpile and Slope Stability Management Plan* is in place to manage the stockpile operations. This plan is a framework document where the operational risks and controls are documented. Risks associated with the stockpile operations are also detailed in the West Cliff CPP Risk Register, which is reviewed regularly by the site management team to test the effectiveness of controls.

Operations During the Reporting Period continued

Monitoring and management review indicates that the current plan effectively controls all potential stockpile management issues effectively.

Water Management

Water Supply and Use

Sydney Water Supply to the BSO
During the reporting period, meetings were held with Sydney Water regarding the future demand for potable water across the BSOP. The proposed figures will be used by Sydney Water in their future planning strategy.

Appin West
Minewater is processed at the Appin West Water Treatment Plant (WTP) to produce treated water. This treated water is supplied to the Appin Mine underground mining operations. Any shortfall in underground supply is made up using potable water provided by Sydney Water. Potable water is used for site administration buildings, workshops and the bathhouse. Excess treated water is released into the environment via LDP 24.

Water Treatment Plant Improvements
A trial of an Arkal Filter System was commissioned in May 2013 and is still in operation. This Arkal filter can provide 30kL/hr of filtered mine water into the raw water tank. This helps to keep the raw water tank full which increases the amount of water that can be treated through the WTP.

The WTP has suffered from production delays due to the combination of the existing microfiltration system and the feed water. Investigations into other technologies available have led to temporary structures assembled on-site inorder to trial UF filtration. Testing of the *Outside-in* style membranes has been completed. The *Inside-out* pilot plant is in process of being set up.

Appin East
Potable water is supplied by Sydney Water to the Appin East mine site via a 600kL surface tank. This tank provides potable water for the Bathhouse, ablutions, workshops, administration buildings, Appin No.2 shaft area, Energy Development Limited and nearby mine-owned cottages.

During this reporting period Appin East underground has been operating on recycled mine water. Surface water runoff from rainfall is captured in the main surface dam and is used as supply for the truck washing facilities, dust suppression on haulage roads and stockpiles and dirty equipment hose down. Potable water is also supplied to the West Cliff Colliery longwall operations and WestVAMP project from the Appin East Site.

Table 12 provides an overview of the potable water usage associated with the Appin operations for the reporting period.

Table 12: Potable water usage for the Appin Operations.

Area	Usage - FY13 (ML)	Usage - FY14 (ML)	Variance
Appin East Surface & U/G[8]	135	45	-90
Appin West Surface	28	39	+11
Appin West U/G	181	208	+27
No.2 Ventilation Shaft	6	9	+3

An estimate of the volume of clean and dirty water stored on site at the end of the reporting period is provided in Table 13.

[8] The AE Sydney Water usage has dropped due to the recycling of white panel water for U/G use

Operations During the Reporting Period continued

Table 13: Stored Water - Appin

	Volumes held (cubic meters)		
	Start of Reporting Period	**At End of Reporting Period**	**Storage Capacity**
Clean water	2.8	2.8	2.8
Dirty water	30	30	33.3
Controlled discharge water (salinity trading schemes)	2.4	2.4	2.4
Contaminated water	N/A	N/A	N/A

West Cliff

West Cliff Colliery Site is primarily reliant on recycled water. Some potable water is trucked to site and stored in a surface tank for use in the bathhouse and office facilities. Potable water is pumped from Appin East to West Cliff for use in West Vamp and the longwall hydraulics. Recycled water is sourced from Brennans Creek Dam (BCD) from where it is pumped, following chlorination treatment, for use in the following areas:

- West Cliff Underground operations;
- West Cliff Coal Preparation Plant and associated infrastructure; and
- West Cliff Pit Top.

Annual recycled water usage from BCD for the West Cliff operations for this reporting period was approximately 1067ML. Approximately 70% of this water was utilised on the surface for CPP and associated infrastructure with the remaining 30% utilised underground for mining related activities. This was a similar volume to the previous reporting period.

A total of 177ML ML of potable water was consumed during the reporting period of which 149ML was used at the WestVAMP facility, 14ML was used underground and 14ML was used in the surface amenities. A summary of the water usage for the reporting period, compared to the previous reporting period, is provided in the table below.

Table 14 Water usage comparison – West Cliff.

Type	Usage – FY13 (ML)	Usage – FY14 (ML)	Variance
Sydney Water	196	177	-19
Recycled (BCD) Water	1232	1067	-165

An estimate of the volume of clean and dirty water stored on site at the end of the reporting period is provided in the table below.

Table 15: Stored Water – West Cliff

	Volumes held (cubic meters)		
	Start of Reporting Period	**At End of Reporting Period**	**Storage Capacity**
Clean water	307	226	307
Dirty water	210	12[9]	237
Controlled discharge water (salinity trading schemes)	N/A	N/A	N/A
Contaminated water	N/A	N/A	N/A

[9] Very little dirty water on site due to low rainfall

Operations During the Reporting Period continued

Appin Ventilation No.6 Shaft Site
During the reporting period water was extracted from the Nepean River and used on site for operational purposes. The water is extracted under the Surface Water License No. 10WA117285, issued by NSW Office of Water (NOW) on the 15 Nov 2011. The Licence allows up to 53ML to be diverted - Comprising of 40 ML for mining use and 13 ML for industrial use in any one year commencing 1 July. Approximatly 23.9ML was extracted for the reporting period.

Surface Water

Surface water management at the BSO is undertaken in accordance with *EPL 2504* and the approved *BSO Water Management Plan*. Specifics of the site water management systems are provided in the BSO Water Management Plan which is available on the website via the following link:

http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx

Appin West
The filter modules at Point 23 have undergone their standard annual maintenance. No additional works have been undertaken at the site.

Appin East
The silt trap associated with the main dam has undergone standard maintenance. A trial is in process to identify the best folocculent available with reduced aluminium concentration.

West Cliff
The seep that was identified in the reclaim pond at Brennans Creek Dam in March 2010 continues to be monitored on a regular basis with results including flow measurements, piezometer readings and visual inspections, reported through to the consultant geotechnical engineer periodically. There has been no change to the characteristics (i.e. volume, clarity etc) of the seep for the reporting period.

Surveillance reports are prepared every 5 years by the consultant geotechnical engineer. The latest report was submitted to the Dam Safety Committee in August 2011. Intermediate inspections are being conducted by a consultant geotechnical engineer annually.

One action from the 2011 surveillance report was to install and outlet valve on the 600mm BCD drain pipe. In process of setting up for this installation, some cracking was discovered in the pipe. Current investigations are underway to have this damage repaired. The Dam Safety Committee has been notified of the issue.

Surface run-off associated with the emplacement area, operates in accordance with the approved *Coal Wash Emplacement Area Management Plan* which is available on the BHPBilliton website.

Appin Ventilation No.6 Shaft Site
During the reporting period surface water was captured on site and treated with alum prior to discharge into Harris Creek via LDP 36. Approximately 8.6ML was discharged for the reporting period.

Groundwater Management

Appin

During this reporting period approximately 394ML of water was delivered underground with approximately 783ML of surplus underground water pumped to the surface for treatment via the Appin West WTP.

West Cliff

Water for underground use is delivered from BCD to the underground operations via a gravity fed pipeline. Groundwater and surplus mine water is collected in pits and pumped to the surface for use in the West Cliff CPP. Excess water from the West Cliff CPP is treated prior to being released to BCD for further reuse or discharge. During the reporting period approximately 355ML of water was delivered underground with approximately 484ML of surplus underground water pumped to the surface for use in the CPP or treated and release to BCD.

Rainfall

Rainfall for the Appin surface facilities is recorded on a daily basis from a rainfall gauge located at Douglas Park St Marys Towers (BOM site #658200). The Appin site received a total of 453mm of rainfall during the reporting period which was a decrease when compared to the recorded rainfall for the previous reporting period (i.e. 877mm).

The rainfall guage located at Brennans Creek Dam has been decommissioned and a replacement meteorological station has been installed at the West Cliff pit top. As this guage was only recently commissioned, a full year's data is not available. Data will be reporting in the FY15 AEMR.

Operations During the Reporting Period continued

Table 16 displays the annual rainfall for the past four reporting periods at Douglas Park St Marys Towers.

Table 16: Annual rainfall – St Marys Towers (BOM site #658200)

Period	Annual Rainfall (mm)
2010/11	784
2011/12	984
2012/13	877
2013/14	453

Hazardous Material Management

Storage

Oils are stored in purpose built facilities with appropriate bunding and fire fighting provision. A licensed contractor is engaged to remove and recycle and/or dispose of used oil and grease products through appropriately licensed facilities.

All fuels and oils are stored in purpose built facilities with bunding and firefighting provisions. Diesel fuel is brought to the Appin East, Appin West and West Cliff sites by road tanker and stored in above ground bunded tanks from where it is transferred to diesel pods for underground use or direct to machinery. The West Cliff Colliery surface water chemical dosing facility which included 1000L of Sodium Hypochlorite and 1000L of Hydrochloric Acid was decommissioned. The chlorine dioxide dosing plant at Brennans Creek Dam is still in use. This includes storage of approximately 5000L of Sodium Hypochlorite and 5000L of Hydrochloric Acid.

All explosives / detonators for the Appin operations are currently stored at the explosives storage facility located at the Appin West and Appin East mine site. Storage facility information is provided below.

Table 17: Explosives storage – Appin.

Site	Type	Capacity
Appin East[10]	1.1D Explosive type E	300kg
Appin East	1.1D Explosive type A	250kg
Appin West	1.1D Explosive	2t

Table 18: Detonator storage – Appin.

Site	Type	Capacity
Appin East[11]	1.1B	5000 detonators
Appin West	1.1B	5000 detonators

Details of the bulk chemical storage locations associated with the Appin operation are provided in the tables below.

[10] No explosives were stored at Appin East during the 2011/12 reporting period.

[11] No explosives were stored at Appin East during the 2011/12 reporting period.

Operations During the Reporting Period continued

Table 19: Summary of Dangerous Goods storage on the Appin West Site.

Depot	Class	Type of Storage	Product Name	Maximum Volume (L)	Normal Storage (L)
2	8	Above Ground Tank	Hydrochloric acid	12,000	12,000
3	C1	Above Ground Tank	Diesel	42,200	40,000
4	8	Above Ground Tank	Sodium Chlorite	3,000	2,700
5	8	Above Ground Tank	Hydrochloric Acid	3,000	2,700

Table 20: Summary of Dangerous Goods storage on the Appin East Site.

Depot	Class	Type of Storage	Product Name	Maximum Volume (L)	Normal Storage (L)
2	C1	Above Ground Tank	Diesel	36,600	36,000
3	8	Above Ground Storage	Ferric Chloride	3000	3000
4	8	Above Ground Storage	Sodium Hypochlorite	3000	3000

There is one monitoring gauge at the Appin East Surface Elevator Belt that contains radioactive isotopes. This gauge is licensed and maintained as per legal requirements. The gauge is housed in an appropriate container and is inspected and tested in accordance with legislative requirements.

There are several monitoring gauges in the CPP that contain radioactive isotopes and these gauges are licensed and maintained as per legal requirements. All gauges are housed in appropriate containers and are inspected and tested in accordance with legislative requirements.

Other Infrastructure Management

North Cliff

The North Cliff Mine Site and access road is located between O'Hares Creek and Stokes Creek. The majority of the site is gently sloping in a northerly direction towards O'Hares Creek. The mine site covers an area of approximately 10.3 hectares of which approximately 6.5 hectares is undisturbed by mining activities. The North Cliff site is shown in Plan 10.

Access to the site is along 10B and 10C Fire Trails from an intersection on the Bulli/Appin Road, 6km northwest of Bulli Pass. The 4.5 km long access road is included in the mine site Coal Lease CCL724.

Land Ownership and Approvals

The North Cliff Mine Site and access road is subject to CCL724, which embraces the surface and land below to an unlimited depth over the mine site and to a depth of 15m over the access road. Consent to establish the mine was granted in 1981 by the Minister for Planning and Environment under Section 101 of the *Environment Planning and Assessment Act 1979* and subsequently amended under Section 102 of the Act.

History

Mining operations commenced at the site in 1983, with mining operations restricted to a single unit Continuous Miner. The ROM product was brought to the surface through the No.4 shaft and into a 400t surge bin, from which the product was loaded into trucks and transported to West Cliff Colliery for processing.

Mining operations ceased at North Cliff in 1990 at which time all underground equipment was removed from the site. The two shafts were temporarily sealed with concrete caps with additional security fencing and associated signage installed to prevent unauthorised access. A number of the buildings and associated structures, and various other pieces of equipment were also removed from site. Periodic inspections are undertaken by the Site Environmental Representative.

Remaining Infrastructure

As specified above, most of the infrastructure that was located on the North Cliff site was removed following closure of the mine in 1990. The major structures remaining on the site include:

- No.3 shaft head frame;
- No.4 shaft head frame; and

Operations During the Reporting Period continued

- Sub-station base slabs.

There are also various items of discarded equipment, broken pipes, power poles and other smaller structures still located on the site however these are not posing an environmental or safety hazard. There has been no equipment removed from site during the reporting period.

Site Security
The North Cliff Site is enclosed with a 1.8 metre high fence with two locked entry gates. The site security fencing is inspected on a regular basis.

Site Rehabilitation
An area on the site between the two shafts was used for the disposal of spoil excavated from the sinking on the shafts. The spoil heap, which covers an area of approximately 3.5 Ha and containing 55,000 m^3 of loosely tipped shale and sandstone, has been graded, shaped and regenerated with local vegetation species.

The *West Cliff Conceptual Closure Plan* details the remaining site specific closure works to be undertaken at this site. A summary is provided below:

i. Remove infrastructure;
ii. Fill and seal No. 3 and No. 4 shafts in accordance with DTI requirements;
iii. Demolish and remove all concrete slabs and bitumen surfaces including hardstand areas;
iv. Remediate any contaminated soil by removal, encapsulation or land farming on site;
v. Backfill lagoon with wall material and clean material;
vi. Topsoil bare or stripped areas, where appropriate;
vii. Re-profile site as per the final landform design to reduce the slope lengths by constructing contour banks and armouring channels to prevent erosion;
viii. Revegetate as per the final revegetation/landscape plan utilising local species. Rip and seed to stabilise the bare soil using an appropriate method (such as hydro-seeding/hydro-mulching); and
ix. Develop ongoing maintenance management plans.

Post Closure works will include:

- Monitor frequently until vegetation establishment, and then on a minimum 12 monthly basis for at least 5 years after works have been completed (or site sold); and
- Carry out weed control and replanting/reseeding as necessary.

Water Management
Surface drainage is mainly carried in open channels to the site pond located at the northwest corner of the site. The pond is a permeable structure that filters the water that passes through the wall. Water that overflows the dam in wet weather events or passes through the wall flows through open sedge-land before entering an unnamed creek and into O'Hares Creek. There is no environmental impact associated with these discharge events on the receiving environment. No issues were identified with the site drainage system during the reporting period. No hydrocarbons or chemicals are stored at the Site.

Air Quality
The generation of windblown dust from the North Cliff Mine Site is unlikely to cause any adverse impacts on air quality on the community due to the isolated location of the site. A large proportion of the disturbed areas are largely compacted hence further reducing the likelihood of generating significant emissions of wind blow dust.

Noxious Weeds
The site management measures to monitor and control the growth of noxious weeds on the mine site include the use of a weed control specialist to inspect the mine site periodically. No issues were identified during the reporting period.

Archaeological Sites
Archaeological surveys were carried out in 1977 and 1983. The studies identified one aboriginal site, a single axe groove on an exposed rock shelf; located within the fenced mine site area. No damage occurred to these sites during the development or operation of the mine. No damage was identified at this site during the reporting period.

Environmental Inspections
Four environmental inspections of the North Cliff site were completed during the reporting period. The quarterly inspections cover the following aspects:

- Site Security and Safety;
- Surface Drainage;

Operations During the Reporting Period continued

- Erosion;
- Weed Management;
- Archaeological Sites;
- Dust; and
- Hydrocarbon Management.

3. Environmental Management and Performance

Air Pollution

Environmental Management

Air quality is managed in accordance with the BSO Air Quality and Greenhouse Gas Management Plan (AQMP) which details the air quality and emissions control measures for the project, compliance procedures, monitoring programs, evaluation protocols, notification and communication processes.

The AQMP was prepared to comply with the intent and requirements of Condition 12, Schedule 4 of the BSO approval.

The objectives of the AQMP are to:

- Provide the frame work for the responsible management of air quality and emissions associated with the project;
- Describe the control measures for management of dust, odour, greenhouse gas (GHG) and other emissions to atmosphere;
- Prevent adverse air quality impacts on the local communities and environment;
- Describe the compliance criteria for air quality for the project;
- Describe the air quality monitoring program;
- Comply with the relevant requirements of Environment Protection Licence (EPL) No. 2504 and the Bulli Seam Operations (BSO) Project approval;
- Describe measures for the reduction of project GHG emissions; and
- Comply with BHP Billiton and other relevant standards and requirements.

The air quality monitoring program incorporates:

- Collection and measurement of dust samples from strategically placed dust deposition gauges at representative sites;
- Use of real-time air quality monitors: fixed Optical Photometers, portable Optical Photometers;
- Use of a high volume air sampler to determine the land acquisition values; and
- Dust emission surveys and spot checks using hand held photometers; and
- Visual inspections and audits.

Table 21: BSO air quality monitoring sites and their function

Equipment	Monitoring Point ID and Location	Function
Appin East	Dust Deposition Guage 14	Particulate dust deposition rate at SE corner of Stockpile at property boundary Operational Control - Stockpile and internal roadway dust control measures performance reference
	Dust Deposition Guage 15	Particulate dust deposition rate at NE corner of Stockpile Operational Control - Stockpile and internal roadway dust control measures performance reference
	Dust Deposition Guage 16	Particulate dust deposition rate at NW corner of Appin East pit top property boundary Amenity goal reference Operational Control - Site dust control performance reference
	Dust Deposition Guage 17	Particulate dust deposition rate at NE corner of Appin East pit top property boundary Amenity goal reference Operational Control - Stockpile and public road

Environmental Management and Performance continued

		dust control measures performance reference
Appin East	Dust Deposition Guage 18	Particulate dust deposition rate at SE corner of Stockpile Operational Control - Stockpile and internal roadway dust control measures performance reference
	Real-time Photometer (fixed) Photometer ID: (AE-PF3) (NW corner of Appin East pit top boundary between nearest residential receivers)	Amenity goal reference Real Time Operational Control Site dust control performance reference
	High Volume Air Sampler High Volume Air Sampler ID:(AE-HV1)	Amenity goal reference Review against land acquisition levels Real Time Operational Control
	Real-time Photometer (fixed) Photometer ID: (AE-PF1) (NE corner of pit top property boundary – coal stockpile vehicle entry/exit point)	Real-time monitoring of dust emissions at the coal stockpile area truck entry/exit point onto public roads Real-time Operational Control – Stockpile, internal roads and public road dust control measures performance reference monitor
	Real-time Photometer (portable) Photometer ID: (AE-PS1) Coal truck exit point onto Appin Road	Monitor dust emissions at the coal truck exit point onto Appin Road Quarterly survey dust monitoring point Real-time Operational Control
	Real-time Photometer (portable) Photometer ID: (AE-PS3) Residential Area to the NW of Appin East Pit Top	Monitor dust emissions at the Appin residential area immediately NW of Appin Pit Top Quarterly survey dust monitoring point Real-time Operational Control
Appin West	Dust Deposition Gauge No.1 Gauge ID: (AW-DD1) (Appin West pit top – adjacent mine access road, employee car park and EDL power plant)	Particulate dust deposition rate at Appin West pit top Operational Control – Site and road dust control measures performance reference
	Dust Deposition Gauge No.2 Gauge ID: (AW-DD2) (Appin West property boundary at Mine Entrance Point off Douglas Park Drive	Particulate dust deposition rate at the Appin West Mine Gate Entrance Point and the public road Amenity goal reference Operational Control – Site and mine access road dust control measures performance reference
	Real-time Photometer (portable) Photometer ID: (AW-PS1) Northern property boundary between Appin West Pit Top and St. Mary's Towers property	Monitor dust emissions at the Northern pit top property boundary Quarterly survey dust monitoring point Real-time Operational Control
	Real-time Photometer (portable) Photometer ID: (AE-PS2)	Monitor dust emissions at the mine road intersection with Douglas Park Drive

Environmental Management and Performance continued

	Main mine road intersection with Douglas Park Drive	Quarterly survey dust monitoring point Real-time Operational Control
West Cliff	Dust Deposition Gauge No.1 Gauge ID: (W-DD1) (West Cliff southern property boundary at the Wedderburn Rd and-Appin Rd junction)	Particulate dust deposition rate at the Wedderburn Rd and-Appin Rd junction Operational Control – Mine entrance road and coal truck dust control measures performance reference
	Dust Deposition Gauge No.3 Gauge ID: (W-DD3) (West Cliff pit-top south site)	Operational Control – Site dust control performance reference for the West Cliff pit-top south site
	Dust Deposition Gauge No.8 Gauge ID: (W-DD8) (Brennans Creek Dam)	Amenity goal reference Operational Control – Site dust control performance reference Indicator for dust deposition rates between the emplacement area activities and the nearest Appin township residential area Baseline and historical dust deposition trends related to the expansion of the emplacement area north towards the nearest residential receivers
	Dust Deposition Gauge No.10 Gauge ID: (W-DD10) (West Cliff property boundary between the product stockpiles adjacent to Wedderburn Road and the Dharawal State Conservation Area boundary)	Site dust control performance reference for product stockpiles and Wedderburn Road coal truck transport corridor
	Real-time Photometer (fixed) Photometer ID: (W-PF1) (West Cliff southern property boundary at the Wedderburn and Appin Road intersection)	Fixed monitor for real-time monitoring of dust emissions at the Wedderburn Road and Appin Road intersection Real-time Operational Control – Roadway dust emissions
	Real-time Photometer (portable) Photometer ID: (W-PS1) (Brennans Creek Dam locality to the north of the West Cliff Emplacement Area)	Monitor real-time dust emissions at the Brennans Creek Dam locality. Quarterly survey dust monitoring point Operational Control and baseline reference point
	Real-time Photometer (portable) Photometer ID: (W-PS2) (Dust emissions survey locality at the western boundary between the emplacement operations and Appin Road)	Monitor real-time dust emissions at the zone between the active emplacement area and Appin Road Quarterly survey dust monitoring point Operational Control
	Real-time Photometer (portable) Photometer ID: (W-PS3) (Dust emissions survey locality along Wedderburn Road between the coal stockpiles and the Dharawal National Park)	Monitor real-time dust emissions along Wedderburn Road

Environmental Management and Performance continued

	Real-time Photometer (portable) Photometer ID: (W-PS4) (Cataract Scout Camp Reserve to the South West of the West Cliff Site)	Quarterly survey dust monitoring point Operational Control

Three weather stations have been installed: One at Appin East (with mains power), West Cliff (along Wedderburn Road with solar power) and Mount Batten Stud (with solar power) within fixed monitoring compounds.

Temperature probes were installed at the top and base of the Bulk Coal Winder tower at West Cliff (50 metre elevation required) to meet the consent condition to detect inversions within the Bulli Seam using the temperature lapse rate.

Environmental Performance

Results of the air quality monitoring are reported online every 14 days in accordance with Section 66 (6) of the POEO Act and *Schedule 6, Condition 11* of the BSO Project Approval; and on an annual basis to the OEH via the EPA Annual Return (Appendix B – 2013/14 EPA Annual Return). The online report is available via the following link:

http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx

A comprehensive summary of all air monitoring results for the BSO is provided below:

BSO Dust Deposition Gauge Monitoring

The Appin East and West Cliff sites operated well below the long term criteria/amenity goal of 4 g/m2/month for deposited dust (Figure 3). This is evident at all sites located on the perimeter of the Appin and West Cliff sites (i.e. AE-DDG14, 15, 16 and 17; and AW-DD1 and 2; and WC-DD1, 3 and 8). AE-DDG18 (which is located adjacent to the Coal loading bins) and WC-DD10 (which is located on the side of an internal haul road) are both site dust control performance references. The elevated dust levels at these two sites were localised (Figure 3).

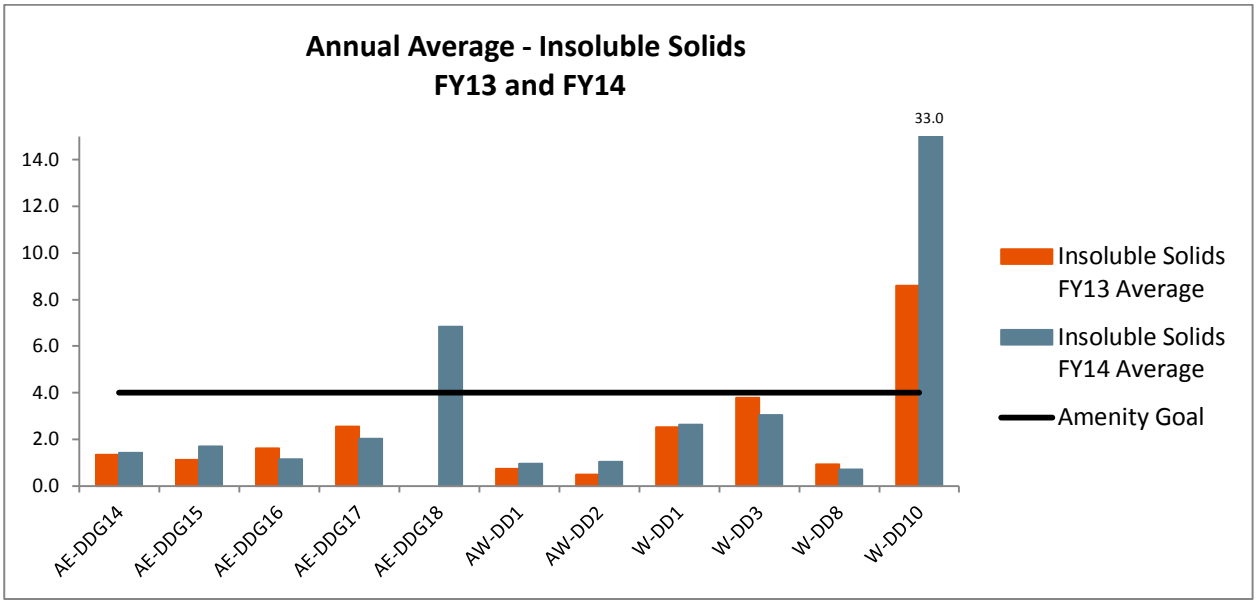

Figure 3: Comparison between FY13 and FY14 annual averages for insoluble solids across the BSO. The long term criteria (amenity goal) applies to particulate emissions on any *residence on privately owned land* – As the gauges are located within the mine site i.e. operational land, they provide an indication only of how the sites are tracking against the criteria at any residence on privately owned land located nearbye.

Real-time Monitoring

As described in the BSO AQMP, if the optical photometer at Appin East (AE-PF3) indicates dust levels greater than 80% of the Air Quality Criteria (refer to Schedule 4, condition 9 of the BSO project approval) additional monitoring will be undertaken using the HVAS (AE-HV1) in order to assess compliance. The PM_{10} levels at this site remained well below the 80% trigger (24 hour average) for the reporting period; therefore the HVAS was not required (Figure 4).

It should be noted that monitoring at AE-PF3 only commenced on 1 April 2014 and hence the below graph only provides data for the last three months of the reporting period.

Environmental Management and Performance continued

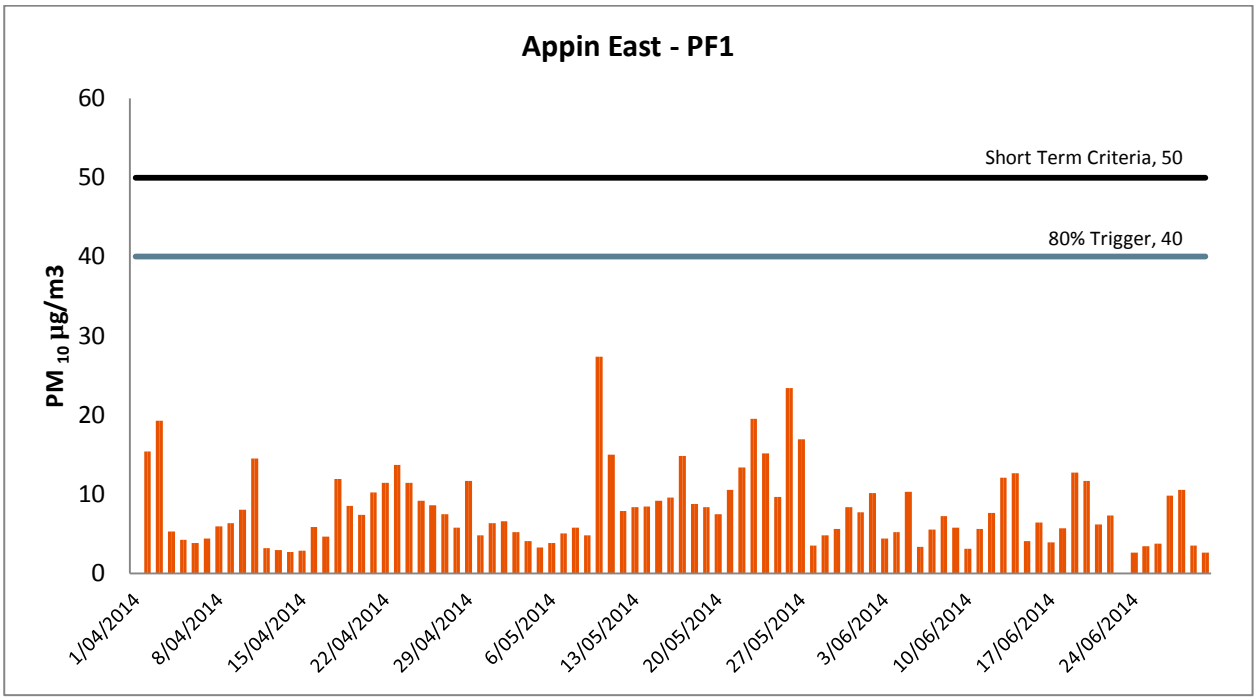

Figure 4: PM_{10} 24 hour average levels at Appin East. Optical photometer was commissioned April 2014.

PRP21 – Implementation of Dust Control Best Management Practices

A summary of the status of PRP21, as at the end of the reporting period, is provided below.

Table 22: PRP21 Status Update

PRP21 Requirement	Status as of June 2014
Finalise and implement the Dust Forecast Ranking for predictive forecasting of adverse weather conditions	Dust Forecast Ranking was implemented during the reporting period.
Retrofit water tankers so that a minimum of 2 tankers are available with a water cannon to spray stockpiles and coal loading areas during adverse weather conditions	Two water tankers with water cannons are available for use to spray stockpiles during adverse weather conditions.
Continue the trial of haul road resurfacing with stabilising waste material including pulverised coal wash reject and provide a progress report to the EPA by the due date.	Trials involving the use of stabilised coal wash are ongoing. RMS was engaged in July 2014 to trial a coal wash blend on the shoulder of Wedderburn Road. Progress will be reported to the EPA inline with the requirements of the PRP.

PRP 22 – Investigation to Reduce Coal Dust Tracked Onto Roads from West Cliff Colliery

IC has designed a monitoring program in accordance with the requirements of PRP22. The program consists of the following:

1. Quadrant monitoring along Appin Road using a vacuume cleaner method
    a. Two quadrant sites (1m by 1m)
    b. One site located to the west of West Cliff Intersection (approx 1km) – safe distance from road
    c. Second site located to the east of the Wedderburn Road intersection (approx 1km) – safe distance from road
    d. Monthly frequency to correlate with dust deposition program
2. Dust deposition monitoring
    a. Total of 3 gauges located on the side of Wedderburn Road at approximately 700m intervals from truck wash intersection to Dustrak real-time monitor

Environmental Management and Performance continued

3. Real-time Dustrak monitoring; and
4. Potable Dustrak meter attached to the tail gate of trucks
    a. Magnetic bracket and portable Dustrak meter to be attached to tailgate of Bulktrans truck at the wash down area at Wedderburn Road and removed at the end of Wedderburn Road (prior to entering Appin Road). Will provide a gradient type profile for dust generated from truck movements along Wedderburn Road.

A report outlining the results of the investigation will be submitted to the EPA by the due date (ie. end of January 2015).

Reportable Incidents

No reportable incidents have occurred during the reporting period.

Further Improvements

AW Waste Yard Dust Mitigation
A concrete pad installed in front of the waste yard within the machine activity area prevents dust generation. Two dust suppression sprinklers were also installed in front of the waste yard servicing this pad, along with two mobile sprinklers covering the general equipment storage area.

Erosion and Sediment

Environmental Management

Most activities at the Appin East and West sites are undertaken on relatively flat areas. In addition, high activity areas are sealed (e.g. car park areas). There are minimal exposed earthen areas at both sites. Internal unsealed roads are maintained to prevent dust, primarily through dust suppression sprays and water carts. Sediment fences are installed where required to filter sediment from drainage / seepage. Sediment is controlled by a series of dams and water treatment facilities at both sites. Water discharged is monitored for suspended solids.

Areas that have the potential to be contaminated by the surface operations at the Appin West Pit Top are contained within the catchment of the Surface Water Dams which are designed to capture and treat a 1:10 year, 72 hour rainfall event. The Surface Water Dam contains a spillway designed for a 1:1000 year rainfall event to maintain the engineering integrity of the structure and reduce the risk of erosion and sediment release. Prior to the release of surface water from the Surface Water Dam (via LDP 23), water passes through a filter unit which is designed to remove suspended solids, oil and grease.

The potential for erosion at the emplacement area is managed in accordance with the *West Cliff Coal Wash Emplacement Area Management Plan*. The following activities are undertaken to minimise the likelihood of erosion within the emplacement area:

- Compaction of emplaced material;
- Profiling of finished areas to designed gradients; and
- Revegetation of emplaced area.

Sediment is controlled by a series of sedimentation ponds, which have a combined capacity in excess of 200ML. Treatment of the water is undertaken at a number of locations across the site prior to release to BCD to meet compliance with EPL limits.

The water management system is regularly inspected by the site environmental representative to ensure the system is operating as efficiently as possible.

Environmental Performance

Routine water quality monitoring of Total Suspended Solids (TSS) across the BSO has not identified any issues associated with erosion and sedimentation. The Appin East and West and West Cliff sites are operating well within their licence limits for TSS.

Reportable Incidents

There were no reportable incidents during the reporting period.

Further Improvements

Appin West Discharge Point 24 Relocation
Licenced Discharge Point 24 was relocated to a new outlet site in order to avoid erosion via the original outlet.

Environmental Management and Performance continued

West Cliff EP3 Recirculation Pump
A pump was installed in Emplacement Pond 3 to enable recirculation and re-treatment of turbid waters. This pump is used on as-needed basis, typically during high rainfall.

Surface Water Pollution

Environmental Management

Surface water management across the BSOP is undertaken in accordance with *EPL 2504* and the approved *BSO Surface Water Management Plan*. The Surface Water Management Plan (SWMP) details the control measures, compliance procedures, monitoring programs, evaluation protocols, notification and communication processes for surface water management for the BSO. This plan has been prepared to satisfy Schedule 4, Condition 16 of the BSO approval.

The objectives of the SWMP are to:

- Provide a water balance for the project including sources, usage and discharge quality;
- Outline the process to reduce the impacts on biota from the Brennans Creek dam discharge;
- Establish responsibilities for the surface water management at the BSO operations;
- Comply with all relevant regulatory requirements, Environmental Protection Licence 2504 and BHP Billiton policies and standards for water management;
- Describe the water management systems including measures to comply discharge limits and minimise potable water usage;
- Outline the framework for water monitoring, auditing and reporting; and
- Specify investigation and communication processes in response to water related issues and complaints.

For specific surface water management strategies and controls, please refer to the SWMP
http://www.bhpbilliton.com/home/society/regulatory/Documents/Bulli%20Seam%20Operations/2013/BulliSeam_SurfaceWater_Management_Plan.pdf

Environmental Performance

Results of the surface water monitoring are reported online every 14 days as per the requirements of Section 66 (6) of the POEO Act and *Schedule 6, Condition 11* of the BSO Project Approval; and on an annual basis to the OEH via the EPA Annual Return (Appendix B – 2013/14 EPA Annual Return). The online report is accessiable via the following link:

http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx

A comprehensive summary of results from the BSO monitoring program is included in the following sections.

Water Quality
All but two of the eleven monitoring sites across the BSO achieved 100% compliance with the EPL2504 limits during the reporting period (refer to Table 23). Sites where an exceedance of the EPL has occurred are discussed in more detail below.

Table 23: Summary of Compliance with EPL water quality limits across the BSO

Monitoring Site	EPL Compliant Y/N	Comments
Point 4	Yes	---
Point 10	No	Refer to paragraph below
Point 11	na	---
Point 12	na	---
Point 18	Yes	---
Point 19	Yes	---
Point 20	No	Refer to paragraph below
Point 22	Yes	---
Point 23	Yes	---

Environmental Management and Performance continued

Monitoring Site	EPL Compliant Y/N	Comments
Point 24	Yes	
Point 36	na	

Licence Excceedances at Point 10

Copper:

Exceedance of the 90th percentile criteria for Dissolved Copper at LDP10 occurred during the reporting period. This was primarily due to the water recycling system and the low rainfall experienced during the reporting period, the dissolved copper levels trended up above the 90th percentile criteria on a number of occasions. The current criterion is set at a level below the historical 90th percentile dissolved copper concentration. This issue has been communicated to the EPA. Site continues to operate the water management system in such a way to maximise capture of surface water run off to assist in the management of dissolved copper levels in the discharge water.

Ongoing discussions and correspondence between Illawarra Coal and the EPA regarding increasing the licence limit to reflect achievable concentrations given current water management system (note: improvements to discharge water quality from LDP10, including the dissolved copper concentations, will be progressed as part of PRP19).

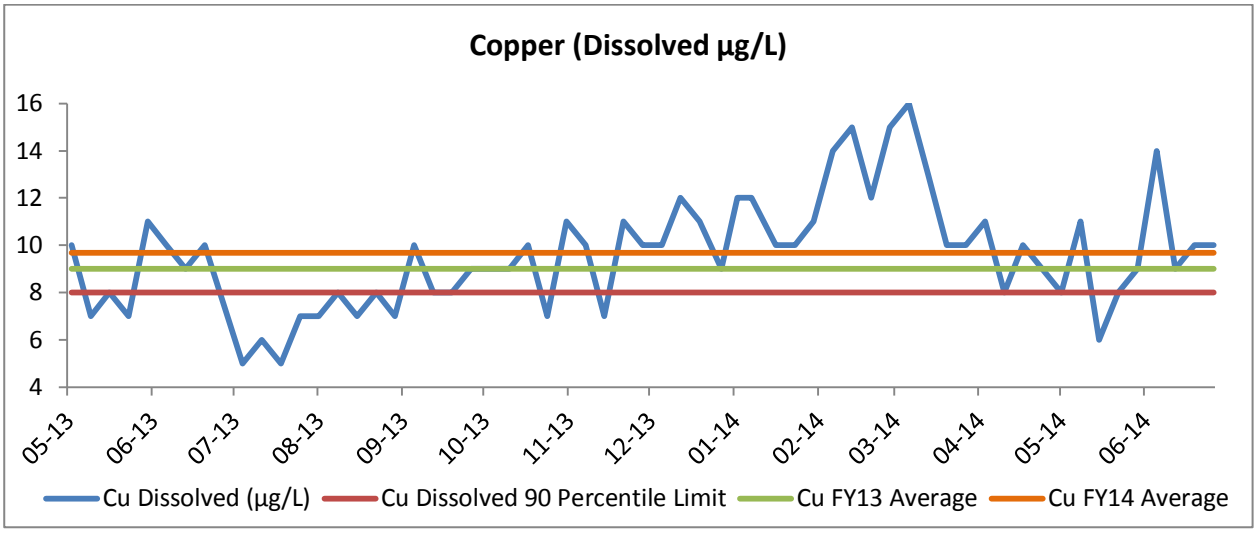

Figure 5: Copper trend: LDP10 (May 2013 to June 2014).

PH

Marginal exceedances of the lower pH concentration limit for LDP10 occurred during the reporting period. The non-compliance is believed to be as a result of probe error however this is unable to be confirmed. A graph showing the pH trending between the 10/9 and 10/10 is included below – the graph shows that the normal pH levels leading up to and after the low readings were between 8 – 8.5 pH units which suggests that the low readings were likely to be as a result of probe error as a sudden change in pH is unlikely to occur given the large volume of water in Brennans Creek Dam. No adverse effects to the receiving environment were expected as the non-compliances were marginal in nature and occurred over a short duration (i.e. 4 instantaneous measurements over a 3 day period). The recorded readings are likely to be invalid due to a probe error but this is unable to be confirmed.

The pH probe was recalibrated on the 27.09.2013 and no further non-compliances have occurred. The following actions have been, or are planned to be, undertaken as a result of this issue: High and low level alarms (sent via email) against pH limits (upper and lower) have been set up in the sites monitoring system (SCADA) to alert the site Environmental personnel of a potential issue.

Environmental Management and Performance continued

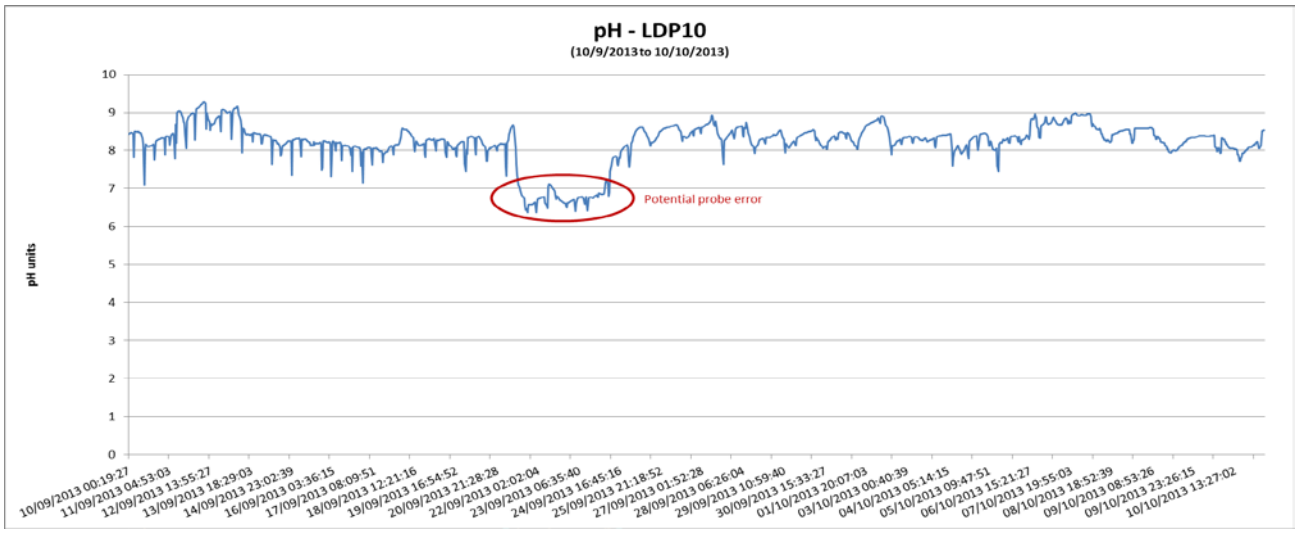

Figure 6: pH trend: LDP10 (10th September to 10th October 2013).

Licence Exceedances at Point 20

BOD

Routine monthly compliance sampling recorded higher than acceptable BOD levels on 3 occasions during the reporting period. The levels recorded were 38mg/l, 57mg/l & 42mg/l (limit: 30mg/l). Note: Limit increased to 50mg/L (Variation Notice: 1515381). An infestation of mosquito larvae in the clarifying chamber caused blockages in the outlet filter allowing short circuiting to occur within the internal chambers of the Envirocycle system, which does not allow effluent to undergo full treatment hence the increase in BOD levels (2/09/13 & 14/11/13).

A power supply issue 12/12/13 at the transfer tank resulted in a surge through the system resulting in a higher BOD. The following actions have been, or are planned to be, undertaken in response to the non-compliances:

- Access points for mosquitoes to the clarifying chamber have been sealed – no infestations have occurred since;
- Discussions with Sydney Water regarding the potential to connect the Appin East pit top to the existing sewer system hence negating the need to irrigate on site; and

The BOD limit associated with Point 20 has been increased to 50mg/L.

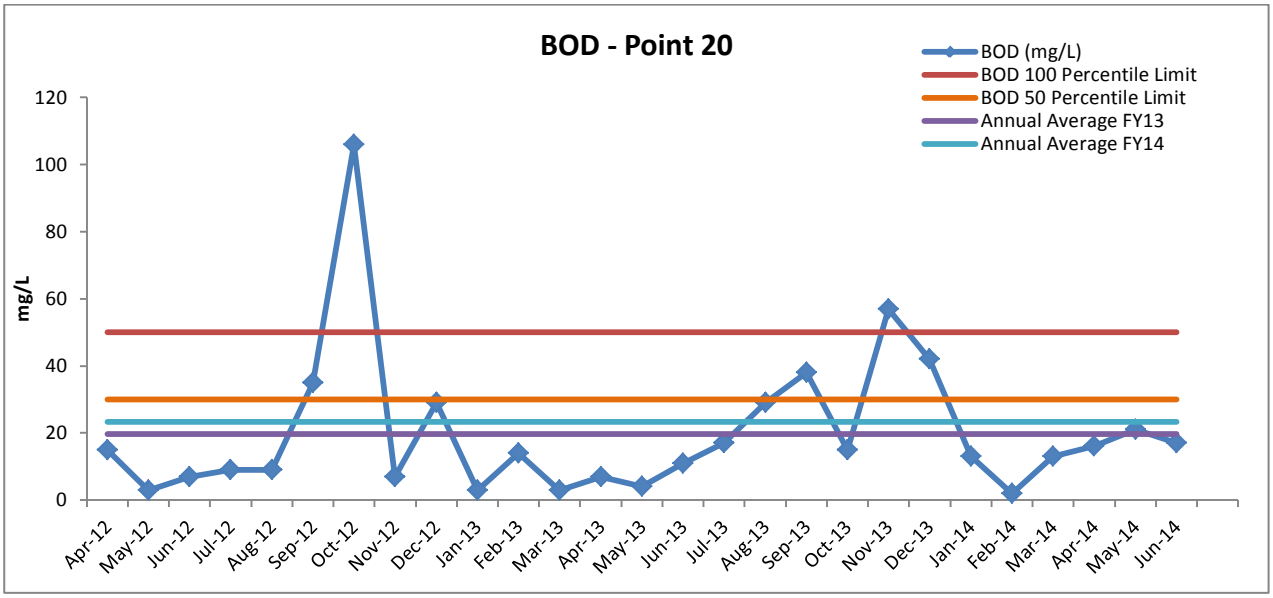

Figure 7: BOD Trend: LDP20 (April 2012 to June 2014). Note – Limit was changed from 30 to 50mg/L (Notice 1515381).

Environmental Management and Performance continued

Oil & Grease

There was one exceedance of the criteria for Oil and Grease (value of 39mg/L vs limit of 10mg/L) on 10 April 2014. The cause of the exceedance is unknown, however is likely to be a laboratory error considering the oil and grease levels before and after this date have been consistently below detection limit for this analyte i.e. <5mg/L.

Water Discharge

There have been nil instances where discharge volume exceeded the EPL limits for discharge. See table below.

Table 24: Summary of Compliance with EPL discharge limits across the BSO

Monitoring Site	EPL Compliant Y/N	Comments
Point 4	Y	---
Point 10	Y	---
Point 13	Y	---
Point 18	Y	---
Point 19	Y	---
Point 20	Y	---
Point 22	Y	---
Point 24	Y	---

There was 1 day where the spillway at BCD was overflowing during the reporting period. The figure below shows the level of the dam during the reporting period and also displays the daily rainfall.

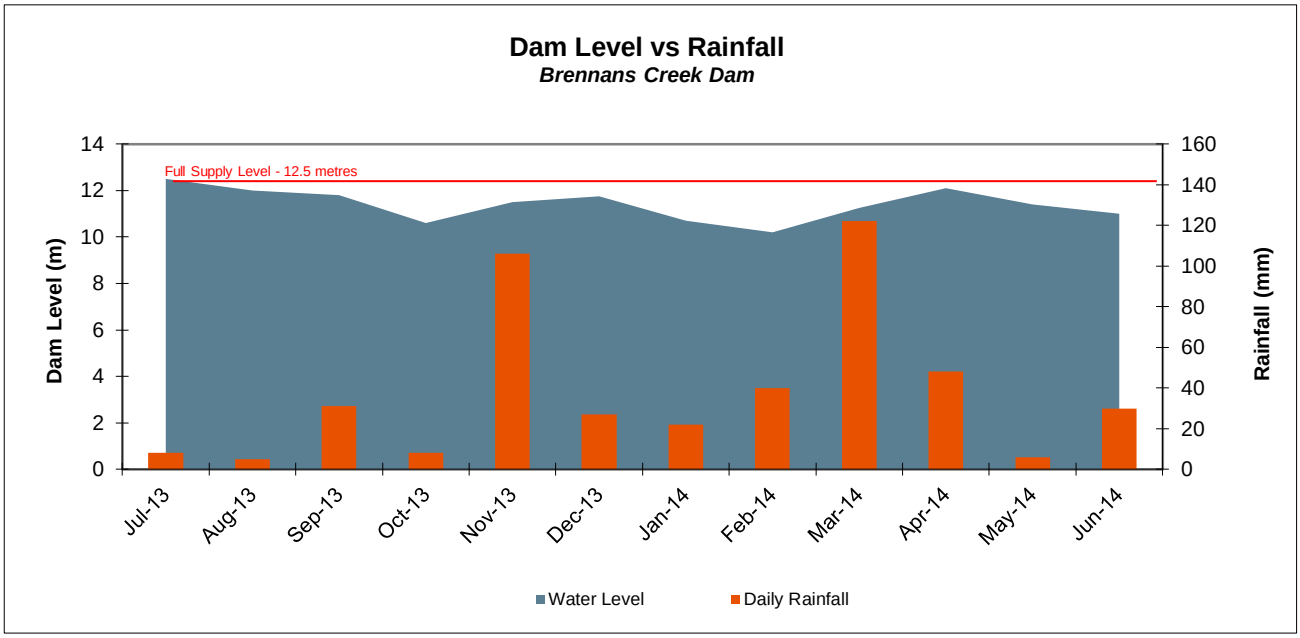

Figure 8: BCD level and rainfall – FY14.

Ecotox

In accordance with EPL 2504 Condition M2.4, Illawarra Coal is conducting acute and chronic (sublethal) toxicity testing of the discharges from Point 10. Samples are collected four times per year; the program commenced in June 2013. Subsequent samples were collected in August 2013, January 2014 and April 2014. A summary of the results from the four sampling events is provided below. Monitoring will continue throughout FY15.

Environmental Management and Performance continued

Table 25: Ecotox results summary (NOEC). Samples collected from LDP10, Brennans Creek Dam.

Test and Spp.	Highest Mine Water Concentration Where There Was No Observable Impact Over a Full or Partial Life Cycle.			
	June 2013	August 2013	January 2014	April 2014
Partial life-cycle toxicity test using the freshwater cladoceran Ceriodaphnia dubia	100%	50%	25%	50%
48hr Acute Toxicity Test using the freshwater cladoceran Ceriodaphnia dubia	50%	100%	50%	100%
10 day Acute Survival Test using the freshwater shrimp Paratya australiensis	50%	100%	50%	50%
96 hour fish imbalance test - Melanotaenia duboulayi	100%	100%	100%	50%
7-day Growth Inhibition of the freshwater aquatic duckweed Lemna disperma	12.1%	96.8%	24.2%	24.2%
72-hour microalgal growth inhibition test - Selenastrum capricornutum (green alga)	100%	100%	100%	100%

Pollution Reduction Programs

PRP19

PRP 19 (condition U2.1) aims to protect and / or restore the environmental values of the receiving waters affected by the discharge of waters from Brennans Creek Dam (BCD) into the Georges River. Stage 1 of the project was completed in December 2012 and involved the transfer of minewater from underground directly to the West Cliff Washery to be used as process water. Stage 2 of the project is due for completion by December 2016 and involves carrying out a program of works which may include minimisation or avoidance of a discharge, installation of a water treatment plant, or a combination of a water treatment plant and other discharge improvement options to achieve specified discharge quality. Stage 2 requires the licensee to provide six monthly progress reports (30 June and 30 December) until the completion of the project. Progress as at the end of the reporting period is as follows:

- Regular water strategy meetings have commenced to discuss and plan suitable options to address the requirements of PRP19.
- Completion of year one base-line aquatic health monitoring (PRP20).
- Construction of an under bore connecting Appin East to West Cliff. This will enable the transfer of treated water via a pipe range. Further design work is being undertaken to ensure adequate quality and volumes of discharge are met in accordance with relevant requirements.
- Review of chemicals used for surface water treatment at West Cliff. In-situ trials of alternate water treatment chemicals are expected to be completed in the near future (outcomes of review to be reported in next 6 monthly update report).

Six monthly progress reports have been submitted to the EPA in December 2013 and June 2014 as per the requirements of the PRP.

Environmental Management and Performance continued

PRP20

A study was developed to meet the aquatic health monitoring requirements of EPL2504 Condition U3 - PRP 20 Aquatic Health Monitoring Plan (see below).

> ***1) Prepare Aquatic Health Monitoring Program Plan***
>
> *The licensee must provide an aquatic health monitoring program plan to the EPA for review and approval. The program must require the monitoring and assessment of the aquatic health of Brennans Creek and the Upper Georges River between 1 September and 30 November (monitoring period) in the years 2013, 2015, 2017 and 2019.*
>
> *The monitoring program must include, but is not limited to, chemical analysis and in-stream biota assessment, including representative macroinvertebrate, algal and vertebrate species. The monitoring program must be carried out at five or more locations including discharge point 10, discharge point 11, discharge point 12 and the Upper Georges River to the confluence with O'Hares Creek.*

The aim of the study is to monitor the changes to biota in-stream and within the sediment within the Upper Georges River as Water Projects required by PRP 19 are commissioned.

The aim will be achieved by:

- Comparing the Brennans Ck/Georges River site with reference sites
- Estimate changes over time in the composition and abundance of in-stream and sediment biota; and
- Assessing the downstream gradient changes in composition and abundance of in-stream and sediment biota

We predict that the abundance and composition of aquatic biota will become more similar to the reference sites as Water Projects required by PRP 19 are commissioned.

The Program includes the following:

- Quantitative sampling of macroinvertebrates
- Fish surveys;
- Ecological assessment processes using DNA extracted from sediment samples;
- In-stream water quality testing; and
- Laboratory water testing.

The study area is located within the Upper Georges River Catchment commencing at GRQ1 and runs for 21 kilometres to site GROH, just upstream of the confluence with O'Hares Creek. Site GROH is located approximately 17.5 kilometres downstream of the West Cliff licensed discharge Point 10. Five sites were located in pool habitats downstream of Licence discharge point 10. Four reference sites were also sampled, GRUFS and GRQ1 (upstream Georges River) and CC1, CC2 (Cascade Creek). Site 11 is upstream of Brennans Creek however is potentially impacted from Appin Mine East drainage. Analysis determined the site is appropriate to use as a reference site.

The first years (baseline) monitoring was completed in November 2013. The report was submitted to the EPA on 26 March 2014. The next round of monitoring will occur in spring 2015. A summary of the results from year one is provided below.

<u>Fish</u>

In general, the fish population was low in abundance and diversity. This was expected and is consistent with findings from previous fish surveys undertaken in the upper Georges River. It is likely that the upper Georges River is naturally low in abundance and diversity of fish. No Threatened fish species were caught or observed during the survey. It is concluded that fish are not a reliable indicator for monitoring in the context of this study because of the low diversity and abundance and are hence limited in ability to detect small or gradual environmental change.

<u>Macroinvertebrates</u>

The univariate data showed no significant difference between discharge monitoring and reference sites in density and family richness, however multivariate data showed there was significant difference in assemblage composition between discharge monitoring and reference sites. This difference was attributed to lower densities of pollution sensitive Leptophlebiidae (SIGNAL 8) and increased densities of pollution tolerant Chironomidae (SIGNAL 3) and Caenidae (SIGNAL 4) in discharge monitoring sites compared to reference sites.

Environmental Management and Performance continued

The influence of mine water discharge on water quality decreased downstream, for example electrical conductivity had almost halved at GRQ18 (~1400 µS/cm). GRQ18 had the highest family richness of all sites (including the reference sites) and was the most similar to reference sites in terms of macroinvertebrate assemblages. GRQ18 showed the presence of pollution sensitive Leptophlebiidae (which was absent from upstream discharge monitoring sites). Based on the study results, it appears as though there is less effect from the mine water discharge on macroinvertebrate assemblages at this location. This is consistent with the CSIRO findings.

Benthic Eukaryotic Assemblages

Biological replication was sufficient to cover 80% of the estimated operational taxonomic units (OTUs) from each site. Total OTU richness was substantially higher in the discharge monitoring sites, however, the ecological significance of this finding requires consideration as the assemblages would have included organisms derived from the point source and the river, as well as deceased taxa and organisms attached or retained within other organisms.

Multivariate analysis clearly showed that the biological communities sampled from the discharge monitoring sites differed from those from the reference sites. Evidence also suggests that location of the site within the catchment and its distance from the discharge point may have also contributed to composition.

The water chemistry from the discharge monitoring sites was complex with a number of variables exceeding ANZECC/ARMCANZ (2000) trigger values. While it was not possible to attribute changes in biological composition to any specific water quality variable, the finding suggests that the discharge is altering the biological composition (as defined by the eukaryotic communities), with this being most evident at Jutts Crossing, Point 10 and Point 12. It can be inferred that the water chemistry is having a more pronounced effect on the biological communities from the discharge sites at sites closer to the discharge point than those located further downstream.

Conclusions:

In both studies, identifying specific water chemistry variables that may be driving the perceived changes in the biologically communities was difficult due to the strong correlations among water quality variables. When the discharge is examined as a mixture, the studies indicate that the water quality in the discharge monitoring sites is altering biological composition compared to the reference sites, with this effect being diminished in the discharge monitoring sites furthest away from the point source.

GRQ18 contained the highest family richness of all sites (including reference); contained the Sydney Hawk Dragonfly; and was the most similar (of all discharge monitoring sites) to reference sites in terms of macroinvertebrate composition. No evidence suggests that the mine water discharge from Point 10 is having a negative effect at this location. The conductivity at this site was ~1400 µS/cm.

Reportable Incidents

Non-compliances with EPL 2504 were reported in the Annual Return to the EPA (Appendix B – 2013/14 EPA Annual Return). No other reportable incidents occurred during the reporting period.

Further Improvements

No further improvments for the reporting period.

Groundwater Pollution

No groundwater pollution issues were associated with the BSOP during this reporting period.

At West Cliff, water make resulting from strata water inflow is collected in pits and low points in the underground workings where it is mixed with water delivered underground from surface storage. This strata water is brought to the surface either as moisture contained within the coal or as surplus underground water which is pumped to the surface. Once on the surface, the water is piped to the concrete settling tanks where it is used as the main supply for the WCCPP. There were no incidents of ground water pollution within the report period.

At Appin, mine water is pumped from the underground working to the surface for treatment in the Appin West WTP from where it is either fed back underground for use or blended with mine water and discharged via LDP24.

Contaminated Polluted Land

Environmental Management

Appin

During the 2010/11 reporting period, Illawarra Coal investigated a small area of the Appin East site that had formerly been used as a fuel dispensing station which comprised two bowsers, a bunded above ground diesel tank, and a bunded

Environmental Management and Performance continued

refuelling pad. The decommissioned fuelling area was being excavated for the purpose of road construction to upgrade coal loading facilities at the site.

Preliminary investigations found the decommissioned fuelling area contained elevated concentrations of TPH C10-C36. In response to this finding, Illawarra Coal endeavoured to remove the majority of contaminated material from the decommissioned fuelling area to reduce environmental and health risks and ensure the site is suitable for continued industrial land use.

During the excavation and grading works, three previously unknown underground diesel storage tank pits (including a total of four UST's) were discovered. Leakage of diesel was evident in all three UST pits, so after the tanks were removed from site, 0.5-1.0m of soil was excavated from the walls and floor of each tank pit excavation.

Validation sampling of the floor of the excavated area continued to show elevated concentrations of Total Petroleum Hydrocarbons but concentrations of aliphatic and aromatic hydrocarbon compounds were below the NEPC (1999) guidelines for human health. The consultant's validation report indicated that the land remaining in the investigation area and around the UST excavations is suitable for continued industrial land use based on application of the NEPC (1999) guidelines and that the remaining in-situ contamination is not perceived to compromise the ongoing use of the site for industrial purposes. A quarterly monitoring program was established in 2011, with sampling conducted at four locations – T1, P1, P2 and P3. T1 is used to monitor for potential contamination from the old Appin Tip which is located upstream of the site.

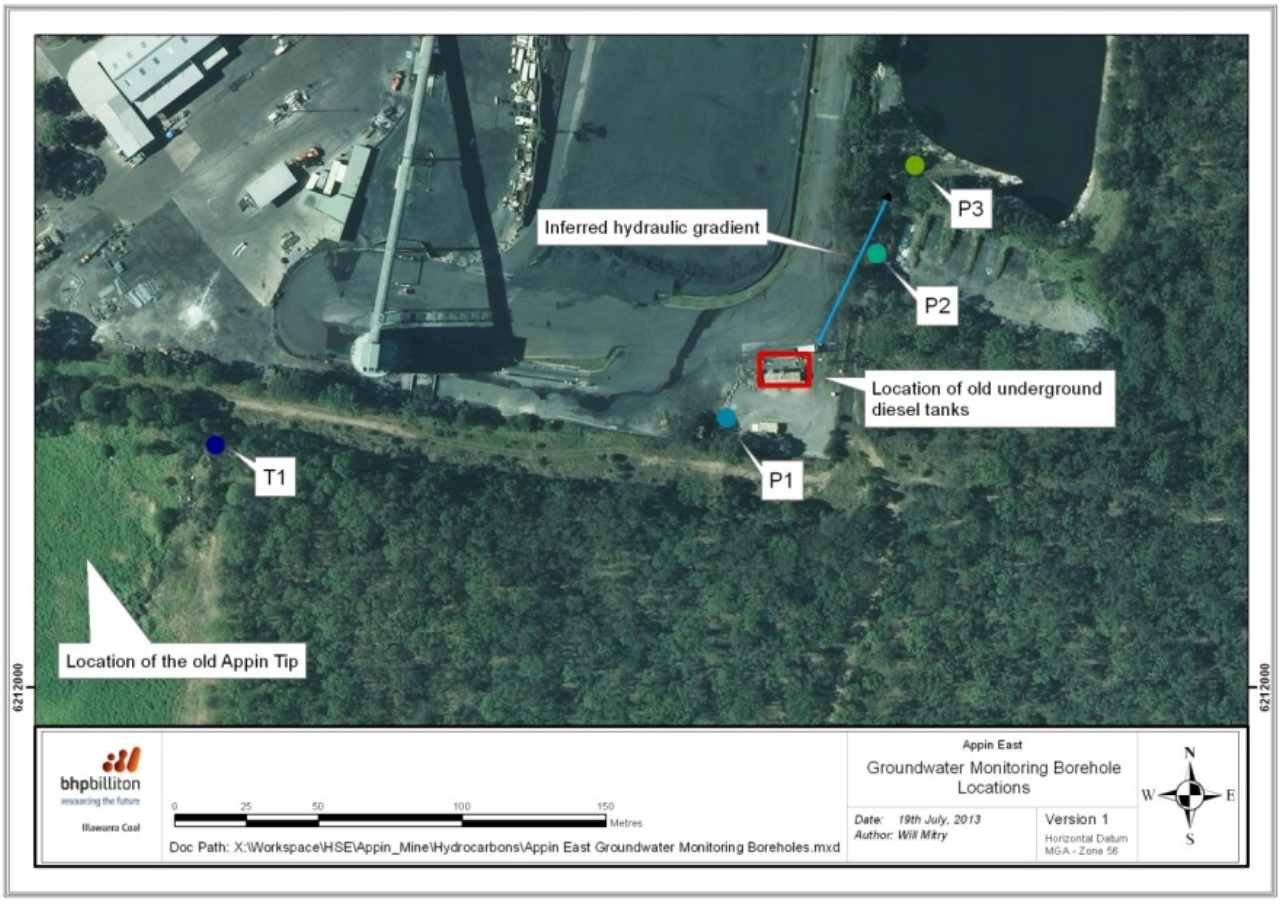

Figure 9: Groundwater Monitoring Bores locations at Appin East.

West Cliff

During the 2009/10 reporting period, both West Cliff Colliery and West Cliff CPP underwent 'Preliminary Contamination Assessments' were undertaken to review site activities and history, a site inspection to look for indicators of contamination followed by a Risk Assessment conducted with relevant site staff.

The site inspection identified a small groundwater seep which was discharging into one of the site dirty water catchment ponds (i.e. Pond P3). The lab analysis of the seep confirmed that the seep contained traces of hydrocarbons and therefore triggered the reporting requirements under Section 60 of the *Contaminated Land Management Act 1997* (CLM Act).

Environmental Management and Performance continued

As part of the notification, Illawarra Coal proposed to undertake a Comprehensive Contamination Assessment to determine the level and extent of contamination (both groundwater and soil) prior to determining an appropriate management strategy. This approach was endorsed by DECCW (now EPA) on the 11th May 2010.

The Comprehensive Contamination Site Assessment was completed by an environmental consultant during the 2010/11 reporting period. The assessment involved drilling of nine boreholes (BH1 to BH9), screening of 39 soil samples and laboratory analysis of 15 soil samples. Two groundwater bores (BH8 and BH9) were also installed as part of the investigation.

The analysis of the results suggested that the majority of the investigation area appeared to be free of contamination with only four of the samples indicating relatively low levels of contamination, three of which were located within 2.5 metres of a recently decommissioned and removed UPSS. The concentrations were relatively low in the context of an industrial site and analysis indicates the concentrations were likely to be well below NEPM health investigation guidelines for the industrial land use. In addition, a preliminary assessment of the soils waste classification suggested that the soil is likely to be classified as general solid waste. Ongoing monitoring of BH8 has been carried out during the reporting period.

Environmental Performance

Appin

Since the first round of monitoring, all samples across all sites have been essentially uncontaminated with respect to BTEX.

As dicussed in last years AEMR, the exact cause of the elevated TPH levels in late 2012/early 2013 is unknown; however this may have been due to asphalting works during that period. TPH concentrations have since returned to trace levels in at P1 and P2 and below detection limit at P3. Site P3 and T1 are essentially uncontaminated with respect to TPH.

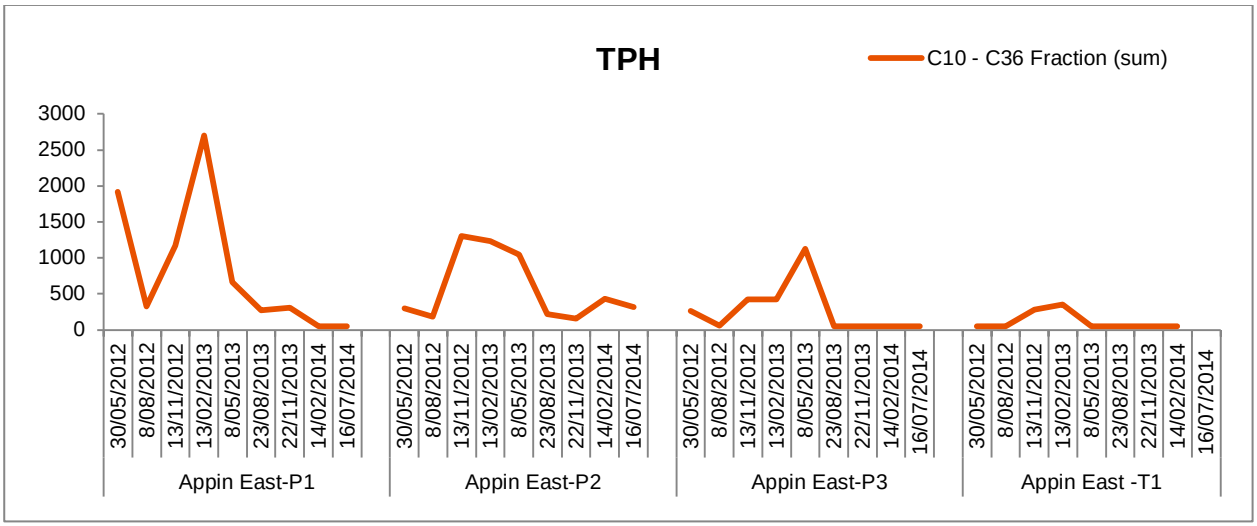

Figure 10: Total Petroleum Hydrocarbons (C10 – C36 Fraction (Sum)) since monitoring began in 2012 at Appin East.

West Cliff

During the reporting period, all samples from BH8 were uncontaminated with respect to BTEX.

Since the first sampling campaign, TPH concentrations have generally trended downwards in BH8. TPH concentrations have had a range between 2050µg/L in Feb 2012 down to 260 µg/L in August 2012. The carbon chain range for BH8 are between C10 – C28 indicating that diesel is a potential source of contamination at this location. This is consistent with data reported in the validation report which was submitted to the EPA in August 2010 which indicated there was a small hot spot of contamination remaining.

Environmental Management and Performance continued

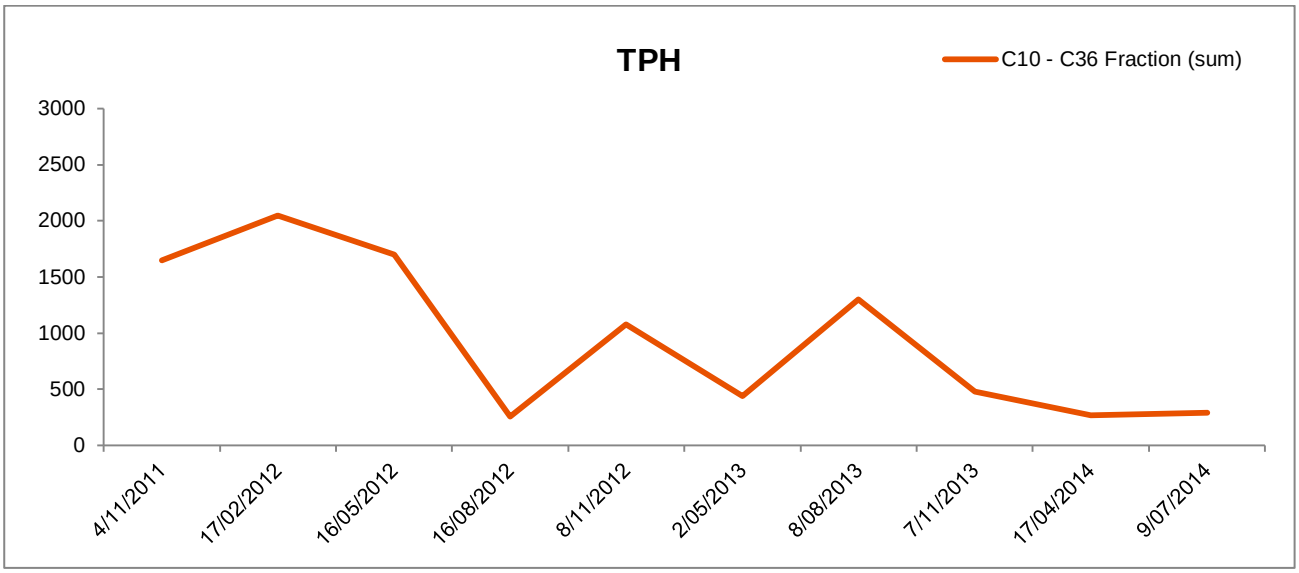

Figure 11: Total Petroleum Hydrocarbons (C10 – C36 Fraction (Sum)) since monitoring began in 2012 in BH8 at West Cliff.

Threatened Flora and Fauna

Environmental Management

Threatened Flora and Fauna communities at the BSO are managed in accordance with the following approved plans:

- West Cliff Coal Wash Emplacement Area Management Plan
- Broad-headed Snake Management Plan
- Southern Brown Bandicoot Management Plan
- Persoonia hirsuta Offset Management Plan
- Ventilation Shaft No.6 Biodiversity Management Plan
- Sandstone Shale Transition Forest Offset Management Plan; and
- Surface and Groundwater Quality Monitoring and Adative Management Plan for Water Sensitive EPBC Listed Species

These plans include the management and mitigation measures for threatened species or habitats that occur on our sites and are available on the BHP Billiton website http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx.

Environmental Performance

No new threatened flora and fauna communities were identified during the reporting period. There have been no impacts to the existing communities, with the exception of natural attrition to the above populations during the reporting period.

The surface area at the Appin Mine and infrastructure sites are largely cleared. There was no significant clearing on site during the reporting period, only maintenance associated with property asset protection zones, maintaining safe clearances from infrastructure and traffic zones, and garden maintenance.

The *Persoonia hirsuta* is listed as Endangered under both the NSW Threatened Species Conservation Act and Commonwealth EPBC. A substantial population of the *Persoonia hirsuta* is known to exist on the West Cliff Colliery Lease. A number of the *Persoonia hirsuta* are located within operational areas such as high voltage transmission lines on site.

Acacia bynoeana is listed as Threatened under the NSW Threatened Species Conservation Act and Vulnerable under the Commonwealth EPBC. The species has previously been recorded along existing roads, tracks and disturbed areas at West Cliff.

Pultenaea aristata is listed as Vulnerable under the NSW Threatened Species Conservation Act and the Commonwealth EPBC. The species has been recorded in areas of impeded drainage in woodland adjoining the main access road and in

Environmental Management and Performance continued

the vicinity of the southern extent of Stage 3 Emplacement Area. 41 *P. aristata* were identified within within the rehabilitating emplacement area (See Appendix A – Annual Rehabilitation Report).

Flora and Fauna aspects associated with mine subsidence are detailed in the Mine Subsidence section.

There have been no instances that required the implementation of mitigation measures for Broad-headed Snakes or Southern Brown Bandicoots (as outlined in the approved management plans). The West Cliff emplacement clearing has been undertaken in accordance with the two-stage clearing proedures as outlined in the Plans.

Persoonia hirsuta Offset Monitoring

Overview

During the reporting period, Illawarra Coal received approval of the West Cliff Emplacement *Persoonia* Offset in-line with the EPBC 2010/5350 Condition 1.

Illawarra Coal conducted its first round of annual condition monitoring of the *P. hirsuta* population at West Cliff. The monitoring was undertaken in accordance with the approved *P. hirsuta* Offset Management Plan, which complies with EPBC Approval Condition 2. The monitoring was completed over three days in November and December 2013 which is the start of the flowering period for the species.

Of the 44 plants that were identified during the baseline 2012 survey, four were unable to be re-located (presumed dead or had false GPS recordings since the 2012 survey). Seven were in very poor condition and likely dead. Five new plants were identified, giving a total of 38 living plants in the core population area.

A further 15 individuals were recorded within the surrounding West Cliff lease area, 10 of which were recorded in 2012. This includes one plant within the future Stage 4 boundary, six plants on the Brennans Creek Dam access road, and eight along the south-west boundary of the Appin Road easement.

Total Site Count

The total count for *P.hirsuta* plants at West Cliff in spring 2013 was 53.

Condition Assessment

The majority of plants are considered to be in 'good' condition, although the proportion of plants in 'good' condition is slightly less than that observed in 2012. No seedlings were identified during the survey. Two juvenile plants were identified (judgement based on size of plant and no flowers present). There was no evidence to suggest any dieback or disease during the survey. No impacts from dust were noted.

Discounting the 5 new plants that were identified during this survey, the Offset area has experienced an overall population decline of 11 plants (assuming the 4 plants that could not be located have died). It is likely the majority of the *P. hirsuta* plants in the Offset are reaching the end of their natural lifecycle (Niche 2012); No seedlings were identified during the survey; it appears that recruitment within the population of *P. hirsuta* is almost entirely absent given the absence of the apparent germination cue (fire or physical disturbance).

The senescence theory is supported by observations that compare the West Cliff Offset with other populations at Couridjah and Yanderra which are in better condition having been subject to recent disturbance by fire (Steph Wilmott Honours Thesis, 2013).

As per 2012, the Offset has a good level of inherent resilience (capacity to regenerate), a high level of native plant species richness, a low level of exotic plant cover and all structural layers are intact (canopy, mid-storey, shrubs and ground-cover). Little has changed since last year.

Overall, the condition of the vegetation is still considered good with a low level of exotic cover. As identified in 2012, the exotic grass, *Andropogon virginicus* (Whiskey Grass) was identified in the powerline easement to the Eastern edge of the Offset area and exclusion of these exotics from this area is considered a high priority. Attempts were made to hand weed the area at the time of survey and the area will be re-inspected in spring 2014.

Persoonia hirsuta Research

Under the BSO EPBC Approval Condition 3, BHPBIC is required to conduct specific research on *P. hirsuta*.

To date, the following has been undertaken:

Project No.1 - Habitat and Demography:

The University of Wollongong (UOW) were engaged to investigate the plants distribution and abundance, Seed bank dynamics and habitat requirements. The project was conducted as an honours thesis and was completed in October 2013. This study is part of a number of studies that will be conducted over the next 3 years.

Environmental Management and Performance continued

Project No.2 – Population Genetics
The UOW have been engaged to investigate population genetics at both a local and regional scale. The project commenced mid 2013 and is ongoing with anticipated completion March 2014.

Project No.3 – Propagation
Mt Annan Royal Botanic Gardens have been engaged to undertake trial ex-situ propagations of *P. hirsuta* cuttings (collected from West Cliff). The first round of cuttings were collected late 2013. There has been little success to date and the program is ongoing.

Potential Future Research
IC is developing a Burn Plan for the West Cliff Offset to promote new growth of dormant *P. hirsuta* seeds.

In spring 2013, a known NSW population was destroyed by wildfire; this presents a unique opportunity to monitor the site for emergent seedlings. IC has engaged UOW to undertake such a monitoring program.

Reportable Incidents
There were no reportable incidents during the reporting period.

Further Improvements
There were no further improvements during the reporting period.

Weeds

Environmental Management

Appin
Monthly environmental inspections (which include weed identification) are undertaken at the Appin East and Appin West sites. When noxious weeds are identified they are removed and treated as per the approved Waste Management Plan. Maps outlining the weed growth areas are provided to the grounds maintenance personnel to assist with identifying the target locations. During the reporting period active weed management included:

- Regular spaying of weed zones by licensed contractors;
- Regular audits of the effectiveness of weed management activities

West Cliff
Ongoing grounds maintenance is undertaken by a contractor who has a regular schedule of work. The annual emplacement rehabilitation monitoring program includes the identification and proposed management strategies to control weed growth within the emplacement areas. Focus areas for weed control are determined through this program. Records of areas targeted are maintained for future reference. Targetted weed control within the emplacement area is undertaken by suitably qualified site environmental representatives.

Blasting

No surface blasting activities are undertaken on site. Minor blasting activities underground are undertaken using approved management plans.

Operational Noise

Environmental Management
Noise across the BSOP is managed in accordance with the approved BSO Noise Management Plan. The Plan was prepared to satisfy Schedule 4, Condition 5 of the BSO approval and details the relevant noise criteria, compliance procedures and controls relating to the mining operations.

The objectives of this plan are to:

- Provide the frame work for the responsible management of noise emissions associated with the project;
- Describe the control measures for management of noise emissions;
- Prevent adverse noise impacts on the amenity of local communities and environment;
- Describe compliance criteria for noise for the project;
- Describe compliance criteria exceedance assessment protocols;
- Describe the noise monitoring program;

Environmental Management and Performance continued

- Comply with the relevant requirements of Environment Protection Licence (EPL) No. 2504 and the BSO Project approval;
- Describe measures for the reduction of noise emissions; and
- Comply with BHP Billiton and other relevant standards and requirements.

A copy of the Plan is available on the BHPB website:

http://www.bhpbilliton.com/home/society/regulatory/Documents/_coal/illawarra/bulliseam/140718_coal_illawarra_bulliseam_NoiseManagementPlan.pdf

Noise Monitoring Program

A noise monitoring program has been developed to comply with Condition 5(f) of Schedule 4 of the Project Approval.

The objectives of the noise monitoring program are to:

- Measure noise levels experienced by nearby residential receivers;
- Assess the effectiveness of the existing noise controls;
- Measure project related noise levels;
- Detect any adverse developments in Project noise;
- Measure Residential Background Level (RBL) noise; and
- Acquire sufficient and reliable data to inform the assessment of compliance with noise criteria

Assessment criteria have been established for each monitoring location, as outlined in Table 26. The criteria enable an assessment of compliance to be made against the noise levels outlined in the Project Approval. The site specific assessment criteria were developed using the following methodology:

- Adoption of the most stringent noise levels as outlined in the Development Consent noise criteria; and
- Where relevant, the noise levels were adjusted (to take into account monitoring location verse receivers) using the noise contours from the BSO Noise Impact Assessment.

Table 26: Noise Survey Points

Survey Point ID	Type	Recievers	Assessment Criteria		Locality	Function
			LAeq(15 min)	LA1(1 min)		
AE-NS4	Real-time and attended	Appin township	43 (day, evening and night)	52 (night)	Located in paddock between Illawarra and Toggarai St North of Pit Top behind receiver 137	Noise from AE
AE-NS5	Attended	Appin No.1 and No.2 recievers	40 (day, evening and night)	50 (night)	Northampton Dale Road between the No.2 Shaft Site and power plant project and the nearest residential receivers in the South to East quadrant from site.	Noise levels between Shaft Site and the nearest residential receivers to the SE
AW-NS5	Real-time and attended	All other Appin West recievers	39 (day and evening) 35 (night)	53 (night)	Between nearest residential receivers on Douglas Park Drive and the Appin West Pit Top	Noise level at AW property boundary; Noise levels between AW and nearest residential receivers on Douglas Park Drive
AW-NS4	Attended	Appin West recievers South-west of Appin	39 (day and evening)	49 (night)	Ashwood Road, South-west of Appin West Pit Top	Noise level for Appin West Recievers South-west of Appin West;

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		West; and Appin West recievers near Hume Highway	35 (night)			and Appin West Recievers near Hume Highway
AW-NS3	Attended	Appin No.3 recievers	41 (day, evening and night)	49 (night)	Appin No.3 Shaft site at end of Brookes Pt Road	Noise level at Brookes Pt Road and nearest residential receivers to the East of the shaft site
W-NS1	Attended	N/A – Baseline data for West Cliff only	N/A	N/A	West Cliff Brennans Creek Dam	Noise level between the West Cliff emplacement area and the nearest residential receivers to the North of site

The program consists of continuous, real-time noise monitoring and attended monitoring using handheld portable monitors. The attended monitoring is undertaken at the nominated monitoring locations to confirm compliance.

From the end of June 2013 to the end of December 2014, the noise generated by the project is not to exceed the criteria for the Appin Township Recievers (see Table 26).

Environmental Performance

Compliance against the limits for the Appin Township Recievers is measured at Site AE-NS4. Monitoring was undertaken at this site during November/December 2013, January/February 2014 and June 2014.

During this time, the noise levels generated from the Appin East pit top were below the Day, Evening and Night assessment criteria in Table 26.

Reportable Incidents

There were no reportable incidents during the reporting period.

Further Improvements

AE Noise Mitigation

Coal Bin Bash Plate

A purpose built Bash Plate was installed and commissioned at the transfer point of coal from the surface elevator belt conveyor to the Coal Bins. The face of this unit is fitted with replaceable wear plates.

Noise Monitoring during application for the Bulli Seam approval revealed considerable noise being generated from this area; the bash plate is designed to absorb noise generated in the coal transfer process.

Ventilation ducting

Roof ventilators were installed on top of the coal bin to assist with drawing out accumulated Methane Gas. This replaces the previous practice by shift supervisors opening the ventilation doors to dissipate any gas build up (with these doors open, noise escapes this high activity area).

Visual, Stray Light

The Appin West Mine Site is not directly visible by residential receivers. Lighting located on the Man and Materials Winder is partially visible by some residences at Wilton, but has not been raised by the community as an issue.

At Appin East, operations are not directly visible by residential receivers. Lighting located at the top of the coal storage bins is partially visible by some residences but has not been raised by the community as an issue.

Due to the relatively remote locality of West Cliff Colliery there are no significant issues in regard to lighting pollution. There were no lighting impacts from the construction activities undertaken during the reporting period. Lighting emissions from the site will continue to be monitored to ensure that there continues to be no impact to the surrounding community.

During the next reporting period, Illawarra Coal will undertake assessments of visual lighting. The assessments will be done in accordance with the requirements of the relevant Australian Standard.

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Mine Safety Gas Drainage

Lighting

During the 2013/14 reporting period, no lighting was operated for Mine Safety Gas Management operations as no 24/7 drilling activities were undertaken.

Aesthetics

During the 2013/14 reporting period, the aesthetics of Mine Safety Gas Drainage activities were addressed by:

- Shielding wells from residences as practicable. This included utilising natural topography and vegetation to screen operations and optimising the position of pad infrastructure;
- Where possible infrastructure was green coloured, or housed in a green coloured compound;
- Green coloured noise barriers were installed at the perimeter of sites within sight of residences. During 2013/2014 noise barriers remained in place around Area 9 operational sites; and
- Revegetation of exposed areas as soon as practicable. Pads associated with Longwall 704 were re-vegetated in 2013/14.

Figure 12: LW 704 pads during rehabilitation works

Ventilation shaft No.6

Drilling of the No 6 Vent Shaft (VS#6) commenced in December 2012 and continued throughout 2013/14. Lighting is installed with the aim of creating a safe working environment for 24/7 activities, while preventing light spill towards adjacent properties.

Lighting

During 2013/14 lighting was progressively installed to service permanent facilities such as the electrical substation, switchyard and office facilities. This lighting will be installed to the applicable standards and to minimise light spill.

Aesthetics

Construction activities for the VS#6 precinct continued throughout 2013/14. To minimise the visual disturbance from these activities, exposed areas were revegetated progressively as final landform was achieved. The most significant feature being re-vegetated was the shaft spoil stockpile, which was grassed and tubestock installed.

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Figure 13: VS#6 Spoil revegetation.

During 2013/14 aesthetic improvements will progressively continue on exposed and newly completed areas.

Aboriginal and Natural Heritage

Aboriginal and natural heritage at West Cliff is managed in accordance with the approved *West Cliff Coal Wash Emplacement Area Management Plan*. This Plan outlines the management/mitigation measures relating specifically to each heritage site located within or in close proximity to the West Cliff Coal Wash Emplacement. A copy of the Plan is available at

http://www.bhpbilliton.com/home/society/regulatory/Documents/_coal/illawarra/bulliseam/140812_coal_illawarra_bulliseam_WestCliffCoalWashEmplacementAreaManagementPlan.pdf.

During the reporting period, no sites were consumed by the emplacement operations. Site BC2 is likely to be consumed by the emplacement operation during the next reporting period. The following management actions have been completed for this site:

- Detailed recording – including scale photographic recording of the art and the sandstone overhang (art recoding will be undertaken using methods that do not involve touching the art surface).
- Facilitating the agreed Aboriginal Community Enhancement Program with the Tharawal LALC which included funding for: 3D imaging and recording of the landscape; research and sponsorship; and training and employment.
- Excavation – The archaeological deposits at BC2 have been entirely salvage excavated as per the Preliminary Research Permit #2908.

The following activities are planned to be undertaken prior to emplacement of the site:

- Protection of site using geo-textile and clean sand fill prior to emplacement.
- Signage and appropriate interpretation on the final emplacement landform indicating the location of the site below the emplacement.

The location of all heritage sites at West Cliff is outlined in Plan 13.

Aboriginal and natural heritage aspects associated with subsidence from the underground mining activities are detailed in the Mine Subsidence section of this report.

Spontaneous Combustion

No incidence of spontaneous combustion occurred within this reporting period.

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Bulli seam coal has a very low propensity to spontaneous combustion. Sampling programs (at Appin and West Cliff) are in place to detect any changes in coal quality that could potentially lead to spontaneous combustion occurring in coal stockpiles or refuse emplacements.

Routine and Statutory Inspections are used to identify any heating or spontaneous combustion events. In addition, a real time CO monitoring system exits, and all mine officials carry CO handheld monitors.

Bushfire

The risk of bushfire at Appin West, Appin East and West Cliff is managed by a combination of preventative and ready response activities. Bushfire management on both sites is achieved through the formation of a "fire break" around the site perimeters fence-line and the establishment of an extensive fire fighting water pipeline around the sites (with booster pump facilities).

Appropriate site personnel are trained in emergency response and fire fighting and have a large supply of readily available firefighting equipment on the sites.

Mine Subsidence

Approvals

Appin Area 7 Longwalls 705 – 710

The SMP for Appin Area 7 Longwalls 705 to 710 was approved by the Department of Trade, Investment, Regional Infrastructure and Services (DTIRIS) on the 28th February 2012 (for Longwalls 705 and 706) and 28th of September 2012 (for Longwalls 707 to 710). The Longwalls 705 to 710 SMP is supported by a number of management plans addressing social, cultural, environmental and infrastructure aspects of the mining area.

During the reporting period, Appin Mine completed Longwall 705 on the 27th of March 2014. Longwall 706 extraction began on the 23rd of April 2014. As of the 30th of June 2014 Longwall 706 had extracted 367m.

West Cliff Area 5 Longwalls 34 – 36

DTIRIS granted conditional approval for the extraction of West Cliff Longwalls 34-36 on the 13th of May 2009. Several variations were also granted to shorten the longwalls.

During the reporting period, West Cliff Mine completed Longwall 35 on the 20th of July 2013. Longwall 36 started on the 10th of August and was completed on the 17th of May 2014.

West Cliff Area 5 Longwalls 37 – 38

DTIRIS and Department of Planning and Environment (DoPE) granted approval for the West Cliff Longwalls 37 38 Extraction Plan on the 24th of March 2014. The Extraction Plan is supported by a number of management plans addressing cultural, environmental and infrastructure aspects of the mining area. A variation to reduce the length of Longwall 37 by 223m at the commencing end was approved by DTIRIS and DoPE on the 6th of June 2014.

During the reporting period Longwall 37 extraction began on the 10th of June 2014 and as of the 30th of June 2014, had extracted 139m.

Appin Area 7 Monitoring and Management Programs

The surface features in the vicinity of mining during the reporting period include:

- The Nepean River and associated tributaries;
- Harris Creek and associated tributaries;
- Cliffs, rocky outcrops and steep slopes;
- Aboriginal and European heritage;
- Buildings and infrastructure.

Monitoring activities within the SMP area includes:

- Water flow, pool water levels and water quality monitoring;
- Photographic and observational monitoring to identify mining-induced fractures, strata gas releases, iron staining and rock falls;
- Aquatic ecology monitoring;
- Terrestrial ecology monitoring;
- Aboriginal and European heritage items; and

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- Built features.

The results of these monitoring programs are provided below.

Landscape Features

During the reporting period monitoring of environmental features was carried out in accordance with the Appin Longwall 705 to 706 Subsidence Management Plan (SMP). Monitoring was conducted for landscapes within the zone of influence for Longwalls 705 and 706 during baseline, mining and post-mining periods (where applicable).

Three gas releases were identified along the Nepean River during the reporting period. For all observed impacts, the appropriate TARP's were applied, actions implemented and key stakeholders notified as required by the approved SMP.

Impacts associated with Longwalls 705 are summarised in Table 27 below. For further detail on impacts associated with Longwalls 705, refer to the Longwall 705 End of Panel report (EoP), available on the BHP Billiton website: http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx

Table 27: Predicted vs Observed Impacts for Landscape Features for Appin Area 7

Aspect	Predicted Impacts	Observed Impacts
Nepean River water levels	Unlikely for any significant change in water level along the Nepean River	No impacts observed
Surface waters in the mining areas	Potential for surface water diversion directly above or adjacent the mining area	No impacts observed
Gas releases	Likely that gas emissions could occur in the Nepean River	Three new gas releases have been identified
Iron staining	Minor iron flocs are expected to occur in the Nepean River. No change in water quality is predicted	No impacts observed
Fracturing	Minor fracturing may occur in the bed of the Nepean River	No impacts observed
Creeks	Possible for localised increase in ponding, flooding or scouring	No impacts observed
Cliffs	Possible minor isolated rock falls. Unlikely that any large cliff instabilities would occur	No impacts observed
Steep Slopes	Unlikely that there would be any significant impacts to steep slopes	No impacts observed

Surface Water

Field inspections carried out by the BHPBIC Environmental Field Team included monitoring for iron staining and gas releases in the river and tributaries. Areas of iron staining were identified during the mining of Longwall 701, however no new iron staining associated with Longwall 705 has been observed.

Data for pH, Electrical Conductivity, Dissolved Oxygen, Total Iron and Total Manganese were compared at sites upriver and downriver of Longwall 705 in order to identify any significant water quality change due to Longwall 705. Trigger Action Response Plan (TARP) limits were established by the Management Plan for water quality adjacent to the mining and downriver at down river sites.

No TARP trigger level was reached as a result of water quality measurements in the Nepean River. Table 28 provides a summary of the predicted and observed impacts for surface waters during the reporting period. Further information can be found in the Longwall 705 EoP report.

Table 28: Predicted vs Observed Impacts for Surface Water for Appin Area 7

Aspect	Predicted Impacts	Observed Impacts
Nepean River	Unlikely for any significant change in water level along the Nepean River	No mining-induced water level change has been observed – natural fluctuations with rainfall and SCA dam water releases
	Potential for surface water flow diversion is very low	No surface water flow diversion has been observed

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	Strata gas emissions into the river likely, with some associated reduction in dissolved oxygen possible	Three new gas zones were observed during the mining of Longwall 705, one of which is still active. No associated reduction in dissolved oxygen has been observed
	Low likelihood of ferruginous springs. Significant impacts on Nepean River pH, iron and dissolved oxygen not predicted	No new iron staining or seeps resulting from the extraction of Longwall 705 were identified
Harris Creek	Mine subsidence induced ferruginous springs possible, with potential impacts on water quality	No subsidence induced fracturing or iron staining has been observed in Harris Creek

Groundwater

The piezometer and bore monitoring data has been used to determine the pre Longwall 705 status of groundwater level and quality. Monitoring undertaken includes deep groundwater (e.g. Bulgo Sandstone and coal seams) and the Hawkesbury Sandstone. Targeted monitoring to a depth of approximately 10m below the level of the Nepean River has been established to determine if there are any changes to groundwater contributions to base flow of the river resulting from mining.

Groundwater levels are logged hourly using vibrating wire piezometers in the NGW and EAW series piezometers and are downloaded once every two months.

No piezometers or private bores were directly mined under during extraction of Longwall 705, however the Zampiron bore (GW102584), which overlies the Longwall 705 maingate chain pillar was within the 20mm subsidence zone of Longwall 705 (GeoTerra 2014). Table 29 summarises predicted and observed impacts.

Table 29: Predicted vs Observed Impacts for Groundwater for Appin Area 7

Aspect	Predicted Impacts	Observed Impacts
Aquifer / Aquitard interconnection under the Plateau	No adverse interconnection of aquifers and aquitards anticipated within 20m of the plateau surface	Some interconnection between aquifers has been observed within 20m of the surface over Longwall 704
	Potential increase in rate of groundwater recharge into the plateau	Increased rate of recharge into the western plateau has been observed
Groundwater Levels	Temporary lowering of the piezometric surface over the subsidence area	No adverse changes observed
	Groundwater levels may reduce by up to 10m	Some bores showed a response to mining, observed changes are within predictions
	No permanent post mining reduction in water level bores on the plateau	No permanent lowering of piezometric surface has been observed
Well yield and bore serviceability	Registered bores may be affected by subsidence	No adverse changes observed
	Horizontal displacement of strata may make some bores inaccessible	No bores have been made inaccessible by subsidence impacts
	Strata dilation may temporarily lower standing water levels	Standing water levels have increased by 2.3m (Boustani) to 31m (Nahkle)
Groundwater quality	Potential increased iron and manganese hydroxide precipitation in discharged bore water	No adverse changes observed
	Potential lowering of pH in discharged bore water	No adverse changes observed
Potential inflow into mine workings	No observable increase in mine workings groundwater in-flow	No increase observed

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Gas	Strata gas discharge into private bores may occur	No gas discharge into private bores observed

Aquatic Ecology

Within the Area 7 mining domain significant aquatic habitat is limited to the Nepean River and its tributaries. Four species of aquatic macrophytes and five species of native fish were identified in the EIS and SMP studies. No threatened fish or invertebrate species were identified.

The area is potentially within the range of two threatened species (Macquarie Perch and Sydney Hawk Dragonfly) listed under the Threatened Species Conservation Act. 'Assessments of Significance' concluded that mining within Area 7 is unlikely to have a significant impact on these species.

Mine subsidence can result in a net vertical uplift of the river bed, resulting in reductions in water depth. It was predicted that these effects could impact on components of aquatic ecology including flow, connectivity and water quality and could also reduce the availability of aquatic habitat. The baseline investigations showed that the Nepean River within the SMP Areas was generally a deep, continuous slow-flowing pool created by the damming effect of Menangle Weir. This would minimise the potential impacts on aquatic ecology resulting from reduced water flow and/or depth caused by any net uplift of the river bed. Any impacts on water flow and water loss caused by fracturing would also be expected to be minimal due to the flooded nature of the river system.

Cardno (2014) describes the results of the latest field survey completed in December 2013 and January 2014 at ten sites on the Nepean River in accordance with recommendations made in the SMPs for Longwalls 701 to 704 and 705 to 710. Data collected constitute post-extraction data for Longwalls 701 to 704, during extraction data for Longwall 705 and pre-extraction data for Longwalls 706 to 710. Comparisons have also been made with data collected during previous surveys in 2003, 2005, 2008, 2010, 2011 and 2012. Table 30 provides a summary of predicted and observed impacts on aquatic ecology for the reporting period.

Table 30: Predicted vs Observed Impacts for Aquatic Ecology for Appin Area 7

Aspect	Predicted Impacts	Observed Impacts
Aquatic Ecology	Exposure of wetted substrata in some limited shallow areas of the river, potentially arising due to minor reductions in water depth caused by net uplift of the river bed	No reported change in water level apart from the normal fluctuations associated with rainfall and Sydney Catchment Authority releases. No exposed wetted substrata observed
	Potential water loss or reduced flow due to fracturing of the river bed. However, this was not expected to result in significant water loss or reduced flow due to the flooded nature of this reach	No fracturing observed in the Nepean River and no water loss observed
	Components of aquatic ecology such as flow characteristics, connectivity and water quality should not be impacted by any predicted subsidence	No reported surface water flow diversions, impacts on water quality or connectivity of aquatic plant components
	Alterations to the composition of macrophyte beds due to small reductions in water depth. However, this is not expected to have a significant impact on the overall habitat in the survey area	No alterations to the composition of macrophyte beds observed. No mining induced dieback has been observed
	Possible that gas emissions may have impacts on water quality	No evidence of significant impacts on water quality due to gas releases
	Potential impacts on fish and macroinvertebrates due to mine subsidence are considered unlikely	No evidence of mining induced impact on either fish or macroinvertebrates

Terrestrial Ecology

Assessments of significance were undertaken for an endangered community and threatened flora and fauna species within Area 7. The assessment focused on flora and fauna that could potentially be impacted by subsidence. The following aspects were assessed:

- Native vegetation communities;
- Threatened flora; and

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- Threatened fauna and fauna habitat.

Plant communities, fauna habitats, threatened species, populations and ecological communities have not been significantly impacted by subsidence during the reporting period as outlined in Table 31 below.

Table 31: Predicted vs Observed Impacts for Terrestrial Ecology for Appin Area 7

Aspect	Predicted Impacts	Observed Impacts
Vegetation communities and fauna habitat	Minor impacts to riparian habitats on the Nepean River through changes in water levels, desiccation, gas release and minor fracturing	No impacts observed
	Minor impacts to vegetation due to rock falls, an increase in ponding, flooding or cracking to drainage lines and creeks	No impacts observed
Threatened flora	Unlikely that any threatened flora would be significantly impacted	No impacts observed
Threatened fauna	Unlikely that threatened fauna or habitats will be significantly impacted	No impacts observed

Cultural Heritage

European Heritage

No historical sites are located above Longwall 705.

Aboriginal Heritage

An assessment of the impacts of Longwall 705 on Aboriginal sites was conducted as part of the Longwall 705 EoP report by Niche (2014). Four registered Aboriginal archaeological sites occur in proximity to Longwall 705 and were considered in the Longwall 705 EoP report.

Based on reported observations large landscape changes that may affect the overhang sites and scarred tree have not occurred (Niche 2014). Given the lack of major movement and the predictions of low impact to Aboriginal sites, subsidence is considered to have a negligible impact on cultural heritage values (Niche 2014).

Based on the subsidence predictions provided by MSEC (2008) for Longwalls 705 to 710, it is unlikely that there will be impacts to the archaeological sites resulting from the extraction of the longwalls (Biosis, 2008). Aboriginal archaeological sites that have some potential, however unlikely, to be impacted by Longwalls 705 to 710, will be subject to monitoring (where access to the sites is granted). Table 32 provides a summary of predicted and observed impacts.

Table 32: Predicted vs Observed Impacts for Cultural Heritage for Appin Area 7

Site Name	Site Type	Predicted Impacts	Observed Impacts
Nepean River 6 (52-2-2095)	Shelter with deposit	Unlikely to experience subsidence impacts	No impacts observed
Nepean River 7 (52-2-2096)	Scarred tree	Unlikely to experience subsidence impacts	No impacts observed
Moreton Park Road 2 (52-2-3842)	Open camp site	Unlikely to experience subsidence impacts	No impacts observed
Moreton Park Road 5 (52-2-3845)	Open camp site	Unlikely to experience subsidence impacts	No impacts observed

Surface Infrastructure

The items of surface infrastructure which are located within either the 35 degree angle of draw line from Longwall 705 or within the predicted incremental 20 mm subsidence contour resulting from the extraction of Longwall 705 include the following:

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- Optical fibre cables (Telstra, Optus, NextGen and Powertel);
- Main Southern Railway and associated infrastructure;
- HW2 Hume Highway and associated infrastructure;
- Moreton Park Road and drainage culverts;
- Low voltage power lines;
- Copper telecommunications cables;
- Building structures, pools, water tanks and farm dams;
- Groundwater bores;
- Heritage structures; and
- Survey control marks.

The items of surface infrastructure which are located in the vicinity of Longwall 705 and are considered sensitive to far-field or valley related movements include:

- The Nepean Twin Bridges at Douglas Park;
- Moreton Park Road Bridge (South);
- Pumps in the Nepean River;
- The Upper Canal, Cataract Tunnel and associated infrastructure; and
- Survey Control Marks

The predicted and observed impacts for the surface infrastructure, resulting from the extraction of Appin Longwall 705, were provided in Report No. MSEC209. Comparisons between the assessed and observed impacts for the items of surface infrastructure during the reporting period are summarised in Table 33.

Table 33: Predicted vs Observed Impacts for Surface Infrastructure for Appin Area 7

Aspect	Predicted Impacts	Observed Impacts
Moreton Park Road	Minor cracking and localised heaving of the road surface in some locations above the longwall	Minor localised heaving observed, reported and remediated
HW2 Hume Highway	No impacts on the safety or serviceability of the highway after the implementation of the management strategies	No adverse impacts to safety or serviceability. Humps formed on both carriageways and these were remediated by re-shaping of the pavement surface and installation of additional slots as part of Management Plan responses
Main Southern Railway	No impacts on the safety or serviceability of the railway after the implementation of the management strategies	Changes in track geometry recorded and remediated in accordance with the established Management Plan. No adverse impacts to safety and serviceability
Douglas Park Twin Bridges	Impacts unlikely after the implementation of the TARP	No reported impacts
Moreton Park Road Bridge (south)	Impacts unlikely after the detailed investigation, analysis and implementation of the TARP	No reported impacts
Low voltage power lines	Impacts unlikely, but minor mitigation measures may be required	No reported impacts
Copper telecommunications cables	Impacts unlikely	No reported impacts
Optical fibre cables	Impacts unlikely with the implementation of the management strategies including OTDR monitoring and mitigation	No reported impacts
Building structures	Typically Category A Tilt Impacts, with 1 x Category B Tilt	*Houses and Non-Residential Structures*

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Aspect	Predicted Impacts	Observed Impacts
	Impact. Typically Category 0 Strain Impacts, With 6 x Category 1 Strain Impacts, 4 x Category 2 Strain Impacts	Building structures remained in safe and serviceable condition during mining. To date, no new claims to the Mine Subsidence Board (MSB) for impacts to building structures due to the mining of Longwall 705 *Other Features* One claim to the MSB for impact to pavement and one claim for impact to an irrigation pipe due to the mining of Longwall 705
Pools	In ground pools could be more susceptible to ground strains	No reported impacts
Water tanks	Impacts unlikely	No reported impacts
Farm dams	Potential for minor cracking or leakage	One claim to the MSB for impacts to a dam
Heritage structures	Impacts unlikely	No reported impacts
Groundwater bores	Potential for blockage or reduction in the capacity of the groundwater bores	No reported impacts
Pumps in the Nepean River	Impacts unlikely	No reported impacts
The Upper Canal, Cataract Tunnel and associated infrastructure	Impacts unlikely	No reported impacts
Survey control marks	Small far-field horizontal movements which could require re-establishment	Small far-field horizontal movements

West Cliff Monitoring and Management Programs

The surface features in the vicinity of mining during the reporting period include:

- The Georges River and associated tributaries;
- Mallaty Creek, Leafs Gully and associated tributaries;
- Rocky outcrops, steep slopes;
- Aboriginal and European heritage; and
- Buildings and infrastructure.

Monitoring activities within the SMP area includes:

- Water flow, pool water levels and water quality monitoring;
- Photographic and observational monitoring to identify mining-induced fractures, strata gas releases, iron staining and rock falls;
- Aquatic ecology monitoring;
- Terrestrial ecology monitoring;
- Aboriginal and European heritage items; and
- Buildings and infrastructure.

The results of these monitoring programs are provided below.

Landscape Features

Monitoring of natural features above and adjacent to Longwall 36 includes regular inspections of the Georges River, Mallaty Creek, Nepean River and Nepean Creek as well as riparian features and cliffs.

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Pool water levels, flows, water quality, photographic and observational monitoring is undertaken to identify any mining-induced impacts such as fractures, strata gas releases, iron staining or rock falls from cliffs, steep slopes or rock outcrops. Detailed analysis and reporting of water quality data is undertaken by Ecoengineers Pty Ltd and can be found in the Surface Water section of the Longwall 36 EoP report. Table 34 summarises predicted and observed impacts.

Table 34: Predicted vs Observed Impacts for Landscape Features for West Cliff Area 5

Aspect	Predicted Impacts	Observed Impacts
Georges River water levels/ flows	Minor fracturing in rockbar or bed of the Georges River which causes low water levels in mapped pools, under similar flows, when comparing pre-mining and post mining. Pool water level is able to be maintained by intervention	No impacts observed as a result of Longwall 36, however ongoing impacts from previous longwalls continues to be monitored
Georges River appearance	Slight increase in turbidity, iron staining, algal growth, or other visible water quality parameters determined by comparing baseline photos with photos during the mining period	No impacts observed as a result of Longwall 36, however ongoing impacts from previous longwalls continues to be monitored
Cliffs, steep slopes and fire trails	Infrequent isolated rock falls Impacts to slopes such as minor cracking and erosion Small crack in an unsealed road which does not appear to be causing erosion or impeding access Minor gas emissions with no vegetation die off	No impacts observed
1st and 2nd order streams in the mining area	Crack/s with loss of surface water flow or pool water level to the near sub-surface strata Increase in turbidity, iron staining, algal growth, or other visible water quality parameters determined by comparing baseline photos with photos during the mining period	No impacts observed

Surface Water

The monitoring program provides a basis for the comparison of flow, pool level and water quality in the area before, during and after mining as outlined in the West Cliff Colliery Area 5 Longwalls 34 to 36 SMP.

A summary of the predicted and observed surface water impacts for Longwalls 36 and 37 (as of June 2014) are provided in Table 35. An assessment of the surface water quality will be completed as part of the Longwall 36 EoP report.

Table 35: Predicted vs Observed Impact for Surface Water for West Cliff Area 5

Aspect	Predicted Impacts	Observed Impacts
Georges River water quality	Water chemistry parameters not predicted to exceed second trigger point (i.e. between 2 and 3 standard deviations) when comparing upstream/downstream and/or pre-mining and post-mining results (see Georges River TARP for details)	No impacts observed
1st and 2nd order streams water quality	Temporary reduction in water quality (< 2 standard deviation reduction in water quality apparent at downstream monitoring site when comparing pre-mining to baseline data and/or upstream samples) observed for less than 2 months at any site when comparing baseline period to mining period and/or upstream samples	No impacts observed

Groundwater

Groundwater monitoring includes water level readings from a network of monitoring boreholes either via the use of a dip meter or vibrating wire piezometers. Boreholes near the Georges River are screened in a section of strata equivalent to

the base of the river in that location. Previous longwall extraction in West Cliff Area 5 indicates that groundwater levels directly over or adjacent to goaf areas can reduce. A summary of the predicted and observed groundwater impacts for Longwall 36 (as of June 2014) is provided in Table 36.

Table 36: Predicted vs Observed Impacts for Groundwater for West Cliff Area 5

Aspect	Predicted Impacts	Observed Impacts
Shallow Groundwater	Permanent reduction in groundwater levels (i.e. effect persisting after significant groundwater recharge rainfall events after mining) in some of the boreholes compared to the variability determined in baseline monitoring	No impacts observed

Aquatic Ecology

Cardno Ecology Lab (CEL) was commissioned by BHPBIC to assess the potential impact of mining subsidence on the aquatic ecology of the Georges River and other nearby watercourses within the West Cliff Area 5 SMP Area.

The condition of the aquatic macroinvertebrate fauna indicated that the Georges River had experienced some degree of environmental stress before mining commenced and that it continues to do so. In the current survey, the aquatic macroinvertebrate fauna at four of the six study sites along the Georges River was equivalent to the AUSRIVAS reference condition, while at the remaining sites was either significantly impaired or severely impaired relative to the AUSRIVAS reference condition.

A reduction in the number of macroinvertebrate taxa and desiccation of macrophytes was observed at two sites on the Georges River in November 2013. There was also evidence of a reduction in the quality of macroinvertebrate habitat at one of these sites and a reduction in the numbers of fish and larger mobile macroinvertebrates at the other. These changes are most likely due to the mining impacts (fracturing of bedrock, loss of flow and reductions in pool water levels and associated loss of aquatic habitat and reductions in river connectivity) associated with the extraction of Longwall 35. No such impacts were evident at sites further downstream, suggesting that the majority of these impacts are restricted to the areas directly affected by mining.

The most pronounced change in aquatic ecology observed since the commencement of the monitoring program was the absence of water in Mallaty Creek in May 2010 (CEL 2010b). The absence of flow was noted upstream of the monitoring site and adjacent to the gas pipeline works by ICFET following an extended dry period (CEL 2010b). This was most likely due to the ephemeral nature of the creek and recent low rainfall, rather than any subsidence-induced impact. In either case, the data collected over the course of the monitoring program suggest that this stream is of only limited aquatic ecological value and any potential loss of aquatic habitat due to mining related impacts would be relatively minor in both a local and regional context (CEL 2012b). Monitoring of the Mallaty Creek site was recommended to cease after the November 2011 survey, due to the stream lacking ecological value (CEL, 2012).

A summary of predicted and observed impacts on aquatic ecology is provided in Table 37.

Table 37: Predicted vs Observed Impacts for Aquatic Ecology for West Cliff Area 5

Aspect	Predicted Impacts	Observed Impacts
Aquatic Ecology	Subsidence impacts predicted by MSEC (2007) are expected to have only minor, localised impacts on aquatic biota in the Georges River (The Ecology Lab 2008)	Localised reduction in numbers of macroinvertibrate taxa, evidence of a lowering of habitat quality and the desiccation of macrophytes
	Any water loss in Mallaty Creek would result in the loss of aquatic habitat and biota from the affected area. Once flow is re-established, re-colonisation by aquatic flora and fauna should occur (The Ecology Lab 2008)	No mining related water losses observed
	Water quality impacts predicted by Ecoengineers (2007) are likely to have significant impacts on aquatic ecology only if they coincide with low flows. Any concurrent impacts on aquatic biota and ecology are otherwise likely to be minor, localised and short term (The Ecology Lab 2008)	No impacts observed

Environmental Management and Performance continued

Terrestrial Ecology

Biosis Research assessed the potential for mining impacts associated with Longwalls 34 – 36 (Biosis 2007), and Niche Environment and Heritage have undertaken monitoring of flora and fauna to identify any potential impacts as a result of mining.

A detailed assessment of the terrestrial flora and fauna will be completed as part of the Longwall 36 EoP report. Table 38 summarises the predicted and observed impacts for the reporting period.

Table 38 – Predicted vs Observed Impacts for Terrestrial Ecology at West Cliff Area 5

Aspect	Predicted Impacts	Observed Impacts
Endangered Ecological Communities (and other vegetation)	Unlikely to have a significant impact as physical and chemical changes to the 'habitat' are unlikely to lead to material change in the vegetation community composition. Potential for gas emissions within creek and rivers could lead to minor vegetation die back	No impacts observed
Threatened Flora	No predicted impact	No impacts observed
Threatened Fauna	Potential redirection of surface flows in some sections of the Georges River or creeks. Drainage of some pools within the creeks. Unlikely to result in a significant impact to threatened fauna	No impacts observed
Other terrestrial ecology	Possible changes in water levels and quality due to mining induced springs, gas emissions, ponding, flooding and resultant inundation or desiccation has potential to alter the distribution of water plant habitat for amphibians, drown riparian vegetation or remove foraging habitat for any fauna dependant on pools	No impacts observed
Threatened Fauna and Fauna Habitats	Possible impacts to threatened fauna and fauna habitats associated with physical impacts in the area	No impacts observed

Cultural Heritage

European Heritage

No historical site is located above Longwall 36.

Aboriginal Heritage

Aboriginal shelters with art and/or deposits, which are located within the valleys of the Georges River and Mallaty Creek, can potentially be impacted by mine subsidence movements including fracturing of sandstone, rock falls, or water seepage through joints which may affect artwork (MSEC, 2007). Where longwall mining has previously been carried out in the Southern Coalfield, beneath 52 shelters, approximately 10% of the shelters have been affected by fracturing or shear movements along bedding planes; however none of the shelters have collapsed (MSEC, 2007 & Sefton, 2000).

A detailed assessment of the relevant Aboriginal archaeological sites associated with Longwall 36 will be undertaken as part of the Longwall 36 EoP report.

A summary of the impacts on archaeological sites from the extraction of Longwalls 35 is outlined in Table 39 below.

Table 39 Predicted vs Observed Impacts for Cultural Heritage at West Cliff Area 5

Site Name	Site Type	Predicted Impacts	Observed Impacts
Georges River 1 (52-2-2234)	Shelter with Art; shelter with deposit	Unlikely to experience structural impacts	No Impacts observed

Environmental Management and Performance continued

Site Name	Site Type	Predicted Impacts	Observed Impacts
Georges River 2 (52-2-2243)	Shelter with Art; shelter with deposit	Unlikely to experience structural impacts	No impacts observed
Georges River 3 (52-2-2244)	Shelter with Art; shelter with deposit	Unlikely to experience structural impacts	Cracking and exfoliation within shelter observed
Georges River 4 (52-2-2242)	Shelter with Art	Unlikely to experience structural impacts	No impacts observed
Georges River 5 (52-2-2241)	Shelter with Art; shelter with deposit	Unlikely to experience structural impacts	No impacts observed
Ousedale Creek 3 (52-2-2237)	Shelter with Art; shelter with deposit	Unlikely to experience structural impacts	No impacts observed

Surface Infrastructure

Subsidence monitoring programmes are implemented for each longwall. The monitoring programmes, which are developed in consultation with key stakeholders, ensure that all key infrastructure and other surface features located above the extraction areas are closely monitored to assess the level of subsidence movements and any impacts from subsidence.

Monitoring frequency varies in relation to the proximity of mining to the features in accordance with the agreed monitoring plans. Frequencies vary from weekly during periods when subsidence is most active, to monthly or pre and post longwall extraction for some types of infrastructure.

All survey reports are checked, reviewed and assessed by the Illawarra Coal Survey Team with additional reviews undertaken by the Illawarra Coal Subsidence Management Review Committee which meets on a monthly basis.

A summary of the predicted and observed impacts for surface infrastructure is provided in Table 40 below. For more detail, refer to the West Cliff Longwall 36 EoP report.

Table 40 – Predicted vs Observed Impacts for Surface Infrastructure at West Cliff Area 5

Aspect	Predicted Impacts	Observed Impacts
Appin Road	Cracking and minor localised buckling which are likely to be infrequent and minor in nature	No impacts observed
The Upper Canal, Devines Tunnel and Associated Infrastructure	Impacts unlikely after implementation of necessary preventive measures at the concrete and wrought iron aqueducts	No impacts observed
Sydney Water Service Line along Appin Road	Impacts unlikely	No impacts observed
Macarthur Water 1200 mm diameter Treated Water Gravity Main	Impacts unlikely after the implementation of preventive measures at Mallaty Creek	No impacts observed
Alinta EGP and AGN Natural Gas and Gorodok Ethane Pipelines	Impacts unlikely after the implementation of preventive measures at Mallaty Creek	No impacts observed
TransGrid 330 kV Transmission Line	Impacts unlikely after the implementation of preventive measures including roller sheaves	No impacts observed

Environmental Management and Performance continued

Aspect	Predicted Impacts	Observed Impacts
Integral Energy 66 kV, 11 kV and low voltage power lines	Impacts unlikely	No impacts observed
Telstra Optical Fibre Cable along Appin Road,	Impacts unlikely	No impacts observed
Telstra copper cables	Impacts unlikely	No impacts observed
Inghams Farm and associated Infrastructure	Category A or B Tilt Impacts Category 0 to 2 Strain Impacts Negligible to slight impacts	No impacts observed
Rural building structures	Category A or B Tilt Impacts Category 0 to 1 Strain Impacts Negligible to very slight impacts	No impacts observed
Tanks	Tilts up to 5.0 mm/m Systematic strains up to 1.7 mm/m Impacts unlikely	No impacts observed
Farm dams	Tilts up to 6.0 mm/m Systematic strains up to 1.7 mm/m Potential for some minor cracking or leakage in farm dams	No impacts observed
Houses	Category A or B Tilt Impacts Category 0 to 2 Strain Impacts Negligible to slight impacts	One property as reported impacts following Longwall 36 extraction. A claim has been made to the MSB
Pools	Tilt could be visible along waterline and in ground pools could be more susceptible to strain impacts	No impacts observed
Fences	Possible that some fences could experience slight impacts	No impacts observed
Survey control marks	Small regional horizontal movements which could require re-establishment	Small regional horizontal movements

Hydrocarbon Contamination

Refer to section on Contaminated Polluted Land.

Methane Drainage/Ventilation

The in-seam gas content of the Bulli Seam in the Appin and West Cliff areas is in the order of 12 to 14 cubic metres of methane per tonne of in-situ coal. Both operations maintain a comprehensive underground methane drainage program which includes a network of drill holes and pipes to recover a large proportion of this gas by in-seam and cross-measure drainage. Methane drainage is necessary to provide a safe, compliant and productive underground mining environment.

Drainage gas extraction, utilisation and venting rates are reported on a monthly basis and these readings are used by Illawarra Coal for Greenhouse Gas (GHG) accounting. During this period the Appin and West Cliff monitoring systems, procedures and figures reported were audited (reasonable assurance) as required by statutory and internal requirements.

Mine Safety Gas Drainage

Details of the goaf gas drainage activities, including current status of each of the established well sites, is provided in Mine Safety Gas Drainage section of this report.

At West Cliff, the surface gas drainage activities ceased operations with no gas flaring during the reporting period.

At Appin, surface gas drainage activities commenced above the Appin Area 9 mining domain. An approximate total of 10,000,697 normalised cubic meters of CH4 and 768,888 normalised cubic meters of CO2 were flared. This resulted in a total approximate abatement of 121 Kt CO2 e, a marginal increase when compared to the previous reporting period.

Environmental Management and Performance continued

Mine Methane Extraction

Appin

The methane gas extracted from the coal seam by the underground gas extraction network is directed to the surface, via the gas drainage plant, from where it is piped to the electricity generation plants and used to generate electricity. The electricity generation plants are operated by EDL.

A total of 1,894 ktCO2e was recovered and transferred (ie. abated) to the EPL Power Plant which equates to a 72% increase when compared to the previous reporting period. There was a further 7 ktCO2e vented via the mines methane drainage system, which equates to a 80% decrease when compared to the previous reporting period. The decrease was the direct result of a gas balance and purity control project that was implemented during the first half of the reporting period.

West Cliff

The mine methane drainage gas extracted from Area 5 (the current longwall mining area) had an average CH4 concentration of 54% and a CO2 concentration of 6%. The extracted drainage gas was transported by a 6.8 km overland pipeline for utilisation at the Appin East EDL Power Plant. The amount of gas transferred was accounted for in the section above. The West Cliff Methane Drainage Extraction Plant and the gas blower station for transport of drainage gas via the overland pipeline is shown in the figure below.

A total of 556 ktCO2e was recovered and transferred (ie. abated) to the EPL Power Plant which equates to a 18% decrease when compared to the previous reporting period. There was a further 11 ktCO2e vented via the mines methane drainage system, which equates to a 79% decrease when compared to the previous reporting period.

Figure 14: Methane extraction plant – West Cliff

Mine Ventilation Fans

Appin

During the reporting period, approximately 1,349 kt CO2e was emitted to atmosphere from the Appin Mine Ventilation System, up 1% when compared to FY13. The average CH4 concentration was 0.66% (up 20% compared to FY13) and the average CO2 concentration was 0.39% (down 18% compared to FY13).

West Cliff

During the reporting period, approximately 772 kt CO2e was emitted to atmosphere from the West Cliff Mine Ventilation System, up 6% when compared to FY13. The average CH4 concentration was 0.54% (similar to FY13) and the average CO2 concentration was 0.39% (similar to FY13).

WestVAMP

The WestVAMP project was designed to consume low purity methane in air mix (mine vent air) to produce electricity. The project was completed during the 2007/08 reporting period. The plant is scaled to utilise approximately 20% of the available mine vent air with a generation capacity of 6 MW. WestVAMP consumed 18,668,491 m3 of coal mine waste gas (CMWG) in the period which resulted in a net GHG abatement of approximately 253 ktCO2e. The WestVAMP power generator produced 37,195 MWh (net) of electricity which was wholly utilised by the West Cliff Colliery. This is a slight

Environmental Management and Performance continued

decrease when compared to the previous periods' abatement and generation performance but still a positive result from abatement and electricity generation perspective. The project has been a significant Greenhouse Gas reduction initiative, which complements the reductions presently achieved by the Appin and Tower Power Plant Projects.

Public Safety

No incidents involving the general public occurred during the reporting period. Safety risks associated with the site activities are addressed and controlled by the mechanisms listed in Table 41.

Table 41: Site safety risks and control mechanisms

Potential Safety Risk	Control Mechanism
External persons attending site	Site reception office – sign in/out procedure in place for visitors. Site inductions / awareness sessions for persons undertaking activities on site. Company representative accompanies visits to the North Cliff site.
General vehicle traffic	Designated and sign posted roads and rules. Periodic speed monitoring along Wedderburn Road. Key locked gates to site (North Cliff).
Public roadway conditions	Routine daily inspections of public roads for evidence of coal spilled from trucks. Use of road sweepers to clean roads as required Coal Trucks - Loads covered before travelling on public roads. All truck leaving the West Cliff site must pass through the truck wash located to the east of the clean coal bins.
Exposure to hazardous chemicals	Designated storage facilities and signage. Chemalert system in place. Rules and procedures in place for bringing chemicals into site.
Personnel Health and Hygiene	Surveillance / monitoring program in place for noise, reparable dust, hazardous materials exposure. PPE requirements enforced and periodically audited. Hazardous areas are delineated with warning signs and notices.
Radiation apparatus	Certified and registered installations – annual inspections by certifying officer. Licences in place for all radiation apparatus.
Heavy vehicle movements on site	Reversing alarms. BHPB Fatal Risk standards. Authorised / licensed operators.
Working at heights	Standards and procedures for working at height activities.
Confined Spaces	Standards and procedures for working in confined spaces.
Explosive atmospheres	Explosion protected and intrinsically safe equipment – monitoring of the underground environment.
Fire	Fire fighting infrastructure in place to protect persons and property.
Potential at risk activities	Formal risk assessment / task analysis process in place to assess risks and ensure sufficient controls are in place prior to the work/activity commencing.
Surface and underground vehicles	Vehicle standards in place - rotating beacons / seat belts / roll bar protection where relevant. Light vehicle policy for surface vehicles.

Environmental Management and Performance continued

Other Issues and Risks

Environmental Audits

The Illawarra Coal Environmental Management System was certified to the International Standard ISO14001 in May 2003.

The Appin East and West sites, West Cliff Colliery and the West Cliff CPP are included in Illawarra Coal's schedule of certified ISO 14001:2004 sites. Each of these operational sites, as well as the Emplacement Area has been regularly audited for compliance against this Standard.

KPMG undertook two audits during the Reporting Period:

- BHP Billiton Sustainability Report Audit – verification of data provided for the BHP Billiton Public Targets;
- Reasonable assurance audit for NGERs (National Greenhouse and Energy Reporting)

The audits/management reviews undertaken during the reporting period are provided in Table 42.

Table 42: Environmental audits undertaken during the reporting period.

Date	Type	Internal	External	Comments
Sept-13	EMS	X		West Cliff, Appin, WCCPP
Oct-13	EMS	X		External Affairs (Projects)
Jan-13	ISO14001		X	Illawarra Coal, Appin, West Cliff
May 2014	Reasonable assurance audit for NGERs		X	Conducted by KPMG
Dec-13	Triennial Independent Environmental Audit		X	Conducted by URS

The auditing process requires demonstration of adequacy of systems to manage environmental aspects and impacts related to site activities. The systems audited include legal compliance, document control, records, corrective action, monitoring and control, training and management of risks.

Non-conformances and/or improvement opportunities identified during audits, both internal and external, are recorded and tracked via the 1SAP reporting system utilised by Illawarra Coal operations.

Triennial Independent Environmental Audit

URS Australia Pty Ltd was engaged by Illawarra Coal to carry out an Independent Environmental Audit of the BSOP. A condition of the BSO Project Approval 08/0150 requires Illawarra Coal to commission an Independent Environemtal Audit prior to the end of December 2013 and every three years thereafter. In addition, the EPBC approval 2010/5350 requires the same.

The audit commenced December 2013 and was completed in February 2014; the report was provided to IC on 2nd April 2014. The scope of the audit included an assessment of compliance against:

- NSW Project Approval (Development Consent)
- Environmental Protection Licence 2504 (EPL 2504)
- EPBC Approval
- Consolidated Coal Lease 724 and 767

Overall good compliance levels were achieved across approval and licence conditions with only 4 non-compliances and 3 indeterminates.

- 3 out of the 4 non-compliances related to previously reported EPL 2504 non-compliances; and
- Other non-compliance related to submission of 2013 Annual Report (EPBC approval) being 5 days late.

4. Community Relations

At the completion of this reporting period the Appin and West Cliff Mines employed 916 full time employees. In addition 400 full time contractors were working across the operations.

The closest township to the Appin West surface operations is the village of Douglas Park, which is located approximately 4km to the north west of the surface operations. The current underground mining operation (i.e. Area 7) is located on the outskirts of the Douglas Park village.

The closest township to the West Cliff surface operations is the village of Appin, which is located approximately 4km to the north west of the operations. The current underground mining operations (i.e. Longwall 37) are located approximately 5km to the north of Appin.

Appin East Pit Top is located on the outskirts of Appin.

Complaints

During this reporting period 40 complaints were received in relation to BSO operations (including Pit Tops, Mine Safety Gas Drainage projects, exploration work and coal transportation). Details of the complaints received and the actions taken are provided in Appendix C – FY14 Complaints. A comprehensive analysis of all complaints received across the BSO is included in Refer to Table 43 and the figure below.

All complaints received are recorded in the BHPB information management system in accordance with the Environmental Protection Licence and Development Consent conditions. The Illawarra Coal Community Call Line is a 24 hour, 7 day per week call centre for enquiries and complaints. A Company representative responds to the contact promptly (within 24 hours) and liaises with operational personnel to attend to any issue/s of concern within a reasonable timeframe.

Table 43: Community complaints analysis for the BSO

Time Period	No. Complaints Recieved	Notes
October 2011 to June 2012	18	8 of the 11 recorded noise complaints related to noise associated with Mine Safety Gas Drainage drilling work 1 noise complaint related to an operating excavator 1 noise complaint related to reversing beepers on equipment 1 noise complaint related to vibrating noise reportedly from Ventilation Shaft # 6.
July 2012 to June 2013	37	20 of the 24 noise complaints received in relation to gas flaring operations under the Mine Safety Gas Drainage gas flaring program. 6 complaints received in relation to alleged vehicle damage claims [rocks flicked up by "truck" and striking vehicle] 2 dust complaints received in relation to Appin East Mine Site, located near Appin village. 2 odour complaints received in relation to suspected gas leaks associated with the Mine Safety Gas Drainage gas flaring program.
July 2013 to June 2014	40	5 of 6 noise complaints related to gas flaring activity under Mine Safety Gas Drainage program. These five complaints were received in July, August and October 2013. The remaining noise complaint was related to a loading noise heard at Appin East Mine Site.

Community Relations continued

There has been a spike in complaints relating to alleged vehicle damage claim. Upon investigation, the most likely cause has been rocks present on the roadway being flicked up, and hitting other vehicles. Each investigation undertaken included a correlation of the incident details with the position of the Illawarra Coal truck fleet, to understand whether a truck was in the vicinity.

It is also noted that two events occurred in this reporting period:

A new tyre tread profile was introduced on the truck fleet.

Company procedure relating to this type of complaint / investigation had interest from mine site employees, who themselves lodged a complaint to the Company following an alleged vehicle damage claim while undertaking a private journey.

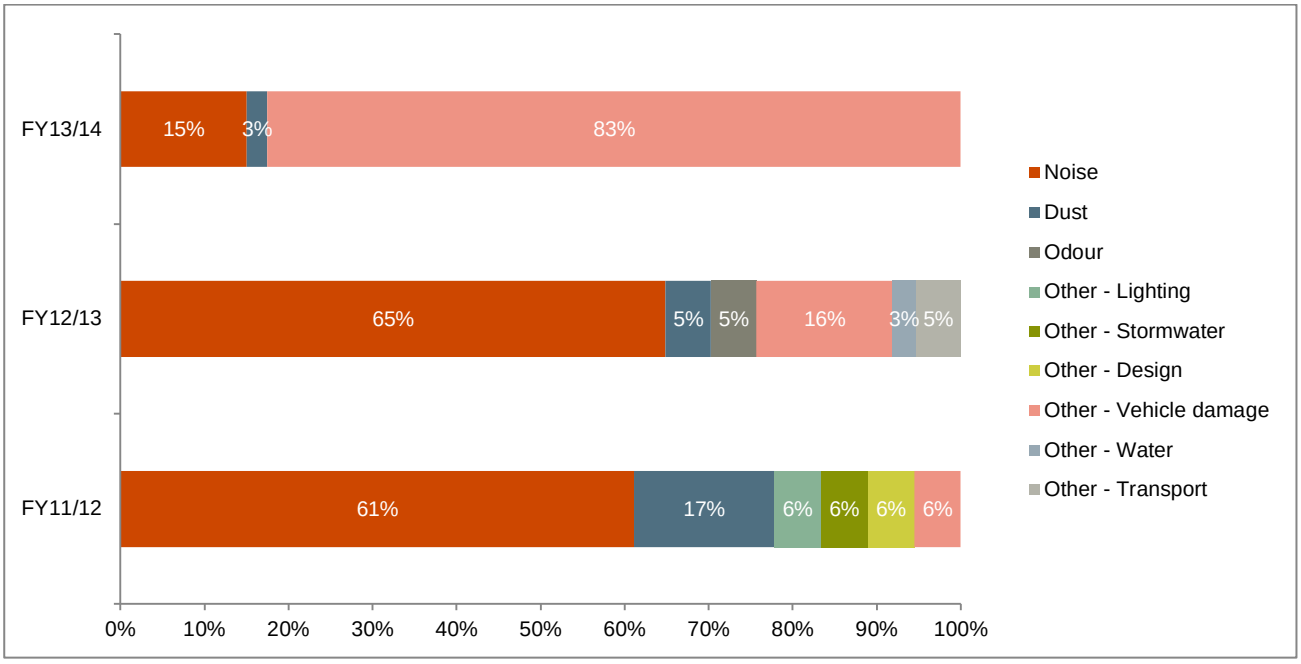


Figure 15: Analysis of complaints – Percentage composition of complaints per year.

Community Relations continued

Community Liaison

Community consultation is undertaken on an Illawarra Coal group basis, with support of operational and functional team members. Community liaison is managed as per the Illawarra Coal Stakeholder Engagement Management Plan. The plan, which was reviewed during the reporting period, identifies key stakeholders and appropriate communication and consultation processes.

Key regional stakeholders include:

- Communities surrounding the Appin and West Cliff operations;
- Local government
- State government agencies and authorities including DTIRIS, OEH, SCA, and MSB;
- Employees and contractors;
- Local and regional business groups;
- Community and Environmental groups;
- The indigenous community – Tharawal Aboriginal Land Council and others;
- Local schools and volunteer groups; and
- The broader regional community.

Community information is provided in accordance with the Illawarra Coal Stakeholder Engagement Management Plan. The mechanisms utilised include:

- Community newsletters and information sheets via letter box drops;
- Door knocks;
- Media releases and other media activities;
- Community notice boards;
- The BHP Billiton Illawarra Coal 'Appin Community Office' located in Appin Township;
- Biennial community perception surveys and reports [undertaken in February 2013];
- Coalition News – a three-monthly Illawarra Coal publication;
- The 'Regulatory Information' webpage on the BHP Billiton website;
- Stakeholder group presentations and information sessions; and
- Community Information days.

Illawarra Coal directly manages the following stakeholder committees and working groups:

- Illawarra Coal Community Consultative Commitee
- Douglas Park Advisory Panel; and
- Illawarra Coal Community Partnership Board.

Illawarra Coal is also represented at other stakeholder committees in the area of the Bulli Seam Operations, including the Appin Chamber of Commerce and Wollondilly Council's Economic Development Advisory Group.

Table 44 provides a summary of the information presented to the Illawarra Coal Community Consultative Committee during the reporting period.

Table 44: Summary of the information presented to the Illawarra Coal Community Consultative Committee during the reporting period.

Month	Presentation
30 July 2013	MEETING – Items discussed: Operational update on Appin Area 7 LW705, West Cliff Area 5 LW35 and LW36, Appin Area 9, Ventilation Shaft No. 6. Environment overview, including update on work associated with Brennans Creek Dam Licence EPL2504 Update on community initiatives and concerns, including discussion of new memberships Administrative matters – meeting time Meeting guest: NSW EPA representative attended as a guest of Illawarra Coal.
24 September 2013	MEETING – Items discussed:

Community Relations continued

Month	Presentation
	Operational update on Appin Area 7 LW705, West Cliff Area 5 LW35 and LW36, Appin Area 9, Ventilation Shaft No. 6. Overview of the Longwall 37/38 Extraction Plan [public comment period] Environment overview Overview on community matters and initiatives
28 October 2013	*Appointment of three new members to the Illawarra Coal Community Consultative Committee by the-then NSW Department of Planning & Infrastructure, and representative nominated by Campbelltown City Council.*
26 November 2013	MEETING – Items discussed: Welcome and introduction of new committee members Operational update on Appin Area 7 LW705, West Cliff Area 5 LW36, Appin Area 9, Ventilation Shaft No. 6. Discussion regarding Longwall 37/38 Extraction Plan. Update on Appin Area 9 Longwall 901-904 Extraction Plan Environment overview, including update on research programs (*Persoonia hirsuta* research, and Georges River Aquatic Health Study). Update on community initiatives. Administrative matters.
31 January 2014	SITE VISIT – Site visit arranged for members to visit operational longwall at West Cliff Mine (Longwall 36).
4 February 2014	MEETING – items discussed: Operational update on Appin Area 7 LW705, West Cliff Area 5 LW36, Appin Area 9, Ventilation Shaft No. 6. Discussion regarding Longwall 37/38 Extraction Plan. Environment overview, including community concerns. Overview on community matters and initiatives Administrative matters
25 Mar 2014	MEETING – Items discussed: Operational update on Appin Area 7 LW705, West Cliff Area 5 LW36, Appin Area 9, Ventilation Shaft No. 6, and renewal of CCL767. Environment overview, including information on air quality program. Overview on community matters and initiatives, including projects supported through Community Partnerships Program. Administrative matters (including discussion of work plan for remaining meetings in 2014)
4 April 2014	SITE VISIT – A repeat site visit was arranged for members (for those who were unable to attend on 31 January 2014) to visit operational longwall at West Cliff Mine (Longwall 36).
27 May 2014	MEETING – Items discussed: Operational update on Appin Area 7 LW705, West Cliff Area 5 LW36, Appin Area 9, Ventilation Shaft No. 6. Also discussed: information on Illawarra Coal business performance, and an update on the North Cliff site. Environment overview, including results of the first year of the Georges River Aquatic Health Program. Overview on community matters and initiatives. Administrative matters (including confirmation of work plan, covering meeting and site visit dates).

During the reporting period, members of the Community Consultative Committee were also kept informed of operational matters via email.

The minutes of community meetings are made available to the public primarily in three ways: displayed in the window at the Appin Community Office; placed (as 'draft') on the BHP Billiton "Regulatory Information" webpage within 28 days of each meeting; and distributed via email to a stakeholder notification list (meeting minutes are emailed directly to persons who have expressed an interest to receive a copy).

Community Relations continued

Douglas Park Advisory Panel

A purpose-formed community representative group, the Douglas Park Advisory Panel, was established by Illawarra Coal in April 2010 to provide input to the preparation of the Ventilation Shaft No. 6 Environmental Assessment. Since approval and commencement of construction, meetings have continued with other local issues discussed including Mine Safety Gas Drainage. The Douglas Park Advisory Panel operates under agreed Terms of Reference and is facilitated by Illawarra Coal. The Panel comprises 10 representatives of the Douglas Park Township.

The table below provides a summary of the information presented to the Douglas Park Advisory Panel during the reporting period.

Table 45: Douglas Park Advisory Panel Meetings – 2013/14.

Month	Presentation
23 July 2013	MEETING Items discussed: Operational update on Ventilation Shaft No 6 construction work Operational update on Mine Safety Gas Drainage Update on Illawarra Coal activity: other operations in Douglas Park and other community initiatives. Discussion regarding changes to the Advisory Panel Terms of Reference.
17 September 2013	MEETING Items discussed: Operational update on Ventilation Shaft No 6 construction work and other infrastructure supporting the vent shaft. Operational update on Mine Safety Gas Drainage Update on Illawarra Coal activity: other operations in Douglas Park and other community initiatives. Information on proposed Douglas Park Community information day. Confirmation of Terms of Reference
19 November 2013	MEETING [meeting venue was Vent Shaft # 6 Site Office] Items discussed: Operational update on Ventilation Shaft No 6 construction work and other infrastructure supporting the vent shaft. Operational update on Mine Safety Gas Drainage Update on Illawarra Coal activity: other operations in Douglas Park and other community initiatives. Confirmation of 2014 meeting schedule Members also conducted a brief site walkthrough to view the drill rig and the site for fan infrastructure.
29 January 2014	MEETING Items discussed: Operational update on Ventilation Shaft No 6 construction work and other infrastructure supporting the vent shaft. Focus on visual amenity (landscaping, screening). Operational update on Mine Safety Gas Drainage, and application for MSGD on future Appin Area 7 longwalls (LW706-708). Update on Illawarra Coal activity: other operations in Douglas Park and other community initiatives.
18 March 2014	MEETING and SITE VISIT combined at Vent Shaft # 6 Items discussed during walkthrough of Vent Shaft # 6 site: Operational update on Ventilation Shaft No 6 construction work and other infrastructure supporting the vent shaft. Focus on fan systems. Operational update on Mine Safety Gas Drainage.
20 May 2014	MEETING Items discussed: Operational update on Ventilation Shaft No 6 construction work and other infrastructure supporting the vent shaft. Focus on connection of Vent Shaft to mine workings.

Community Relations continued

Month	Presentation
	Operational update on Mine Safety Gas Drainage.
	Update on Illawarra Coal activity: other operations in Douglas Park and other community initiatives.

During the reporting period, members of the Douglas Park Advisory Panel were also kept informed of operational matters relating to Douglas Park through email updates.

Community Partnerships Program

Illawarra Coal has an overriding commitment to supporting the communities in which we operate. As part of this commitment, the Company established the Illawarra Coal Community Partnerships Program (CPP) to provide support for community projects and initiatives in the regions surrounding the Appin and West Cliff operations.

Since being established in 2004, the program has provided support to a range of community groups and not-for-profit organisations.

The CPP is funded by three cents per saleable tonne of coal from Illawarra Coal's Appin and West Cliff operations. The program is administered by a board of community and Illawarra Coal representatives, which ensures community-based decision making on the allocation of funds.

During 2013/14, the Board committed over $100,000 for community projects in the local Wollondilly area.

Some local not-for-profit groups to benefit from program funding in 2013/14 included:

- Stewart House Visits for local school students)
- Wilton Public School P&C (Computer Equipment)
- Campbelltown Uniting Care ('Focus on Families' program)
- Wollondilly White Waratahs Rugby Club (Refurbishment of amenities block)
- Douglas Park Netball Club – Court Floodlighting
- Appin Chamber of Commerce (Outdoor fitness equipment)
- Douglas Park Physical Culture Club (Equipment)
- Life Education (Subsidised visits for local primary school students)

The CPP Board continued its support for Life Education with funding to primary schools in the Wollondilly area to the value of $10 per child to visit the Life Education mobile learning centre. Life Education aims to empower the young to make the best choices for a safe life, through leading drug and health education programs.

Illawarra Coal has supported Life Education in the Wollondilly area since 2008, and this latest support will see the Illawarra Coal's support for Life Education total more than $230,000.

Camp Quality Convoy

For the ninth consecutive year, Illawarra Coal has helped raise money for children with cancer and launch another successful i98FM Camp Quality Convoy for Kids. Held in November 2013, West Cliff's access road became the muster ground and starting point for 780 trucks and 872 motorbikes for the Convoy and the mine's external truck movements were stopped for approximately five hours to avoid heavy traffic travelling in opposite directions on the mine access road.

The Convoy is organised by local radio station i98FM, and raises money for Camp Quality Illawarra, which helps provide access to a variety of activities and resources to help brighten the lives of kids living with cancer and their families in the local regions.

Over $1.1 million was raised during the 2013 Convoy, with over $4.4 million raised since the inaugural event in 2005.

Complaints/Enquiries Management

Illawarra Coal maintains a 24 hour Community Call Line (freecall 1800 102 210) and a general email address ICEnquiries@bhpbilliton.com. These avenues are promoted as the primary point of contact throughout Illawarra Coal's suite of communications for persons who seek to lodge a complaint or make a general enquiry.

Complaints and enquiries are recorded in an internal event reporting system, and processes in place ensure the complaint/enquiry is responded to and actioned. Complaints, and its resolution, are reported on the BHP Billiton website each month in the Community Complaints Report.

All complaints recorded during the reporting period are attached at Appendix C – FY14 Complaints.

Community Relations continued

The Illawarra Coal Appin Community Office, open on Tuesdays, also provides an opportunity for the community to have face to face discussions or raise issues with Illawarra Coal representatives. The office provides for pictorial displays and written material for perusal by interested persons or groups.

5. Rehabilitation (this AEMR period)

Buildings

No rehabilitation of buildings was completed for this period.

Rehabilitation of Disturbed Land

Progressive rehabilitation of the West Cliff Emplacement has been undertaken during the reporting period in accordance with the approved *West Cliff Coal Wash Emplacement Area Management Plan.* Refer to Plan 12 for the rehabilitation undertaken over the reporting period.

Exploration activities are undertaken on an ongoing basis following completion of associated activities.

The rehabilitation summary is provided in Table 46.

Rehabilitation Trials and Research

No rehabilitation trials or research was conducted during the reporting period.

Further Development of the Final Rehabilitation Plan

The BSO *Mining Operations Plan* (also known as the *Rehabilitation Management Plan*) addresses the rehabilitation requirements and objectives for all domains associated with the Appin and West Cliff combined BSO. The MOP outlines a range of post land use options that are potentially available for the BSO sites upon completion of operations. The future final land use objectives are yet to be decided upon and agreed due to timing of the eventual closure of BSO related sites. There has been no further development of this plan.

In addition to the MOP, IC maintains Conceptual Closure Plans for sites across the BSO. These plans were originally developed by Cardno Forbes Rigby in 2006 and updated in 2010. In FY15, IC will consolidate the MOP and Conceptual Closure Plans into one report. This work will be undertaken in consultation with the DTI.

In-line with consolidating the MOP/Closure Plans, the Rehabilitation Cost Estimate (RCE) for the BSO is currently under review. The revised RCE will be submitted in conjunction with the revised MOP when completed. This will be submitted by 1st December 2014.

Rehabilitation (this AEMR period) continued

Table 46: Rehabilitation Summary

		Area Affected/Rehabilitated (hectares)		
		To Date	**Last Report**	**Next Report (estimated)**
A: MINE LEASE AREA				
A1 Mine Lease (s) Area		25468	46580[12]	46580
B: DISTURBED AREAS				
B1 Infrastructure area (other disturbed areas to be rehabilitated at closure including facilities, roads)	Appin	40	40	40
	West Cliff[13]	114	114[14]	114
B2 Active Mining Areas (excluding items B3-B5 below)	N/A	N/A	N/A	N/A
B3 Waste Emplacements (active/unshaped/in or out of pit)		16	19	12
B4 Tailings emplacements (Active/unshaped/uncapped)	N/A	N/A	N/A	N/A
B5 Shaped Waste Emplacement (awaits final vegetation)		5	6	9
All DISTURBED AREAS		175	179	175
C: REHABILITATION PROGRESS				
C1 Total Rehabilitated Area (except for maintenance)	Appin	6	6	6
	West Cliff	57	57	62
D: REHABILITATION ON SLOPES				
D1 10 to 18 Degrees		17	14	21
D2 Greater than 18 degrees		6	6	6
E: SURFACE OF REHABILITATED LAND				
E1 Pasture and Grasses	Appin	6	6	6
	West Cliff	8	8	8
E2 Native Forest/Ecosystems	Appin	0	0	0
	West Cliff	49	45	54
E3 Plantations and Crops	N/A	N/A	N/A	N/A
E4 Other (include nonvegetative outcomes	N/A	N/A	N/A	N/A

[12] ML1698 granted 26 June 2014 for AA9.
[13] Includes North Cliff Site
[14] Last years figure was underestimated. Figure revised in FY14.

Rehabilitation (this AEMR period) continued

Table 47: Maintenance Activities on Rehabilitated Land

	Area Treated		
	Report Period	**Next Period**	**Comments/Control strategies/treatment detail**
Additional erosion control works (drains re-contouring, rock protection)	0	0	No additional works required
Re-covering (detail - further topsoil, subsoil sealing etc)	3	3	3 Ha stockpiled at West Cliff for future use in rehab.
Soil treatment (detail - fertiliser, lime, gypsum etc)	N/A	N/A	N/A
Treatment/Management (detail - grazing, cropping, slashing etc)	3	3	West Cliff Effluent Irrigation Area – Slashing undertaken as required.
Re-seeding/Replanting (detail - species density, season etc)	8	0	Emplacement Rehab seeding
Adversely Affected by Weeds (detail - type and treatment)	0	0	No areas adversely affected
Feral animal control (detail - additional fencing, trapping, baiting etc)	0	0	Undertaken on as needed basis

6. Activities Proposed in the Next AEMR Period

Mine Operations

No significant changes are envisaged for current mining processes.

During the next reporting period it is planned that Appin Mine will continue extraction in Longwall 706 while West Cliff will complete the extraction of Longwall 37 and commence the extraction of Longwall 38. Refer to the FY14 BSO Mine Extraction Plan for detail (Plan 13).

Projects

Ventilation Shaft No.6

Activities proposed for the 2014/15 reporting period will include:

- Continued drilling of the shaft
- Completion of the ventilation fans and duct work
- Continued construction of service boreholes and related surface infrastructure

Mine Safety Gas Drainage – LW706

Activities proposed for the 2014/15 reporting period include:

- Continued operation of existing wells; and
- Potential construction of wells to service LW 706.

Dyke Backfill Project – LW706

During 2014/15 surface batching and delivery activities will occur to address an igneous dyke that coincides with LW 706.

Environmental Management

No major environmental management projects are planned. Environmental monitoring will continue as required by the relevant management plans.

The Appin East Pit Top site to the Appin Town sewage scheme has been approved by Sydney Water in principal and construction is planned in the next Reporting Period.

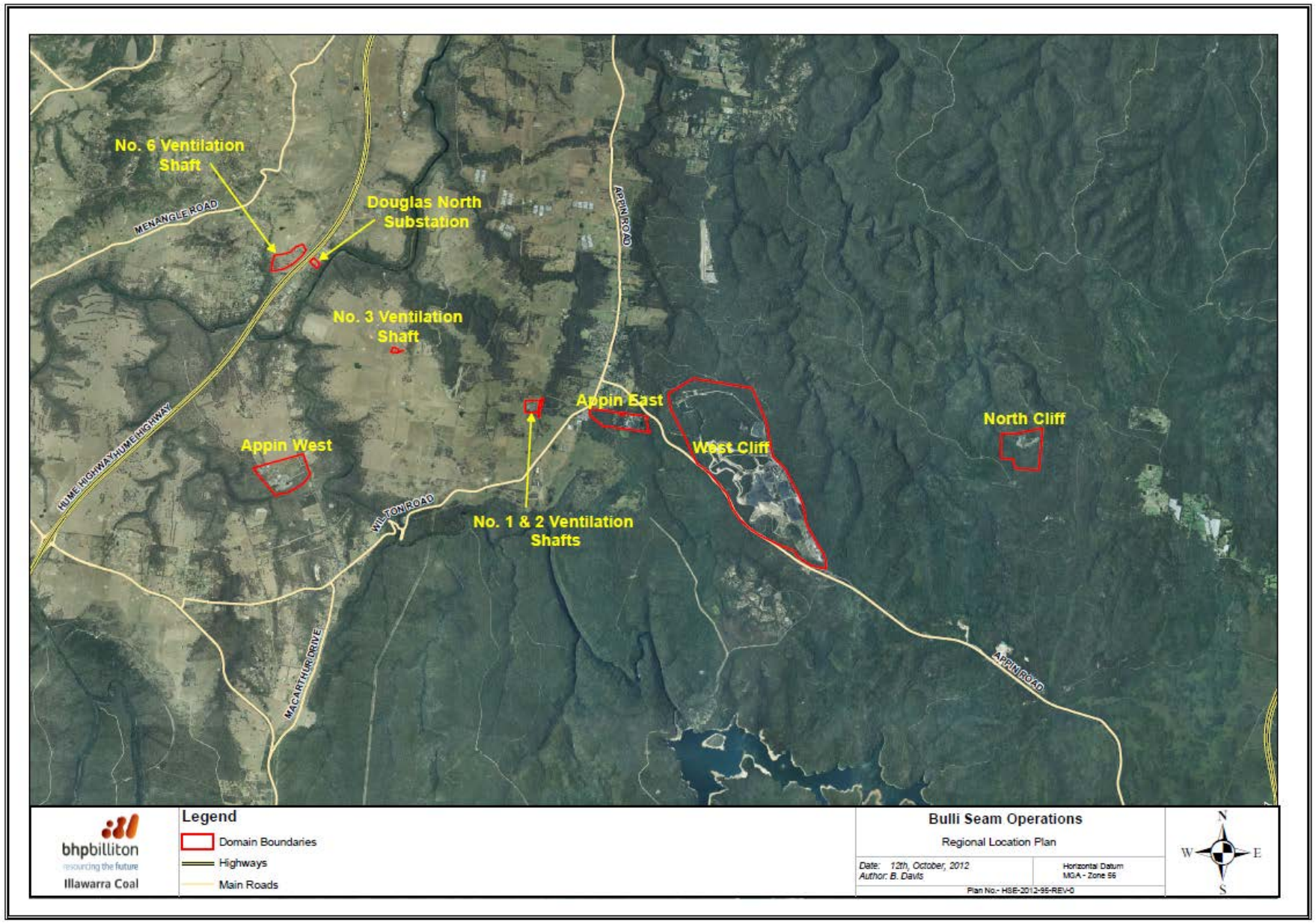
7. References

BHPBilliton Illawarra Coal, Bulli Seam Operations Air Quality and Greenhouse Gas Management Plan
BHPBilliton Illawarra Coal, Bulli Seam Operations Environmental Management Strategy
BHPBilliton Illawarra Coal, BSO Mining Operations Plan – October 2012 – September 2019
Cardno Pty Ltd (2010), Appin Mine Conceptual Closure Plan.
Cardno Pty Ltd (2010), West Cliff Colliery Conceptual Closure Plan.
BHPBilliton Illawarra Coal, West Cliff Stockpile and Slope Stability Management Plan.
BHPBilliton Illawarra Coal, BSO Water Management Plan.
BHPBilliton Illawarra Coal, West Cliff Coal Wash Emplacement Area Management Plan.
BHPBilliton Illawarra Coal, BSO Waste Management Plan.
NSW Office of Environment and Heritage (2014), Environment Protection Licence No.2504.
NSW Trade and Investment, EDG03 Guidelines to the Mining Rehabilitation and Environmental Management Process.

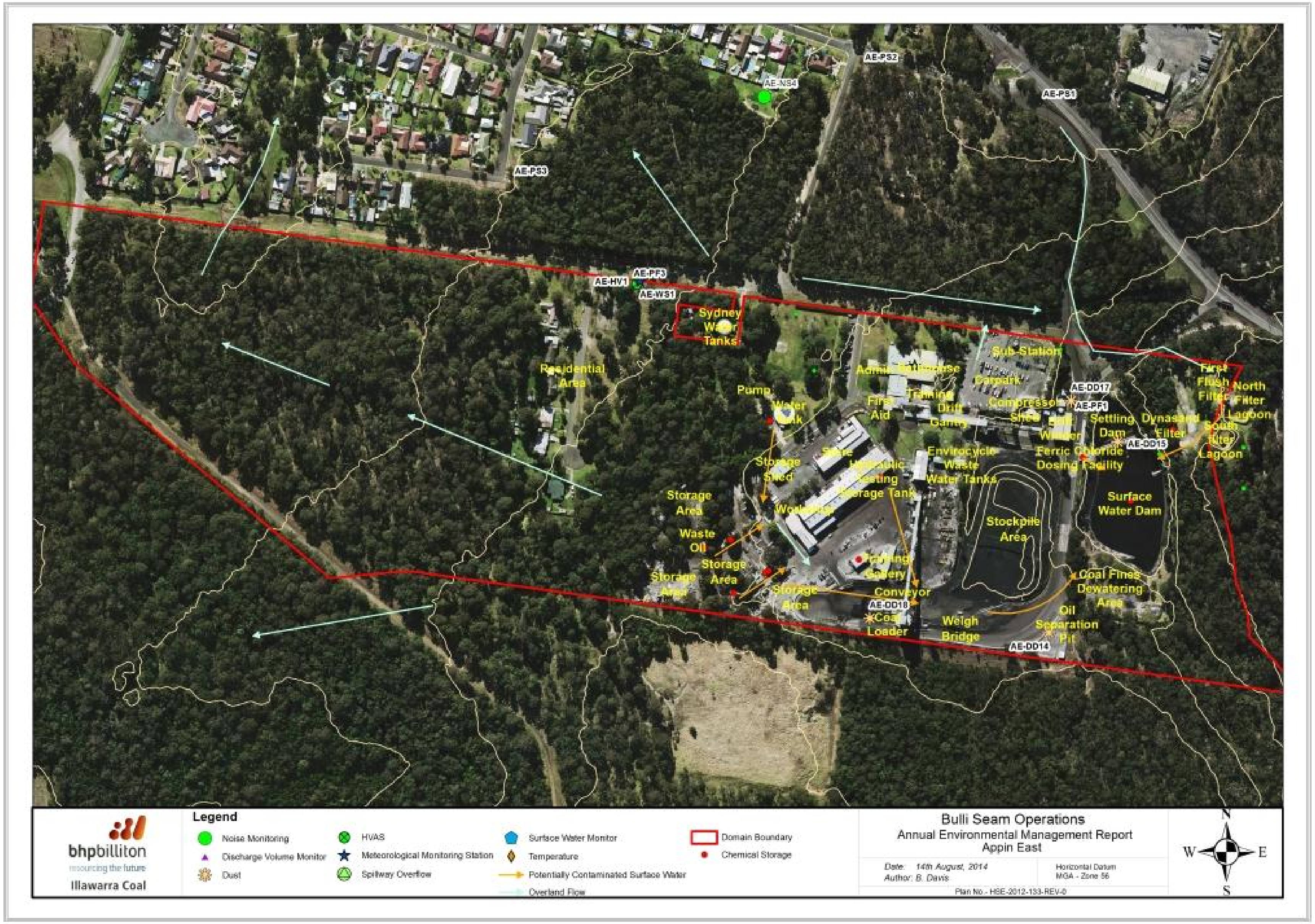
8. Plans

Plans continued

Plan 1 – Regional Location Plan

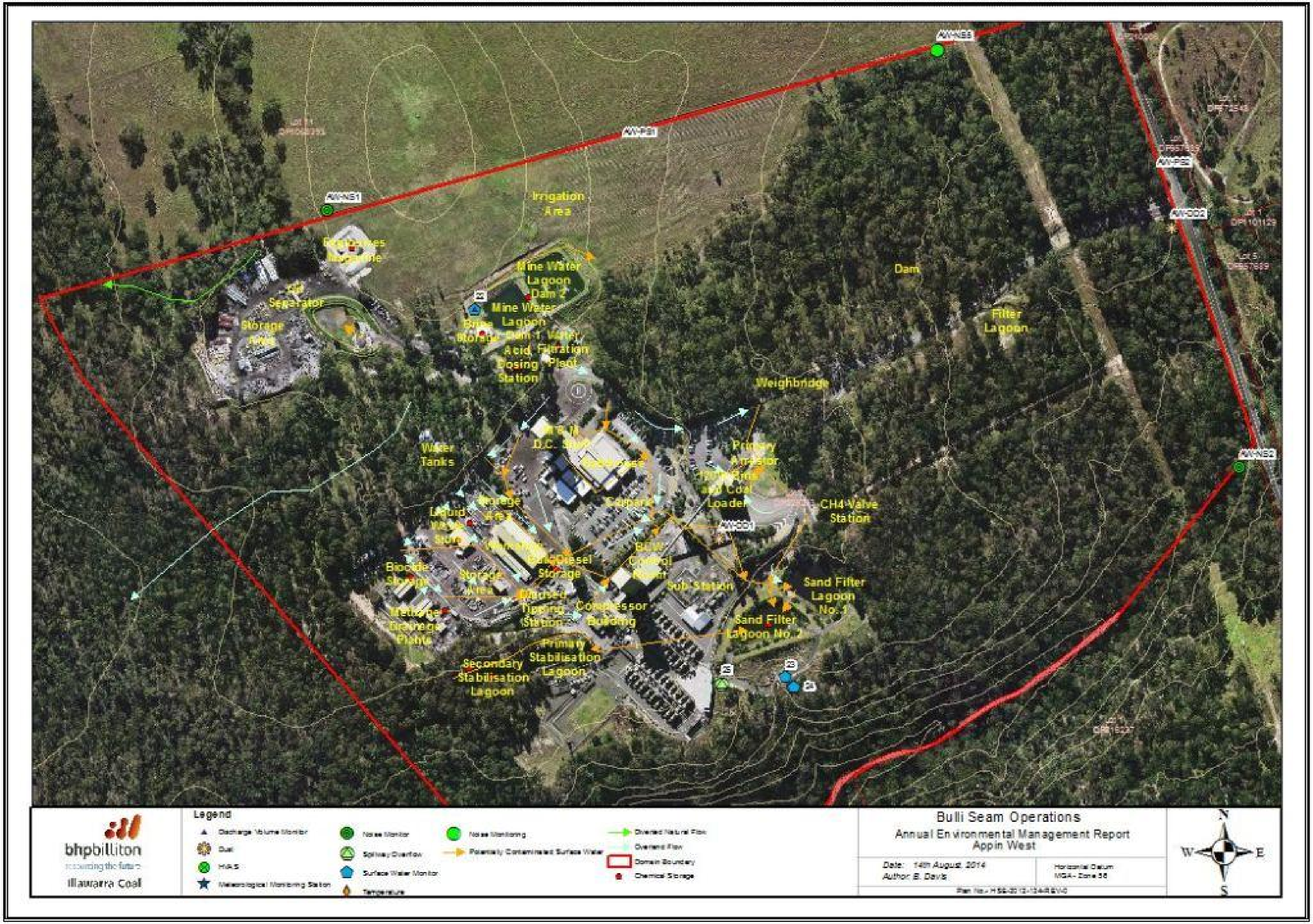

No. 6 Ventilation Shaft
Douglas North Substation
MENANGLE ROAD
APPIN ROAD
No. 3 Ventilation Shaft
Appin East
North Cliff
West Cliff
Appin West
HUME HIGHWAY/HUME HIGHWAY
WILTON ROAD
No. 1 & 2 Ventilation Shafts
MACARTHUR DRIVE
APPIN ROAD
bhpbilliton
resourcing the future
Illawarra Coal
Legend
Domain Boundaries
Highways
Main Roads
Bulli Seam Operations
Regional Location Plan
Date: 12th, October, 2012
Author: B. Davis
Horizontal Datum
MGA - Zone 56
Plan No.- HSE-2012-95-REV-0
N
W
E
S

Plan 2 – Appin East Mine Site



AE-PS2
AE-NS4
AE-PS1
AE-PS3
AE-PF3
AE-HV1
AE-WS1
Sydney Water Tanks
Residential Area
Sub-Station
Admin Bathhouse
Carpark
Pump
Water Tank
First Aid
Training
Drift
Gantry
Compressor Shed
AE-DD17
AE-PF1
Winder
Settling Dam
Dynasand Filter
AE-DD15
First Flush Filter
North Filter Lagoon
South Filter Lagoon
Envirocycle Waste Water Tanks
Ferric Chloride Dosing Facility
Store
Storage Shed
Hydraulic Testing Storage Tank
Storage Area
Workshop
Surface Water Dam
Stockpile Area
Waste Oil
Storage Area
Storage Area
Storage Area
Training Gallery
Conveyor
AE-DD18
Coal Loader
Weigh Bridge
Coal Fines Dewatering Area
Oil Separation Pit
AE-DD14
bhpbilliton
resourcing the future
Illawarra Coal
Legend
Noise Monitoring
Discharge Volume Monitor
Dust
HVAS
Meteorological Monitoring Station
Spillway Overflow
Surface Water Monitor
Temperature
Potentially Contaminated Surface Water
Overland Flow
Domain Boundary
Chemical Storage
Bulli Seam Operations
Annual Environmental Management Report
Appin East
Date: 14th August, 2014
Author: B. Davis
Horizontal Datum
MGA - Zone 56
Plan No. - HSE-2012-133-REV-0
N
W
E
S

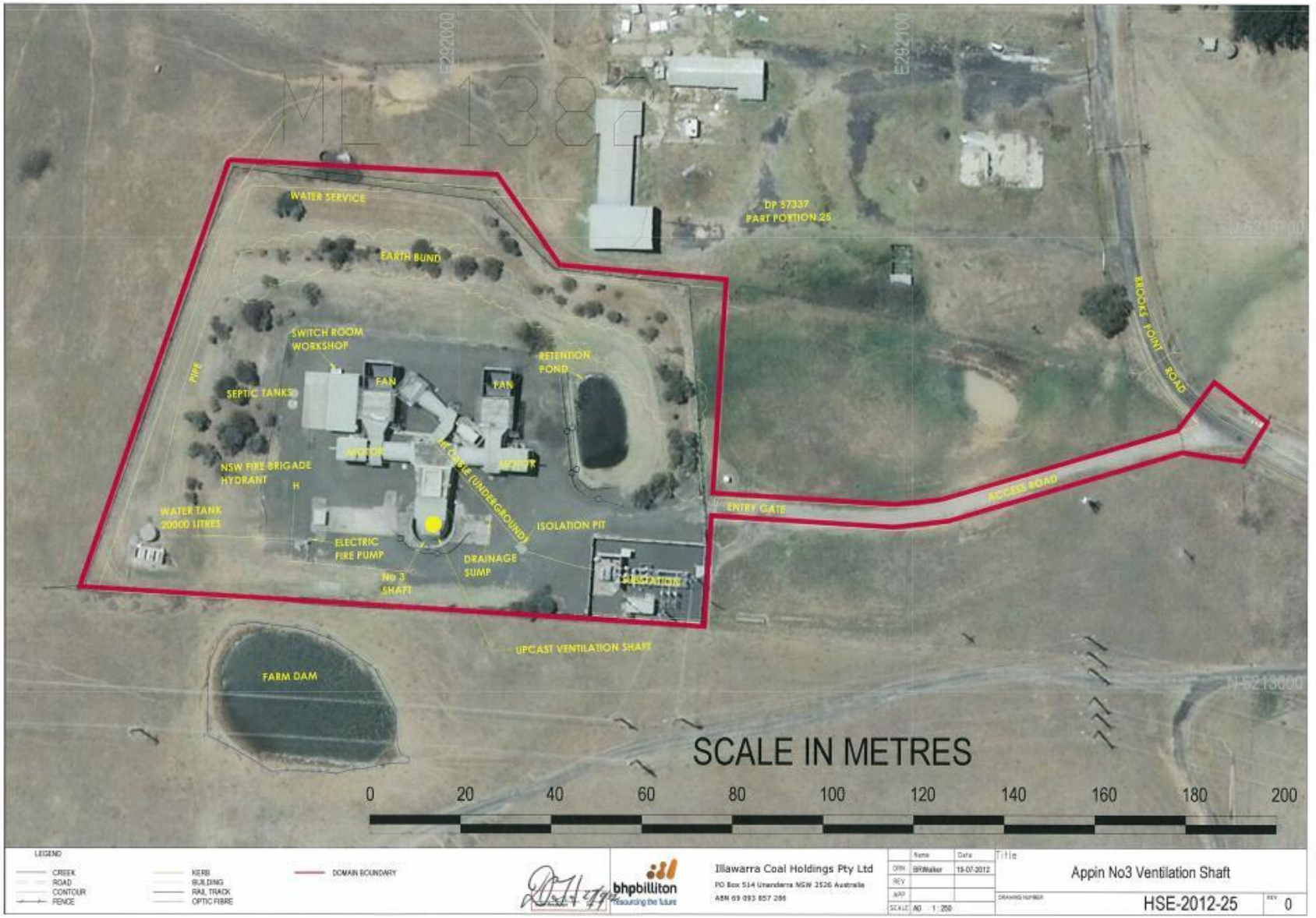
Plan 3 – Appin West Mine Site


Irrigation Area
Mine Water Lagoon Dam 2
Mine Water Lagoon Dam 1
Brine Storage
Water Filtration Plant
Acid Dosing Station
Oil Separator
Storage Area
Weighbridge
Dam
Filter Lagoon
Water Tanks
Primary Arrestor
CH4 Valve Station
Storage Area
Liquid Waste Store
Biocide Storage
Storage Area
Bulk Diesel Storage
BCW Control Room
Sub Station
Sand Filter Lagoon No. 1
Sand Filter Lagoon No. 2
Methane Drainage Plants
Tipping Station
Compressor Building
Primary Stabilisation Lagoon
Secondary Stabilisation Lagoon
AW-NE1
AW-NE3
AW-NE2
AW-PE1
AW-PE2
AW-OD1
AW-OD2
Legend
Discharge Volume Monitor
Dust
HVAS
Meteorological Monitoring Station
Noise Monitor
Spillway Overflow
Surface Water Monitor
Temperature
Noise Monitoring
Potentially Contaminated Surface Water
Diverted Natural Flow
Overland Flow
Domain Boundary
Chemical Storage
Bulli Seam Operations
Annual Environmental Management Report
Appin West
Date: 14th August, 2014
Author: B. Davis
Horizontal Datum
MGA - Zone 56
bhpbilliton
Illawarra Coal
N
S
E
W

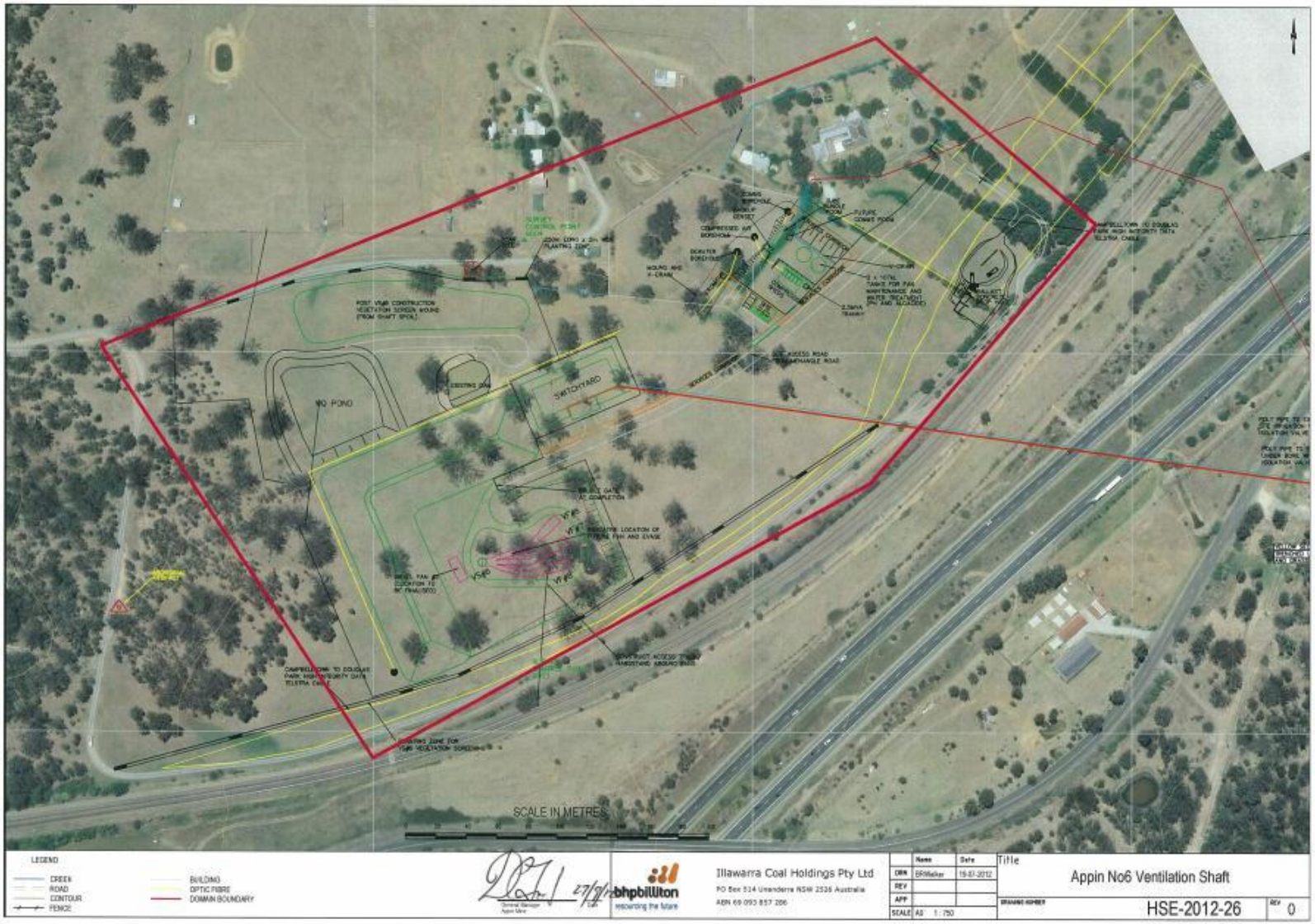
Plan 4 – No.1 & No.2 Shaft Site


E294500
E294750
E295000
N 6212750
N 6212500
Cusedale Creek
SOUTH HAMPTON ROAD
SITE ENTRY
DUCTING
UPCAST MINE VENTILATION SHAFT
DIESEL FAN
GENERATOR TRANSFORMER
SWITCH & CABLE ROOM
WORKSHOP STORE ROOM
WATER TANKS
METHANE DRAINAGE SURFACE EXHAUSTER HOUSE
OPEN DRAINAGE CHANNEL
SITE RUNOFF COLLECTION PONDS
WATER COURSE
66KV TO 6.6KV SWITCH YARD
SWITCH ROOM
CARPARK
DOWNCAST MINE VENTILATION SHAFT
METHANE DRAINAGE PIPE
TRIBUTARY OF CUSEDALE CREEK
LEGEND
SITE PERIMETER FENCING
EDL PERIMETER FENCING
WATER COURSE
OPEN DRAINAGE CHANNEL
SURFACE LEASE BOUNDARY
EDL SITE (RESPONSIBILITY OF EDL)
SCALE IN METRES
0
100
200
LEGEND
CREEK
ROAD
CONTOUR
FENCE
KERB
BUILDING
METHANE PIPE
DOMAIN BOUNDARY
bhpbilliton
Illawarra Coal Holdings Pty Ltd
PO Box 514 Unanderra NSW 2526 Australia
ABN 69 093 857 286
Name
Date
DRN BRWalker 19-07-2012
RCV
APP
SCALE A0 1 : 500
Title
Appin No1 & No2 Ventilation Shafts
DRAWING NUMBER
HSE-2012-24
REV 0

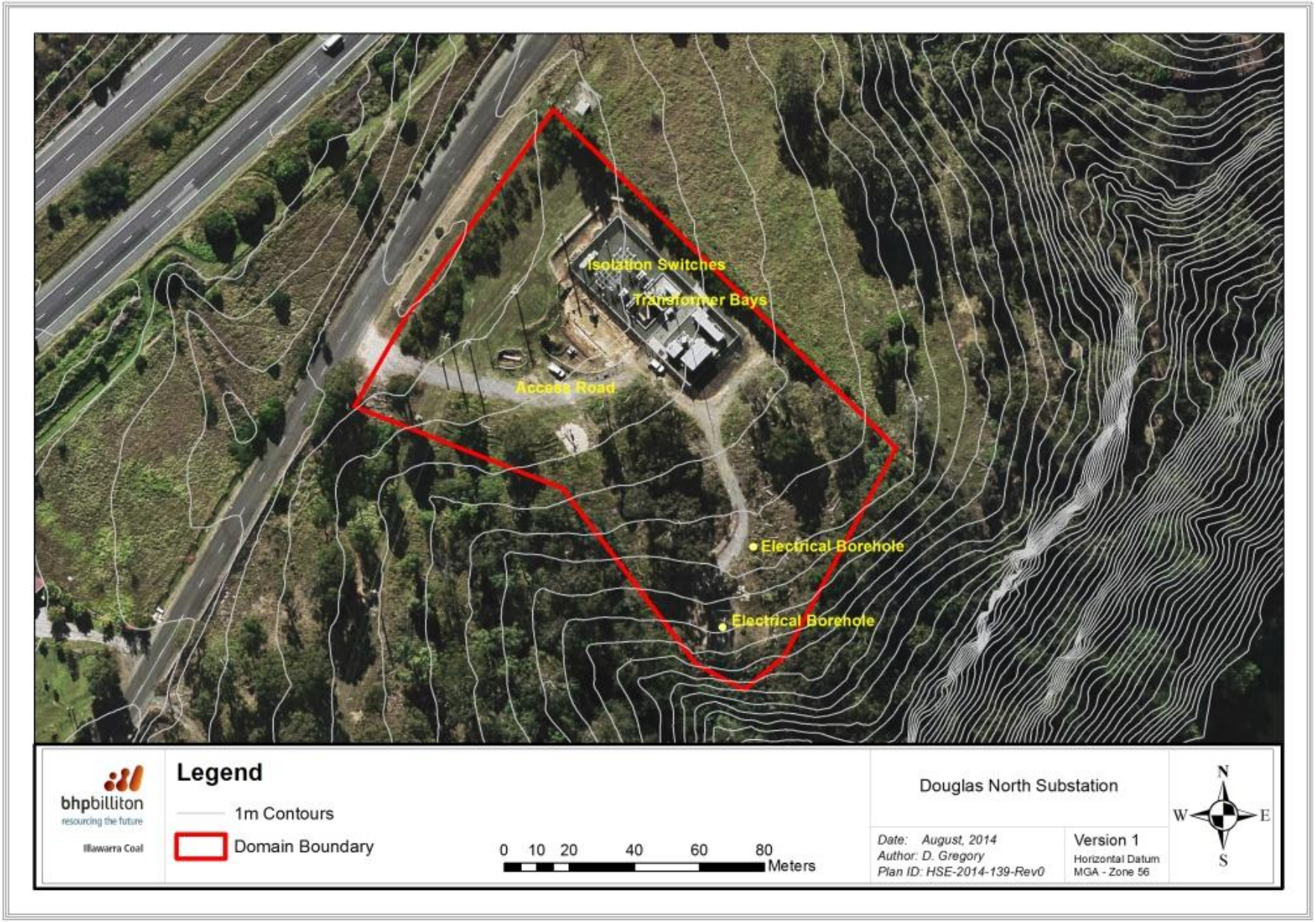
Plan 5 – No.3 Shaft Site


ML 1388
WATER SERVICE
EARTH BUND
DP 57337
PART PORTION 25
BROOKS POINT ROAD
SWITCH ROOM
WORKSHOP
RETENTION
POND
PIPE
SEPTIC TANKS
FAN
FAN
MOTOR
MOTOR
CABLE (UNDERGROUND)
NSW FIRE BRIGADE
HYDRANT
H
WATER TANK
20000 LITRES
ENTRY GATE
ACCESS ROAD
ISOLATION PIT
ELECTRIC
FIRE PUMP
DRAINAGE
SUMP
No 3
SHAFT
SUBSTATION
UPCAST VENTILATION SHAFT
FARM DAM
SCALE IN METRES
0 20 40 60 80 100 120 140 160 180 200
LEGEND
CREEK
ROAD
CONTOUR
FENCE
KERB
BUILDING
RAIL TRACK
OPTIC FIBRE
DOMAIN BOUNDARY
bhpbilliton
Illawarra Coal Holdings Pty Ltd
PO Box 514 Unanderra NSW 2526 Australia
ABN 69 093 857 286
DRN BRWalker 19-07-2012
REV
APP
SCALE A0 1:250
Title
Appin No3 Ventilation Shaft
DRAWING NUMBER
HSE-2012-25
REV 0

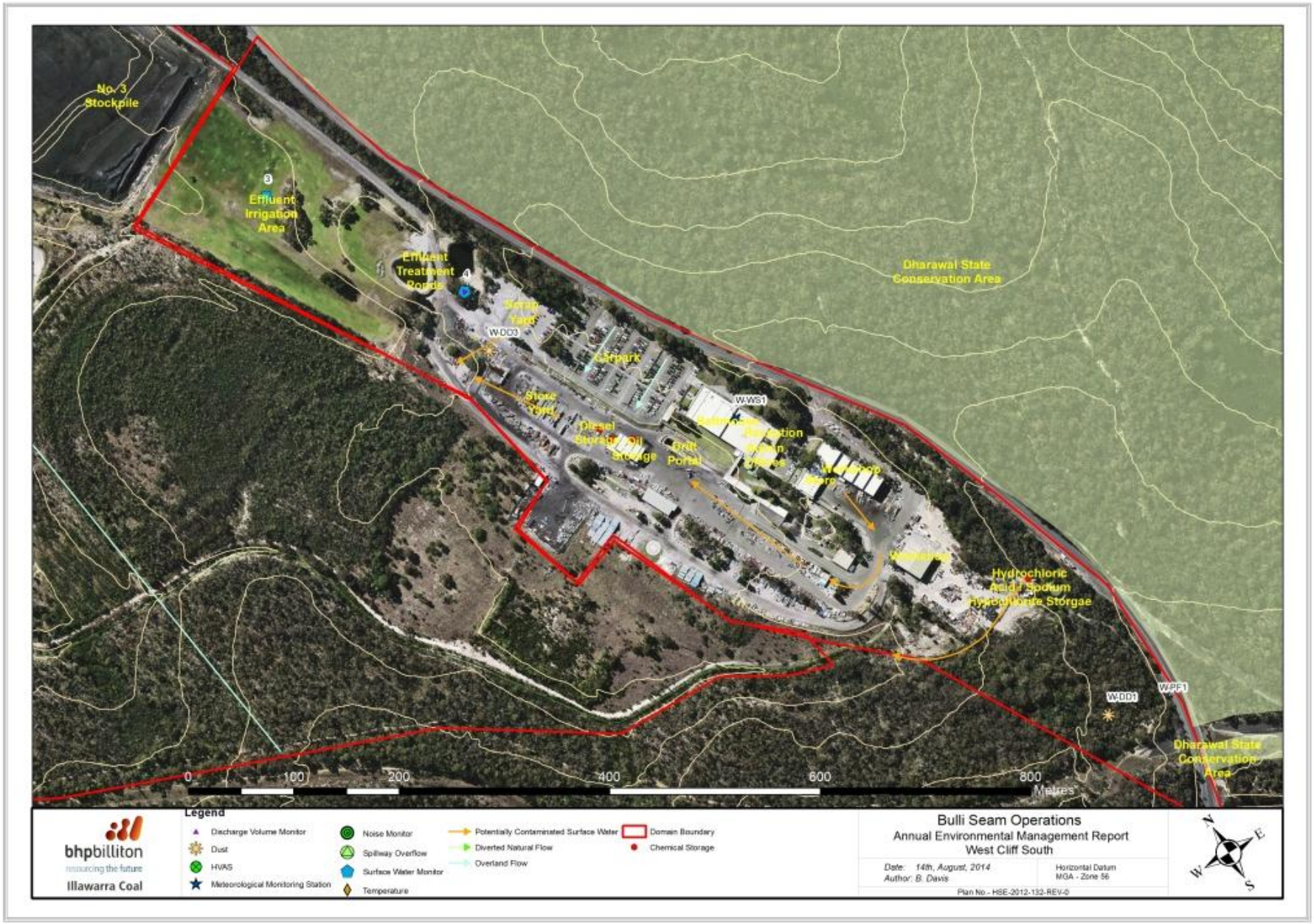
Plan 6 – No.6 Shaft Site


SCALE IN METRES
LEGEND
CREEK
ROAD
CONTOUR
FENCE
BUILDING
OPTIC FIBRE
DOMAIN BOUNDARY
bhpbilliton
Illawarra Coal Holdings Pty Ltd
PO Box 514 Unanderra NSW 2526 Australia
ABN 69 093 857 266
Title
Appin No6 Ventilation Shaft
HSE-2012-26
0

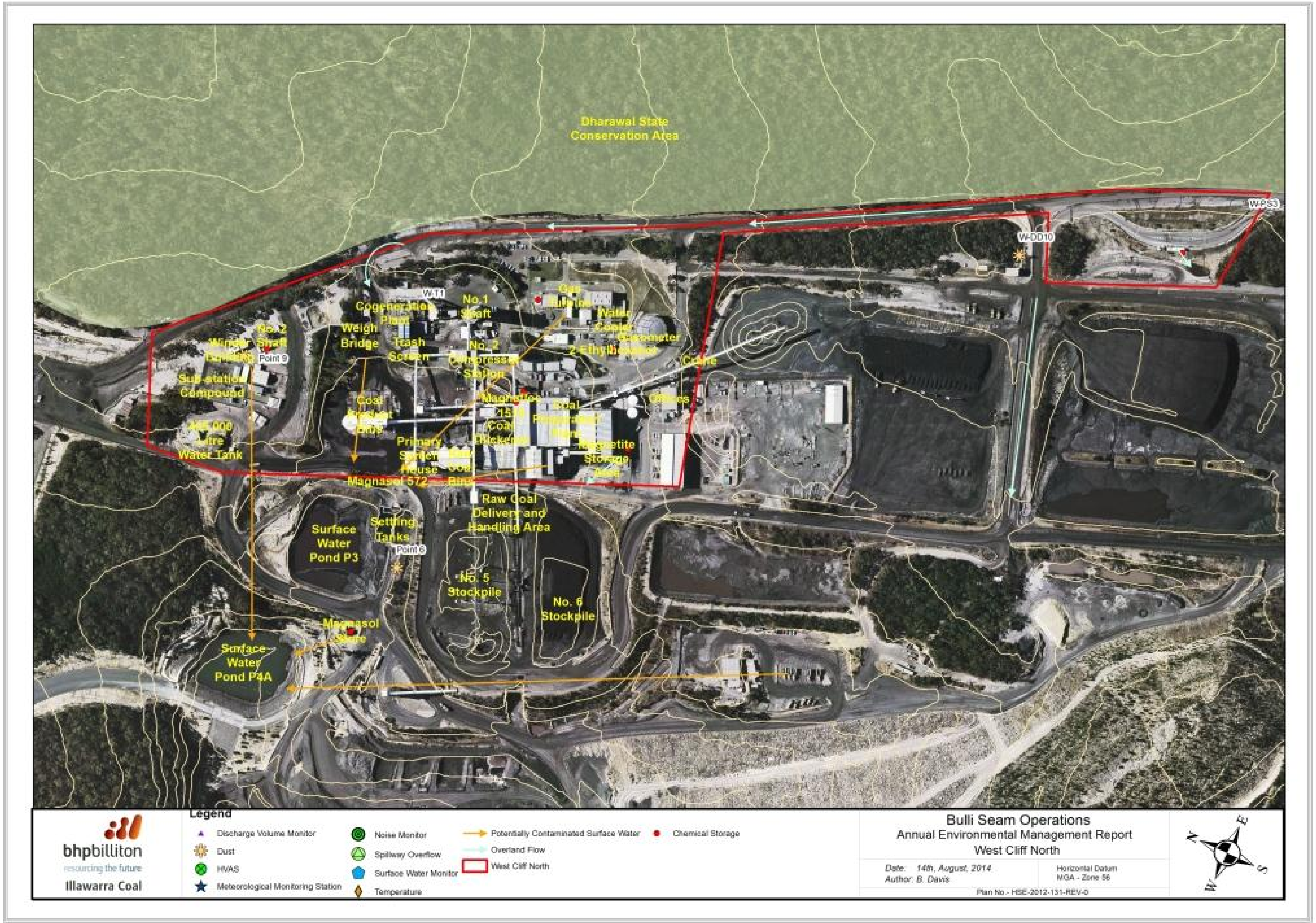
Plan 7 – Douglas North Substation


Isolation Switches
Transformer Bays
Access Road
Electrical Borehole
Electrical Borehole
bhpbilliton
resourcing the future
Illawarra Coal
Legend
1m Contours
Domain Boundary
0 10 20 40 60 80
Meters
Douglas North Substation
Date: August, 2014
Author: D. Gregory
Plan ID: HSE-2014-139-Rev0
Version 1
Horizontal Datum
MGA - Zone 56
N
W
E
S

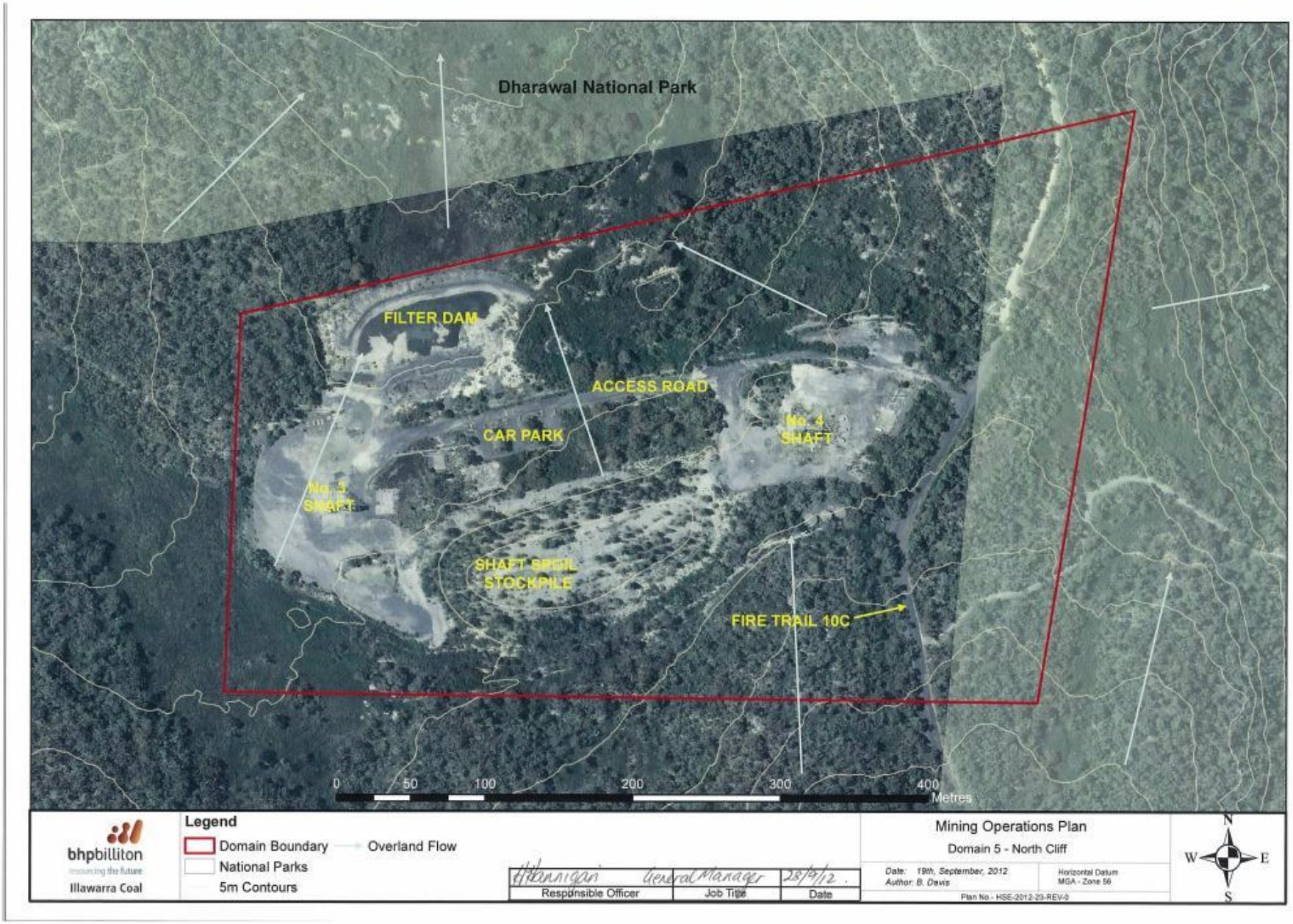
Plan 8 – West Cliff South site


No. 3 Stockpile
Effluent Irrigation Area
Effluent Treatment Ponds
Dharawal State Conservation Area
Carpark
W-DD3
W-WS1
Diesel Storage
Oil Storage
Grit Portal
Hydrochloric Acid / Sodium Hydroxide Storgae
W-DD1
W-PF1
0
100
200
400
600
800
Metres
Legend
Discharge Volume Monitor
Dust
HVAS
Meteorological Monitoring Station
Noise Monitor
Spillway Overflow
Surface Water Monitor
Temperature
Potentially Contaminated Surface Water
Diverted Natural Flow
Overland Flow
Domain Boundary
Chemical Storage
bhpbilliton
resourcing the future
Illawarra Coal
Bulli Seam Operations
Annual Environmental Management Report
West Cliff South
Date: 14th, August, 2014
Author: B. Davis
Horizontal Datum
MGA - Zone 56
Plan No - HSE-2012-132-REV-0
N
E
S
W

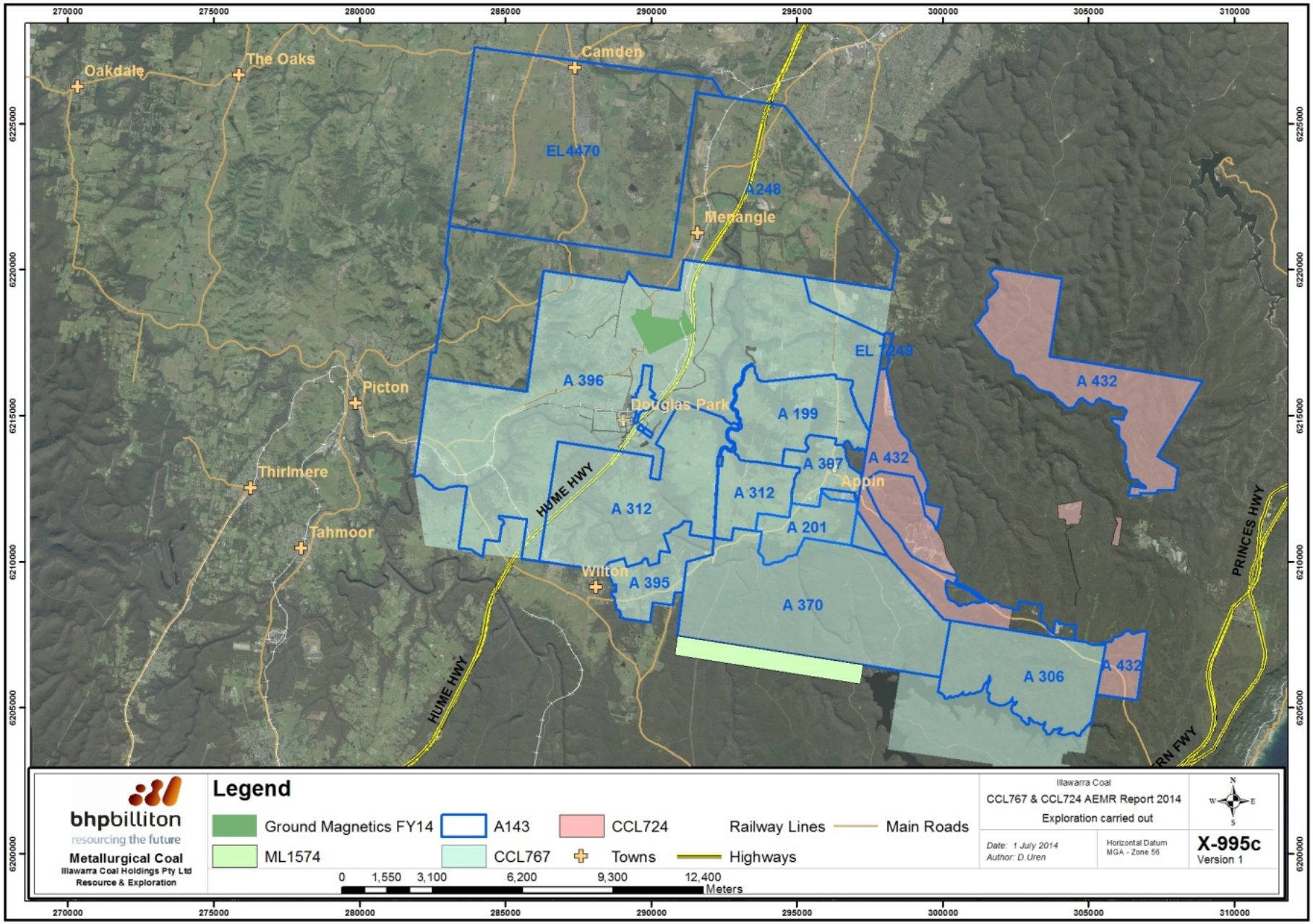
Plan 9 – West Cliff North Site


Dharawal State Conservation Area
W-PS3
W-DD10
W-T1
No.1 Shaft
Cogeneration Plant
Weigh Bridge
Trash Screen
No. 2 Compressor Station
No. 2 Shaft
Winder Building
Point 9
Sub-station Compound
Water Cooler
Gasometer
2-Ethylhexanol
Crane
Offices
Magnafloc 1521
Coal Thickener
Coal Preparation Plant
Magnetite Storage Area
Coal Product Bins
Primary Screen House
Raw Coal Bins
Magnasol 572
Raw Coal Delivery and Handling Area
Surface Water Pond P3
Settling Tanks
Point 6
No. 5 Stockpile
No. 6 Stockpile
Magnasol Store
Surface Water Pond P4A
Legend
Discharge Volume Monitor
Dust
HVAS
Meteorological Monitoring Station
Noise Monitor
Spillway Overflow
Surface Water Monitor
Temperature
Potentially Contaminated Surface Water
Overland Flow
West Cliff North
Chemical Storage
bhpbilliton
resourcing the future
Illawarra Coal
Bulli Seam Operations
Annual Environmental Management Report
West Cliff North
Date: 14th, August, 2014
Author: B. Davis
Horizontal Datum
MGA - Zone 56
Plan No.- HSE-2012-131-REV-0
N
E
S
W

Plan 10 – North Cliff Site


Dharawal National Park
FILTER DAM
ACCESS ROAD
CAR PARK
No. 4 SHAFT
No. 3 SHAFT
SHAFT SPOIL STOCKPILE
FIRE TRAIL 10C
0
50
100
200
300
400
Metres
bhpbilliton
Illawarra Coal
Legend
Domain Boundary
National Parks
5m Contours
Overland Flow
Responsible Officer
General Manager
Job Title
28/9/12
Date
Mining Operations Plan
Domain 5 - North Cliff
Date: 19th, September, 2012
Author: B. Davis
Horizontal Datum
MGA - Zone 56
Plan No.- HSE-2012-23-REV-0
N
W
E
S

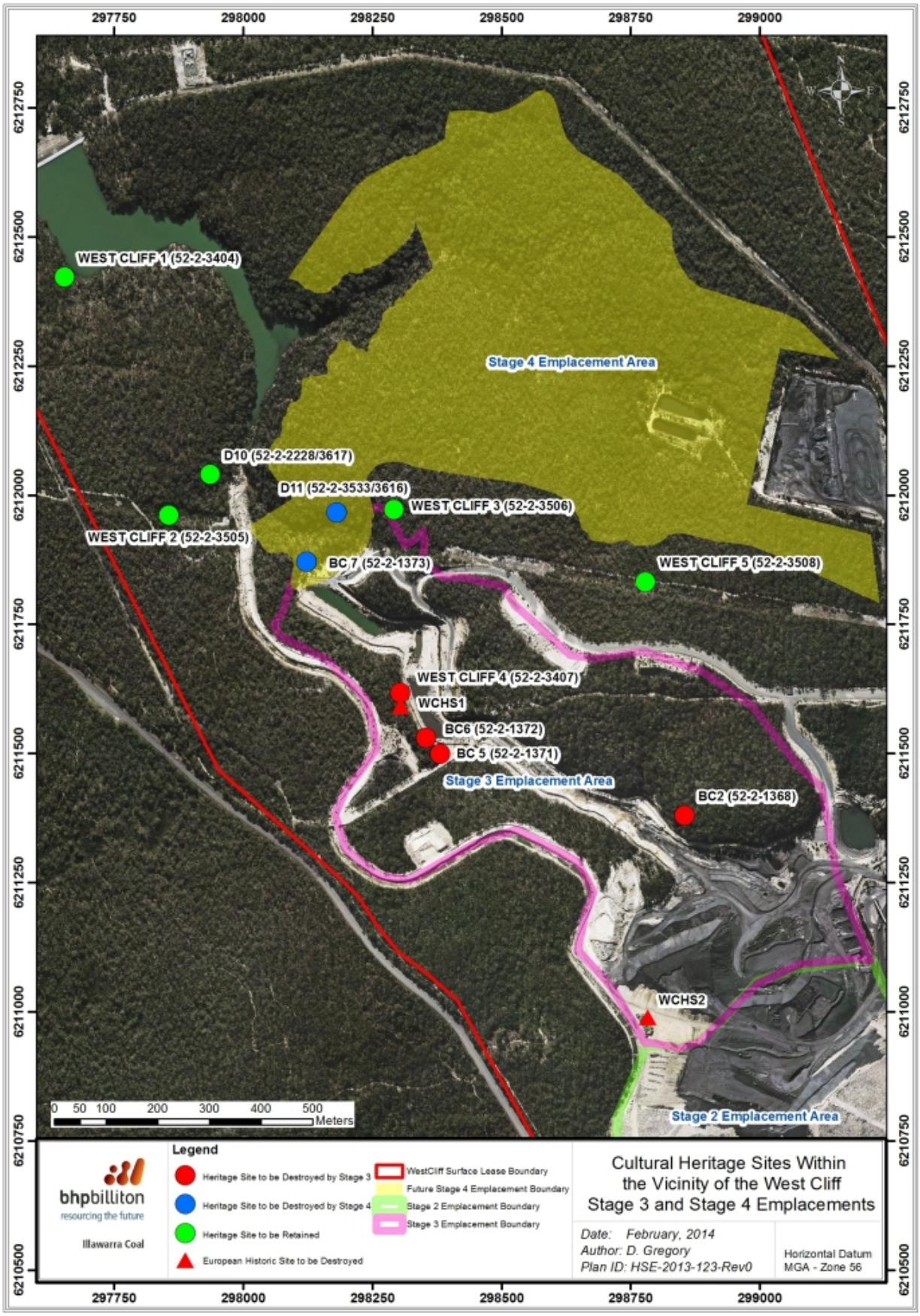
Plan 11 – Exploration for the AEMR Period


Oakdale
The Oaks
Camden
EL4470
A248
Menangle
A 396
Douglas Park
EL 7249
A 432
A 199
Picton
Thirlmere
A 397
A 432
Appin
HUME HWY
A 312
A 312
A 201
Tahmoor
Wilton
A 395
A 370
A 306
A 432
PRINCES HWY
HUME HWY
RN FWY
Legend
Ground Magnetics FY14
A143
CCL724
Railway Lines
Main Roads
ML1574
CCL767
Towns
Highways
0 1,550 3,100 6,200 9,300 12,400
Meters
bhpbilliton
resourcing the future
Metallurgical Coal
Illawarra Coal Holdings Pty Ltd
Resource & Exploration
Illawarra Coal
CCL767 & CCL724 AEMR Report 2014
Exploration carried out
Date: 1 July 2014
Author: D.Uren
Horizontal Datum
MGA - Zone 56
X-995c
Version 1
270000
275000
280000
285000
290000
295000
300000
305000
310000
6225000
6220000
6215000
6210000
6205000
6200000

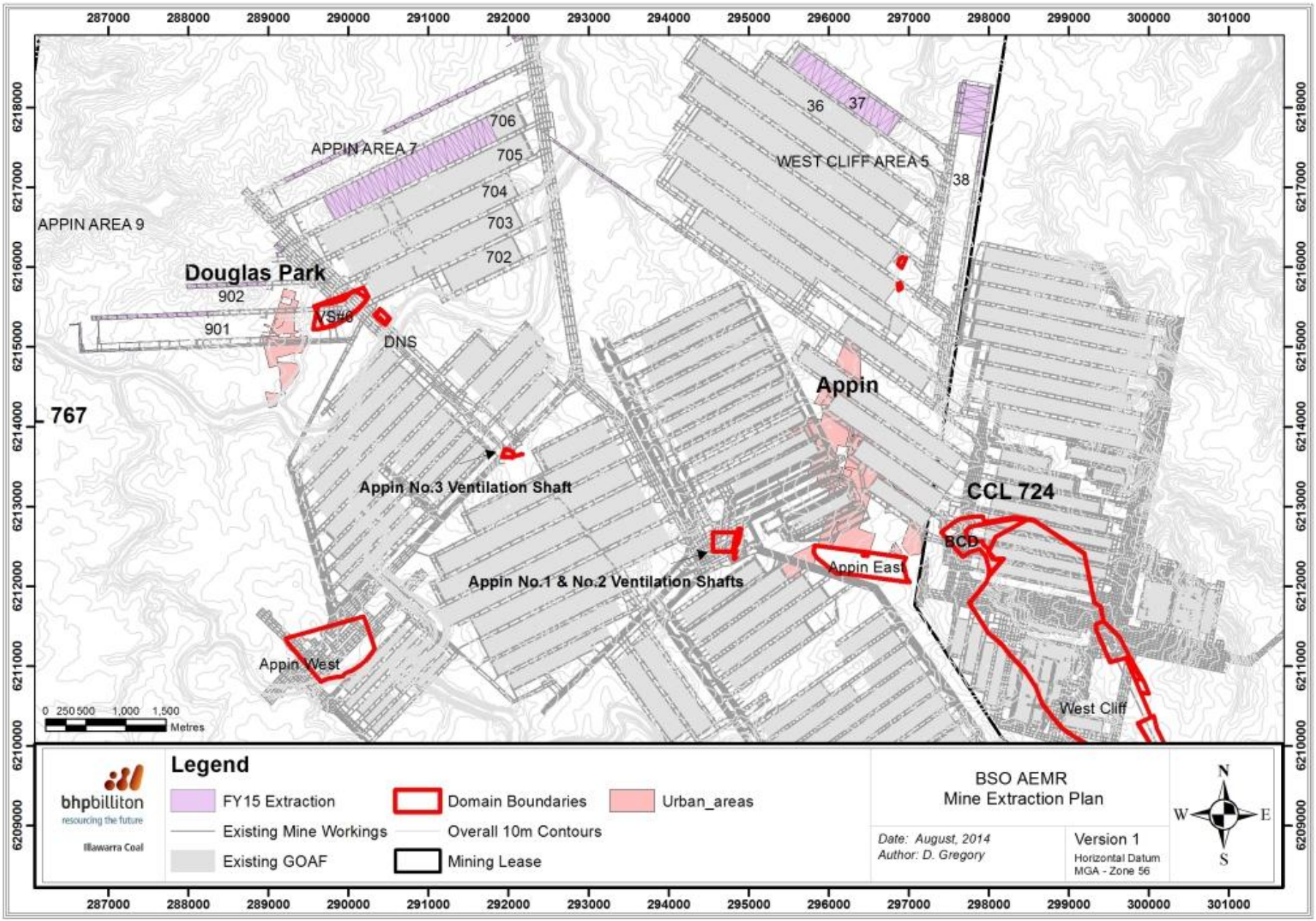
Plan 12 – Land Preparation Plan

Doc Path: P:\GIS\Workspace\HSE\West Cliff Emplacement\Emplacement_planning\AEMR Land preparation plan FY14.mxd

Plan 13 – West Cliff Emplacement Cultural HeritageSites


297750
298000
298250
298500
298750
299000
6212750
6212500
6212250
6212000
6211750
6211500
6211250
6211000
6210750
6210500
WEST CLIFF 1 (52-2-3404)
Stage 4 Emplacement Area
D10 (52-2-2228/3617)
D11 (52-2-3533/3616)
WEST CLIFF 3 (52-2-3506)
WEST CLIFF 2 (52-2-3505)
BC 7 (52-2-1373)
WEST CLIFF 5 (52-2-3508)
WEST CLIFF 4 (52-2-3407)
WCHS1
BC6 (52-2-1372)
BC 5 (52-2-1371)
Stage 3 Emplacement Area
BC2 (52-2-1368)
WCHS2
Stage 2 Emplacement Area
0 50 100 200 300 400 500
Meters
bhpbilliton
resourcing the future
Illawarra Coal
Legend
Heritage Site to be Destroyed by Stage 3
Heritage Site to be Destroyed by Stage 4
Heritage Site to be Retained
European Historic Site to be Destroyed
WestCliff Surface Lease Boundary
Future Stage 4 Emplacement Boundary
Stage 2 Emplacement Boundary
Stage 3 Emplacement Boundary
Cultural Heritage Sites Within the Vicinity of the West Cliff Stage 3 and Stage 4 Emplacements
Date: February, 2014
Author: D. Gregory
Plan ID: HSE-2013-123-Rev0
Horizontal Datum
MGA - Zone 56

Plan 14 – Mine Extraction Plan


APPIN AREA 7
APPIN AREA 9
WEST CLIFF AREA 5
Douglas Park
902
901
VS#6
DNS
706
705
704
703
702
36
37
38
767
Appin
Appin No.3 Ventilation Shaft
Appin No.1 & No.2 Ventilation Shafts
Appin West
Appin East
CCL 724
BCD
West Cliff
0 250 500 1,000 1,500
Metres
Legend
FY15 Extraction
Existing Mine Workings
Existing GOAF
Domain Boundaries
Overall 10m Contours
Mining Lease
Urban_areas
bhpbilliton
resourcing the future
Illawarra Coal
BSO AEMR
Mine Extraction Plan
Date: August, 2014
Author: D. Gregory
Version 1
Horizontal Datum
MGA - Zone 56
N
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287000
288000
289000
290000
291000
292000
293000
294000
295000
296000
297000
298000
299000
300000
301000
6218000
6217000
6216000
6215000
6214000
6213000
6212000
6211000
6210000
6209000

9. Appendices

Appendices continued

Appendix A – Annual Rehabilitation Report

Niche Environment and Heritage
PO Box W36 Parramatta NSW 2150
T 02 9689 2098 F 02 4017 0071
E info@niche-eh.com ABN 19 137 111 721

12 February 2014

Ms Joanne Page
BHP Billiton Illawarra Coal
Level 3, Enterprise 1
Innovation Campus
Squires Way
North Wollongong, NSW 2500

Via email: Joanne.Page@bhpbilliton.com

Dear Joanne,

RE: WEST CLIFF COLLIERY EMPLACEMENT AREA REHABILITATION MONITORING PROGRAM – YEAR 4 SUMMARY OF RESULTS

As requested, the fourth year of monitoring of the rehabilitation at the West Cliff Colliery Coal Wash Emplacement Area has been completed and a summary report prepared (below). The raw data including photos of each of the sites has also been supplied for your records.

I trust this information is of assistance to you. Please do not hesitate to contact me if you require any further information.

Yours sincerely

Matthew Richardson
Director
Niche Environment and Heritage
Contact:
p. 0488 224 777
e. mrichardson@niche-eh.com

Niche Environment and Heritage
PO Box W36 Parramatta NSW 2150
T 02 9689 2098 F 02 4017 0071
E info@niche-eh.com ABN 19 137 111 721

WEST CLIFF MONITORING SURVEY, DECEMBER 2013

As part of the development consent for the West Cliff Colliery Emplacement Area Stage 3, BHP Billiton Illawarra Coal (BHPBIC) is required to implement a formal monitoring program for all past, present and future coal wash emplacement areas at West Cliff Colliery. The aim of this monitoring and performance evaluation is to measure, over time, the success of the rehabilitation of the emplacement area, particularly in relation to the translocation of natural soil profiles and the regeneration of their associated soil seedbanks.

To achieve these aims, 11 monitoring sites were originally established in translocated patches of the emplacement area and six control sites in local remnants of Exposed Sandstone Scribbly Gum Woodland and Sandstone Gully Peppermint Forest. During the 2012 surveys a further two monitoring sites were added in newly emplaced areas where no data had been collected previously. We recommend that further emplacement monitoring sites and threatened flora surveys take place as newly emplaced areas are established. The control sites allow for the comparison of the above listed site attributes with local benchmark conditions and it will also be possible, over time, to detect natural variability within the control sites themselves.

Methods for measuring these values included a combination of:

- Biometric plots and transects using the BioBanking Assessment Methodology where a number of ecosystem condition attributes are collected (native plant species richness, native vegetation cover, exotic cover, over-storey recruitment and logs and hollows);
- Analysis of floristic composition and structure (using Braun-Blanquet cover-abundance scores within a 20x20 m plot);
- Photographs along the central transect line of the biometric plot; and
- Targeted threatened plant surveys (parallel transect searches).

Summary of previous survey results

The first season of monitoring rehabilitation success in Stages 1 and 2 of the West Cliff Colliery Coal Wash Emplacement Area (the Emplacement), was undertaken in the spring of 2010. The second rehabilitation monitoring took place in spring 2011. The results of both surveys have been compared against each other and with a number of control sites (Niche 2012). The third survey was carried out in April 2013.

The key findings of the previous monitoring surveys include:

1. Scores of between 50 and 70 species have been consistently recorded for the Native Plant Species Richness condition attribute, which is well above the benchmarks for the local vegetation types.
2. The rehabilitation of the emplacement areas has, generally speaking, succeeded in terms of native plant cover.
3. Weed occurrences are patchy but can be severe in some areas, with the major threat to the site being the invasion of exotic perennial grasses such as *Cortaderia selloana* (Pampas grass), *Chloris gayana* (Rhodes grass), *Andropogon virginicus* (whisky grass) and *Eragrostis curvula* (African lovegrass). *Juncus acutus* (sharp rush), a potentially bad environmental weed and noxious weed in some Local Government Areas, has severely infested parts of low-lying impeded drainage areas and around ponding and the main Brenan's Creek diversion.

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4. Some taxonomic groups are regenerating well and this was expected, e.g., Myrtaceae (eucalypts, tea trees), Fabaceae (*Acacia* spp. and the bush peas such as *Pultenaea* and *Dillwynia* spp.), some Proteaceae (*Banksia* spp., *Grevillea* spp.), sedges and rushes (e.g., *Lomandra* spp.) and some native grasses (e.g., *Entolasia stricta*).
5. Regular occurrences and good cover of some genera and species that are difficult to cultivate in sterile conditions, such as *Epacris* spp., *Leucopogon* spp., some sedges and rushes (e.g., *Lepidosperma* spp., *Caustis* spp. and *Schoenus* spp.), *Hibbertia* spp. and also *Persoonia* spp. (especially *P. pinifolia*), are indicators that the translocation of the natural soil profile has encouraged a good natural germination response in these species and groups.
6. Some anomalies exist in the form of a suite of non-local species such as *Acacia sophorae* (coast wattle) and other non-local *Acacia* spp., *Eucalyptus robusta* (swamp mahogany), *E. crebra* (narrow-leaved ironbark), a box type eucalypt (possibly blue box *E. baueriana*) and a red gum species (possibly *E. tereticornis* or *E. amplifolia*). The occurrences of these species are regular enough to not be outliers and these species are not a floristic component of the surrounding bushland. It is noted that 'seeding' of the site has occurred and it is anticipated that the seed mix has included a suite of non-local native species.
7. Threatened flora; In April 2013, 41 *Pultenaea aristata* individuals, were recorded throughout the Emplacement area. *P. aristata* is listed as Vulnerable on both the NSW *Threatened Species Conservation Act 1995* (TSC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Two *Persoonia hirsuta* individuals, one of which has been previously identified were located in a control plot (c253), though none were located in the Emplacement area. *Persoonia hirsuta* is listed as Endangered on both the TSC and EPBC Acts.
8. No formal surveys of fauna have been conducted, however opportunistic observations of native fauna have included a variety of woodland birds such as scrub wrens, silvereyes and honeyeaters, Red-bellied Black Snake, Eastern Water Dragon, Eastern Water Skink, Copper-tailed Skink, frog species and Swamp Wallaby. Feral animals had utilised the emplacement and included European Rabbit, European Red Fox and Feral Cat.

Summary results of fourth monitoring survey (December 2013)

The fourth survey was carried out in late November/early December 2013 and the following summarises the findings of the survey.

Table 1 has been provided below comparing the key results of the survey with previous surveys. Not a lot has changed since the April 2013 survey in terms of native species richness and native vegetation structure and cover. The most important result during the December 2012 surveys was the detection of an additional five *Pultenaea aristata* specimens. The targeting of perennial exotic grasses throughout the site is seen as the main challenge in terms of management.

Recommendations

Recommendations are provided in Table 1 in respect to on-going management and monitoring of the Emplacement. These may be summarised as follows:

- Continue to monitor vegetation structure and cover, regeneration of expected taxonomic groups and regeneration of difficult-to-germinate taxonomic groups;
- Continue to establish new plots in newly translocated areas;
- Fire should continue to be wholly excluded from the Emplacement area;

- Develop and implement a Weed Management Program. Prioritise weed management around *Pultenaea aristata* locations and target perennial exotic grasses throughout;
- Direct seeding of the site should be revised to only include local native plant species collected from the vicinity of the West Cliff Colliery site;
- Continue monitoring Emplacement for threatened flora;
- Periodic surveys and assessment of Persoonia hirsuta condition in control habitat areas;
- Conduct woodland bird surveys as indicators of the regeneration of species richness and cover of native midstorey and groundcover;
- Conduct remote camera detection for ground dwelling mammals and reptiles; and
- Develop and implement of a Pest Species Management Plan.

Due to the overall health of the site and the continued success of the translocation, soils characterisation as specified in the Flora and Fauna Management Plan (Biosis 2007), is not required at this point. This should be reviewed during each survey.

Monitoring of the rehabilitation and control sites will be repeated in spring 2014.

Summary Report Authors

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Matthew Richardson – Director – Niche Environment and Heritage

References

Biosis Research (2007) *Vegetation and Fauna Management Plan, Westcliff Colliery and Stage 3 Coal Wash Emplacement*, Report prepared for Illawarra Coal Holdings Pty Ltd.

Niche (2012) *Rehabilitation Monitoring Report Year 2 - West Cliff Colliery Coal Wash Emplacement Area*, Niche Environment and Heritage Pty Ltd, February 2012.

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Table 1. Summary of findings and recommendations

Key attributes	Findings from previous surveys (2010 – April 2013)	Findings from December 2013 survey	Recommendations for future surveys and site management
Native Plant Species Richness	Scores for Native Plant Species Richness are well above the benchmarks for the local vegetation types.	Native Plant Species Richness scores continue to be well above benchmark for the local vegetation types.	Continue to monitor. Continue to establish new plots in newly translocated areas. Soils characterisation is not required at this point, however should be reviewed in 2012.
Native Plant Cover (overstorey, midstorey, groundcovers)	Native midstorey and groundcover regeneration and survivorship has, overall, been very high. As can be expected native overstorey is not yet measurable due to the short time-frame of the project to date (i.e., overstorey species have not had time to reach optimal height and maturity).	Native midstorey and groundcover regeneration and survivorship, continues to be very high. The first generation of some short-lived obligate seeding varieties, such as *Viminaria juncea*, are senescing or have expired. This was expected and will continue in respect some other species, particularly from the Fabaceae (pea family).The first generation of these species has flowered and set abundant see each year since the original Emplacement. The resultant soil seedbank will result in some second generation cohorts, however most seed is likely to be stored in the soil until a natural disturbance, such as fire, results in a subsequent germination event.	No action required in relation to management of native midstorey and groundcover. As native overstorey matures and utilises more soil water and nutrients and creates shade, it can be expected that the cover of native groundcover will drop. Fire should be wholly excluded from the Emplacement area until native overstorey tree species have achieved optimal height and maturity.
Weed occurrences and cover	Weed occurrences are patchy but can be severe in some areas, with the major threat to the site being the invasion of exotic perennial grasses and *Juncus acutus* (sharp rush).	No great change in weed cover or species present, though immediate implementation of a regular maintenance weed management regime is recommended.	Continue weed management including non-local native species and noxious weeds. Key priorities are around *Pultenaea aristata* locations and the targeting of perennial exotic grasses and *Juncus acutus*.
Regeneration of expected taxonomic groups	Some taxonomic groups are regenerating well as expected, e.g., eucalypts, tea trees, *Acacia* spp., *Pultenaea* spp., *Dillwynia* spp., *Banksia* spp., *Grevillea* spp., *Lomandra* spp. and some native grasses (e.g., *Entolasia stricta*).	No change. Some long-lived shrub species such as *Callistemon* spp., *Melaleuca* spp. and *Acacia* spp. have reached maturity and have started to set seed.	Continue to monitor.

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Key attributes	Findings from previous surveys (2010 – April 2013)	Findings from December 2013 survey	Recommendations for future surveys and site management
Regeneration of difficult-to-germinate taxonomic groups	Regular occurrences and good cover of taxonomic groups that are difficult to cultivate in sterile conditions are indicators that the soil translocation has encouraged a natural germination response for these groups.	No change and recruitment still excellent. Many of these species have reached maturity and have started to set seed.	Continue to monitor.
Non-local native species	Some anomalies exist in the form of a suite of non-local species such as non-local *Acacia* spp. and *Eucalyptus* spp. It is noted that direct seeding of the site has occurred and it is anticipated that the seed mix has included some non-local native species.	Evident that some of these non-local varieties are stressed and likely to expire, however most plants are in a healthy state. *Acacia sophorae* has matured and set seed.	The seed mix used to in the direct seeding of the site should be revised to only include local native plant species collected from the vicinity of the West Cliff Colliery site. Continued implementation of weed management.
Threatened flora	41 *Pultenaea aristata* individuals were recorded throughout the Emplacement area. Two *Persoonia hirsuta* individuals, one of which has been previously identified were located in a control plot (c253). No *Persoonia hirsuta* were located in the Emplacement area.	Additional five *Pultenaea aristata* individuals detected during survey. No additional *Persoonia hirsuta* detected either within the Emplacement or at controls.	Continue monitoring Emplacement for threatened flora. Prioritise weed management in Emplacement area on *Pultenaea aristata* locations. Periodic surveys and assessment of *Persoonia hirsuta* condition in control habitat areas.
Native fauna	Opportunistic observations of native fauna have included a variety of relatively common native fauna. No threatened fauna have been detected as yet.	Fauna not recorded though native fauna assemblage likely to persist and improve over time as vegetative cover and structure improves.	Woodland bird surveys would be well justified within the next couple of surveys due to the species richness and cover of native midstorey and groundcover. Remote camera detection for ground dwelling mammals and reptiles recommended due to extent of vegetative and log cover.

Key attributes	Findings from previous surveys (2010 – April 2013)	Findings from December 2013 survey	Recommendations for future surveys and site management
Feral fauna	Feral animals had utilised the Emplacement and included European Rabbit, European Red Fox and Feral Cat.	Fauna not recorded though feral species likely to persist in Emplacement area.	Pest Species Management Plan – development and implementation of an integrated program to manage feral animals such as foxes, cats and rabbits. In order to be effective this must include liaison with OEH, the SCA and the NSW Scouts Association.

Appendices continued

Appendix B – 2013/14 EPA Annual Return

ANNUAL RETURN

LICENCE NO	2504
LICENCE HOLDER	ENDEAVOUR COAL PTY LIMITED
REPORTING PERIOD	01-Feb-2013 to 31-Jan-2014

If your licence has been transferred, suspended, surrendered or revoked by the EPA during this reporting period, cross out the dates above and specify the new dates to which this Annual Return relates below:

REVISED REPORTING PERIOD _____/_____/_____ to _____/_____/_____

(Note: the revised reporting period also needs to be entered in Section E)

THIS ANNUAL RETURN MUST BE RECEIVED BY THE EPA BEFORE 02-Apr-2014

Your Annual Return must be completed, including certification in Section E, and submitted to the EPA no later than 60 Days after the end of the reporting period for your licence.

Failure to submit this Annual Return within 60 days after the reporting period ends may result in:

- **the issue of a Penalty Notice for $750 (individuals) or $1500 (corporations);**

OR

- **prosecution.**

Please send your completed Annual Return by **Registered Post** to:

Regulatory and Compliance Support Unit
Environment Protection Authority
PO Box A290
SYDNEY SOUTH NSW 1232

It is an offence to supply any information in this form to the EPA that is false or misleading in a material respect, or to certify a statement that is false or misleading in a material respect.

THERE IS A MAXIMUM PENALTY OF $250,000 FOR A CORPORATION OR $120,000 FOR AN INDIVIDUAL.

Details provided in this Annual Return will be available on the EPA's Public Register in accordance with section 308 of the *Protection of the Environment Operations Act 1997.*

Use the checklist below to ensure that you have completed your Annual Return correctly.

(✓ the boxes)

CHECKLIST		
✓	Section A:	All licence details are correct
✓	Section B1:	You have entered the correct number in the complaints table
✓	Section B2 – B3:	If there are tables, you have provided the required details
✓	Section C:	You have answered question 1, and 2 if applicable
N/A	Section D:	If applicable, you have completed all load calculation worksheets
✓	Section E:	You have answered question 1, 2, 3, 4, 5 and 6 if applicable
✓	Section F:	You have answered question 1, 2 and 3 if applicable
✓	Section G:	The Annual Return has been signed by appropriate person(s) and, if applicable, the revised reporting period entered
✓	Make a copy of the completed Annual Return and keep it with your licence records	
✓	Attach a cheque (unless you have paid separately) for the payment of the administrative fee for the next licence fee period	

Please send your completed Annual Return by **Registered Post** to:

Regulatory and Compliance Support Unit
Environment Protection Authority
PO Box A290
SYDNEY SOUTH NSW 1232

A Statement of Compliance - Licence Details

ALL licence holders must check that the licence details in Section A are correct

If there are changes to any of these details **you must advise the EPA and apply as soon as possible for a variation to your licence or for a licence transfer.**

Licence variation and transfer application forms are available on the EPA website at: http://www.epansw.gov.au/licensing, or from regional offices of the EPA, or by contacting us on telephone 02 9995 5700.

If you are applying to vary or transfer your licence you must still complete this Annual Return.

A1 Licence Holder

Licence Number	2504
Licence Holder	ENDEAVOUR COAL PTY LIMITED
Trading Name *(if applicable)*	
ABN	38 099 830 476

A2 Premises to which Licence Applies (if applicable)

Common Name (if any)	3. WEST CLIFF AND NORTH CLIFF COLLIERIES
Premises	WEDDERBURN ROAD APPIN NSW 2560
Common Name (if any)	1. APPIN COLLIERY
Premises	OFF APPIN ROAD APPIN NSW 2560
Common Name (if any)	2. APPIN WEST COLLIERY
Premises	DOUGLAS PARK DRIVE DOUGLAS PARK NSW 2569

A3 Activities to which Licence Applies

Mining for Coal
Waste Disposal (application to land)
Coal Works

A4 Other Activities (if applicable)

Electricity generation

A5 Fee-Based Activity Classifications

Note that the fee based activity classification is used to calculate the administrative fee.

B Monitoring and Complaints Summary

B1 Number of Pollution Complaints

Number of complaints recorded by the licensee during the reporting period. **If no complaints were received enter nil in the attached box, otherwise complete the table below.**	19*

Pollution Complaint Category	Number of Complaints
Air	1.5**
Water	0
Noise	15.5**
Waste	0
Other	2

*3 complaints related to pit top activities. 16 complaints related to other surface activities such as the Mine Safety Gas Drainage operations.
** One complaint related to both Dust and Noise

Note: Above complaints data only relates to licensed facilities and activities. Excludes complaints received re: truck movements on public roads

B2 Concentration Monitoring Summary

For each monitoring point identified in your licence complete all the details for each pollutant listed in the tables provided below.

If concentration monitoring is **not** required by your licence, **no tables** will appear below.
Note that this does not exclude the need to conduct appropriate concentration monitoring of assessable pollutants as required by load-based licensing (if applicable).

Monitoring Point 4

Discharge Quality Monitoring. Volume Monitoring. - West Cliff and North Cliff Collieries., Effluent irrigation pump discharging to POINT 3

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Biochemical oxygen demand	milligrams per litre	12	12	<2	6	12

Oil and Grease	milligrams per litre	12	12	<5	5	6
pH	pH	12	12	6.8	7.3	8.3
Total suspended solids	milligrams per litre	12	12	<5	24	78

Discharge & Monitoring Point 10

Discharge to waters
Discharge quality monitoring
Volume monitoring - West Cliff and North Cliff Collieries., Piped discharge from the Brennans Creek Reclaim Dam labelled "LDP10" on map titled "West Cliff and North Cliff Mine" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Alkalinity (as calcium carbonate)	milligrams per litre	39	39	547	878	1250
Aluminium (dissolved)	micrograms per litre	39	39	260	540	1130
Arsenic (dissolved)	micrograms per litre	39	39	3	9	15
Bicarbonate	milligrams per litre	39	39	533	762	1060
Cadmium (dissolved)	micrograms per litre	39	39	<0.1	0.1	0.3
Chemical oxygen demand	milligrams per litre	39	39	9	20	68
Cobalt (dissolved)	micrograms per litre	39	39	3	7	12
Conductivity	microsiemens per centimetre	continuous*	continuous**	442	1649	3560
Copper (dissolved)	micrograms per litre	39	39	5	9	12

Lead (dissolved)	micrograms per litre	39	39	1	3	7
Manganese (dissolved)	micrograms per litre	39	39	1	13	32
Nickel (dissolved)	micrograms per litre	39	39	57	121	182
Nitrogen (ammonia)	micrograms per litre	39	39	20	117	790
Nitrogen (total)	micrograms per litre	39	39	1100	2428	4700
Oil and Grease	milligrams per litre	42	42	<5	<5	<5
Oxidised nitrogen	micrograms per litre	39	39	300	1615	4080
pH	pH	continuous*	continuous**	6.4	8.1	9.3
Total dissolved solids	milligrams per litre	39	39	684	1277	1870
Total suspended solids	milligrams per litre	42	42	<5	8	53
Turbidity	nephelometric turbidity units	continuous*	continuous**	0	26	100
Zinc (dissolved)	micrograms per litre	39	39	13	33	48

* Continuous monitoring commenced 1 June 2013

** Daily measurements taken when continuous monitoring system down for maintenance (as per the EPL2504 Discharge Point 10 - Continuous Water Monitoring Instrumentation Protocol)

Monitoring Point 11

Water quality monitoring- West Cliff and North Cliff Collieries., Georges River located approximately 50 metres upstream of the confluence with Brennans Creek labelled "LDP11" on map titled "West Cliff and North Cliff Mine" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Conductivity	microsiemens per centimetre	42	42	126	191	541

pH	pH	42	42	6.5	7.1	7.7
Total suspended solids	milligrams per litre	39	39	<5	7	34

* TSS sampling commenced in May 2013

Monitoring Point 12

Water quality monitoring - West Cliff and North Cliff Collieries., Georges River located approximately 50 metres downstream of the confluence with Brennans Creek labelled "LDP12" on map titled "West Cliff and North Cliff Mine" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Conductivity	microsiemens per centimetre	42	42	471	1854	3170
pH	pH	42	42	8.2	8.8	9.1
Total suspended solids	milligrams per litre	39	39	<5	7	19

* TSS sampling commenced in May 2013

Monitoring Point 14

Dust Monitoring - Appin Colliery., Dust gauge located 50m to the SE of the coal stockpile near the diesel tank labelled "LDP14" on map titled "Appin East Pit Top" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Ash	grams per square metre per month	12	12	0.2	0.6	1.0
Combustible solids	grams per square metre per month	12	12	0.2	0.7	1.1
Insoluble solids	grams per square metre per month	12	12	0.4	1.3	2.1

Monitoring Point 15

Dust Monitoring - Appin Colliery., Dust gauge located 100m east of the coal stockpile near the sediment pond, labelled "LDP15" on map titled "Appin East Pit Top" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Ash	grams per square metre per month	12	12	0.2	0.5	1.0
Combustible solids	grams per square metre per month	12	12	<0.1	1.1	7.0
Insoluble solids	grams per square metre per month	12	12	0.2	1.6	7.4

Monitoring Point 16

Dust Monitoring - Appin Colliery., Dust gauge located 350m north west of the coal stockpile near the Sydney Water tank, labelled "LDP16" on map titled "Appin East Pit Top" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Ash	grams per square metre per month	12	12	0.4	0.7	1.2
Combustible solids	grams per square metre per month	12	12	0.2	0.5	0.9
Insoluble solids	grams per square metre per month	12	12	0.7	1.2	2.1

Monitoring Point 17

Dust Monitoring - Appin Colliery., Dust gauge located 100m north west of the coal stockpile next to the truck exit, labelled "LDP17" on map titled "Appin East Pit Top" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Ash	grams per square metre per month	12	12	0.7	1.1	2.2
Combustible solids	grams per square metre per month	12	12	0.6	1.2	2.1

Insoluble solids	grams per square metre per month	12	12	1.3	2.3	4.3

Discharge & Monitoring Point 18

Discharge to waters.
Discharge quality and volume monitoring
(Stormwater Discharge) - Appin, Underflow from the filter lagoon discharging through a v-notch weir labelled "LDP18" on map titled "Appin East Pit Top" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Oil and Grease	milligrams per litre	0	0	0	0	0
pH	pH	0	0	0	0	0
Total suspended solids	milligrams per litre	0	0	0	0	0

Discharge & Monitoring Point 19

Discharge to waters. Discharge quality and volume monitoring.
(Surface Water Discharge) - Appin, Dyna Sand Filter outlet at location labelled "LDP19" on map titled "Appin East Pit Top" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Oil and Grease	milligrams per litre	7	7	<5	<5	<5
pH	pH	7	7	7.7	7.9	8.1
Total suspended solids	milligrams per litre	7	7	<5	7	22

Discharge & Monitoring Point 20

Discharge to land.
Discharge quality and volume monitoring.
(Spray Irrigation Discharge) - Appin., Envirocycle Irrigation Area as indicated by highlighted area labelled "LDP20" on map titled "Appin East Pit Top" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Biochemical oxygen demand	milligrams per litre	12	12	3	21	57
Oil and Grease	milligrams per litre	12	12	<5	5	5
pH	pH	12	12	7.5	7.7	7.9
Total suspended solids	milligrams per litre	12	12	<5	24	41

Discharge & Monitoring Point 22

Discharge to utilisation area.
Water quality monitoring
Volume Monitoring. - Appin West, The 100mm poly pipe from the secondary stabilisation lagoon of the sewage treatment plant labelled "LDP22 Sample Location" on Plan A07-1240 "Appin West Effluent Irrigation Area" dated 30.08.11. The application area is labelled LDP22 "Irrigation Area"

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Biochemical oxygen demand	milligrams per litre	12	12	3	8	18
Oil and Grease	milligrams per litre	12	12	<5	<5	<5
pH	pH	12	12	7.1	7.4	7.8
Total suspended solids	milligrams per litre	12	12	<5	22	42

Discharge & Monitoring Point 23

Discharge to waters.
Water quality monitoring.
Discharge volume monitoring. - Appin West, Piped discharge outlet for stormwater labeled "LDP23" on map titled "Appin West Pit Top" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Oil and Grease	milligrams per litre	8	8	<5	<5	<5
Total suspended solids	milligrams per litre	8	8	<5	17	36

Discharge & Monitoring Point 24

Discharge to waters.
Water quality monitoring. Discharge volume monitoring. - Appin West, Piped discharge outlet for minewater labelled "LDP24" on map titled "Appin West Pit Top" dated May 2010.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples you collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Conductivity	microsiemens per centimetre	12	12	562	1025	1590
Oil and Grease	milligrams per litre	12	12	<5	<5	<5
pH	pH	12	12	7.3	7.9	8.4
Total suspended solids	milligrams per litre	12	12	<5	5	5

B3 Volume or Mass Monitoring Summary

For each monitoring point identified in your licence complete the details of the volume or mass monitoring indicated in the tables provided below.

If volume or mass monitoring is not required by your licence, **no tables** will appear below.

Note that this does not exclude the need to conduct appropriate concentration monitoring of assessable pollutants as required by load-based licensing (if applicable).

Monitoring Point 4

Discharge Quality Monitoring. Volume Monitoring. - West Cliff and North Cliff Collieries.

Unit of measure	Frequency	No. of measurements made	Lowest result	Mean result	High result
kilolitres per day	Continuous	continuous	0	29	493

Discharge & Monitoring Point 10

Discharge to waters
Discharge quality monitoring
Volume monitoring - West Cliff and North Cliff Collieries.

Unit of measure	Frequency	No. of measurements made	Lowest result	Mean result	High result
kilolitres per day	Continuous	continuous	0	234	827

Monitoring Point 13

Volume monitoring - West Cliff and North Cliff Collieries.

Unit of measure	Frequency	No. of measurements made	Lowest result	Mean result	High result
kilolitres per day	Continuous	continuous	0	2580	7876

Discharge & Monitoring Point 18

Discharge to waters.
Discharge quality and volume monitoring
(Stormwater Discharge) - Appin

Unit of measure	Frequency	No. of measurements made	Lowest result	Mean result	High result
kilolitres per day	Continuous during discharge	0	0	0	0

Discharge & Monitoring Point 19

Discharge to waters. Discharge quality and volume monitoring.
(Surface Water Discharge) - Appin

Unit of measure	Frequency	No. of measurements made	Lowest result	Mean result	High result
kilolitres per day	Continuous during discharge	continuous	0	216	1184

Discharge & Monitoring Point 20

Discharge to land.
Discharge quality and volume monitoring.
(Spray Irrigation Discharge) - Appin.

Unit of measure	Frequency	No. of measurements made	Lowest result	Mean result	High result
kilolitres per day	Continuous during discharge	continuous	0	2	8

Discharge & Monitoring Point 22

Discharge to utilisation area.
Water quality monitoring
Volume Monitoring. - Appin West

Unit of measure	Frequency	No. of measurements made	Lowest result	Mean result	High result
kilolitres per day	Continuous	continuous	0	22	76

Discharge & Monitoring Point 24

Discharge to waters.
Water quality monitoring. Discharge volume monitoring. - Appin West

Unit of measure	Frequency	No. of measurements made	Lowest result	Mean result	High result
kilolitres per day	Continuous	12	0	1058	2231

C Statement of Compliance - Licence Conditions

C1 Compliance with Licence Conditions

(☑ the boxes)

1 Were all conditions of the licence complied with (including monitoring and reporting requirements)? ☐ Yes ✓ No

(✓ a box)

2 If you answered 'No' to question 1, please supply the following details for each non -compliance in the format, or similar format, provided on the following page.

Please use a separate page for each licence condition that has not been complied with.

a) What was the specific licence condition that was not complied with?

b) What were the particulars of the non -compliance?

c) What were the date(s) when the non -compliance occurred, if applicable?

d) If relevant, what was the precise location where the non-compliance occurred?

Attach a map or diagram to the Statement to show the precise location.

e) What were the registration numbers of any vehicles or the chassis number of any mobile plant involved in the non -compliance?

f) What was the cause of the non -compliance?

g) What action has been, or will be, taken to mitigate any adverse effects of the non-compliance?

h) What action has been, or will be, taken to prevent a recurrence of the non-compliance?

3. How many pages have you attached?

Each attached page must be initialled by the person(s) who signs Section G of this Annual Return

5

C2 Details of Non-Compliance with Licence

Licence condition number not complied with
M2.4 Acute and Chronic Toxicity Testing
Summary of particulars of the non-compliance (NO MORE THAN 50 WORDS)
The frequency of the Acute and Chronic toxicity testing at LDP10 did not comply with the monitoring frequency prescribed in condition M2.4.
If required, further details on particulars on non-compliance
The Acute and Chronic toxicity sampling at LDP10 was undertaken on the 11th June 2013 and the 8th August 2013 - which equates to a 58 day interval. The required monitoring frequency is 4 times a year with a minimum interval of 80 days.
Date(s) when the non-compliance occurred, if applicable
08.08.2013
If relevant, precise location where the non-compliance occurred (attach a map or diagram)
LDP10 (Point 10 – refer to location in EPL2504)
If applicable, registration numbers of any vehicles or the chassis number of any mobile plant involved in the non-compliance
N/A
Cause of non-compliance
An administrative error occurred with the scheduling of the Acute and Chronic Toxicity testing program for the August/September period.
Action taken or that will be taken to mitigate any adverse effects of the non-compliance
There were no adverse effects to the environment - administrative non-compliance only.
Action taken or that will be taken to prevent recurrence of the non-compliance
A rolling 12 month monitoring schedule for the Acute and Chronic toxicity sampling program has been developed and communicated to relevant people (sampling personnel and laboratory staff). It is anticipated that the implementation of the 12 month monitoring schedule will eliminate any future sampling frequency non-compliances.

C2 Details of Non-Compliance with Licence

Licence condition number not complied with
L2 Concentration Limits
Summary of particulars of the non-compliance (NO MORE THAN 50 WORDS)
Marginal exceedance of the 100th percentile criteria for Total Suspended Solids (TSS) at LDP10.
If required, further details on particulars on non-compliance
TSS result recorded was 53mg/L (concentration limit of 50mg/L).
Date(s) when the non-compliance occurred, if applicable
07.03.2013
If relevant, precise location where the non-compliance occurred (attach a map or diagram)
LDP10 (Point 10 – refer to location in EPL2504)
If applicable, registration numbers of any vehicles or the chassis number of any mobile plant involved in the non-compliance
Nil
Cause of non-compliance
The primary cause of the non-compliance was two consecutive heavy rainfall events in which the site received 366mm of rain fall over a month. The second heavy rainfall event, in which 166mm fell over a 5 day period, resulted in sediment laden surface runoff entering Brennans Creek Dam via the Clean Water Diversion drains and surface ponds. The site ponds and associated water treatment systems were at capacity and some spillways were operational. In addition, a structural issue was detected in the side wall of the upper emplacement catch pond which resulted in a volume of water being diverted directly into the clean water diversion and reporting to Brennans Creek Dam. It is unlikely that this issue would have contributed to the non-compliance due to the relatively small volume of water released from the pond when compared to the large water storage volume of Brennans Creek Dam.
Action taken or that will be taken to mitigate any adverse effects of the non-compliance
The site was operating in accordance with the approved Water Management Plan (i.e. active water treatment systems were operational hence minimising volume of sediment laden water entering the dam).
Action taken or that will be taken to prevent recurrence of the non-compliance
The site will continue to operate as per the approved Water Management Plan. The pond and dam storage levels will be managed to maximise capture of surface runoff from rainfall events and provide sufficient residence time to minimise suspended particulate matter within the discharge water.

C2 Details of Non-Compliance with Licence

Licence condition number not complied with
L2 Concentration Limits
Summary of particulars of the non-compliance (NO MORE THAN 50 WORDS)
Marginal exceedances of the lower pH concentration limit for LDP10.
If required, further details on particulars on non-compliance
Exceedance recorded via the continuous monitoring equipment. The pH probe was checked for accuracy on the 20th September 2013 – the probe was operating normally and did not require calibration. On the 21st September 2013, the pH level recorded by the probe drifted from approx 8 pH units down to approx 6.5 pH units and stayed at this level until the 23rd September 2013. The pH level returned to normal (expected) levels on the 24th September 2013. Between the 21st September and 23rd September 2013, a total of four measurements were marginally below the limit of 6.5 (refer to Supporting Information section at the rear of the Annual Return).
Date(s) when the non-compliance occurred, if applicable
21.09.2013, 22.09.2013, 23.09.2013.
If relevant, precise location where the non-compliance occurred (attach a map or diagram)
LDP10 (point 10 – refer to location in EPL2504).
If applicable, registration numbers of any vehicles or the chassis number of any mobile plant involved in the non-compliance
N/A
Cause of non-compliance
Non-compliance believed to be as a result of probe error however this is unable to be confirmed. A graph showing the pH trending between the 10/9 and 10/10 is attached – the graph shows that the normal pH levels leading up to and after the low readings were between 8 – 8.5 pH units which suggests that the low readings were likely to be as a result of probe error as a sudden change in pH is unlikely to occur given the large volume of water in Brennans Creek Dam.
Action taken or that will be taken to mitigate any adverse effects of the non-compliance
No adverse effects to the receiving environment were expected as the non-compliances were marginal in nature and occurred over a short duration (i.e. 4 instantaneous measurements over a 3 day period). The recorded readings are likely to be invalid due to a probe error but this is unable to be confirmed. The pH probe was recalibrated on the 27.09.2013 and no further non-compliances have occurred.
Action taken or that will be taken to prevent recurrence of the non-compliance
The following actions have been, or are planned to be, undertaken as a result of this issue: — High and low level alarms (sent via email) against pH limits (upper and lower) have been set up in the sites monitoring system (SCADA) to alert the site Environmental personnel of a potential issue.

C2 Details of Non-Compliance with Licence

Licence condition number not complied with
L2 Concentration Limits
Summary of particulars of the non-compliance (NO MORE THAN 50 WORDS)
Exceedance of the 90th percentile criteria for Dissolved Copper at LDP10. 90th percentile for reporting period was 11ug/L (90th percentile limit: 8ug/L).
If required, further details on particulars on non-compliance
Data based on a total of 40 samples collected between May 2013 and January 2014.
Date(s) when the non-compliance occurred, if applicable
31.01.2014 (refer to the Supporting Information section at the rear of the Annual Return for sample dates and corresponding dissolved copper levels)
If relevant, precise location where the non-compliance occurred (attach a map or diagram)
LDP10 (point 10 – refer to location in EPL2504)
If applicable, registration numbers of any vehicles or the chassis number of any mobile plant involved in the non-compliance
N/A
Cause of non-compliance
Due to the water recycling system and the low rainfall experienced during the reporting period, the dissolved copper levels trended up above the 90th percentile criteria on a number of occasions. The current criterion is set at a level below the historical 90th percentile dissolved copper concentration. This issue has been communicated to the Environmental Protection Authority.
Action taken or that will be taken to mitigate any adverse effects of the non-compliance
Site water management system is operated in such a way to maximise capture of surface water run off to assist in the management of dissolved copper levels in discharge water.
Action taken or that will be taken to prevent recurrence of the non-compliance
Site to continue to operate water management system in such a way to maximise capture of surface water run off to assist in the management of dissolved copper levels in the discharge water. Ongoing discussions and correspondence between Illawarra Coal and the Environmental Protection Authority regarding increasing the licence limit to reflect achievable concentrations given current water management system (note: improvements to discharge water quality from LDP10, including the dissolved copper concentations, will be progressed as part of PRP19).

C2 Details of Non-Compliance with Licence

Licence condition number not complied with
L2 Concentration Limits
Summary of particulars of the non-compliance (NO MORE THAN 50 WORDS)
Routine monthly compliance sampling recorded higher than acceptable BOD levels on 3 occasions during the reporting period. The levels recorded were 38mg/l , 57mg/l & 42mg/l (limit: 30mg/l). Note: Limit increased to 50mg/L (Variation Notice: 1515381).
If required, further details on particulars on non-compliance
Nil
Date(s) when the non-compliance occurred, if applicable
02.09.2013, 14.11.2013, 12.12.2013
If relevant, precise location where the non-compliance occurred (attach a map or diagram)
LDP20 (point 20 – refer to EPL for location)
If applicable, registration numbers of any vehicles or the chassis number of any mobile plant involved in the non-compliance
N/A
Cause of non-compliance
An infestation of mosquito larvae in the clarifying chamber caused blockages in the outlet filter allowing short circuiting to occur within the internal chambers of the Envirocycle system, which does not allow effluent to undergo full treatment hence the increase in BOD levels (2/09/13 & 14/11/13) A power supply issue 12/12/13 at the transfer tank resulted in a surge through the system resulting in a higher BOD
Action taken or that will be taken to mitigate any adverse effects of the non-compliance
No adverse environmental effects were observed – the irrigated water is discharged onto a purpose built irrigation area located on the Appin East site.
Action taken or that will be taken to prevent recurrence of the non-compliance
The following actions have been, or are planned to be, undertaken in response to the non-compliances.: — Access points for mosquitoes to the clarifying chamber have been sealed – no infestations have occurred since; — Discussions with Sydney Water regarding the potential to connect the Appin East pit top to the existing sewer system hence negating the need to irrigate on site; and — The BOD limit associated with Point 20 has been increased to 50mg/L.

D Statement of Compliance - Load-Based Fee Calculation Worksheets

If you are not required to monitor assessable pollutants by your licence, no worksheets will appear below. Please go to Section E.

If assessable pollutants have been identified on your licence (see licence condition L2), complete the following worksheets for each assessable pollutant to determine your load-based fee for the licence fee period to which this Annual Return relates.

Loads of assessable pollutants must be calculated using any of the methods provided in the EPA's Load Calculation Protocol for the relevant activity. A Load Calculation Protocol would have been sent to you with your licence. If you require additional copies you can download the Protocol from the EPA's website or you can contact us on telephone 02 9995 5700.

You are required to keep all records used to calculate licence fees for four years after the licence fee was paid or became payable, whichever is the later date.

PENALTIES APPLY FOR SUPPLYING FALSE OR MISLEADING INFORMATION

D1 - D8 (Not Applicable)

E Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan (PIRMP) Under Section 153A of the POEO Act 1997

1 Have you prepared a PIRMP as required under s153A of the Protection of the Environment Operations Act 1997?

✓ (✓ a box) ✓ Yes ☐No

If you answered 'Yes' to question 1, please tick the appropriate box to indicate the following:

2 Is the PIRMP available at the premises?

(✓ a box) ✓ Yes ☐No

3 Is the PIRMP available in a prominent position on a publicly accessible web site?

(✓ a box) ✓ Yes ☐No

If the PIRMP is available on a publicly accessible web site please indicate clearly below the address of the web site where the PIRMP can be accessed:

Web site Address: http://www.bhpbilliton.com/home/aboutus/regulatory/Documents/Bulli%20Seam%20Operations/Pollution%20Incident%20Response%20Management%20Plan_EPL%202504.pdf

4 Has the PIRMP been tested?

(✓ a box) ✓ Yes ☐No

If you answered 'Yes' to question 4 please indicate clearly below the date that the PIRMP was last tested:

The PIRMP was last tested on: 20 June 2013 (West Cliff – Uncontrolled release of Chlorine Dioxide (mock exercise))

5 Has the PIRMP been updated?

(✓ a box) ☐ Yes ✓ No

If you answered 'Yes' to question 5 please indicate clearly below the date that the PIRMP was last updated:

The PIRMP was last updated on: Not Applicable

6 How many times has the PIRMP been activated in this reporting period? Zero

If the PIRMP has been activated, please indicate clearly below the date/s when the PIRMP was activated:

The PIRMP was activated on: Not Applicable

The EPA's guidelines for preparation of pollution incident response management plans are available at

http://www.epa.nsw.gov.au/legislation/20120227egpreppirmp.htm

F Statement of Compliance - Requirement to Publish Pollution Monitoring Data Under Section 66(6) of the POEO Act 1997

1 Are there any conditions attached to your licence that require pollution monitoring to be undertaken?

(✓ a box) ✓ Yes ☐No

If you answered 'Yes' to question 1, please tick the appropriate box to indicate the following:

2 Do you operate a web site?

(✓ a box) ✓ Yes ☐No

3 Is the pollution monitoring data published on your web site in accordance with the EPA's written requirements for publishing pollution monitoring data?

(✓ a box) ✓ Yes ☐No

If you publish pollution monitoring data on a web site please indicate clearly below the address of the web site where the pollution monitoring data can be accessed:

Web site address http://www.bhpbilliton.com/home/aboutus/regulatory/Documents/_coal/illawarra/bulliseam/140304_coal_illawarra_14DayMonitoringReport.xlsx

The EPA's written requirements for publishing pollution monitoring data are available at http://www.epa.nsw.gov.au/legislation/20120263reqpubpmdata.htm

Note - if you do not maintain a web site, you must provide a copy of any monitoring data that relates to pollution, to any person requests a copy of the data at no charge to the person requesting the data.

G Signature and Certification

This Annual Return may only be signed by a person(s) with legal authority to sign it as set out in the categories below. **Please tick (✓) the box** next to the category that describes how this Annual Return is being signed.

If you are uncertain about who is entitled to sign or which category to tick, please contact us on telephone 02 9995 5700.

If the licence holder is:		the Annual Return must be signed and certified:
an individual	☐	by the individual licence holder, or
	☐	by a person approved in writing by the EPA to sign on the licence holder's behalf
a company	☐	by affixing the common seal in accordance with Corporations Act 2001, or
	✓	by 2 directors, or
	☐	by a director and a company secretary, or
	☐	if a proprietary company that has a sole director who is also the sole company secretary – by that director, or
	☐	by a person delegated to sign on the company's behalf in accordance with the Corporations Act 2001 **and** approved in writing by the EPA to sign on the company's behalf.
a public authority (other than a council)	☐	by the Chief Executive Officer of the public authority, or
	☐	by a person delegated to sign on the public authority's behalf in accordance with its legislation **and** approved in writing by the EPA to sign on the public authority's behalf.
a local council	☐	by the General Manager in accordance with s.377 of the Local Government Act 1993, or
	☐	by affixing the seal of the council in a manner authorised under that Act.

It is an offence to supply any information in this form that is false or misleading in a material respect, or to certify a statement that is false or misleading in a material respect. There is a maximum penalty of $250,000 for a corporation or $120,000 for an individual.

I/We

- *declare that the information in the Monitoring and Complaints Summary in section B of this Annual Return is correct and not false or misleading in a material respect, and*
- *certify that the information in the Statement of Compliance in sections A, C, D, E and F and any pages attached to Section C is correct and not false or misleading in a material respect.*

If your licence has been transferred, suspended, surrendered or revoked by the EPA during this reporting period, cross out the dates below and specify the new dates to which this Annual Return relates below:

For the reporting period 01-Feb-2013 to 31-Jan-2014 or ___/___/___ to ___/___/___

SIGNATURE: _____

NAME: (printed) TROY MCDONALD

POSITION: DIRECTOR

DATE: 17 / 3 / 14

SIGNATURE: _____

NAME: (printed) Michael K. Thorn

POSITION: Director

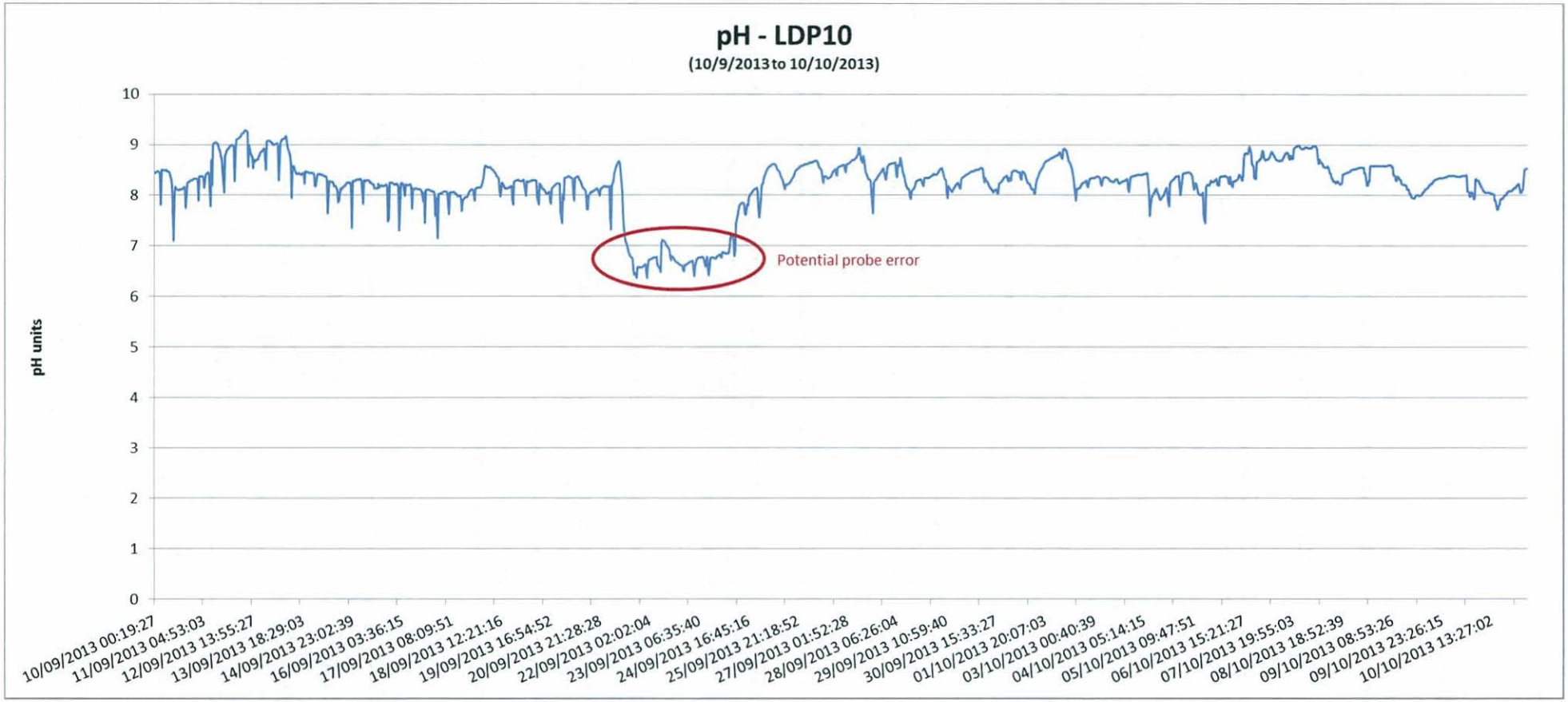
DATE: 17 / 03 / 2014

SEAL (if signing under seal)

PLEASE ENSURE THAT ALL APPROPRIATE BOXES HAVE BEEN COMPLETED AND THAT THE CHECKLIST ON PAGE 2 OF THE ANNUAL RETURN HAS BEEN COMPLETED

SUPPORTING INFORMATION

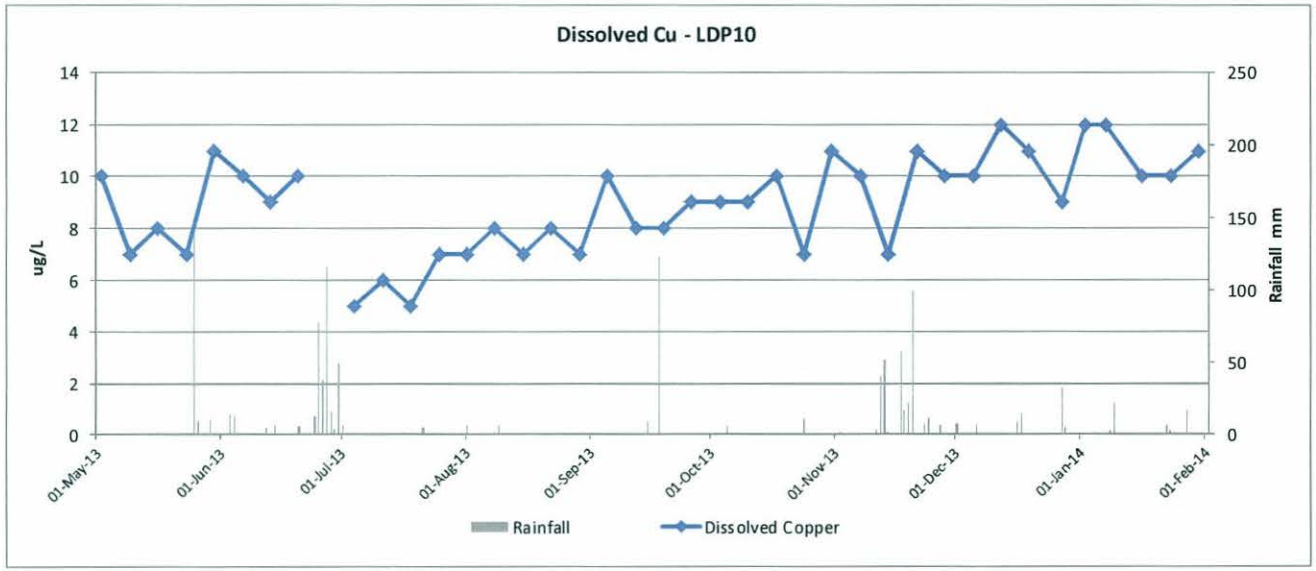
pH trend: LDP10 (10th September to 10th October 2013)



SUPPORTING INFORMATION

Dissolved Copper (Cu) Data used for 90th percentile calculation: LDP10

Date	90th %ile limit 8 ug/L	
2/05/2013	10	
9/05/2013	7	
16/05/2013	8	
23/05/2013	7	
30/05/2013	11	
6/06/2013	10	
13/06/2013	9	
20/06/2013	10	
27/06/2013		No discharge
4/07/2013	5	
11/07/2013	6	
18/07/2013	5	
25/07/2013	7	
1/08/2013	7	
8/08/2013	8	
15/08/2013	7	
22/08/2013	8	
29/08/2013	7	
5/09/2013	10	
12/09/2013	8	
19/09/2013	8	
26/09/2013	9	
3/10/2013	9	
10/10/2013	9	
17/10/2013	10	
24/10/2013	7	
31/10/2013	11	
7/11/2013	10	
14/11/2013	7	
21/11/2013	11	
28/11/2013	10	
5/12/2013	10	
12/12/2013	12	
19/12/2013	11	
27/12/2013	9	
2/01/2014	12	
7/01/2014	12	
16/01/2014	10	
23/01/2014	10	
30/01/2014	11	
Actual 90th %ile	11	



Rainfall data sourced from Darkes Forest Rainfall Station (BOM - 068024)

Appendices continued

Appendix C – FY14 Complaints

Bulli Seam Operations Community Complaints Report
Reporting period: 1 July 2013 – 30 June 2014

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Bulli Seam Operations - Community Complaints Report

Key: BHPB IC = BHP Billiton Illawarra Coal | WSC = Wollondilly Shire Council | SMP = Subsidence Management Plan | MSGD = Mine safety gas drainage | MRD = Medium Radius Drill | LW = Longwall

Operation/Project	Month	Date	Nature of Complaint	Actions / Follow Up
Processing & Logistics	July 2013	4/07/2013	Driver made a complaint about debris falling from truck and damaging windscreen	Reported to logistics team and investigated incident. Further investigation into quality of covers being undertaken
Processing & Logistics	July 2013	5/07/2013	Driver made a complaint about debris falling from truck and damaging windscreen	Reported to logistics team and investigated incident. Further investigation into quality of covers being undertaken
Appin Mine	July 2013	9/07/2013	Complainant raised concerns about coal dust from Appin East Pit Top clogging gutters and the shed	Organised an inspection to inspect dust and revied dust data. Dust data is well under approved levels.
Appin Gas Drainage (Area 9)-RPaD	July 2013	22/07/2013	Resident complained about flare noise from MSGD Site 2 waking them up.	Spoke to the operator who advised that gas flows were within the agreed limits, inspected site and did not identify an adverse noise source. Could be due to adverse weather conditions. Will monitor site over coming week
Processing & Logistics	July 2013	20/07/2013	Driver made a complaint about debris falling from truck and damaging windscreen	reported to logistics team and investigated. Inspections and briefings are being undertaken to ensure coal is loaded correctly
Appin Gas Drainage (Area 9)-RPaD	July 2013	30/07/2013	Resident complained about flare noise from MSGD Site 2 waking them up.	Called operator who advised he would send a technician out to turn down the well. Had a meeting with complainant to discuss outcome.
Appin Gas Drainage (Area 9)-RPaD	August 2013	5/08/2013	Resident complained about noise from flare at MSGD Site 2	Investigated complaint by phoning operator to ensure compliance with gas flow rates and conducting noise monitoring to ensure compliance with government approvals.

Operation/Project	Month	Date	Nature of Complaint	Actions / Follow Up
Appin Gas Drainage (Area 9)-RPaD	August 2013	6/08/2013	Resident complained about noise from flare at MSGD Site 2	Investigated complaint by phoning operator to ensure compliance with gas flow rates and conducting noise monitoring to ensure compliance with government approvals.
Processing & Logistics	September 2013	9/09/2013	Driver complained about windscreen damage incurred on Appin Road after following a BHPB contractor truck	reported to logistics team and investigated. Sweeping to be undertaken of Appin East Mine entrance on Appin Road
Processing & Logistics	September 2013	18/09/2013	A rock hit driver's windscreen on Appin Road and caused shattering.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	September 2013	25/09/2013	A rock hit a driver's windscreen on Appin Road causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	October 2013	1/10/2013	A rock hit a driver's windscreen between Bulli Pass and Wollongong	Reported to Processing and Logistics and investigated incident.
Appin Gas Drainage (Area 9)-RPaD	October 2013	21/10/2013	Resident complained about noise from flare at MSGD Site 2	Phoned project team to report complaint, flares have been turned off for maintenance and noise monitoring will take place once flares are back online
Processing & Logistics	November 2013	22/11/2013	A rock hit a driver's windscreen on Appin Road causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	December 2013	16/12/2013	A rock hits a driver's windscreen on Appin Road causing damage	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	December 2013	27/12/2013	A rock hits a driver's windscreen on Appin Road causing damage	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	December 2013	27/12/2013	A rock hits a driver's windscreen on Appin Road causing damage	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	January 2014	27/01/2014	A rock hits a driver's windscreen on Appin Road causing damage	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	January 2014	29/01/2014	A rock hits a driver's windscreen on Appin Road causing damage	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	January 2014	8/02/2014	A rock hits a driver's windscreen on Appin Road causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	February 2014	10/02/2014	A rock hits a driver's windscreen on Appin Road causing damage	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	February 2014	15/02/2014	A rock hits a driver's windscreen on Appin Road causing damage. Also concerned about the filthy state of the truck.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	March 2014	15/03/2014	A rock hits a driver's windscreen on Wedderburn Road causing damage.	Reported to Processing and Logistics and investigated incident.

Operation/Project	Month	Date	Nature of Complaint	Actions / Follow Up
Processing & Logistics	March 2014	19/03/2014	A rock hit driver's windscreen on Appin Road causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	March 2014	19/03/2014	A rock hit driver's windscreen on Appin Road causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	March 2014	19/03/2014	A rock hit driver's windscreen on Appin Road causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	March 2014	25/03/2014	A rock hit driver's windscreen on Appin Road causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	March 2014	28/03/2014	A rock hit driver's windscreen on M1 Motorway causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	March 2014	28/03/2014	A rock hit driver's windscreen on Appin Road causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	April 2014	6/04/2014	A rock hit driver's windscreen on Appin Road causing damage	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	April 2014	11/04/2014	A rock hit driver's windscreen on Appin Road causing damage	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	April 2014	14/04/2014	A rock hit driver's windscreen on Appin Road causing damage	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	April 2014	27/04/2014	A rock hit driver's windscreen on Appin Road causing damage	Reported to Processing and Logistics and investigated incident.
Appin East pit top	May 2014	18/05/2014	Resident complained about banging noise coming from Appin East Pit Top.	Noise source identified as emptying of four waste bins on site. Activity had ceased prior to complaint being made. Site Team to monitor.
Processing & Logistics	May 2014	27/05/2014	A rock hit driver's windscreen on Appin Road causing damage	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	June 2014	1/06/2014	A piece of coal fell off truck and hit driver's lights on Appin Road, causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	June 2014	5/06/2014	A piece of coal fell off truck and hit driver's windscreen on Appin Road, causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	June 2014	10/06/2014	A piece of coal fell off truck and hit driver's lights on Appin Road, causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	June 2014	13/06/2014	A rock hit driver's windscreen on Appin Road, causing damage.	Reported to Processing and Logistics and investigated incident.
Processing & Logistics	June 2014	26/06/2014	A piece of coal fell off truck and hit driver's lights and windscreen on Appin Road, causing damage.	Reported to Processing and Logistics and investigated incident.

Appendices continued

Appendix D – BSO EPBC Approval 2010/5350 Compliance Report

Bulli Seam Operations Annual Compliance Report – August 2014 (EPBC 2010/5350)

Date of submission: 15 August 2015
BHPBIC Website Upload Date: 15 August 2014
Abbreviations:
DOE – Federal Department of the Environment
DOPE – NSW Department of Planning and the Environment
OEH – NSW Office of Environment and Heritage
CCL – Consolidated Coal Lease
UOW – University of Wollongong
EPBC – Environment Protection and Biodiversity Conservation
In accordance with condition 14 of the EPBC approval (2010/5350) within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the department at the same time as the compliance report is published.

Condition	Condition Summary	Status	Compliant Y/N
1	Persoonia Hirsuta Provide proposed *Persoonia hirsuta* offset area for approval.	Proposed off-set area submitted to DOE in the Persoonia hirsuta Offset Management Plan. Application submitted on 26 Nov 2013 to amend CCL724 via a s238 Condition under the Mining Act 1992 to legally secure a Persoonia Offset Area at West Cliff Mine as required by our Bulli Seam Operations EPBC Approval (2010/5350). The Minister for Resources and Energy amended CCL 724 on 23 March 2014.	Yes
2	Persoonia Hirsuta Develop a management plan for the *Persoonia hirsuta* offset area.	Persoonia management plan was submitted to DOE prior to the 31st December 2012 and approved on 22 November 2013 (ref 2013/10882). Plan is available on our website.	Yes
3	Persoonia Hirsuta Engage a suitably qualified expert to undertake targeted research to inform conservation activities. Make research publicly available.	Research has commenced in conjunction with the UOW. Project #1 – Demography and Habitat study completed in Nov 2013. Genetic study currently ongoing. Mt Annan Royal Botanic Gardens have been engaged to undertake propagation trials (ongoing).	Yes
4	Shale/Sandstone Transition Forest Conduct an ecological survey that demonstrates quality and extent of proposed offset area. Setup mechanism to protect the shale/sandstone transition forest offset in perpetuity.	Ecological survey completed and submitted to DOE on the quality and extent of the shale/sandstone transition forest. IC submitted a request to extend time to secure the SSTF area for conservation. Mechanism being established in consultation with OEH, the DOPE and DOE.	Yes
5	Shale/Sandstone Transition Forest Develop a management plan for shale/sandstone transition forest.	Management plan completed and submitted to DOE and approved by DOE. Plan is available on our website. IC submitted a request to amend Table 11 of the approved SSTF Offset MP – Still awaiting approval from DOE.	Yes
6	Coal Wash Emplacement Staging and Rehabilitation Plan Develop a Coal Wash Emplacement Staging and Rehabilitation Plan for stage 4 coal wash emplacement area.	Emplacement management plan incorporates staging and rehabilitation for stage 4 coal wash emplacement area. Plan submitted 30th June 2013. Plan revised following feedback from OEH and DOP; Plan re-submitted to DOPE and approved on 25 July 2014 by DOPE. Plan re-submitted to DOE for subsequent approval on 28 July 2014. Still awaiting approval from DOE	Yes

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Condition	Condition Summary	Status	Compliant Y/N
7	Southern Brown Bandicoot and Broad Headed Snake Management Plan or Plans Develop a Southern Brown Bandicoot and Broad Headed Snake conservation management plan or plans.	Draft Plans completed and submitted to DOE on the 15th May 2013. Plans revised following comments from DOE and OEH. Final Plans re-submitted to DOE and OEH on 29 April 2014. Plans approved on the 28 May 2014. Plans are available on our website.	Yes
8	Surface and Ground Water Quality Monitoring and Adaptive Management Plan Develop a Surface and Ground Water Quality Monitoring and Adaptive Management Plan for species listed in the EPBC Act.	Draft Plan completed and submitted on the 30th September 2012 to DOE. Plan revised following comments from DOE. Final Plan approved on 3 July 2014.	Yes
9	Mine Closure Environmental Management Plan Develop a mine closure plan 3 years prior to closure for EPBC Act listed species.	Current mining plan is for next 30 years, therefore plan not required.	Yes
10	Mine Closure Environmental Management Plan Management for EPBC listed bats through the decommissioning of mining equipment.	Plan not yet submitted. To be submitted in the mine closure plan.	Yes
11	Shapefiles Provide offset area shapefiles to the DOE.	Shapefiles provided on 26 November 2013.	Yes
12	Notification of Actual Date of Commencement Notification date of commencement to be supplied to DSEWPaC.	Letter sent to DOE 31 May 2012.	Yes
13	Publication Requirements publish all management plans, reports, strategies or agreements with DSEWPaC	Undertaken as required. See website.	Yes
14	Compliance Report Publish a report on website addressing compliance with each of the conditions of this approval.	This compliance report meets this condition. The 2013 compliance report was submitted; however, the date was five days after the due date required by the condition. This was found to be non-compliant due to late submission of the compliance report. The 2014 report was sent to BHP Billiton corporate office on 15 August 2014 to upload to the website.	Yes – See comments regarding the 2013 report.
15	Accurate Records Must be Maintained Maintain accurate records substantiating all activities associated with or relevant to the conditions of approval.	Documents are maintained in the Illawarra Coal controlled document registers.	Yes
16	Minister's Approval of the Modification to a Management Plan, Report, Strategy or Agreement Apply to the minister for approval to modify management plans, reports, strategies or agreements.	Undertaken as required. BHPBIC submitted an application to modify the Shale Sandstone Transition Forest Offset Management Plan. The approval letter has not yet been received from DOE.	Yes
17	Minister's Modification to a Management	No requests have been received from the minister.	Yes

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Condition	Condition Summary	Status	Compliant Y/N
	Plan, Report, Strategy or Agreement Comply with the minister's request to modify management plans, reports, strategies or agreements.		
18	Independent Auditor Commission and pay the full cost for independent environmental auditor of the project.	Independent Environmental Audit was conducted by URS. The Audit commenced December 2013 and was completed in February 2014; the report was provided to Illawarra Coal on 2nd April 2014. A copy of the report was provided to DOE to satisfy Condition 18 (g). EPBC condition (14) was found to be non-compliant due to late submission of the 2013 compliance report (5 days late). BHPBIC currently arranging for this report to be published on the website.	Yes
19	Unsatisfactory Commencement of Action If work is not commenced within 5 years of approval, written approval needs to be obtained from the minister.	Work commenced 15th May 2012 as per date of commencement letter sent to Department of the Environment.	Yes

Appendix E - BSO Consent Compliance Report and Summary of Non-compliances in the Independent Environmental Audit Conducted Dec 2013.

BSO Consent Condition Checklist
Project Approval – Environmental Planning and Assessment Act 08_0150

Schedule 2 – Administrative Conditions

Condition	Condition Summary	Status
	Obligation to Minimise Harm to the Environment Prevent and/or minimise any harm to the environment.	Management Plans developed and implemented to minimise harm to the environment.
	Terms of Approval Carry out projects in accordance with the EA, Statement of Commitments, PPR and conditions of this approval.	Management Plans and monitoring developed to meet EA, Statement of Commitments, PPR and conditions of this approval.
	Terms of Approval If there is any inconsistency between the above documents, the more recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.	Not triggered during the Reporting Period.
	Terms of Approval Comply with any reasonable requirement/s of the Director-General arising from the Department's assessment of: (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this approval; and (b) the implementation of any actions or measures contained in these documents.	Requirements from Director General included in the Management Plans.
	Limits on Approval – Mining Operations Carry out mining operations on the site until 31 December 2041.	Not triggered during the Reporting Period.
	Limits on Approval – Coal Extraction and Production Ensure that no more than 10.5 million tonnes of ROM coal is extracted from the site in a financial year, or transport more than 9.3 million tonnes of product coal from the site in a financial year.	FY14 – ROM Coal – 6.1MT FY14 – Product Coal transported – 7.4MT
	Limits on Approval – Hours of Operation Undertake mining operations 24 hours a day, 7 days a week.	Mining operations are in accordance with hours of operation.
	Surrender of Consents and Approval Surrender all existing development consents and project approvals for mining operations relied on by the Proponent for the site (other than this approval) in accordance with Sections 75YA and 104A of the EP&A Act.	Letters sent on 29 July 2014 to DoPE and 1 Aug 2014 to WSC advising that Illawarra Coal Holdings Pty Ltd surrenders all existing development consents and project approvals for mining (including Wollondilly Shire Council approvals for: Shaft and Electrical Substation 22 January 1972; Appin Mine 22 February 1972; West Cliff Mine 17 April 1975; West Cliff Extended 3 September 1986; Washing of Appin Coal at West Cliff 25 March 1997) operations relied on by the Proponent for the site (other than the Bulli Seam Operations Approval), subject to and in accordance with the regulations.
	Surrender of Consents and Approval Prior to the surrender of these consents and/or approvals, the conditions of this approval (including any notes) shall prevail to the extent of any inconsistency with the conditions of these consents and/or approvals.	Conditions transferred to updated management plans.
	Structural Adequacy Ensure all new buildings and structures, and any alterations or additions to existing buildings and structure that are part of the project are constructed in accordance with the relevant	New buildings and structures were project managed by the engineering team to the relevant building codes.

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	requirements of the BCA and any additional requirements of the MSB where the building or structure is located on land within declared Mine Subsidence Districts.	
	Demolition Ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures,* or its latest version.	No demolition carried out in the reporting period.
	Operation of Plant and Equipment Ensure that all plant and equipment used at the site is maintained in a proper and efficient condition and is operated in a proper and efficient manner.	Operations are conducted in accordance with approved management plans. Daily, weekly and monthly inspections of plant, equipment and site areas are conducted. This includes a number of system generated maintenance work orders. Regular site environmental inspections are undertaken to address inspections for leaking machinery and equipment. Mine machinery and equipment are maintained and serviced accordingly.
	Staged Submission of Strategies, Plans or Programs Submit any strategies, plans or programs required by this approval on a progressive basis.	Management Plans submitted as required.

Schedule 3 – Specific Environmental Conditions – Underground Mining

Condition	Condition Summary	Status / Other documents
1.	Subsidence – Performance Measures – Natural and Heritage Features, etc Ensure that the project does not cause any exceedances.	Condition not triggered during Reporting Period.
2.	Offsets Provide a suitable offset to compensate for the impact or environmental consequence.	Condition not triggered during Reporting Period.
3.	Performance Measures – Built Features Ensure that the project does not cause any exceedances of performance measure.	Condition not triggered during Reporting Period.
4.	Performance Measures – Built Features Any dispute between the Proponent and the owner of any built feature over the interpretation is to be settled by the Director-General.	Condition not triggered during Reporting Period.
5.	Extraction Plans Prepare and implement an Extraction Plan for first and second workings within each longwall mining.	SMP's and Extraction Plans prepared as required. Approved plans are available on the regulatory website. http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx
6.	Extraction Plans Ensure that the management plans include an assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this approval and a detailed description of the measures that would be implemented to remediate predicted impacts.	Link to Subsidence Management Plans and Extraction Plans http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx
7.	First Workings Carry out first workings within the project area, other than in accordance with an approved extraction plan.	Link to Subsidence Management Plans and Extraction Plans http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx
8.	Payment of Reasonable Costs Pay all reasonable costs incurred by the Department to engage suitably qualified, experienced and independent experts to review the adequacy of any aspect of an Extraction Plan.	Condition not triggered during Reporting Period.
9.	Improved Understanding and Prediction of Subsidence Impacts Prepare and implement a program to improve its prediction and understanding of subsidence impacts (in particular sub-surface impacts and impacts on groundwater resources).	BSO Environmental Research Program submitted to the Director General and other government agencies for consideration (12th September 2012). No feedback to date.
10.	Improved Understanding and Prediction of Environmental Consequences on Significant Natural Features Prepare and implement a Research Program and allocate $1,000,000 in total to this program for expenditure over a period of seven years from the date of the program's approval.	BSO Environmental Research Program submitted to the Director General and other government agencies for consideration (12th September 2012). No feedback to date.

Schedule 4 – Specific Environmental Conditions - General

Condition	Condition Summary	Status / Other documents
1.	Noise – Noise Impact Assessment Criteria Ensure that the noise generated does not exceed the identified criteria at any residence on privately-owned land or on more than 25 percent of any privately-owned land.	No exceedances of the noise criteria (for Appin East recievers) are attributed to mine related noise.
2.	Noise – Noise Impact Assessment Criteria Ensure noise generated does not exceed the identified criteria at any residence on privately-owned land or on more than 25 percent of any privately-owned land.	As above.
3.	Noise Mitigation Implement noise mitigation measures upon receiving written request from identified residents.	No requests received during the Reporting Period.
4.	Operating Conditions The Proponent shall: (a) implement best management practice, including all reasonable and feasible noise mitigation measures, to minimise the construction, operational and road traffic noise generated by the project; (b) operate a comprehensive noise management system on site that uses real-time noise monitoring data for mining operations and the implementation of noise mitigation measures to ensure compliance with the relevant conditions of this approval; and (c) regularly assess the real-time noise monitoring to ensure compliance with the relevant conditions of this approval, to the satisfaction of the Director-General.	Link to Noise Mgmt. Plan http://www.bhpbilliton.com/home/society/regulatory/Documents/_coal/illawarra/bulliseam/140718_coal_illawarra_bulliseam_NoiseManagementPlan.pdf
5.	Noise Management Plan Prepare and implement a Noise Management Plan.	Plan submitted and approved. http://www.bhpbilliton.com/home/society/regulatory/Documents/_coal/illawarra/bulliseam/140718_coal_illawarra_bulliseam_NoiseManagementPlan.pdf
6.	Road Traffic Noise Mitigation If after the end of June 2013, road traffic noise generated by the project (including employee vehicles) results in an exceedance by more than 2 dB(A) of the NSW criteria for road traffic noise on Douglas Park Drive or Macarthur Road at any residence on privately-owned land, then the Proponent shall, upon receiving a written request from the landowner, implement reasonable and feasible noise mitigation measures (such as double-glazing, insulation, and/or air conditioning) at the residence in consultation with the landowner. 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.	Condition not triggered during Reporting Period.
7.	Air Quality & Greenhouse Gas – Odour Ensure that no offensive odours are emitted from the site.	Condition not triggered during Reporting Period.

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8.	Greenhouse Gas Emissions Implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site.	Link to Air Quality and GHG Mgmt. Plan http://www.bhpbilliton.com/home/society/regulatory/Documents/_coal/illawarra/bulliseam/131113_coal_illawarra_bulliseam_AirQualityandGreenhouseGasManagementPlanV2.pdf
9.	Air Quality Criteria Ensure all reasonable and feasible avoidance and mitigation measures are employed so that the particulate emissions generated by the project do not exceed the criteria.	Link to Air Quality and GHG Mgmt. Plan http://www.bhpbilliton.com/home/society/regulatory/Documents/_coal/illawarra/bulliseam/131113_coal_illawarra_bulliseam_AirQualityandGreenhouseGasManagementPlanV2.pdf
10.	Air Quality Acquisition Criteria If the particulate matter emissions generated by the project exceed the criteria in Tables 7, 8 and 9 at any residence on privately-owned land or on more than 25 percent of any privately owned land, then upon receiving a written request for acquisition from the landowner the Proponent shall acquire the land in accordance with the procedures in Conditions 5 - 6 of Schedule 5.	Condition not triggered during Reporting Period.
11.	Operating Conditions Implement best practice air quality management on site, including all reasonable and feasible measures to minimise the off-site odour, fume and dust emissions generated by the project, including from any spontaneous combustion on site.	Link to Air Quality and GHG Mgmt. Plan http://www.bhpbilliton.com/home/society/regulatory/Documents/_coal/illawarra/bulliseam/131113_coal_illawarra_bulliseam_AirQualityandGreenhouseGasManagementPlanV2.pdf
12.	Air Quality & Greenhouse Gas Management Plan Prepare and implement a detailed Air Quality & Greenhouse Gas Management Plan.	Link to Air Quality and GHG Mgmt. Plan http://www.bhpbilliton.com/home/society/regulatory/Documents/_coal/illawarra/bulliseam/131113_coal_illawarra_bulliseam_AirQualityandGreenhouseGasManagementPlanV2.pdf
13.	Meteorological Monitoring Ensure that there is a suitable meteorological station operating in the vicinity of the site.	Weather station installed at West cliff Mine. Additional weather stations were installed at Appin Mine and No. 6 Shaft Site during next Reporting Period.
14.	Compensatory Water Supply Provide a compensatory water supply to any owner of privately-owned land whose water supply is adversely impacted (other than an impact that is negligible) as a result of the project.	Water supplied as per the management plan.
15.	Surface Water Discharge Ensure all surface water discharges from the site (including from the Brennans Creek Dam) comply with the discharge limits (both volume and quality) set for the project in any EPL.	Surface water discharge monitored in accordance with the EPL. http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=33589&SYSUID=1&LICID=2504
16.	Surface Water Management Plan Prepare and implement a Surface Water Management Plan.	Plan submitted and approved. Link to Surface Water Mgmt. Plan http://www.bhpbilliton.com/home/society/regulatory/Documents/Bulli%20Seam%20Operations/2013/BulliSeam_SurfaceWater_Management_Plan.pdf
17.	West Cliff Coal Wash Emplacement Area – West Cliff Coal Wash Emplacement Area Management Plan Prepare and implement a West Cliff Coal Wash Emplacement Area Management Plan.	Plan submitted, and approved by the DoPE. http://www.bhpbilliton.com/home/society/regulatory/Documents/_coal/illawarra/bulliseam/140812_coal_illawarra_bulliseam_WestCliffCoalWashEmplacementAreaManagementPlan.pdf
18.	West Cliff Coal Wash Emplacement Area Biodiversity Offset Strategy Provide a suitable biodiversity offset strategy to compensate for the	The West Cliff Coal Wash Emplacement Area Offset Strategy is

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	impacts of Stage 4 of the West Cliff Coal Wash Emplacement Area.	currently in preparation. Preliminary consultation has been undertaken with DoPI and OEH.
19.	West Cliff Coal Wash Emplacement Area Biodiversity Offset Strategy Provide appropriate long-term security for the offset areas by 31 December 2012.	On 20 December 2012, the Director-General of Planning and Environment granted an extension to 31 December 2014 for the submission of the West Cliff Coal Wash Emplacement Area Biodiversity Offset Strategy.
20.	Underground Coal Wash Emplacement Trial Prepare and undertake an Underground Coal Wash Emplacement Trial.	IC is yet to receive feedback on the draft plan that was provided. We will re-engage the Dept. outlining our preferred Consent Condition - Meeting held with DoPE in May 2014. Discussions ongoing.
21.	Project Surface Infrastructure Management – Gas Drainage Management Plan Prepare and implement a Gas Drainage Management Plan.	Plans submitted and approved. http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=33589&SYSUID=1&LICID=2504
22.	Service Boreholes Management Plan Prepare and implement a Service Boreholes Management Plan.	Link to Borehole Mgmt. Plan http://www.bhpbilliton.com/home/society/regulatory/Documents/Bulli%20Seam%20Operations/BulliSeam_Service_Boreholes_Management_Plan.pdf
23.	Personal Emergency Device (PED) Communication Management Plan Prepare and implement a PED Communications Management Plan.	Plan has not been required. There are no plans to install a PED cable as technology has advanced and the BSO communications systems are being installed underground.
24.	Heritage – Heritage Management Plan Prepare and implement a Heritage Management Plan.	Plan submitted and approved. Link to Heritage Mgmt. Plan http://www.bhpbilliton.com/home/society/regulatory/Documents/_coal/illawarra/bulliseam/130717_coal_illawarra_bulliseam_HeritageManagementPlan.pdf
25.	Transport – Monitoring of Coal Transport Keep accurate records of the amount of coal transported from the site (on a daily basis) and make these records publicly available on its website at the end of each financial year.	Documents are maintained in the Illawarra Coal document registers. Records are on our website: http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx
26.	Traffic Management Plan Prepare and implement a Traffic Management Plan.	Plan was developed and submitted to the Director General on 21/12/2013; however, the plan has not been formally approved. RMS is reviewewing the concept for the road intersection with Appin and Wedderburn Roads prior to endorsement.
27.	Visual – Visual Amenity and Lighting Minimise the visual impacts, and particularly the off-site lighting impacts, of the main infrastructure area and associated ancillary surface works.	Lighting setup in accordance with consent conditions. During the next reporting period, Illawarra Coal will undertake assessments of visual lighting. The assessments will be done in accordance with the requirements of the relevant Australian Standard.
28.	Waste Minimise the waste (including coal reject) and ensure that the waste generated by the project is appropriately stored, handled and disposed of.	Waste management in accordance with the waste management plan.
29.	Waste Prepare and implement a Waste Management Plan.	Link to Waste Mgmt. Plan http://www.bhpbilliton.com/home/society/regulatory/Documents/Bulli%20Seam%20Operations/2013/BulliSeam_Waste_Management_Plan.pdf
30.	Bushfire Management Ensure that the project is suitably equipped to respond to any fires on site; and assist the Rural Fire Service and emergency services as	Sites are equipped to manage bushfires. Asset protection zones are maintained.

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	much as possible if there is a fire in the surrounding area.	
31.	Rehabilitation – Rehabilitation Objectives Rehabilitate the site to describe satisfactory level.	Rehabilitation conducted in accordance with rehabilitation management plan.
32.	Progressive Rehabilitation Carry out the rehabilitation of the site progressively.	Rehabilitation conducted in accordance with rehabilitation management plan.
33.	Rehabilitation Management Plan Prepare and implement a Rehabilitation Management Plan.	Plan submitted and approved in 2012. Link to Mining Operations Plan/RMP http://www.bhpbilliton.com/home/society/regulatory/Documents/Bulli%20Seam%20Operations/2013/BulliSeam_MOP_Rehabilitation_Management_Plan_2012-19.pdf

Schedule 5 – Additional Procedures

Condition	Condition Summary	Status / Other documents
1.	Notification of Landowners Notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the project is again complying with the relevant criteria.	Condition not triggered during Reporting Period.
2.	Independent Review As required commission a suitably qualified, experienced and independent person, to consult with the landowner to determine his/her concerns, conduct monitoring to determine whether the project is complying with the relevant criteria.	Condition not triggered during Reporting Period.
3.	Independent Review If the independent review determines that the project is complying with the relevant criteria in Schedule 4, then the Proponent may discontinue the independent review with the approval of the Director-General. If the independent review determines that the project is not complying with the relevant impact assessment criteria in Schedule 4, and that the project is primarily responsible for this non-compliance, then the Proponent shall: (a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent person, and conduct further monitoring until the project complies with the relevant criteria; or (b) secure a written agreement with the landowner to allow exceedances of the relevant criteria, to the satisfaction of the Director-General. If the independent review determines that any relevant acquisition criteria in schedule 4 are being exceeded and that the project is primarily responsible for this non-compliance, then upon receiving a written request from the landowner, the Proponent shall acquire all or part of the landowner's land in accordance with the procedures in Conditions 4-5 below.	Condition not triggered during Reporting Period.
4.	Land Acquisition Make a binding written offer to the landowner within 3 months of receiving a written request.	Condition not triggered during Reporting Period.
5.	Land Acquisition Pay all reasonable costs associated with the land acquisition process.	Condition not triggered during Reporting Period.

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Schedule 6 – Environmental Management, Reporting and Auditing

Condition	Condition Summary	Status / Other documents
1.	Environmental Management Strategy Prepare and implement an Environmental Management Strategy for the project.	Strategy submitted and approved. Link to Environmental Management Strategy. http://www.bhpbilliton.com/home/society/regulatory/Documents/Bulli%20Seam%20Operations/Bulli%20Seam%20Operations%20Project%20Environmental%20Management%20Strategy.pdf
2.	Management Plan Requirements Ensure management plans required under this approval are prepared in accordance with any relevant guidelines.	Management Plans are prepared in accordance with relevant guidelines.
3.	Adaptive Management Assess and manage project-related risks.	Condition not triggered during Reporting Period.
4.	Annual Review Review the environmental performance of the projects.	Refer to 2014 AEMR
5.	Revision of Strategies, Plans and Programs Review and revise strategies, plans and programs within 3 months of the annual review, the submission of an incident report, submission of an audit report and/or modification to the conditions of this approval.	Plans were reviewed as required by the recommendations in the Triennial Audit Report. The BSO noise MP was resubmitted and approved by the DoPE.
6.	Community Consultative Committee Establish and operate a new Community Consultative Committee (CCC) which must be operated in general accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects* (Department of Planning, 2007, or its latest version), and be operating by 30 September 2012.	Community Consultative Committee is operational in accordance with the Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects.
7.	Reporting – Incident Reporting Notify the Director-General and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment and provide a detailed report on the incident.	Condition not triggered during Reporting Period.
8.	Regular Reporting Regularly report on the environmental performance on the website.	Link to BSO 14 Day EPL Reporting and BSO Project Approval monitoring requirements. http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx
9.	Independent Environmental Audit Commission and pay the full cost for independent environmental auditor of the project.	URS Australia Pty Ltd was engaged by IC to carry out an Independent Environmental Audit of the BSO. The audit commenced December 2013 and was completed in February 2014; the report was provided to IC on 2nd April 2014. Overall good compliance levels were achieved across approval and licence conditions with only 4 non-compliances and 3 indeterminates. 3 out of the 4 non-compliances related to previously reported EPL 2504 non-compliances; and Other non-compliance related to submission of 2013 Annual Report (EPBC approval) being 5 days late.
10.	Independent Environmental Audit Within 6 weeks of the completion of this audit provide a copy of the	As above.

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	audit report.	
11.	Access to Information From 30 June 2012, make copies of specified documents publically available on the website and keep them up to date.	Link to BHPB Website. All approved plans, strategies and monitoring results are on the BHPB Regulatory Webpage. http://www.bhpbilliton.com/home/society/regulatory/Pages/default.aspx

Table 13-1 Summary of conditions / requirements assessed as non-compliant or indeterminate and recommendations

Condition / Requirement No.	Summary of Condition / Requirement	Comment	Compliance Status and Recommendation
PA 08_0150 – Schedule 2, Condition 8	**SURRENDER OF CONSENTS AND APPROVALS** By 31 December 2012, or as otherwise agreed by the Director-General, the Proponent shall surrender all existing development consents and project approvals for mining operations relied on by the Proponent for the site (other than this approval) in accordance with Sections 75YA and 104A of the EP&A Act.	Existing development consents and Project Approvals for mining operations with the exception of existing and proposed building works under Part 4A of the *Environment Planning and Assessment Act 1979* were relinquished during the audit period. The only evidence to support this was provided in the 2012/2013 Annual Environmental management Report (AEMR) (p.10). At the time of the audit Appin Gas Drainage Project Areas 7 and 9 (PA 08_0256) and Appin Ventilation Shaft No. 6 Project (PA 10_0079) were subject to the requirements of separate Project Approvals that had not been surrendered in accordance with Condition 8, Schedule 2 of PA 08_0150. No correspondence with Planning and Infrastructure was available to demonstrate that the Director General had agreed that these projects not be surrendered or that operations and activities associated with these projects would be managed in accordance with the previously approved Project Approvals. On this basis, compliance with this condition is considered Indeterminate.	Indeterminate **Recommendation** Confirm with relevant agencies appropriate Approvals have been surrendered as per the requirements of Condition 8, Schedule 2.
PA 08_0150 – Schedule 4, Condition 15	**Surface Water Discharges** The Proponent shall ensure that all surface water discharges from the site (including from the Brennans Creek Dam) comply with the discharge limits (both volume and quality) set for the project in any EPL.	The Water Management Plan identifies Licenced Discharge Points (LDPs) as specified in EPL 2504. The plan describes the treatment processes and the waters reporting to each LDP as well as measures to manage and minimise water use at the three BSOP sites. The Water Management Plan requires that water monitoring be conducted in accordance with the requirements of EPL 2504. A sample of data (04/04/2012 to 12/12/2013) from the 14 day monitoring data exceedances correlated with non-compliances reported in the Annual Return for 2012/2013. The site inspection identified ICHPL have installed automated monitoring equipment at a number of LDPs. BSOP personnel report on the monitoring required at LDP. Monitoring reports are available online providing the results of monitoring carried out at the LDPs for each of the BSOP sites. ICHPL has recorded non-compliances at West Cliff Colliery, Appin East and Appin West. Non-compliances are reported in 1SAP and formally reported in the Annual Returns to the EPA. Annual returns for the audit period were available for review. The EPA website accessed on 16/01/2013 for EPL 2504 identified the following number of non-conformances concerning surface water discharges: • 2011/2012 Annual Return: - Condition L2, six occurrences. EPA comments '*BOD, pH exceedances at West Cliff and Appin STPs, TSS exceedance at Appin West. Exceedances not environmentally significant. Corrective actions have been adopted to prevent a recurrence*.' - Condition L3, three occurrences. EPA comments '*Exceedance of discharge volume limit at LDP 22 Appin. The STP & irrigation system had recently been upgraded & the flow limit switch was not operational. No environmental impact expected. Programable Logic Controller (PLC) installed March 2013*.' - Condition M2, two occurrences. EPA comments '*Sample not collected on 30 April, due to miscommunication between contractor & BHP. Samples were collected on 2 May. Illawarra Coal now undertakes a fortnightly review of all Environmental data including Certificate of analysis & Chain of Custody*.' • 2012/2013 Annual Return: - Condition O4.1, one occurrence. EPA comments '*Runoff from Point 3 effluent irrigation area. Runoff collected and treated in site's dirty water collection system. A Programable Logic Controller (PLC) installed to control effluent irrigation*.' - Condition L3, 13 occurrences. EPA comments '*Limit exceedances at effluent irrigation areas. Inconsistent treatment plant operation resulted in algal growth. Treatment plant upgraded in 2011/12, and also improved maintenance. Environmental impacts unlikely*.' - Condition M2, two occurences. EPA comment '*A single sample not collected/analysed as pump system out of service at time of sampling at Point 3, and one dust sample not collected. No environmental impact as a result of non-compliance.*' - Condition M6, one non-compliance. EPA comments '*Flow data from LDP1 could not be located for the discharge in June 2011 as monthly field sheet misplaced. Data now recorded and e-mailed to Env staff weekly. A piezometer will be installed & data will be sent daily via telemetry into a database*.' It is noted that for each non-compliant condition the EPA noted that appropriate action had been taken by the licensee. The outlet at Brennan's Creek Dam (LDP 010 at West Cliff Colliery) regularly records non-compliance for the slight exceedance of Copper concentration. ICHPL reported that discussions are ongoing with the EPA concerning the exceedance of Copper. Minutes of a meeting between ICHPL and the EPA on 6 March 2014 indicate that the potential to change the Copper limit in the EPL was discussed and that ICHPL should submit an EPL variation request based on recent monitoring data. Water monitoring results are reviewed every 14 days and uploaded to the BSOP website.	Non-compliant **Recommendation** As discussed with the EPA (minutes of meeting 6 March 2014), ICHPL to submit an EPL variation request based on recent monitoring data.

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PA 08_0150 – Schedule 4, Condition 20	**Underground Coal Wash Emplacement Trial** The Proponent shall prepare and undertake an Underground Coal Wash Emplacement Trial for the project to the satisfaction of the Director-General. The design of the trial must: a) be undertaken in consultation with OEH; b) be submitted to the Director-General for approval by the end of December 2012; c) contain a two year program to undertake both pilot scale and demonstration scale trials of underground coal wash disposal; d) include commitments for ongoing development and/or implementation of underground emplacement options following this two-year trial; and e) include 6 monthly progress reporting to the Department and OEH.	The following was noted concerning the Underground Coal Wash Emplacement Trial: a) An Underground Coalwash Emplacement Research and Trial draft proposal/plan for West Cliff Colliery dated December 2012 was available for the auditors to review. The draft proposal/plan notes that the plan was provided to the OEH and where appropriate feedback has been incorporated into the plan, however; the OEH did not provide feedback concerning the draft proposal/plan. b) A letter dated 11/12/2012 from ICHPL to the Wollongong EPA concerning submission of the draft plan prior to formal submission was available for review. A letter dated 19/12/2012 from ICHPL to Planning and Infrastructure concerning submission of the draft proposal/plan was available for review. ICHPL management reported that no formal communications has been received from Planning and Infrastructure concerning the draft proposal/plan. c) A preliminary project schedule (Section 2.6) was included in the draft proposal/plan. It is noted that the schedule included a set of assumptions and would be revised during the detailed planning phase of the research plan. The schedule had not been implemented at the time of the audit as consultation had not been received from OEH. d) The draft proposal/plan included commitments for ongoing development and/or implementation of underground emplacement options following this two-year trial. e) Given the trial had not commenced as formal approval from the Director-General had not been granted or feedback received from OEH, no progress reports have been prepared. Given no formal approval had been received at the time of the audit this Condition was found to be indeterminate.	Indeterminate **Recommendation** It is recommended that ICHPL update the Director-General concerning the status of the Underground Coal Wash Emplacement Trial and this Condition. Communications with the Director-General should be documented.
EPL 2504 – Condition L2.1	**Concentration Limits** 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.	The Surface Water Management Plan states that monitoring is carried out to check the concentration limits at the licenced discharge points. If exceedances are found, site operations are investigated and changes made to improve the non-compliant results. Where possible, the release of water is reduced or stopped during the adjustment phase. Water quality reporting shows that BSOP activities have generally maintained water quality within the required limits, with only minor and occasional non-conformances. Where non-conformances have occurred, brief commentary is provided as to the causes and corrective actions taken. 14 Day water monitoring data for the three BSOP sites was available on the ICHPL website. Data was available to URS for review from April 2012 through to published data on 16/01/2014. ICHPL reported that the Biochemical Oxygen Demand (BOD) limit for LDP 020 was in the process of being increased by the EPA at the time of the audit. A variation to the EPL containing an increased BOD limit for LDP 020 was expected in March 2014. The following non-conformances are noted: • The 90th percentile concentration of dissolved Copper in discharge water from Brennan's Creek Dam (LDP 10) exceeded the concentration limit during the 2013-14 reporting period. Monitoring data was available from 02/05/2013. ICHPL management reported that the limit was set following discussion with the EPA. ICHPL advised they requested the 90% limit be set to the current baseline of 10 µg/L; however, the EPA subsequently set the limit to 8 µg/L. West Cliff Colliery has regularly exceeded this discharge criteria from LDP 10. Meeting minutes between ICHPL and the EPA dated 6 March 2014 record that the EPA indicated that the 90th percentile Copper level should be generated using the 90th percentile calculation and be reported as one non-compliance (dated the last day of the reporting period). The raw data showing the 19 occurrences where the level was above 8 parts per billion (ppb) is to be provided as an attachment to the Annual Return.One TSS exceedance at West Cliff Colliery LDP 10 on 07/03/2013 (53 mg/L) up to 16/01/2014. • Five BOD exceedances at Appin Mine LDP 20 from 30/04/2012 to 16/01/2014. • One TSS exceedance at Appin Mine LDP 23 on 13/06/2012 (64 mg/L) up to 16/01/2014. • The 2011/12 Annual Return to the EPA recorded one non-conformance for concentration limit exceedance (BOD) at LDP 3 (04/01/2012). The cause was identified and actions taken were described in the return. The 2012/13 Annual Return to the EPA recorded five non-conformances for concentration limit exceedance. These were recorded between 23/02/2012 and 31/10/2013 at LDP 3 (two exceedances), LDP 20 (two exceedances) and LDP 23 (one exceedance).	Non-compliant

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EPL 2504 – Condition L3.1	**Volume and Mass Limits** For each discharge point or utilisation area specified below (by a point number), the volume/mass of: (a) liquids discharged to water; or (b) solids or liquids applied to the area; must not exceed the volume/mass limit specified for that discharge point or area.	The identified discharge points have continuous flow monitoring equipment to record the flow data. Continuous flow monitoring was observed at LDP 10 and LDP 19. A summary of this information is contained in the published 14 Day monitoring data on the ICHPL website. • The Annual Return for 2012/13 reports non-compliances due to volume exceedance on three occasions at LDP 22 (29/02/2012 = 111 kL/Day, 05/03/2012 = 96 kL/Day and 08/03/2013 = 123 kL/Day). It was reported that the system was in the process of being upgraded. During heavy rainfall treated effluent was sprayed onto the irrigation area over three days whilst the flow limit switch was not operational. URS sighted FirstPriorty (former ICHPL health, safety, environment risk management system) reports for the exceedances noted on 29/02/2012, 03/03/2013 and 08/03/2012. (Event ref No.: APENV12030022). • The above information could not be verified when reviewing the data that was available on the 14 Day monitoring spread sheet uploaded to the ICHPL website on 16 /01/2014. 14 Day monitoring data has only been required to be published since April 2012. LDP 001 was not shown on the 14 Day monitoring spreadsheet and data for LDP 22 for March 2013 showed a maximum daily flow of 50 kL/Day. The original data was requested but not available for review during the audit period. The Water Management Plan states that monitoring is undertaken in accordance with the requirements of the EPL. URS observed use of the Watersavers® website that provided volume and mass data for LDPs at Appin Mine and West Cliff Colliery. The Watersavers® website provides volume and mass information for LDPs as specified in the EPL. Data viewed included the period 28/01/2014 to 28/02/1014. Data from the website is downloaded by HSEC Analyst and uploaded to 14 Day monitoring data spreadsheet. Any exceedances against the criteria are noted during this download process. Environmental Coordinators at each site are also able to login to the Watersavers® website at any time and can identify if there are any exceedances to the criteria prior to the monthly download by the HSEC Analyst. Given the three non-compliances recorded at LDP 22 during the audit period this Condition was found to be non-compliant.	Non-compliant

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EPL 2504 – Condition M2.5	The licensee must carry out acute and chronic (sub-lethal) toxicity testing of the discharges from discharge point 10 on the following species using the test or tests indicated for each species.	Testing results are publicly available on the ICHL website in the 14 Day monitoring data spreadsheet. When comparing the requirements of EPL with the initial test results it was found that some alternate tests were being conducted. An example is the Inhibitory Concentration (IC) being provided when the Effective Concentration (EC) is requested. ICHPL reported that the issue has been discussed with both the Laboratory and the EPA as to whether the existing results comply with the licence requirements. A meeting was to be organised between ICHPL, EPA and the laboratory to discuss and determine what, if any, changes need to be made in order to comply with the condition. If the EPA determines the current practice to be non-compliant this will be reported by ICHPL in the 2014/15 Annual Return. On this basis URS consider this condition to be indeterminate. Re-issued test reports were sighted for August 2013 and January 2014 that showed IC25 values instead of IC15 values. The ICHPL contractor takes samples from LDP 010 and sends them under COC to Ecotox Services Australasia Pty Ltd (Ecotox). Results are sent from Ecotox to the ICHPL Land and Biodiversity Specialist and the HSEC Analyst who enters the data into the 14 Day monitoring data spreadsheet. There were no exceedances against the requirements of M2.5 reported by ICHPL. Results are cross checked with original data and what has previously been entered into the 14 Day monitoring data spreadsheet. An email from the ICHPL Manager, Environment (PRP19 - Review of Lab Results vs PRP requirements, 18/02/2014, 09:37hrs) requested clarification concerning the units of measurement associated with Condition M2.5. The clarifications to the questions raised by the ICHPl, Manager, Environment have been summarised below (PRP19 - Review of Lab Results vs PRP requirements, 18/02/2014, 10:13hrs): • Ceriodaphnia dubia (Acute Test) - the ICHPL Manager, Environment noted that Effective Concentration (EC) and Inhibiting Concentration (IC) is dependent on the statistical analyses run. The laboratory noted that for the non-proportional data, i.e. duckweed and algae, the statistical output will always be an IC value. The laboratory is able to report the EC or IC25 depending on what is requested on the COC. • Ceriodaphnia dubia (7-day Reproduction Impairment Test) - the ICHPL Manager, Environment noted that Condition M2.3 requires ICHPL to report on LC50 (parental mortality); however, this has not been included in the lab reports. The laboratory noted that is does not report LC values as the endpoint is technically an immobilisation of the adults therefore only EC or an IC50 are reported and that this was an acceptable reported endpoint. The laboratory confirmed that it can report EC or IC25; however, this needs to be clearly stipulated on the COC or in other correspondence. • Paratya australiensis (10-day acute test) - the ICHPL Manager, Environment noted that EPL 2504 requires ICHPL to report Lethal Concentration (LC) LC10, LC25 and LC50; however, laboratory reports (not sighted by URS) reported only ECs or ICs. The laboratory noted that LC values are not largely reported in Australia and that immobilisation is reported due to their NATA accredited endpoint (EC or an IC50). • Larval Melanotaenia (4-day acute test) - the ICHPL Manager, Environment noted that the June 2013 test was conducted for 72 hrs. The laboratory reported that there was a poor survival of fish larval in the 96 hr tests and that ICHPl was advised of this who requested that the laboratory report the results for the 72 hrs available. No evidence concerning this communication was observed by URS. - the ICHPL Manager, Environment noted that for the August results IC10 and IC25 were reported instead of the required EC10 and EC25. The laboratory noted that for the non-proportional data, i.e. duckweed and algae, the statistical output will always be an IC value due to the statistical analyses that is applied to the data. • Lemna disperma (7-day growth inhibition test) - the ICHPL Manager, Environment noted that for the August 2013 and January 2014 results.,. The laboratory noted that this is what had been requested at the time and that they can report the EC or IC25; however, this will need to be requested on the COC or in correspondence as it is not an endpoint normally reported. • Pseudokirchneriella subcapitata (3-day growth inhibition test) - the ICHPL Manager, Environment noted that for the August 2013 and January 2014 results. The laboratory noted that this is what had been requested at the time and that they can report the EC or IC25; however, this will need to be requested on the COC or in correspondence as it is not an endpoint normally reported.	Indeterminate **Recommendation** Ensure the required units of measurement (i.e. EC or IC) are included on the Chain of Custody or another form of communication so that the laboratory is aware of the required endpoint.
EPBC 2010/530 – Condition 14	**Compliance Report** A compliance report is provided to SEWPaC by 15 August every year.	A letter dated 20 August 2013 from ICHPL to DoE was sighted providing evidence the compliance report was submitted; however, the date was five days after the due date required by the condition. This condition was found to be non-compliant due to late submission of the compliance report.	Non-compliance (due to late timing of submission)