



**DONALDSON COAL**

Part of the Yancoal Australia Group  
ABN: 87 073 088 945

# **Annual Environmental Management Report**

**Abel Underground Coal Mine**  
1 June 2013 – 31 May 2014



Prepared by

**R.W. CORKERY & CO. PTY. LIMITED**


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# DONALDSON COAL

PTY LTD

ABN: 87 073 088 945

## Annual Environmental Management Report for the Abel Underground Coal Mine 1 June 2013 to 31 May 2014

Name of mine	Abel Underground Coal Mine		
Mining Titles/Leases	ML 1618		
MOP Commencement Date	31/12/09	MOP Completion date	31/12/16
AEMR Commencement Date	01/06/13	AEMR Completion date	31/05/14
Name of leaseholder	Donaldson Coal Company Pty Ltd		
Name of mine operator (if different)	NA		
Reporting Officer	Mr Phillip Brown		
Title	Environmental Manager		
Signature			
Date	09 September 2014		

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September 2014



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## FORWARD

This Annual Environmental Management Report (“AEMR”) for the Abel Underground Coal Mine has been compiled by R.W. Corkery & Co. Pty. Limited on behalf of Donaldson Coal Pty Ltd (the “Company”). Donaldson Coal Pty Ltd became part of Yancoal Australia Limited in July 2102. The Abel Underground Coal Mine (the “Abel Mine”) is located approximately 23km northwest of Newcastle, New South Wales (see **Figure 1.1**).

This is the sixth AEMR submitted for the Abel Mine and is applicable for the period 1 June 2013 to 31 May 2014 (“the reporting period”). The information presented within this AEMR has been compiled based on information and advice provided by the Company.

This AEMR has been prepared in accordance with *Schedule 5 Condition 4* of Project Approval 05\_0136 and generally follows the format and content requirements identified in the Guidelines to the Mining, Rehabilitation and Environmental Management Process (2013) prepared by NSW Department of Trade and Investment, Regional Infrastructure and Services, Division of Resources and Energy.



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# 1. INTRODUCTION

## 1.1 APPROVAL, LEASE AND LICENCES

The Company has operated the approved activities at the Abel Underground Coal Mine (the “Abel Mine”) under the approval, lease and licences listed in **Table 1.1**.

**Table 1.1**  
**Abel Underground Coal Mine – Approval, Lease and Licences**

Approval/Lease/Licence	Issue Date	Expiry Date	Details / Comments
Project Approval 05_0136	7 June 2007	31 December 2030	Granted by the (then) Minister for Planning and last modified on 04 December 2013.
Mining Lease ML 1618*	15 May 2008	15 May 2029	Granted by the Department of Primary Industries - Mineral Resources. Incorporates 2755ha of surface area.
Environment Protection Licence No. 12856	9 July 2008 (licence version date 21 December 2011)	Not applicable	Issued by the (then) Department of Environment and Climate Change (EPA)
Water Licence 20BL171935	5 August 2013	4 August 2018	Bore licence to intercept groundwater

\*See **Figure 1.1**.

Approval for the modification of Project Approval 05\_0136 was granted on 04 December 2013 allowing the recovery of a further 10 million tonnes of coal, the introduction of longwall and shortwall mining methods and an increase in maximum ROM coal extraction. Water Licence 20BL171935 was also renewed during the reporting period for a further 5 year period.

Conditions within the modified Project Approval 05\_0136 which specify specific environmental criteria are as follows.

### 1. Subsidence

- *Schedule 3 Condition 1* – performance measures for natural and heritage features.
- *Schedule 3 Condition 3* – performance measures for built features.
- *Appendix 5 Schedule 1* – Subsidence Effects on All other Surface Structures.

### 2. Noise

- *Schedule 4 Conditions 1 to 4* – noise emissions (day, evening and night).

### 3. Air Quality

- *Schedule 4 Condition 9* – dust emissions (suspended particulates and deposited dust).

The approved management and monitoring plans and programs prepared for the Abel Mine provide further detailed information relating to applicable environmental criteria.

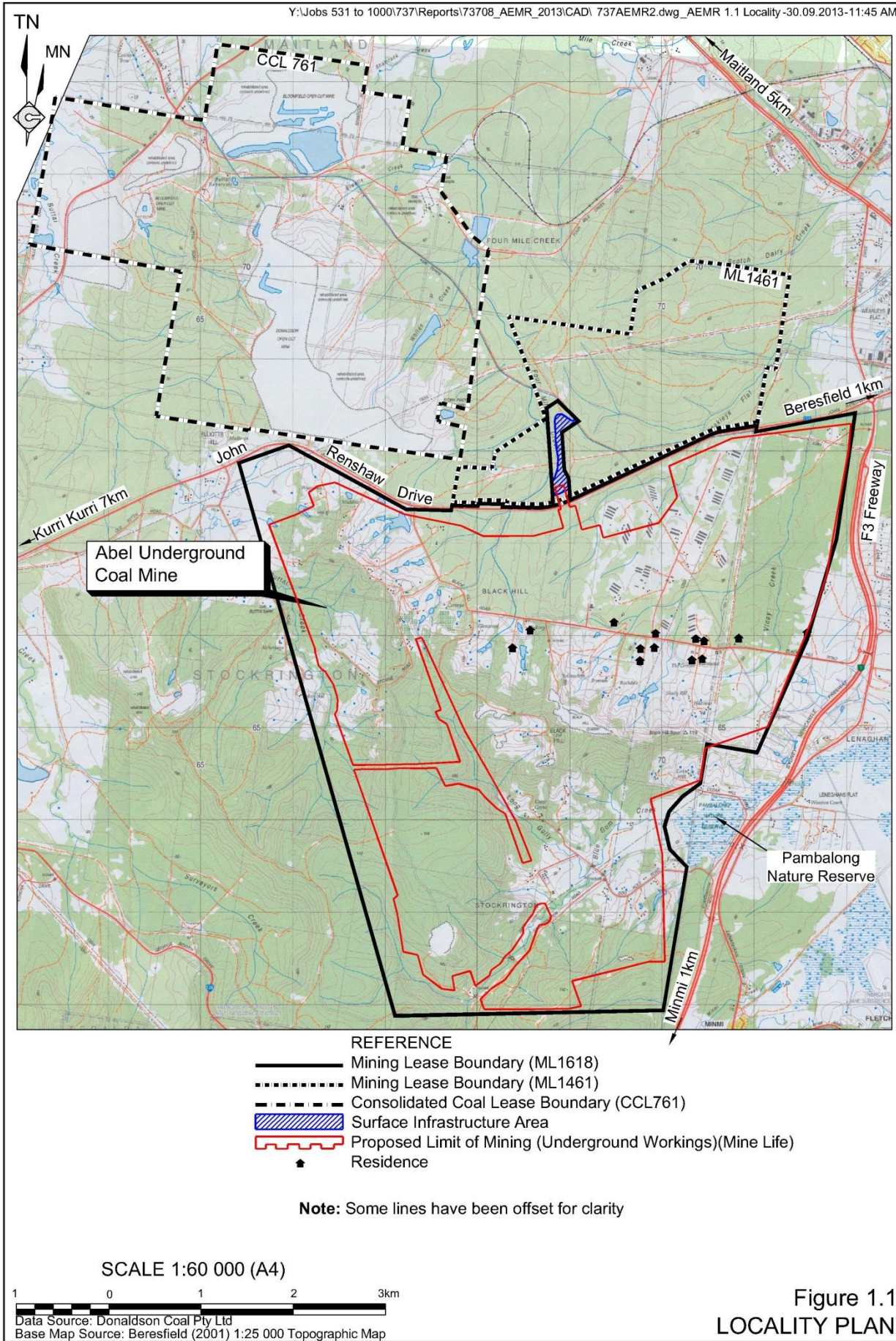


Figure 1.1  
LOCALITY PLAN

The last independent environmental audit of the mine was undertaken between 14 and 16 November 2011, in accordance with *Schedule 5 Condition 5* of PA 05\_0136. The audit reported a high degree of compliance with the project approval with no non-compliance reported for the period 2008 to 2011. The next independent environmental audit is due in mid-2014.

As part of this AEMR, a review of compliance against the conditions specified within PA 05\_0136 is also provided in **Appendix 1**.

## 1.2 MINE CONTACTS

The Manager of Mining Engineering for the Abel Mine, Mr David Gibson is the primary mine contact (Tel: 02 4015 1104). Mr Gibson is responsible for the environmental management of the Abel Mine and ensuring compliance with all relevant legislative obligations. Mr Phillip Brown (Tel: 0439 909 952) is the nominated Environmental Manager and is also responsible for the environmental management of the Abel Mine. The contact details for the Abel Mine are as follows.

Postal Address:	Donaldson Coal Pty Ltd PO Box 2275 GREENHILLS NSW 2323	Tel: 02 4015 1100 Fax: 02 4015 1199 Email: donaldson@doncoal.com.au
Physical Address:	Abel Underground Coal Mine 1132 John Renshaw Drive BLACKHILL NSW 2322	
24 hour Environmental Hotline:		Tel: 1800 111 271

## 1.3 ACTIONS REQUIRED FROM THE 2012/2013 AEMR REVIEW

The 2012/2013 AEMR was forwarded to NSW Department of Trade and Investment, Regional Infrastructure and Services, Division of Resources and Energy (DTIRIS-DRE) and the Department of Planning and Infrastructure (DP&I) on 02 October 2013. Feedback was received from the DRE dated 08 October 2013. The following sets out the issues raised by the DRE in its feedback to the 2012/2013 AEMR, and how these have subsequently been addressed (in *italics*).

1. No feedback or actions raised by DTIRIS-DRE to the 2011/12 AEMR. (p3) – *Correct.*
2. Typo: “During the reporting *period*, no exploration.....” (p4) – *Typo fixed.*
3. Exploration – none during the reporting period. (p4) – *Correct.*
4. Only 300,000m<sup>3</sup> of ROM coal predicted to be mined during next reporting period (cf1.1Mm<sup>3</sup> this period)? (p4) – *This was a typographical error and has been adjusted for this reporting period.*
5. “Development Consent 114-116” - should this be “Development Consent Conditions 114-116”? (p6) – *This was an incorrect cross reference and has been removed.*



6. Can a definition for water categories be provided? What is “controlled discharge water” in the context of “volumes held”? What is “contaminated water” in the context of “volumes held”? Appreciate nil indicated for both categories for reporting period. (p7) – *Definitions are per DRE’s EDG03 Guidelines to the Mining, Rehabilitation and Environmental Management Process.*
7. “A new Pollution Incident Response Management Plan will be implemented during the reporting period.” – there is a version dated 31 August 2012 on the Doncoal website. Is this statement correct? - *No. The 31 August 2012 PIRMP is the current version. This statement has been adjusted.*
8. Abel Mine EMPs to be found on the Doncoal website under “AEMR” heading – can a more appropriate location be generated? *The location of these documents will be adjusted as suggested.*
9. What is the weather station mast height (10m)? *Yes, the weather station mast height is 10m.*
10. Expand “TSP” and “PM10” (p8) – *completed.*
11. Amend Figure 3.1 legend from “Dust Monitoring Location” to “Deposited Dust Monitoring Location” since HVAS are keyed separately (p9) - *completed*
12. “D5” depositional dust results were not recorded for any month during the reporting period, reported due to “site unable to be accessed”. Is this a failure to monitor? Need an explanation provided in the AEMR. Will monitoring be possible in 2013/14 and beyond? Need for a replacement monitor? (p10) – *Refer to Section 3.2 of this report.*
13. Blackhill HVAS TSP graph – plotting an annual average criterion against a series of 24 hour readings. Would inclusion of rolling average results be more appropriate? (p11) Otherwise a reader could misread blue line above the red line as an exceedance etc – *Rolling averages are now provided.*
14. Why are only “FMCU” and “FMCD” monitoring locations measure quarterly for turbidity? Is this a mistake? (p13) – *No. FMCU and FMCD are additional ‘due diligence’ monitoring sites and are not required to be monitored. Additionally, the Environment Protection Licence only requires monitoring of total suspended solids, not turbidity. In any event, monthly turbidity monitoring will be undertaken in the future.*
15. No trigger nominated for TSS but exceedance of trigger stated. (p13) – *Correct. There is no formal trigger level for TSS specified in the ANZECC guidelines or within EPL 12856. However, an informal trigger level of 50mg/L is adopted based on standard industry practice. This was explained in the paragraph below the table, but additional notations have been added to Table 3.3.*

16. “All EC results are within the water quality trigger values for Lowland Rivers in NSW” but Site 11 does exceed the range limit. (p13) – *Monitoring results for the current reporting period have been checked with no exceedances of range limit. No activities from the Abel mine are considered likely to have resulted in the previously elevated EC value at Site 11.*
17. “MOP” – please expand. (p15) – The acronym MOP has been defined earlier in the report.
18. Groundwater piezos – some sites marked as “no samples collected due to access issues.” Can an explanation be provided? Contingency for missing data? Ongoing access issues? (p16) – *Access to sample sites is undertaken in consultation with landholders. At times, access cannot be obtained. Sampling has resumed at a number of sites unable to be accessed during the previous reporting period.*
19. Table 3.5 shows TSS for site DPZ-6 as 35 – 64 mg/l but the graph (p19) shows a range of over 400 mg/l. Check graphs/data suggestion. (p18) – *Data and graphs have been checked and adjusted for the current reporting period – see Section 3.5.*
20. EA determined EC range for groundwater of up to 21,700uS/cm. Statement that “over time salinity may increase to around 3,000 to 4,000mg/l” (equivalent to “between 5000 and 6700uS/cm). Inconsistent?? (p18) – *This statement has now been adjusted for clarity. The predictions related to groundwater inflow quality increasing to between 5,000 and 6,700uS/cm, not to water quality measured in surrounding bores. It is expected that, as mining progresses further down dip the groundwater inflow salinity levels will increase to this level. Groundwater quality in surrounding bores should continue to be compared to baseline monitoring not groundwater inflow monitoring / predictions.*
21. “The RCE ranking remained relatively unchanged at both sites.....” Missing word. – *Typo corrected.*
22. Table 3.6 – Parameter of diversity has no units – should it? (eg number of species??). p20 – *Parameter added – see **Table 3.6.***
23. Diversity @ Blue Gum Creek site for 21/3/13 was relatively very low (only 10) against previous low of 20. I would have thought this should have drawn a comment. (p20) – *see Section 3.6 for commentary.*
24. “Additionally, Donaldson Coal will liaise with the OEH in relation to installation of permanent water depth markers.” This was also stated in the previous year’s AEMR. Explanation as to why did not occur? (p23) – *A monitor has been approved for installation in August 2014 – see Section 3.6.*
25. “I & I NSW” – please expand. (p27) – *Reference now removed.*
26. “^” provided in the legend but not found in the table (Table 5.1). – *“^” is cross referenced in Row C1 of Table 5.1.*

No feedback or actions were raised by DP&I (now NSW P&E).

## 2. OPERATIONS DURING THE REPORTING PERIOD

### 2.1 EXPLORATION

During the reporting period, no exploration was undertaken within ML 1618 although analyses were undertaken of samples from previously drill holes. Exploration is planned for the next reporting period (see Section 6).

Exploration reports for ML 1618 continued to be provided to the Coal Advice and Resource Assessment section of DTIRIS in accordance with *Condition 11* of ML 1618.

### 2.2 LAND PREPARATION

No land preparation activities were undertaken during the reporting period.

### 2.3 CONSTRUCTION

No significant construction activities occurred during the reporting period.

### 2.4 MINING

**Plan 2** presents the mining-related activities undertaken during the reporting period. Mining activities concentrated on the completion of first workings within Panels 23, 24 and 25, commencement of first workings in Panel 26 and West Mains and second workings within Panels 19, 22, 23, 24, 24A, 25 and East Mains Headings. A total of 2,439,935t (1,748,211m<sup>3</sup>) of run-of-mine coal (ROM) was recovered during the reporting period for transportation to and processing at the Bloomfield Coal Handling and Preparation Plant (CHPP).

**Table 2.1** provides a production summary for the reporting period and estimated production at the end of the next reporting period.

**Table 2.1**  
**Production and Waste Summary – 1 June 2013 to 31 May 2014**

	Cumulative Production (m <sup>3</sup> )		
	Start of Reporting Period	End of Reporting Period	End of Next Reporting Period (Estimated)
Topsoils Stripped	1,690	1,690	1,690
Topsoil used / spread	0	0	0
Waste Rock	5,300	6,300	7,300
ROM Coal	3,808,638	5,551,449	7,425,728
Processing Waste	0	0	0
Product Coal <sup>1</sup>	3,808,638	5,551,449	7,425,728
Note 1: For the purposes of reporting, as no coal processing is undertaken on site, ROM coal equates to 'product coal' and therefore no processing waste is produced. Source: Donaldson Coal Pty Ltd.			



Mining equipment used at the mine throughout the reporting period along with its primary function is presented in **Table 2.2**.

**Table 2.2**  
**Principal Mining Equipment Used during the Reporting Period**

Item	No.*	Primary Function
Continuous Miner (Joy 12CM12, Joy 12CM15 and 12CM30)	10	Forming underground roadways and secondary extraction.
Shuttle Cars	19	Transporting cut material away from Continuous Miner.
Driftrunners	15	Transporting people underground.
Coaltrams	7	Transporting materials and equipment, clean up roadways.
Feeder breaker	7	Discharge point for shuttle cars. Reduces size of coal and feeds it onto the conveyor system.
Ventilation Fans (Upcast / Auxiliary and Downcast)	1 / 8 / 1	Extracting used air from the mine and provision of fresh air.

Source: Donaldson Coal Pty Ltd. \*Includes hired equipment.

## 2.5 MINERAL PROCESSING

No processing activities were undertaken within ML 1618 other than the use of a feeder breaker to reduce spillage from the conveyor transporting coal to the surface. Processing activities are, however, applicable to Project Approval 05\_0136 issued for the Abel Mine which provides for haulage to and processing at Bloomfield CHPP. During the reporting period, 2,430,178<sup>1</sup> of coal from the Abel Mine was processed at Bloomfield CHPP producing 1,988,626t of product coal. Details of this process and associated waste management are provided within the respective reporting for the Bloomfield CHPP.

## 2.6 WASTE MANAGEMENT

Wastes generated on site during the reporting period included the following.

- Waste rock / unprocessable weathered coaly material.
- Greases, oils, filters, tyres and batteries from maintenance of vehicles and equipment.
- Bulk scrap metal and plastics from discarded equipment.
- General office wastes, e.g. paper.
- General waste generated by employees, e.g. food scraps, paper, cardboard, aluminium and steel cans.
- Wastewater and sewage from bathhouses.

Fine and coarse rejects were also generated at the Bloomfield CHPP.

<sup>1</sup> The apparent difference in coal processed compared to ROM coal mined (per Section 2.4) is a result of differences in timing between mining of ROM coal, transportation to Bloomfield and storage at Bloomfield prior to processing through the CHPP.

As shown in **Table 2.1**, approximately 1,000m<sup>3</sup> of waste rock and unprocessable coaly material was removed within the reporting period during formation of underground roadways. All waste rock and unprocessable coaly material was removed using dump trucks and placed within the Donaldson Mine waste rock emplacement and backfill areas in accordance with the approved final landform for the Donaldson Mine. It is noted that landform shaping activities at the Donaldson Mine were effectively completed during the reporting period and the remaining West and Square Pits will now be managed by the Abel Underground Coal Mine. All future waste rock and unprocessable coaly material will therefore be placed within the West Pit in accordance with the final landform plan presented in the Abel MOP.

All waste oil was stored within 205L drums or 1,000L IBCs within the oil store before being removed from site, along with used oil filters and oily rags, by Australian Waste Oils. Used tyres are removed from site during servicing by Marathon Tyres Pty Ltd for repair or disposal.

Paper, cardboard, steel, aluminium and any other recyclable material was stored separately in 1.5m<sup>3</sup> and 3.0m<sup>3</sup> skip bins for recycling. Paper, cardboard and general waste material continued to be collected by Veolia on a weekly basis whilst scrap metal was collected by CMA Recycling on an as-needs basis. The scrap steel/drum crusher continued to be used.

All general wastes were stored in skip bins and removed by Veolia. All wastewater (greywater) and sewage generated within the on-site bathhouses was treated using the sewage treatment system with treated water being transferred to the Big Kahuna Dam.

## 2.7 COAL STOCKPILES

All ROM coal was stockpiled within the mine's portal and coal handling area. The ROM stockpile, which is situated under the conveyor outfeed, has a capacity of approximately 3,000t. During the reporting period, ROM coal continued to be transported to the Bloomfield CHPP by private road.

## 2.8 WATER MANAGEMENT

The water management procedures are presented in the approved Water Management Plan prepared for the Abel Mine and are not presented here in detail. Essentially, all surface water continued to be managed through the use of the existing water management structures for the Donaldson Mine with clean water flows directed away from the surface facilities area. Water runoff from within the box cut area incorporating the surface facilities together with excess underground water was directed to an approximately 1.5ML water storage sump located in the southeastern corner of the box cut. Road-side drainage has also been directed using a section of piping to ensure all stormwater runoff from the northern part of the portal access road reports to the storage sump.

A temporary sump within the former open cut area east of the Abel box cut (the 'West Pit' located within ML 1461 for the Donaldson Mine) was also utilised during the reporting period. Water from the 1.5ML sump was piped to the temporary sump as required before being pumped to the Big Kahuna Dam (400ML storage capacity, also located within ML 1461 for the Donaldson Mine). **Table 2.3** provides a summary of the volumes of water stored within the Abel mining lease ML 1618 at the start of the reporting period, at the end of the reporting period and the total storage capacity.

**Table 2.3**  
**Stored Water**

	Volumes Held (m <sup>3</sup> ) <sup>#</sup>		
	Start of Reporting Period	At end of Reporting Period	Storage Capacity
Clean Water	400	400	450
Dirty Water	1,500	1,000	1,500
Controlled Discharge Water	0	0	0
Contaminated Water	0	0	0

Source: Donaldson Coal Pty Ltd. # Within Abel Surface Infrastructure Area (ML 1618).

## 2.9 HAZARDOUS MATERIAL MANAGEMENT

Fuel storages for the site include a 2,000L self bunded tank for the refuelling of mobile equipment and a 28,000L self-bunded tank near the dedicated hydrocarbon store near the workshop. All tanks were filled as required using mini tankers. Smaller volumes of oils and grease are also stored within 1,000L IBCs or 20L/25L drums stored on bunded pallets and / or within the area draining to the wash bay and oil/water separator.

All handling, storage and transport of dangerous goods were undertaken in accordance with relevant Australian Standards including *AS1940*, *AS1596* and the *Dangerous Goods Code*. An on-line Material Safety Data Sheet (MSDS) database is available through subscription to ChemAlert. This provides immediate and current MSDS information in the Administration Office. When MSDSs are required underground hard copies are printed. Any new chemical substance is approved by the Mine Manager before introduction to the site.

Additionally, as part of the Environmental Management System for the Abel Mine, a series of Emergency Response and Preparedness Plans have been prepared by the Company to address any significant environmental emergency, including those involving hazardous materials. Spill kits are located at appropriate points and are serviced by the supplier on a monthly basis. A Pollution Incident Response Management Plan (August, 2012) has also been prepared and implemented in accordance with EPL 12856.

No significant hazardous materials-related environmental incidents were reported during the reporting period.

## 2.10 OTHER INFRASTRUCTURE MANAGEMENT

No additional management measures were required for other infrastructure during the reporting period.

### 3. ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

#### 3.1 METEOROLOGICAL MONITORING

An automated weather station, installed for the Donaldson Mine, has been approved by the, then, Department of Planning as also meeting the requirements for the Abel Mine. The weather station records wind speed and direction, temperature, rainfall and solar radiation. A summary of the rainfall data for the past 10 years is presented in **Table 3.1**.

**Table 3.1**  
**Monthly Rainfall Records**

Period	Average Monthly Rainfall (mm)												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
2004	86.0	176.6	80.0	33.6	17.4	9.4	15.4	43.1	61.2	136.0	77.4	69.8	805.9
2005	64.4	95.8	127.8	57.4	61.8	56.8	7.2	0.8	37.0	84.0	22.8	9.6	625.4
2006	29.8	47.4	63.6	4.6	7.8	43.8	42.6	49.2	162.4	25.4	34.4	34.5	545.5
2007	13.4	96.4	101.4	84.6	59.7	315.2	16.5	79.6	28.3	35.0	163.8	49.5	1043.4
2008	153.4	154.3	46.0	237.6	2.2	105.4	17.4	13.4	27.2	8.4	73.3	62.6	900.3
2009	125.7	97.7	102.8	189.0	125.7	75.7	32.1	1.8	29.2	59.8	44.3	62.0	945.8
2010	89.0	52.1	83.9	37.1	89.4	112.8	65.3	38.5	26.0	80.6	171.1	55.9	901.7
2011	25.6	34.5	65.6	138	98.8	152.2	128.8	48.9	103.0	100.0	171.9	75.9	1143.2
2012	96.1	207.0	137.6	114.7	11.8	172.3	53.8	26.6	18.7	5.7	47.9	47.9	940.1
2013	166.7	226.6	97.9	89.4	60.9	<b>96.5</b>	<b>11.2</b>	<b>9.7</b>	<b>21.2</b>	<b>49.5</b>	<b>261.8</b>	<b>2.6</b>	<b>1094.0</b>
2014	<b>15.6</b>	<b>108.3</b>	<b>112.8</b>	<b>99.3</b>	<b>44.3</b>								

Note: Results relevant to this reporting period are in bold.

Total rainfall during the reporting period was 832.8mm, approximately 181.6mm less than the previous reporting period.

#### 3.2 AIR POLLUTION

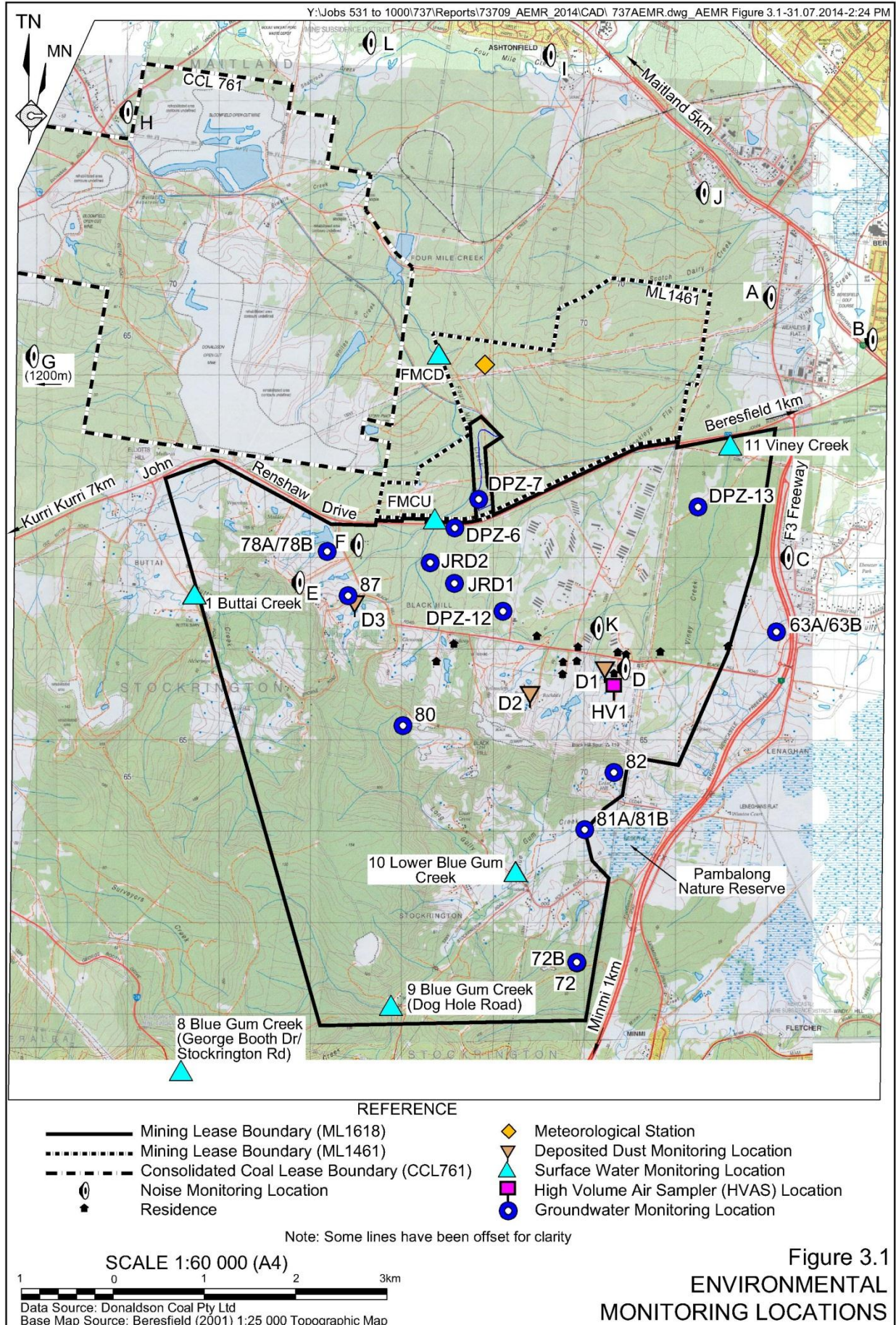
##### Environmental Management

Management of air quality during the reporting period was largely undertaken as an extension of the Donaldson Mine activities which included watering of access roads and use of exhaust controls on mobile equipment.

##### Environmental Performance

Monthly deposited dust monitoring was undertaken by the Company at a total of three locations surrounding and relevant to the Abel Mine. It is noted that site D5 was decommissioned during the 2012/2013 reporting period, however, it is considered that site D1 continues to provide adequate coverage. Total Suspended Particulates (TSP) and Particulate Matter <10µm (PM<sub>10</sub>) monitoring was also undertaken at the existing High Volume Air Sampling (HVAS) station for the Donaldson Mine located approximately 2,300m southeast of the surface infrastructure area at Blackhill (previously relocated from site D5 to Site D1). Locations of deposited dust and suspended particulate (high volume air sampling) monitoring are shown on **Figure 3.1** and results summarised within **Table 3.2** and **Figure 3.2**.





**Table 3.2**  
**Deposited Dust Monitoring Results**

Reporting Period	Month	Monthly Dust Deposition Rate (g/m <sup>2</sup> /month)		
		D1	D2	D3
2007/2008	Monthly Minimum	0.4	0.1	0.6
	Monthly Maximum	4.5	0.9	3.7
	<b>Annual Average</b>	<b>1.65</b>	<b>0.56</b>	<b>1.51</b>
2008/2009	Monthly Minimum	0.2	0.4	0.1
	Monthly Maximum	2.8	5.8	2.7
	<b>Annual Average</b>	<b>0.9</b>	<b>2.1</b>	<b>1.3</b>
2009/2010	Monthly Minimum	0.2	0.1	0.1
	Monthly Maximum	4.3	11.3*	5.6
	<b>Annual Average</b>	<b>1.1</b>	<b>2.8</b>	<b>2.4</b>
2010/2011	Monthly Minimum	0.3	0.5	0.7
	Monthly Maximum	1.0	4.1	5.4
	<b>Annual Average</b>	<b>0.7</b>	<b>1.7</b>	<b>2.1</b>
2011/2012	Monthly Minimum	0.4	0.1	0.4
	Monthly Maximum	1.3	1.3	2.8
	<b>Annual Average</b>	<b>0.8</b>	<b>0.7</b>	<b>1.1</b>
2012/2013	Monthly Minimum	0.3	0.5	0.4
	Monthly Maximum	1.6	4.1	4.7
	<b>Annual Average</b>	<b>0.8</b>	<b>1.7</b>	<b>1.4</b>
2013/2014	Jun-13	0.4	0.5	0.5
	Jul-13	0.2	0.3	0.5
	Aug-13	0.5	0.7	1.2
	Sep-13	0.8	0.8	1.5
	Oct-13	0.8	0.9	3.6
	Nov-13	1.0	0.8	4.0
	Dec-13	0.7	0.8	3.3
	Jan-14	0.6	0.6	2.2
	Feb-14	0.9	0.2	2.0
	Mar-14	1.0	3.2	3.2
	Apr-14	0.4	0.5	2.3
	May-14	0.5	5.6	2.5
	Monthly Minimum	0.2	0.2	0.5
	Monthly Maximum	1.0	5.6	4.0
	<b>Annual Average</b>	<b>0.65</b>	<b>1.24</b>	<b>2.23</b>

Source: Donaldson Coal Pty Ltd. NA = Not Available.  
\* Sample invalid due to excessive contamination (not included in average).

The highest monthly dust deposition measurement (5.6g/m<sup>2</sup>/month at D2) occurred in May 2014. Notably the ash content of this sample was only 1.8g/m<sup>2</sup>/month indicating a high contribution of organic matter (such as pollen, insects, etc.). Monthly deposition rates were generally well below this level. Annual average monthly deposition rates were between 0.65g/m<sup>2</sup>/month and 2.23g/m<sup>2</sup>/month which is significantly below the goal of 4g/m<sup>2</sup>/month, indicating good air quality with respect to dust deposition.

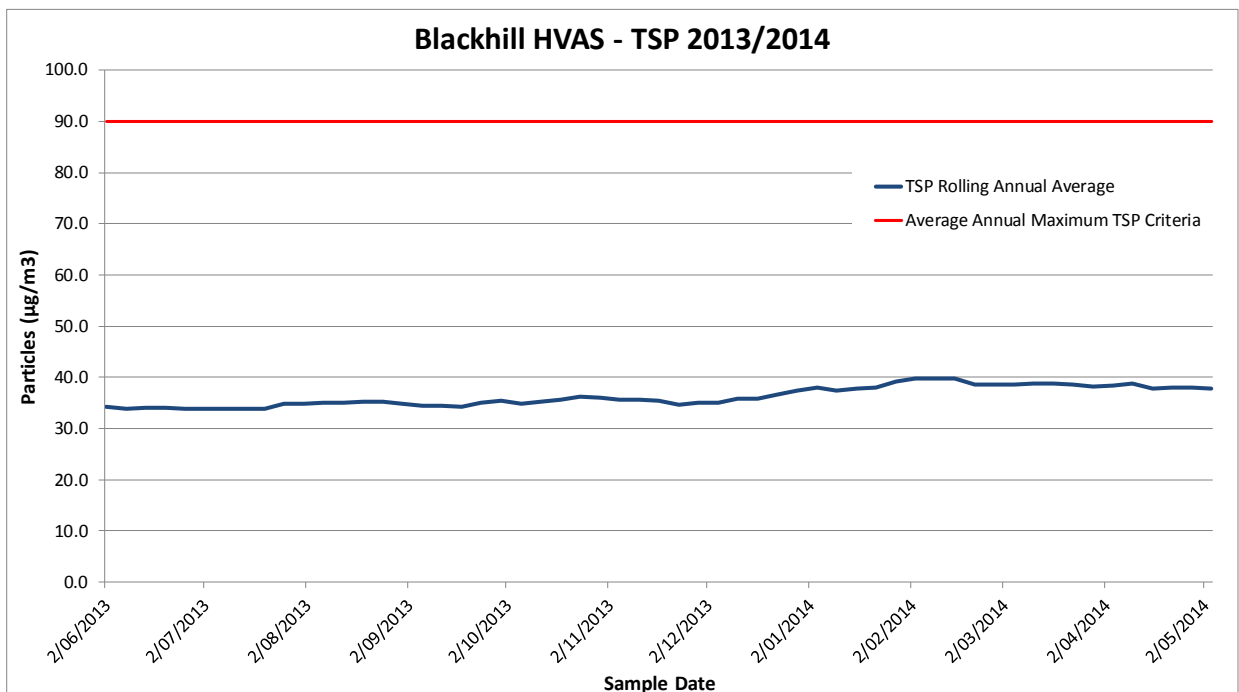
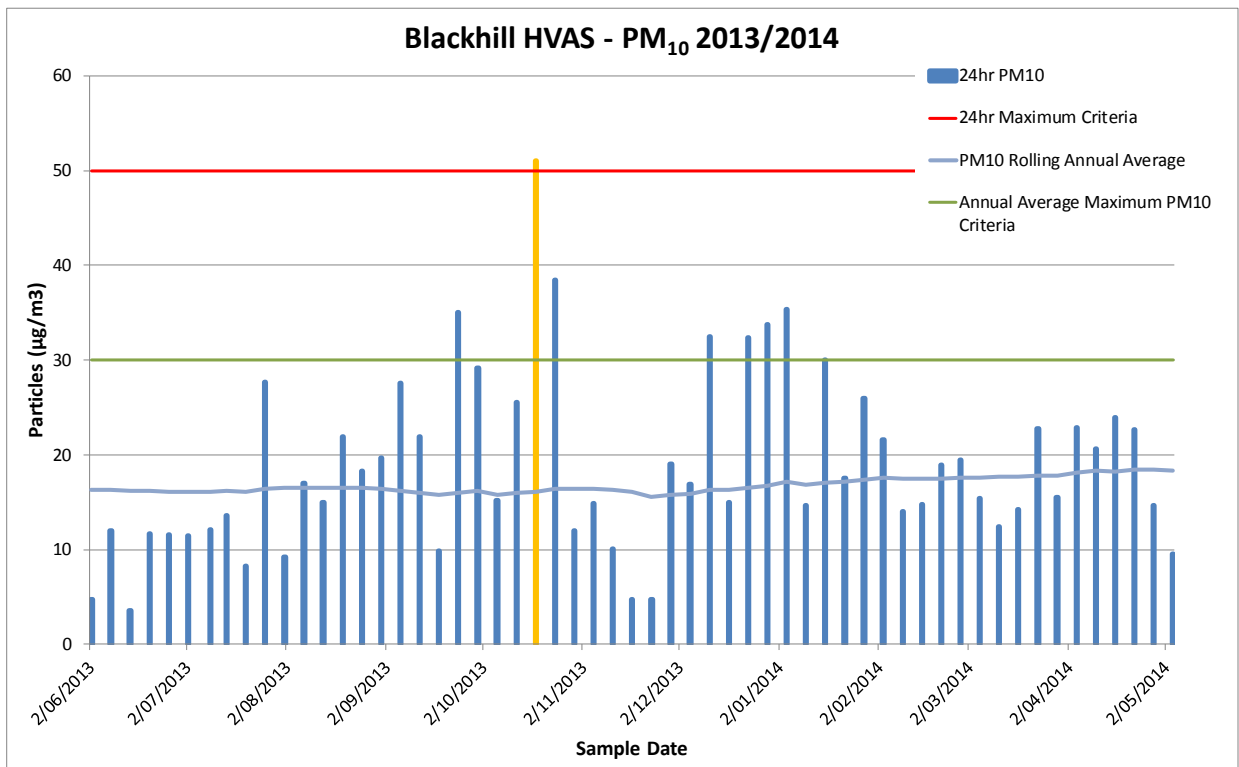


Figure 3.2 Suspended Particulate Monitoring Results – 2013/2014



The suspended particulate monitoring results show that the highest 24-hour average PM<sub>10</sub> concentration was 51µg/m<sup>3</sup>, measured on 18 October 2013. This was the only occasion when the measured PM<sub>10</sub> concentrations exceeded the 50µg/m<sup>3</sup> 24-hour *National Environment Protection Measures* (NEPM) goal. Notably, this is a very marginal exceedance and is considered to have occurred as a result of natural variations in background levels.

The annual average PM<sub>10</sub> concentration for Blackhill was 18.8µg/m<sup>3</sup> for the 12 months to May 2014. The annual average TSP concentration for the 12 months to May 2014 was 38.4µg/m<sup>3</sup>. The monitoring results indicate that suspended particulate concentrations are well below the annual average criteria of 30µg/m<sup>3</sup> and 90µg/m<sup>3</sup> respectively.

### Reportable Incidents

No reportable incidents relating to air pollution occurred during the reporting period.

### Further Improvements

No other improvements relating to air pollution are planned or considered necessary. Air quality management measures during future operations will be consistent with those outlined within the MOP prepared for the Abel Mine and the Air Quality Management Plan.

## 3.3 EROSION AND SEDIMENT CONTROL

### Environmental Management

Sediment and erosion management procedures implemented throughout the reporting period included the following.

- i) Continued diversion of 'dirty' surface water flows within the box cut area to the water storage sump.
- ii) Continued diversion of 'clean' water from areas surrounding the box cut to existing drainage lines.

No further erosion and sediment controls were deemed necessary.

### Environmental Performance

No major erosion or sedimentation was observed during the reporting period. The erosion and sediment control measures implemented were largely considered successful without the need for further control measures. Silt fencing and sediment traps continued to be regularly inspected and maintained.

### Reportable Incidents

No reportable incidents occurred during the reporting period.

### Further Improvements

No further erosion and sediment control measures are planned or considered necessary. Erosion and sediment control measures during future operations will be consistent with those outlined within the Water Management Plan and MOP prepared for the Abel Mine. Regular inspections will continue to be undertaken to ensure that these measures remain effective.



### 3.4 SURFACE WATER POLLUTION

#### Environmental Management

As part of the approved Water Management Plan, Abel Mine transfers water off site to the Big Kahuna Dam and then to Bloomfield CHPP, as required. Surface water monitoring sites specified for the Abel Mine are aimed at detecting indirect impacts such as from underground mining activities and activities in the surface infrastructure area. Monitoring at Sites FMCU and FMCD commenced prior to the commencement of the Abel Mine and serve to provide baseline data. Monitoring at Sites 1, 8, 9, 10 and 11 commenced in 2006 and provide baseline data and can also be used to assess impacts attributable to the Abel Mine.

#### Environmental Performance

Surface water monitoring data for the reporting period is summarised in **Table 3.3** and presented graphically in **Figure 3.3**, with the full data set provided in **Appendix 7**. It is noted that monitoring at additional sites identified within the Integrated Environmental Monitoring Program incorporating the Abel Mine, Donaldson Mine, Tasman Underground Coal Mine and Bloomfield Colliery were undertaken and will be reported within their respective AEMRs.

**Table 3.3**  
**Summary of Water Quality Monitoring Results – 2013/2014**

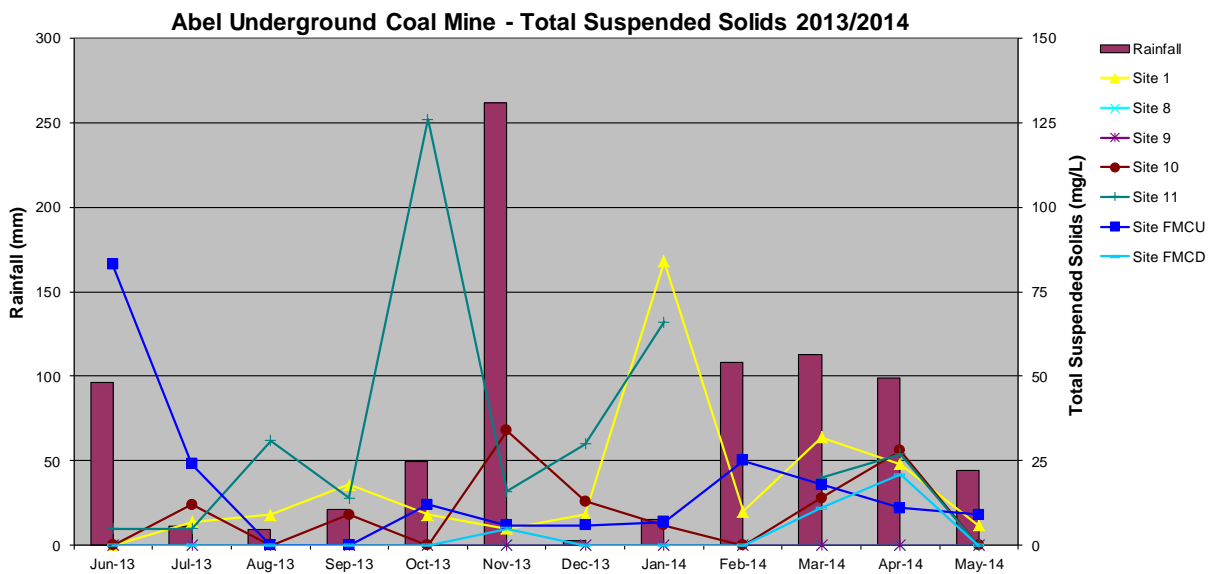
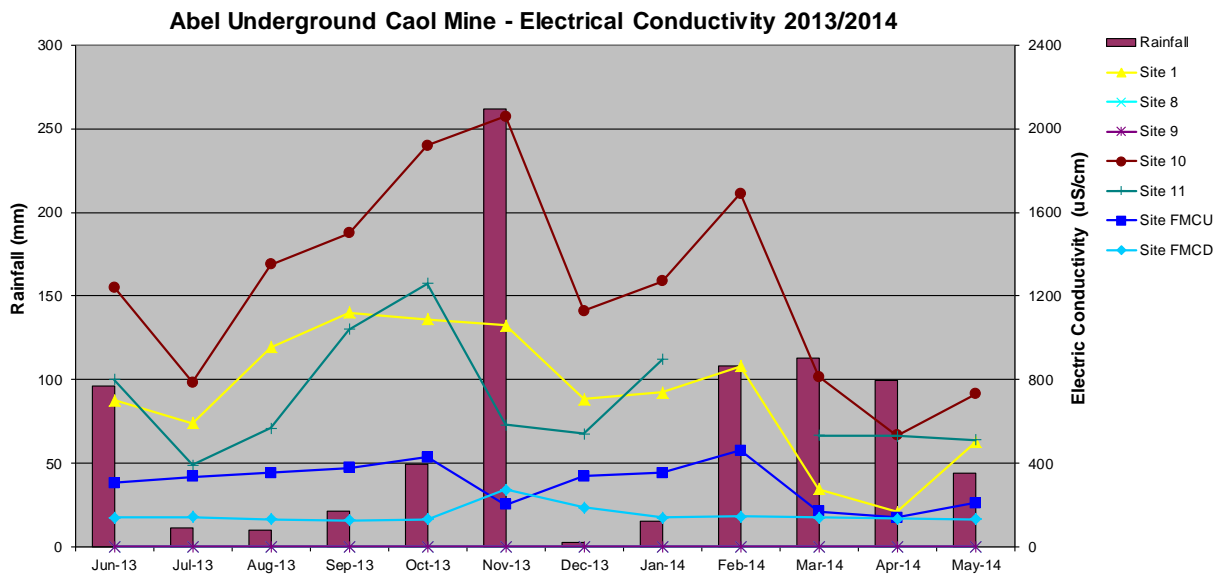
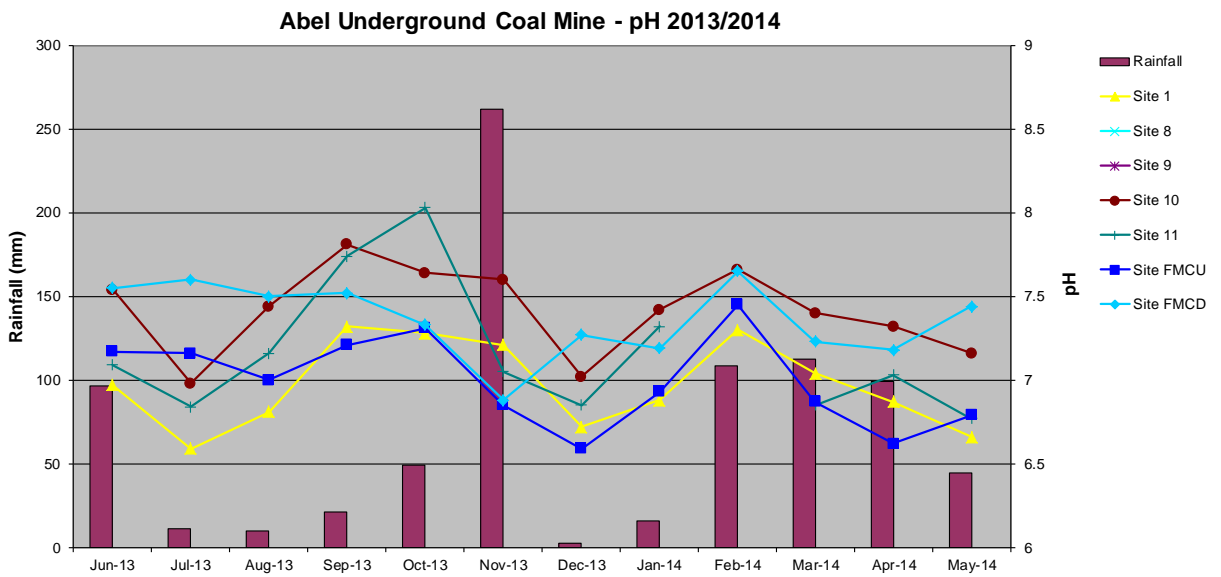
Sampling Site <sup>^</sup>	pH <sup>#</sup>	EC (µS/cm) <sup>#</sup>	Turbidity (NTU)	TSS (mg/L)
1	6.59 to 7.32	166 to 1,120	10.1 to <b>95.3</b>	5 to <b>84</b>
8	No Flow	No Flow	No Flow	No Flow
9	NS	NS	NS	NS
10	6.98 to 7.81	533 to 2,060	5.9 to <b>132</b>	6 to 34
11	6.77 to 8.03	392 to 1,260	16.4 to <b>86.7</b>	5 to <b>126</b>
FMCU	6.59 to 7.45	140 to 460	27.9 to <b>101.0</b>	6 to <b>83</b>
FMCD	6.88 to 7.65	128 to 274	2.8 to 15.9	5 to 21
Trigger Level	6.5 – 8.5 <sup>*</sup>	125 to 2,200 <sup>*</sup>	6 – 50 (NTU) <sup>*</sup>	50 <sup>@</sup>

<sup>^</sup> See **Figure 3.1**      <sup>@</sup> Standard Industry Criterion      <sup>\*</sup> ANZECC Chapter 3 – Aquatic Ecosystems – Lowland Rivers in NSW  
**Bold Text** – Exceedance of Trigger Level      <sup>#</sup> Field Measurement      NS – Not Sampled  
Source: Donaldson Coal Pty Ltd

It is noted that access to Site 9 was restricted due the construction of the Hunter Expressway. Resumption of sampling at this location will occur during the next reporting period.

Analysis of the results obtained during the reporting period indicates the following.

1. The pH values at all sites were slightly acidic to slightly alkaline. All results were within the water quality trigger values for Lowland Rivers in NSW (6.5 to 8.5) outlined in the *Guidelines for Fresh and Marine Water Quality* (ANZECC 2000).
2. The electrical conductivity (EC) results range between 166µS/cm and 2,060µS/cm. All EC results are within the water quality trigger values for Lowland Rivers in NSW (125 to 2,200µS/cm) (ANZECC 2000) at all sample sites.



**Figure 3.3 Surface Water Quality Monitoring Results – 2013/2014**

3. Turbidity results for four sites (Sites 1, 10, 11 and FMCU) and total suspended solids (TSS) levels at three sites (Sites 1, 11 FMCU) exceeded the water quality trigger values for Lowland Rivers in NSW (6 to 50 NTU) outlined in the Guidelines for Fresh and Marine Water Quality (ANZECC 2000) and industry standard TSS criteria (50mg/L).

As Sites 1, and 10 are currently substantially upstream of underground mining activities these sites would not have been influenced by any Abel Mine activities. Baseline monitoring results for Sites 11 and FMCU have also previously recorded significantly elevated TSS (see **Appendix 7**). Therefore it is considered that the Abel Mine did not have a significant influence on the turbidity / TSS during the reporting period and that the elevated levels form part of the natural variation.

### Reportable Incidents

No reportable incidents occurred during the reporting period.

### Further Improvements

No other surface water control measures are planned or considered necessary and surface water control measures during future operations will remain consistent with those outlined within the Water Management Plan and MOP prepared for the Abel Mine.

## 3.5 GROUNDWATER POLLUTION

### Environmental Management

Monthly monitoring of regional groundwater levels and groundwater quality was undertaken, where possible, throughout the reporting period in accordance with the Water Management Plan and Integrated Environmental Monitoring Plan.

### Environmental Performance

#### *Groundwater Levels*

A summary of groundwater level monitoring results relevant to the Abel Underground Coal Mine is provided in **Table 3.4**.

The results indicate that groundwater levels and fluctuations have generally either remained consistent over the reporting period compared to previous reporting periods or, where pressures have declined, the changes are consistent with predicted trends.

Piezometer 63 is located to the east of the Abel Mine adjacent to the F3 Freeway (see **Figure 3.1**). Piezometer 63 has two vibrating wire transducers, one placed in the Lower Donaldson Seam (63A) and the other placed within sandstone interburden below the Buttai Seam (63B) at respective depths of 198m and 129m. The water level decline observed in 63B suggests a very slow recession, following installation in 2005, considered to be an indication of extremely low permeability and not as a result of mining stresses.

**Table 3.4**  
**Groundwater Levels**

Piezometers <sup>#</sup>		Standing Water Level (m AHD)						
		2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014
63A	Average	-0.46*	-0.4*	-0.003*	0.49*	-0.98	0.07	-0.02
	Range	0.17*	0.18*	1.43*	2.55*	0.95	0.23	0.17
63B	Average	-6.6*	-9.36*	-9.88	-10.65*	-10.04*	-10.09	-10.7
	Range	3.49*	1.71*	2.13	6.74*	0.39*	0.24	0.70
72	Average	23.16*	25.24*	27.71*	29.84*	26.68	NA <sup>2</sup>	31.52 <sup>3</sup>
	Range	5.54	4.86	2.46	3.82	1.26	NA <sup>2</sup>	1.66
72B	Average	50.51*	50.61*	50.52*	50.05*	50.06	NA <sup>2</sup>	50.43 <sup>3</sup>
	Range	0.29	0.37	1.08	0.44	0 <sup>1</sup>	NA <sup>2</sup>	0.14
78A	Average	31.13*	32.26*	34.4*	31.5*	31.69	33.70	15.72
	Range	0.67	5.85	5.53	0.34	0 <sup>1</sup>	2.03	25.54
78B	Average	68.3*	69.49*	68.1*	68.34*	68.23*	68.46	68.76
	Range	1.04*	0.52*	0.72*	0.35*	0 <sup>1</sup>	0.38	0.51
80	Average	25.97*	25.34*	21.65*	17.94*	17.14	19.48	9.60
	Range	0.65	2.08	4.69	1.78	0.74	1.56	21.88
81A	Average	17.59*	11.68*	7.06*	-2.68*	-5.12	NA <sup>2</sup>	-20.04 <sup>3</sup>
	Range	1.19	9.49	10.28	4.52	0 <sup>1</sup>	NA <sup>2</sup>	1.42
81B	Average	2.13*	1.97*	1.57*	0.79*	0.38	NA <sup>2</sup>	1.69 <sup>3</sup>
	Range	0.25	0.61	1.52	0.87	0 <sup>1</sup>	NA <sup>2</sup>	0.54
82	Average	24.20*	24.90*	25.02*	24.83*	NA <sup>2</sup>	NA <sup>2</sup>	24.68 <sup>3</sup>
	Range	0.78	1.15	1.66	0.88	NA <sup>2</sup>	NA <sup>2</sup>	1.00

Notes: 1. Only a single record collected during this period due to access issues. \* Corrected data  
2. NA – No Access. No samples collected due to access issues. # See Figure 3.1  
3. Data available for only part of reporting period due to access issues.

Source: Donaldson Coal Pty Ltd.

Piezometers 81A and 81B are located south of 2013/2014 mining activities within the Abel Mine. Monitoring results from 81A (single vibrating wire transducer placed within the Lower Donaldson Seam) show a drawdown response to mining the Donaldson Seam within the Abel Mine. Piezometer 81B is screened within overlying shallow Permian strata with water levels remaining stable during the reporting period.

Piezometer 80 is located southwest of 2013/2014 mining area with a single vibrating wire within the Lower Donaldson Seam. There has been a continued lowering of the groundwater level starting in mid-2008, similar to that seen in 81A, corresponding to development within the Abel Mine underground mine workings. Stable water pressures at this location occurred between mid-2010 and mid-2013. However, depressurisation associated with mining progression has occurred during the reporting period. This punctuated lowering of groundwater pressure is consistent with expectations.

Piezometer 72 is a single vibrating wire piezometer located south of Pambalong Swamp on the southern margins of the ML 1618 boundary (see **Figure 3.1**). Its records show increasing pressures since installation from 2006. No mining stresses on groundwater pressure are observed at this location. Piezometer 72B is a standpipe piezometer screened in shallow Permian strata (42m to 45m below ground level). Water levels within this monitoring bore have remained static.

Piezometers 78A and 78B are standpipe piezometers screened within the Lower Donaldson Seam and shallow Permian strata respectively and are located adjacent to John Renshaw Drive west of the current Abel Mine underground mining activities (see **Figure 3.1**). Similarly to water levels within Piezometers 81A and 81B, monitoring results from 78A show a drawdown response to mining the Donaldson Seam within the Abel Mine. Piezometer 78B, screened within overlying shallow Permian strata, has recorded stable water levels during the reporting period. This indicates that groundwater pressure reduction within the Lower Donaldson Seam is also insulated from shallow and surficial groundwater systems in this area.

The measured (and interpreted) steady drawdowns measured in 81A and 80 are coincident with the mining and dewatering within the Donaldson Seam and indicate that the pore pressure reduction has propagated north-south (i.e. down dip). This is as would be expected within a confined aquifer unit, especially at depth where the degree of hydraulic confinement (elastic compression of groundwater) increases with overburden pressure.

Drawdowns measured in 78A are also coincident with the recently commenced mining within Panel 26 and West Mains located approximately 450m southwest of the piezometer. This is also as expected with mining occurring down dip of the Piezometer 78A.

The available data from the other piezometers also indicates that the pore pressure reduction as a result of mining is largely restricted to the Donaldson Seam

### ***Groundwater Inflows***

Groundwater inflow quality within the reporting period has shown a marked decrease in salinity levels with Electrical Conductivity levels falling from approximately 4,000 $\mu$ S/cm in June 2013 to 2,000 $\mu$ S/cm in June 2014. Previously it has been a protocol that an observed increase or decrease in salinity by more than 25%, sustained over a consecutive 6-month period, would require a response action. However, a preliminary review indicates that the current decline in salinity levels is due to short term water management strategy whereby water is being stored underground.

Groundwater inflow rates during the reporting period decreased from approximately 1,100m<sup>3</sup> per day in June 2013 to approximately 400m<sup>3</sup> in June 2014. However, this reduction is also likely to have occurred due the short term increase in underground storage affecting the water balance estimates for groundwater inflows. In any event, the water inflow rates are generally within the predicted range for Year 7 of mining (i.e. 359ML/year).

### ***Groundwater Quality***

Groundwater quality monitoring results are presented in **Appendix 7** and summarised in **Table 3.5** and **Figure 3.4**. They show that the pH values ranged between slightly acidic (6.07) and alkaline (8.46), EC values ranged between 282 $\mu$ S/cm and 11,100 $\mu$ S/cm and TSS levels ranged between <5mg/L and 11,600mg/L (comments during sample noted the water was “thick and muddy”). The high TSS results are due to groundwater monitoring bores being poorly

developed and as such, sediment is entering bore screens on purging. A recommendation has been made by the consulting hydrogeologist to remove TSS monitoring from the groundwater program as it does not add value in assessing impacts to groundwater system management.

**Table 3.5**  
**Summary of Groundwater Quality Monitoring Results – 2013/2014**

Sampling Site <sup>#</sup>	pH	EC (µS/cm)	TSS (mg/L)
DPZ - 6	6.45 to 7.21	807 to 2,590	44 to 11,600
DPZ -7 <sup>^</sup>	6.98 to 7.26	2,530 to 2,910	<5 to 1,620
DPZ – 12*	6.07 to 7.12	1,940 to 11,100	14 to 3,530
DPZ – 13	7.20 to 7.82	5,260 to 10,200	22 to 1,520
JRD1	8.04 to 8.46	4,200 to 4,560	9 to 150
JRD2	6.24 to 7.55	282 to 2,530	<5 to 932
Source: Donaldson Coal Pty Ltd			# see <b>Figure 3.1</b>
*Bore damaged March 2013 – no further sampling			<sup>^</sup> Bore blocked from August 2013 – no further sampling

The Environmental Assessment baseline monitoring reported that the quality of groundwater sampled within the underground mining area of the Abel Mine was variable with total dissolved solids (TDS) ranging from less than 518mg/L to 13,000mg/L, which is approximately equivalent to EC readings of between 865µS/cm and 21,700µS/cm. All results were within previously recorded baseline ranges.

The results recorded during 2013/2014 reporting period are also largely within the same ranges recorded during the previous reporting periods.

### Reportable Incidents

No reportable incidents occurred during the reporting period.

### Further Improvements

Given that a maximum baseline measure of salinity was approximately 21,700µS/cm, it is considered that, at this point in time, the activities of Abel Underground Coal Mine are not having an effect on groundwater quality. Continued monitoring in subsequent reporting periods will detect any trends in groundwater levels and quality parameters.

## 3.6 THREATENED FLORA AND FAUNA

### Environmental Management

Secondary workings commenced within Panels 23 and 24 wholly or partly beneath five dams of habitat value during the reporting period, namely Dams 32, 35, 54, 161 (as nominated by Kleinfelder, 2014). At the time of the 2013 survey, the likelihood of ecological impacts from subsidence was low and, as such, the data collected continues to represent ‘baseline’ conditions. None of these dams are classified as requiring specific subsidence control / management strategies.

No mining was undertaken during the reporting period within areas that would lead to subsidence under or near the Pambalong Nature Reserve or sub-tropical rainforest. Hence, no specific flora or fauna management measures were required above these areas.

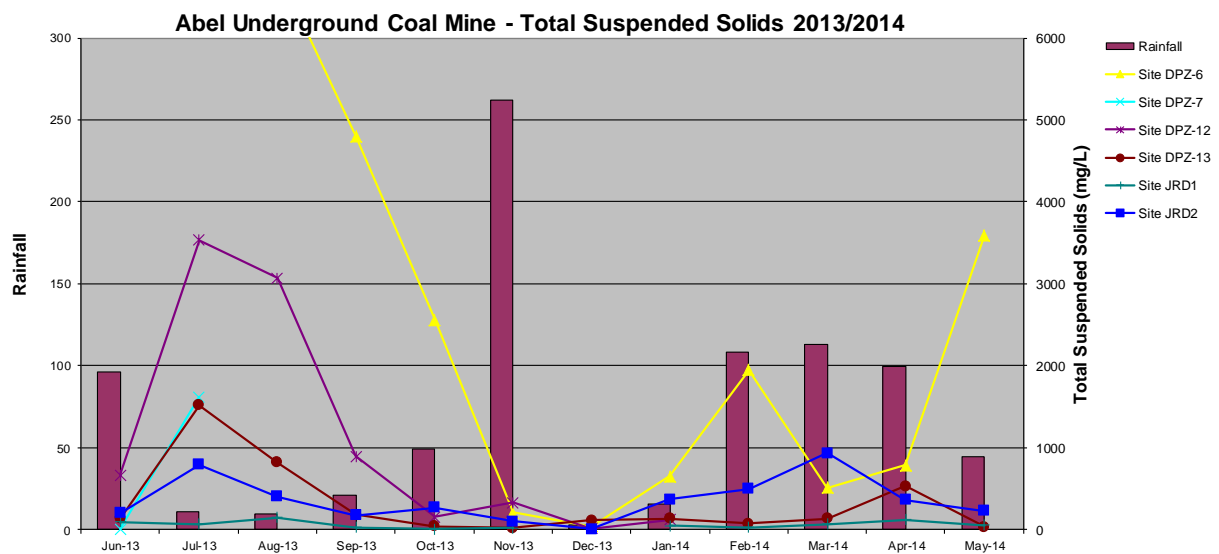
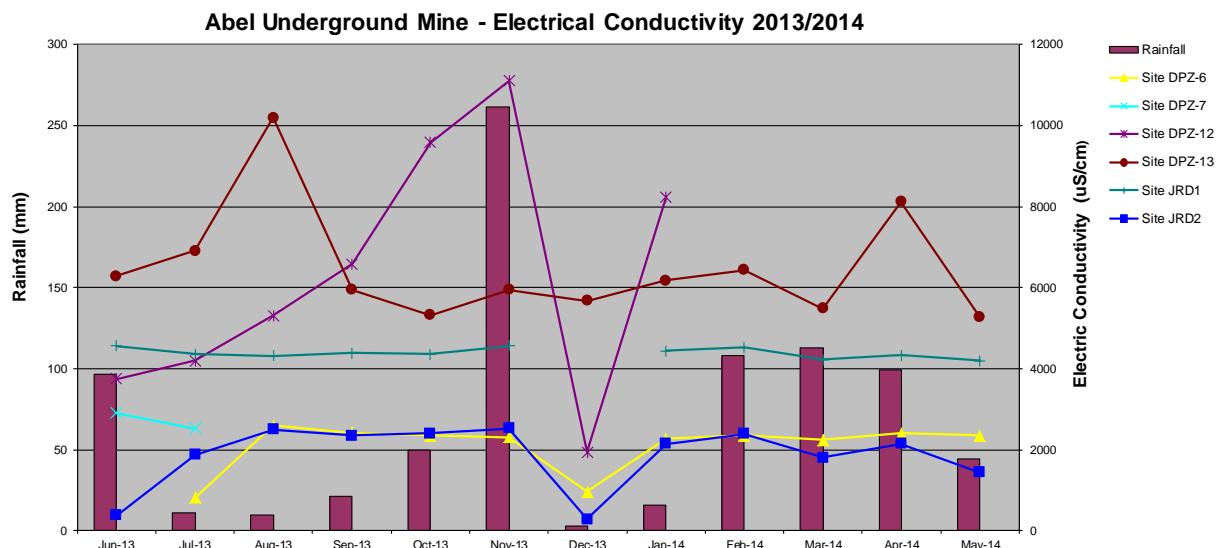
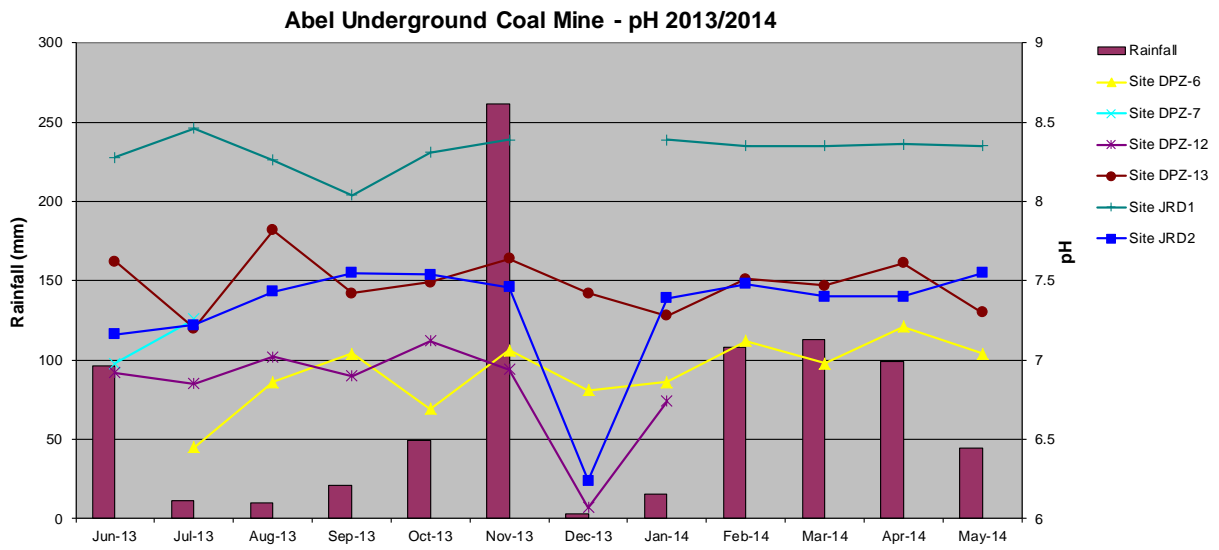


Figure 3.4 Groundwater Quality Monitoring Results – 2013/2014

## Environmental Performance

Ongoing survey work was completed by Kleinfelder Australia Pty Ltd during the reporting period as part of the Dam Monitoring and Management Plan, Sub-tropical Rainforest Monitoring Plan and Pambalong Nature Reserve Monitoring Plan (see **Appendices 2, 3 and 4**). Macroinvertebrate sampling also continued to be undertaken within Blue Gum Creek upstream of the Pambalong Nature Reserve by Robyn Tuft and Associates during Spring 2013 and Autumn 2013 (see **Appendix 5**). A summary of the principal results is provided as follows.

### *Macroinvertebrate – Blue Gum Creek*

Macroinvertebrate surveys have been undertaken within Blue Gum Creek at Stockrington Road and Dog Hole Road since 2009 and 2008 respectively. Monitoring during the reporting period included an assessment of Riparian Channel Environmental (RCE) ranking and aquatic ecology. The RCE ranking reflected a slight improvement in bed and total stream condition for both sites during the Spring 2013 and Autumn 2014 monitoring.

**Table 3.6** provides a summary of the biological characteristics recorded during monitoring undertaken to date.

**Table 3.6**  
**Summary of Biological Characteristics (Macroinvertebrates)**

Page 1 of 2

Parameter	Date	Blue Gum Creek at Stockrington Road (upstream)	Blue Gum Creek at Dog Hole Road (downstream)
Diversity (No. of species)	01/08/08	-	22
	20/05/09	29	25
	16/11/09	20	22
	27/04/10	-	11
	14/12/10	33	35
	01/04/11	24	20
	18/10/11	24	16
	12/04/12	-	23
	01/11/12	28	20
	21/03/13	10	12
	29/09/13	22	16
	24/03/14	9	8
	SIGNAL Index	01/08/08	-
20/05/09		5.7	5.8
16/11/09		4.6	4.6
27/04/10		-	3.4
14/12/10		4.7	4.7
01/04/11		4.7	4.4
18/10/11		5.0	5.3
12/04/12		-	5.6
01/11/12		4.4	5.0
21/03/13		4.9	5.6
29/09/13		4.8	5.3
24/03/14		4.8	3.2



**Table 3.6 (Cont'd)**  
**Summary of Biological Characteristics (Macroinvertebrates)**

Page 2 of 2

Parameter	Date	Blue Gum Creek at Stockrington Road (upstream)	Blue Gum Creek at Dog Hole Road (downstream)
Predominant Species Types	29/09/13	Chironomidae (midge larvae) Moindae (water fleas) Leptophlebiidae (mayfly nymphs) Corixidae (water boatman bug) Dytiscidae (beetle)	Leptoceridae (caddisfly nymphs) Leptophlebiidae (mayfly nymphs) Dytiscidae (water boatmen) Moindae (water fleas) Copepods (microcrustacea)
	24/03/14	Gyrinidae (whirligig beetle) Hydrophilidae (beetle) Leptophlebiidae (mayfly nymphs)	Hydrophilidae (beetle) Chironomidae (midge larvae) Dytiscidae (water boatmen)

Source: Robyn Tuft & Associates (2013 & 2014).

The recorded diversity showed a substantial recovery at both sites from a decline in the Autumn 2013 survey but again declined in the Autumn 2014 survey. The SIGNAL index for both sites was similar in the Spring 2013 survey to the previous surveys with the upstream and downstream sites remaining within the moderately and mildly impaired categories respectively. However, the downstream sites showed a marked decline in Autumn 2014 placing the site in the severely impaired ecological category. Robyn Tuft and Associates Pty Ltd report that there is no obvious reason for this trend and that it may be a temporary aberration. Importantly, it is not considered that either the Tasman or Abel Underground Coal Mines have not been a causal factor. Further review will be undertaken subject to the Spring 2014 survey results.

### ***Dam Monitoring***

The 2013 dam monitoring recorded the highest average diversity of frog species per dam over the six monitoring events to date. Frog diversity was similar in 2008 (baseline), 2010 and 2011 which recorded relatively high rainfall during the breeding season. Lack of rainfall leading up to the breeding season in 2009 and 2012 may have contributed to the reduction in recorded presence during those years.

Similarly, the 2013 bird diversity was the highest average diversity per dam and highest total number of species recorded with 12 new species detected. A total of 48 species have now been observed at the four targeted dams (see **Figure 3.5**). This increase followed an increase in 2012 and may be in response to drier conditions in inland Australia which have concentrated birds to the coast where conditions are more favourable.

No threatened frogs or birds or individuals of the threatened plant *Maundia triglochinos* were identified.

Water level and quality monitoring (for pH and Electrical Conductivity) within dams that could potentially be affected by mining induced subsidence is undertaken pre and post mining in accordance with the individual property and dam management plans. To date no subsidence impacts have been recorded.

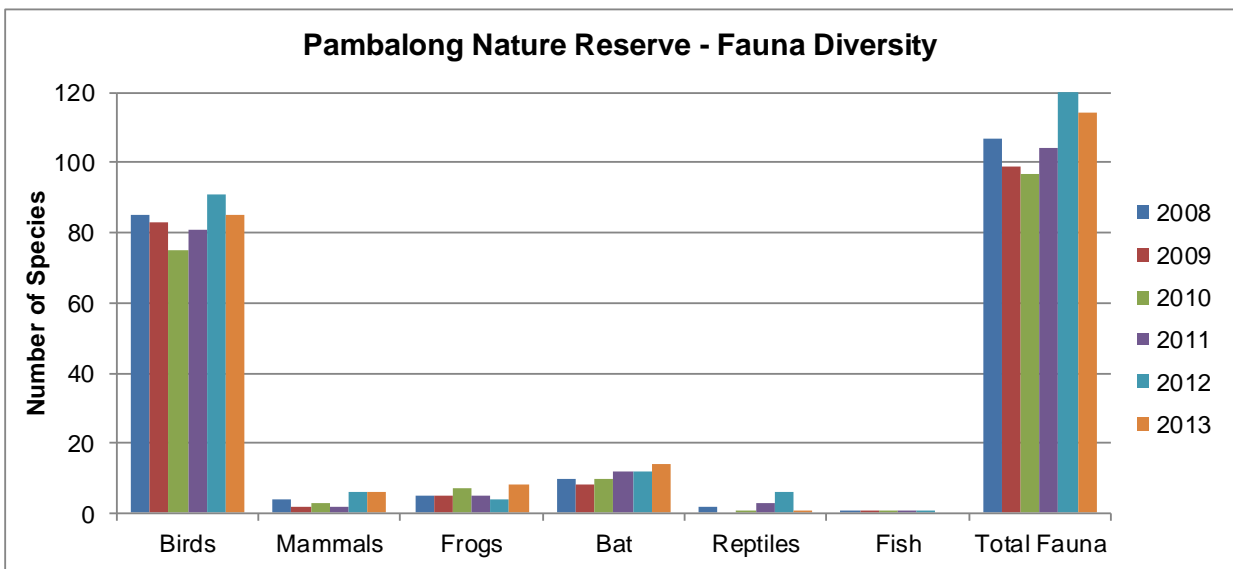
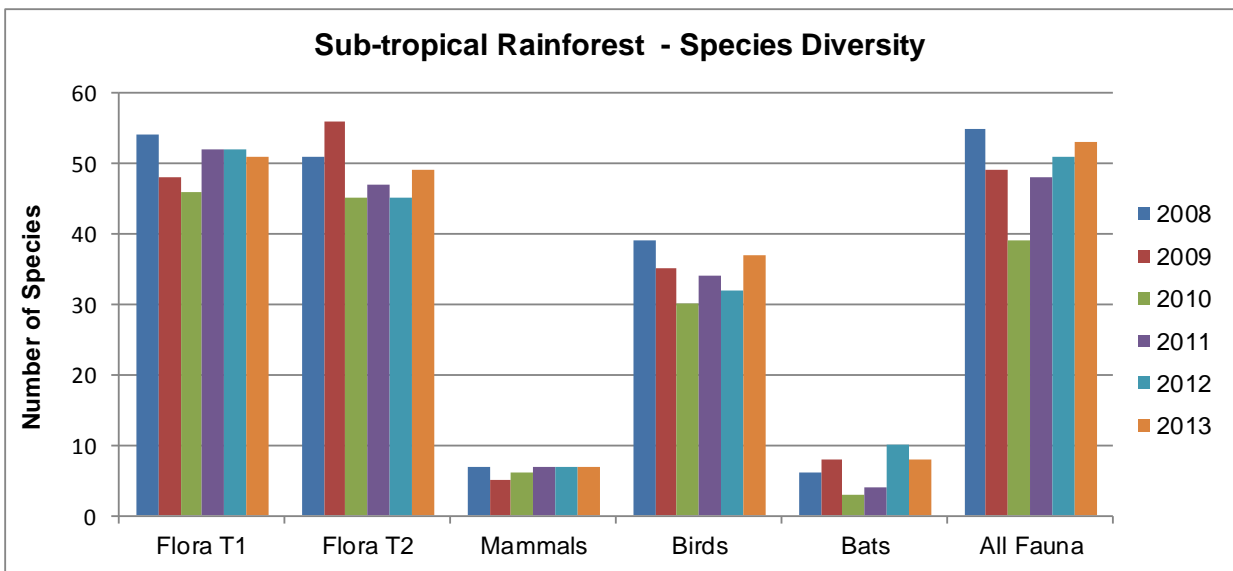
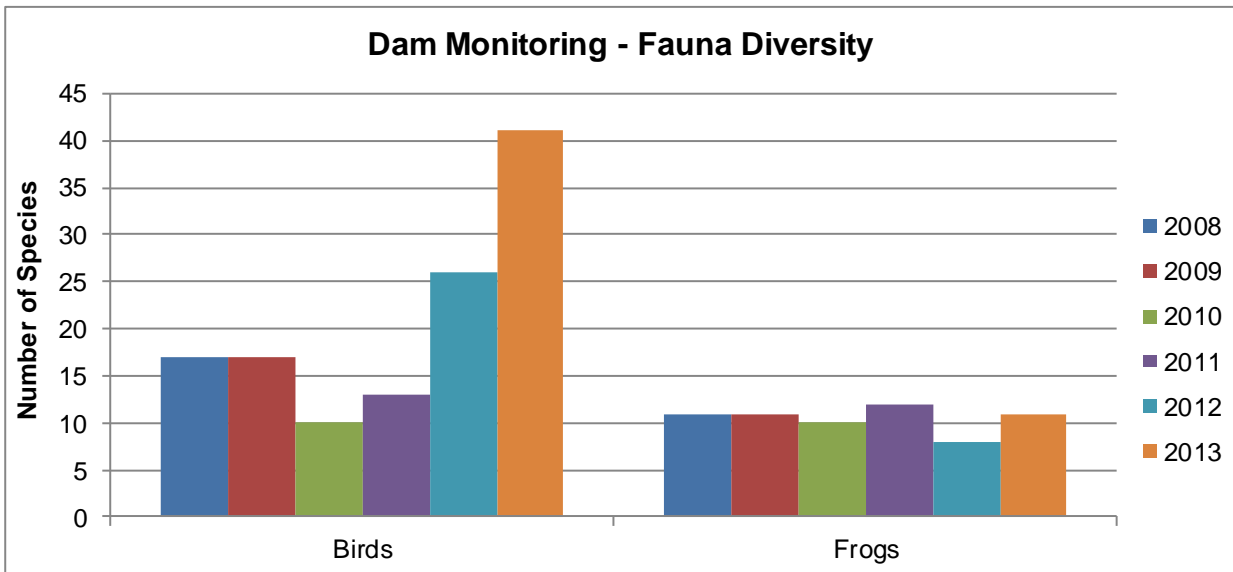


Figure 3.5 Selected Ecological Monitoring Results

### ***Sub-tropical Rainforest Monitoring***

The 2013 sub-tropical rainforest monitoring results indicated no substantial change in floral diversity compared to the 2008 baseline monitoring. Specifically 51 and 49 flora species were identified along the two monitoring transects in 2013 compared to 54 and 51 species in 2008 (see **Figure 3.5**).

The transition between dry and moist forest has expanded slightly in 2013 at Transect 1 with the width of the moist forest increasing. This is likely due to natural changes in species composition. A slight retraction of the shrub layer in Transect 1 also occurred, which can be explained by the dieback of the weed *Lantana camara*. Overall, no major changes in the rainforest width were detected during the 2013 monitoring.

In total, 53 fauna species were recorded during the 2013 survey, including three arboreal mammals, four terrestrial mammals, eight bats, 37 birds (including four new species), and one amphibian. Three species detected are listed as threatened under the NSW *Threatened Species Conservation Act 1995*, namely the Sooty Owl (*Tyto tenebricosa*), Southern Myotis (*Myotis macropus*), and Little Bentwing-bat (*Miniopterus australis*).

Fauna species richness in 2013 is close to the average for most species groups in both dry forest and rainforest (see **Figure 3.5**). However, the data shows a high variability in the bat diversity with relatively low numbers of species in the years 2008, 2010 and 2011; and high numbers in years 2009, 2012 and 2013. Kleinfelder (2013) confirms that this likely to be due to variations in detectability between years rather than actual changes in bat numbers.

No undermining of sub-tropical rainforest occurred during the reporting period or will occur for a number of years.

### ***Pambalong Nature Reserve Monitoring***

Continued monitoring as part of the Pambalong Nature Reserve Monitoring Plan was undertaken during 2013/2014 representing the sixth year of monitoring. The monitoring plan is aimed at building a picture of what constitutes normal variation so that any impacts from subsidence in the future can be identified, should they occur. During 2013/2014, a total of 114 fauna species were identified within Pambalong Nature Reserve including eight frogs, six terrestrial mammals, one reptile, 14 bats and 85 bird species. This includes six threatened species, one bird, *Varied Sittella*, and five microbats namely Little Bentwing-bat *Miniopterus australis*, Greater Broad-nosed Bat *Scoteanax rueppellii*, Eastern Bentwing-bat *Miniopterus schreibersii oceanensis*, Eastern Freetail-bat *Mormopterus norfolkensis* and Large-footed Myotis *Myotis macropus*.

No significant changes to the vegetation community extent or overall species richness were recorded although species richness at Quadrat 3 continued to increase. No additional flora species were recorded with a total of 183 flora species having been recorded since survey commenced in 2008. Of the 183 species, 63 are weed species

### **Reportable Incidents**

No reportable incidents were recorded during the reporting period.

### Further Improvements

Ongoing monitoring will continue to provide information to assist in assessing any potential impacts from subsidence and in formulating the subsidence management plans. Additionally, in conjunction with the Tom Farrell Institute for the Environment a water quality monitoring station is planned to be installed at the Pambalong Nature Reserve in August 2014. The station will monitor water level, pH, EC, dissolved oxygen, turbidity and temperature.

## 3.7 WEEDS

### Environmental Management

Regular inspections of the areas surrounding the surface infrastructure area were undertaken as part of weed management associated with the Donaldson Mine and spot spraying of weeds (including the listed Pampas Grass) was undertaken. It is noted that any seed heads of Pampas Grass were cut and bagged prior to spraying.

### Environmental Performance

Identified noxious weeds within the Abel Mine surface infrastructure area were controlled during the reporting period.

An annual weed survey was also undertaken by Kleinfelder (2014b) for the conveyor route from the Abel Mine surface infrastructure area to the Bloomfield CHPP. In total, 37 weed species were recorded compared to 36 species in 2012. It was concluded that weed control is required in the future conveyor easement, principally for Lantana, Pampas Grass and Blackberry. The management of these weeds prior to construction of the conveyor would significantly reduce the potential for weed invasion and weed management requirements in the future.

### Reportable Incidents

No reportable incidents were recorded within the reporting period.

### Further Improvements

No further improvements are deemed necessary. Ongoing regular weed inspections within the area of responsibility for the Abel Mine will continue. Weed control within the planned conveyor line easement will be undertaken via the respective operations (i.e. Donaldson Open Cut Coal Mine and Bloomfield CHPP).

## 3.8 BLASTING

### Environmental Management and Performance

Three underground blasts were undertaken during November 2013 with a total of 216.5kg of explosives and 217 detonators utilised. As monitoring of previous underground blasts recorded vibrations levels at the closest surrounding sensitive receivers no greater than 0.038mm/s, i.e. orders of magnitude below the amenity criteria of 5mm/s, ongoing monitoring has not been deemed necessary.

### Reportable Incidents

No reportable incidents were recorded during the reporting period.

### Further Improvements

As the monitoring of the initial 'trial' blasts indicate compliance, where similar depths of cover and maximum instantaneous charges are similar to the initial 'trial' blasts additional monitoring will not be undertaken. No further improvements are deemed necessary.

## 3.9 OPERATIONAL NOISE

### Environmental Management

The principal management control during the reporting period relating to noise was the continued use of low modulated frequency reversing alarms on mobile equipment used on the surface.

### Environmental Performance

Quarterly noise monitoring applicable to the Abel Mine commenced in December 2008 as an extension of the monitoring survey previously undertaken for the Donaldson Open Cut Coal Mine. Quarterly attended and unattended noise monitoring continued to be undertaken throughout the reporting period at four monitoring locations (see **Figure 3.1**) for quarters ending June, September and December 2013 and March 2014. Monitoring results are presented in **Table 3.7** and copies of the monitoring reports are presented within **Appendix 6**.

It is noted that, as part of the modification of Project Approval 05\_0136 in December 2013, the applicable noise criteria were adjusted. During the March 2014 quarter, monitoring also commenced at Location I and ceased at Location A.

The findings of the monitoring surveys were that the Abel Mine operations were generally inaudible at the monitoring locations with noise attributable to non-mine related traffic, birds, cricket, insect and frog noise, wind and other extraneous sources. During some monitoring events operations were audible at Locations F and L. The estimated contribution from the Abel operations was assessed as being below the criteria excepting during the June 2013 night time period at Location L where contributing levels were 2dBA above the criteria. SLR (2013) confirm that the *NSW Industrial Noise Policy 2000* states that a development is deemed to be non-compliant if the monitored noise level exceeds the criteria by more than 2dBA. As the exceedance was not greater than 2dBA, compliance is considered to have been achieved.

Night time sleep disturbance criteria ( $LA1_{(1min)}$ ) were in compliance during all monitoring events.

### Reportable Incidents

No reportable incidents were recorded within the reporting period.

### Further Improvements

Other than ongoing plant maintenance and noise monitoring (both attended and unattended), no other improvements are planned during the next reporting period.

**Table 3.7**  
**Summary of Attended Noise Monitoring Results – 2013/2014**

Location <sup>#</sup>	Time	Noise Criteria		Attended Monitoring	Noise generated by Abel Mine
		2013	2014*		
A 98Weakley's Drive, Beresfield	Day (L <sub>A</sub> eq (15 min))	50	35	47 to 70	Abel inaudible
	Evening (L <sub>A</sub> eq (15 min))	48	35	56 to 66	Abel inaudible
	Night (L <sub>A</sub> eq (15 min))	41	35	53 to 62	Abel inaudible
	Night (L <sub>A1</sub> (1min))	51	45	64 to 73	Abel inaudible
D Black Hill School, Black Hill	Day (L <sub>A</sub> eq (15 min))	41	35	55 to 60	Abel inaudible
	Evening (L <sub>A</sub> eq (15 min))	40	35	54 to 58	Abel inaudible
	Night (L <sub>A</sub> eq (15 min))	36	35	36 to 49	Abel inaudible
	Night (L <sub>A1</sub> (1min))	46	45	42 to 59	Abel inaudible
F Black Hill Rd, Black Hill	Day (L <sub>A</sub> eq (15 min))	41	35	58 to 64	Abel inaudible
	Evening (L <sub>A</sub> eq (15 min))	40	35	55 to 61	Abel inaudible
	Night (L <sub>A</sub> eq (15 min))	36	35	46 to 50	June to Dec 2013 Abel inaudible March 2014 Estimated Abel Contribution <30dBA
	Night (L <sub>A1</sub> (1min))	46	45	57 to 62	Abel inaudible
G Buchanan Rd, Buchanan	Day (L <sub>A</sub> eq (15 min))	43	35	42 to 51	Abel inaudible
	Evening (L <sub>A</sub> eq (15 min))	41	35	38 to 44	Abel inaudible
	Night (L <sub>A</sub> eq (15 min))	36	35	33 to 45	Abel inaudible
	Night (L <sub>A1</sub> (1min))	46	45	38 to 49	Abel inaudible
L 7 Kilshanny Av, Ashtonfield	Day (L <sub>A</sub> eq (15 min))	46	40	45 to 55	June 2013 Estimated Abel LAeq Contribution ~ 40dBA Sept & March 2014 Estimated Abel Contribution <30dBA Dec 2013 Abel inaudible
	Evening (L <sub>A</sub> eq (15 min))	46	40	43 to 58	Sept, Dec 2013 & March 2014 Abel inaudible June 2013 Estimated Abel LAeq Contribution ~ 43dBA
	Night (L <sub>A</sub> eq (15 min))	40	40	40 to 48	June 2013 Estimated Abel Contribution ~ 42dBA Sept 2013 Estimated Abel Contribution <30dBA Dec 2013 & March 2014 Abel inaudible
	Night (L <sub>A1</sub> (1min))	53	47	48 to 61	June 2013 Estimated Abel LA1 Contribution ~ 51dBA Sept 2013 Estimated Abel LA1 Contribution <30dBA Dec 2013 & March 2014 Abel inaudible
I Lord Howe Drive, Ashtonfield	Day (L <sub>A</sub> eq (15 min))	44	36	53	Abel inaudible
	Evening (L <sub>A</sub> eq (15 min))	46	36	52	Abel inaudible
	Night (L <sub>A</sub> eq (15 min))	38	36	42	Abel inaudible
	Night (L <sub>A1</sub> (1min))	48	45	47	Abel inaudible

# See Figure 3.1.

\*As per Project Approval 05\_0136 modification 04 December 2013.

### 3.10 VISUAL, STRAY LIGHT

#### Environmental Management

During the reporting period, all lighting was positioned and directed so as to minimise disturbing light emissions. As all activities occurred within the box cut created for the surface infrastructure area, no further controls were deemed necessary. Structures are painted a muted dark green to blend with the background bush.

## Environmental Performance

The visual controls implemented have been considered effective and will be maintained throughout the next reporting period.

## Reportable Incidents

No complaints regarding visual amenity or stray light were recorded during the reporting period.

## Further Improvements

No further improvements are planned or are deemed necessary.

### 3.11 ABORIGINAL HERITAGE

No Aboriginal artefacts are expected to be affected by subsidence within SMP Area 2 (see **Plan 2**) and no further surveys were undertaken by the Company during the reporting period. It is noted that the some landholders have organised Aboriginal heritage surveys of their properties in preference to survey being organised through the Company.

Within SMP Area 3 there are six sites (artefact scatters – AMA2/A, AMA2/B, AMA2/C, CA6, F1/B and FMC6) located above or in close proximity to Panels 24 and 25 (see **Plan 2**). Two cultural places (Black Hill Locality and Black Hill Pathway) are also partly located within SMP Area 3 above the southern end of Panel 25. The heritage assessment undertaken as part of the SMP application concludes that the predicted impacts would probably result in no loss of value upon these sites.

The approved Aboriginal Heritage Management Plan (Donaldson, 2007) requires monitoring for sites for which it is inferred undermining may result in impacts and for a sample of sites for which impacts are not expected to occur (namely sites 38-4-0140, F1/C and FMC8). No impacts are predicted and none of the sites within SMP Area 3 are these specified monitoring sites. This is also consistent with the Aboriginal Cultural Heritage Report (Kuskie, 2012) prepared for the Able Upgrade Modification which confirms that no actions are required for the management of these sites. The Aboriginal Heritage Management Plan is to be updated during the 2014/2015 reporting period.

### 3.12 NATURAL HERITAGE

No items or areas of natural heritage significance are considered to occur within the surface infrastructure area.

### 3.13 SPONTANEOUS COMBUSTION

No incidents of spontaneous combustion were recorded during the reporting period. Considering that the Upper and Lower Donaldson seams are considered to have a very low propensity for spontaneous combustion and with no history of spontaneous combustion, the management measures implemented have been considered adequate.

### 3.14 BUSHFIRE

#### Environmental Management

Integrated emergency response procedures have been prepared for Donaldson Mine and Abel Mine.

#### Environmental Performance

No bushfire incidents occurred during the reporting period nor were any requests received to assist in containing bushfires in the local area.

#### Reportable Incidents

No bushfires or other related reportable incidents occurred during the reporting period.

#### Further Improvements

Other than maintenance of fire fighting equipment at all site buildings and provision of clear access and signposting, no further improvements are planned or deemed necessary.

### 3.15 MINE SUBSIDENCE

#### Environmental Management

To date the following four Subsidence Management Plan (SMP) areas are currently applicable for the mine (see **Plan 2**).

- SMP Area 1 – Panels 1 to 14 and East Mains approved 27 May 2010. A variation was approved 29 September to remove Panels 9 to 14 from the SMP area.
- SMP Area 2 – Panels 14 to 26 approved 7 December 2011. Variations for the removal of Panel 14, shortening of Panels 15 to 19 and partial pillar extraction in Panels 20 to 22.
- SMP Area 3 – Panels 23 to 26 and part of the East Install Headings approved 16 July 2012. A variation to increase the width to part of Panel 24 was approved on 23 December 2013.
- SMP Area 4 – Panels 27 to 35. An application was lodged 30 May 2014. Approval remains pending.

As part of each SMP a subsidence monitoring program has been prepared together with required environmental and public safety management plans. Copies of all relevant SMP assessment reports and management plans are available on the Company's website.

#### Environmental Performance, Reportable Incidents and Further Improvements

During the reporting period secondary workings were undertaken within Panels 19, 22, 23, 24, 24A, 25 and East Mains Headings. **Table 3.8** provides a summary of the SMP approval, extraction commencement and extraction completion dates for all panels worked to date.



**Table 3.8**  
**Panel Approval and Extraction Summary**

Panel	SMP Approval Date	Extraction Commenced	Extraction Completed
Panel 1	27 May 2010	12 July 2010	22 December 2010
Panel 2	27 May 2010	17 September 2010	12 November 2010
Panel 3	27 May 2010	7 January 2011	19 April 2011
Panel 4	27 May 2010	14 March 2011	20 July 2011
Panel 5	27 May 2010	30 May 2011	24 September 2011
Panel 6	27 May 2010	22 September 2011	2 February 2012
Panel 7	27 May 2010	19 November 2011	31 May 2012
Panel 8	7 December 2011	31 March 2012	17 July 2012
Panel 15	7 December 2011	20 February 2012	26 March 2012
Panel 20	3 September 2012	12 September 2012	3 December 2012
Panel 21	3 September 2012	8 November 2012	18 April 2013
East Mains	27 May 2010	18 July 2012	Not Yet Complete
East Install Headings	7 December 2011	4 December 2012	Not Yet Complete
Tailgate Headings	7 December 2011	5 June 2012	10 September 2012
Panel 19A	21 December 2012	20 January 2013	25 May 2013
<b>Panel 19</b>	<b>21 December 2012</b>	<b>25 May 2013</b>	<b>7 August 2013</b>
<b>Panel 22</b>	<b>16 April 2013</b>	<b>19 April 2013</b>	<b>19 July 2013</b>
<b>Panel 23</b>	<b>16 July 2013</b>	<b>22 July 2013</b>	<b>10 March 2014</b>
<b>Panel 24a</b>	<b>23 December 2013</b>	<b>11 March 2014</b>	<b>Not Yet Complete</b>
<b>Panel 24</b>	<b>16 July 2013</b>	<b>16 September 2013</b>	<b>Not Yet Complete</b>
<b>Panel 25</b>	<b>16 July 2013</b>	<b>11 May 2014</b>	<b>Not Yet Complete</b>
<b>East Mains Headings</b>	<b>02 August 2013</b>	<b>09 September 2013</b>	<b>Not Yet Complete</b>
Source: Donaldson (2014a & 2014b)			
<b>Bold Rows Indicate Panels With Secondary Workings During This Reporting Period.</b>			

Subsidence monitoring has been conducted over all these panels in accordance with the monitoring program included within the approved SMP. Monitoring has included survey assessment, photographic monitoring and visual inspections. **Table 3.9** provides a comparison of the surveyed subsidence levels against predicted levels for panels within which extraction occurred during this reporting period. A comparison for all panels completed to date is provided within the Subsidence Management Report Four Monthly Update May 2014 (see **Appendix 8**).

**Table 3.9**  
**Predicted versus Measured Subsidence Levels – 2013/2014**

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Panel	Monitoring Parameter	SMP Prediction	Final Measured
East Main Headings	<b>100m Cover</b>		
	Subsidence	1,590mm	1,408mm
	Tensile Strain	10 to 16mm/m	11mm/m
	Compressive Strain	13 to 20mm/m	15mm/m
	Tilt	49mm/m	48.6mm/m
Panel 19	<b>&gt;110m Cover</b>		
	Subsidence	1,200mm	<b>1,280mm</b>
	Tensile Strain	10mm/m	7mm/m
	Compressive Strain	13mm/m	9mm/m
	Tilt	25mm/m	<b>28mm/m</b>

**Table 3.9 (Cont'd)**  
**Predicted versus Measured Subsidence Levels – 2013/2014**

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Panel	Monitoring Parameter	SMP Prediction	Final Measured
Panel 22	<b>125m Cover</b>		
	Subsidence	150mm	44mm
	Tensile Strain	2mm/m	1mm/m
	Compressive Strain	2mm/m	1mm/m
	Tilt	-	-
Panel 23	<b>&lt;130m Cover</b>		
	Subsidence	1,300mm	983mm
	Tensile Strain	30mm/m	13mm/m
	Compressive Strain	30mm/m	13mm/m
	Tilt	-	-
Panel 24	<b>&gt;110m Cover</b>		
	Subsidence	1,350mm	Not Yet Completed
	Tensile Strain	30mm/m	
	Compressive Strain	30mm/m	
	Tilt	70mm/m	
Panel 25	<b>&gt;110m Cover</b>		
	Subsidence	1,350mm	Not Yet Completed
	Tensile Strain	30mm/m	
	Compressive Strain	30mm/m	
	Tilt	70mm/m	
Source: Donaldson Coal (2014b).		<b>Bold</b> values indicate exceedances.	

All subsidence, tilt and strain results for Panels actively worked during the reporting period were within the predicted range excepting for Panel 19 which recorded minor exceedances in some areas above the panel.

The SMP End of Year Report 2013 and Subsidence Management Status Report May 2014 (**Appendix 8**) also provide results of visual monitoring. These are outlined as follows.

- No exceedances of predicted cracking occurred with remedial works carried out in consultation with landholders and infrastructure owners.
- Impacts upon Blackhill Road due to mining within Panels 23 and 24 were within predictions (cracking typically 50mm to 80mm). The 24hr monitoring and repair program for the road was implemented and the road remained in a safe and serviceable condition.
- All subsidence impacts on the Hunter Water Corporation Waterline or Ausgrid Power Poles or TransGrid Transmission Towers were within predicted levels and the infrastructure remaining in a safe and serviceable condition.
- There have been no other observed and/or reported subsidence impacts, incidents, service difficulties, community complaints during the reporting period that would require notification under the SMP approvals.
- Monitoring results display no discernible trends.

Monitoring including subsidence survey and photographic and visual monitoring will be continued throughout the ensuing reporting period and the end of year report outlined within the Subsidence Management Plan Approval will continue to be submitted, as required.

### **3.16 HYDROCARBON CONTAMINATION**

#### **Environmental Management**

All hydrocarbons were stored either within a self-bunded tank or a bunded area with a capacity to contain a minimum 110% of the largest storage tank.

#### **Environmental Performance, Reportable Incidents and Further Improvements**

No hydrocarbon-related incidents occurred during the reporting period.

The existing hydrocarbon management practices will continue to be implemented with no further improvements planned during the next reporting period.

### **3.17 METHANE DRAINAGE / VENTILATION**

Methane testing previously undertaken during exploration programs indicate that the generation of methane will be low. During the previous reporting period, an upcast ventilation shaft was installed and the existing ventilation fan from the portal area was relocated to the upcast shaft to improve ventilation and reduce air flow velocities. No further changes to ventilation were required during the current reporting period or are planned during the next reporting period.

### **3.18 PUBLIC SAFETY**

The perimeter of the Donaldson Mine, incorporating the surface infrastructure area for the Abel Underground Coal Mine, has been secured by standard rural fencing, boom gates and lockable gates to prevent unauthorised entry and various warning and information signs positioned to alert both employees and visitors.

No public safety issues relating to the Abel Mine were reported during the reporting period.

### **3.19 OTHER ISSUES AND RISKS**

No other issues arose during the reporting period nor were there unaccounted risks which needed to be addressed.

## 4. COMMUNITY RELATIONS

### 4.1 ENVIRONMENTAL COMPLAINTS

Between 1 June 2013 and 31 May 2014 no complaints relating to the Abel Mine were received. Since the commencement of operations at the Abel Mine there has been only one complaint (relating to stray light).

### 4.2 COMMUNITY LIAISON

The principal formal community consultation undertaken is the Community Consultative Committee. In accordance with *Schedule 6 Condition 6* of the modified Project Approval 05\_0136, the Company has established a Community Consultative Committee for the Abel Mine. During the reporting period, the committee consisted of:

- four representatives from the Company (Mr Phillip Brown, Tony Sutherland, Charlie Spence and Adam Heeney);
- a representative from Bloomfield Colliery (Mr Greg Lamb – absent during this reporting period); and
- five representatives of the local community (Messers Alan Brown, Allan Jennings, Terry Lewin, Andrew Pace and Brad Ure).

The committee is chaired by the Hon Mr Milton Morris, an independent chairperson appointed by the NSW State government. No representatives from Maitland City Council attended the committee meetings during the reporting period.

The committee held a total of four meetings during the reporting period (17 June, 16 September and 09 December 2013 and 17 March 2014). The meetings have continued to provide an opportunity for the Company to keep the community up to date with activities undertaken and programmed at the Abel Mine and for community members to table issues relating to the Abel Mine for the Company's consideration. It is noted that the Company provided presentations during each meeting to provide updates on the mine development, environmental monitoring, subsidence management planning and a proposed modification to allow shortwall and longwall mining in designated areas.

In addition to the committee meetings, a Stakeholder Day was held on 27 March 2014 in relation to the Extraction Plan and Subsidence Management Plan for Area 4.

## 5. REHABILITATION

### 5.1 BUILDINGS

No permanent buildings were renovated or removed during the reporting period.

### 5.2 REHABILITATION OF DISTURBED LAND

**Table 5.1** provides a summary of the areas disturbed and rehabilitated at the start and end of the reporting period and estimated areas during the next reporting period whilst **Table 5.2** provides a further breakdown of the rehabilitation activities relevant to the surface infrastructure area.

**Table 5.1**  
**Rehabilitation Summary**

	Area Affected (ha)		
	Total Area, start of Reporting Period	Total Area, end of Reporting Period	Area Estimated end of next Reporting Period
<b>A: MINE LEASE AREA</b>			
<b>A1 Mine lease(s) Area</b>	2755	2755	2755
<b>B: DISTURBED AREAS</b>			
<b>B1 Infrastructure area</b> (other disturbed areas to be rehabilitated at closure including facilities, roads)	11.02*	11.02 <sup>#</sup>	11.02
<b>B2: Active Mining Area</b> (excluding items B3 - B5 below)	278 (underground)	344 (underground)	451 (underground)
<b>B3 Waste emplacements</b> , (active/unshaped/in or out-of-pit )	0	0	0
<b>B4 Tailings emplacements</b> , (active/unshaped/uncapped)	0	0	0
<b>B5 Shaped waste emplacement</b> (awaits final vegetation)	0	0	0
<b>Previous Mining Activities</b>	0	0	0
<b>TOTAL ALL DISTURBED AREAS</b>	289.02	355.02	462.02
<b>C REHABILITATION</b>			
<b>C1 Total Rehabilitated area</b> <sup>^</sup> (except for maintenance)	0.75	0.75	0.75
<b>D: REHABILITATION ON SLOPES</b>			
<b>D1 10 to 18 degrees</b>	0.7	0.7	0.7
<b>D2 Greater than 18 degrees</b>	0.05	0.05	0.05
<b>D3 Less than 10 degrees</b>	0	0	0
<b>E: SURFACE OF REHABILITATED LAND</b>			
<b>E1 Pasture and grasses</b>	0.7	0.7	0.7
<b>E2 Native forest/ecosystems</b>	0.05	0.05	0.05
<b>E3 Plantations and crops</b>	0	0	0
<b>E4 Other</b> (include non-vegetative outcomes)	0	0	0
* Includes 0.41ha associated with the extended light vehicle car park and 0.23ha for the downcast ventilation shaft.			
<sup>#</sup> Includes 0.58ha relating to the upcast ventilation shaft.			
<sup>^</sup> Excludes rehabilitation of surface cracks resulting from subsidence.			

As the Abel Mine is an underground operation, the only significant rehabilitation will be during mine decommissioning. During the reporting period rehabilitation activities within the surface infrastructure area related to regular inspection and maintenance of previously rehabilitated areas and retained vegetation.

Above the underground mining area, minor rehabilitation works were completed for surface cracks associated with subsidence. These cracks were within the predicted range and were excavated to the limit of the crack, backfilled, compacted, topsoiled and seeded. Road repair

works were also completed for Blackhill Road in accordance with the Blackhill Road Management Plan. Works above Panel 23 were completed between October and December 2013 and above Panel 24 between January and February 2014. All cracking was within predicted levels. Visual inspections on 15 January 2014 noted water seeping from the Hunter Water Pipeline and repairs were conducted that same day.

**Table 5.2**  
**Maintenance Activities on Rehabilitated Land – Surface Infrastructure Area**

Nature of Treatment	Area Treated (ha)		Comments/control strategies/treatment detail <sup>#</sup>
	During Reporting Period	During Next Reporting Period*	
Additional Erosion Control Works	0	0	No additional erosion control works were undertaken during the reporting period.
Re-covering	0	0	Nil
Soil Treatment	0	0	No soil treatment (e.g. lime, gypsum or fertilisers) was required during the reporting period or is likely to be required in subsequent reporting periods.
Treatment / Management	0	0	No specific treatments or management measures were required during the reporting period or are expected to be required in ensuing reporting periods.
Re-seeding / Replanting	0	0	No re-seeding or re-planting was required during the reporting period.
Adversely Affected by Weeds	0	0	No areas were identified within ML 1618 as being adversely affected by weeds although 'spot' treatment of Pampas Grass was undertaken (as opposed to treatment of an infested area). Continued inspections and, where necessary, weed control will be undertaken.
Feral Animal Control	0	0	No feral animal control was deemed necessary within the surface infrastructure area during the reporting period. It is noted that the Company participated in the fox and wild dog baiting on the Black Hill Land above the underground mine area.
* Indicative only			

### 5.3 OTHER INFRASTRUCTURE

As discussed in Section 2.1, no exploration holes were drilled during the reporting period or required rehabilitation. No issues relating to the rehabilitation of previous exploration holes / drill sites were raised during the reporting period.

No other specific rehabilitation or maintenance activities were undertaken during the reporting period.

#### **5.4 REHABILITATION TRIALS AND RESEARCH**

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

#### **5.5 FURTHER DEVELOPMENT OF THE FINAL REHABILITATION PLAN**

No further development of the final rehabilitation plan was undertaken during the reporting period. The Landscape Management Plan which incorporates a Rehabilitation Management Plan was approved by the, then, Department of Planning on 11 February 2008 and remains the most up-to-date rehabilitation plan.

## 6. ACTIVITIES PROPOSED DURING THE NEXT AEMR PERIOD

The activities proposed for 2014/2015 will include the continued expansion of mining areas together with a range of monitoring activities. The following provides a summary of the proposed activities.

### Exploration

During the next reporting period an exploration program is planned with up to 14 boreholes, including five boreholes within ML 1618 (LD01 to LD05). Associated sub-surface geophysical surveys and gas testing will be completed for the purpose of validating estimated coal resource quantities and gathering data on coal quality and geological conditions. A Review of Environmental Factors (REF) for this program was prepared and submitted by the Company during May 2014.

Exploration reports will continue to be submitted to the Coal Advice and Resource Assessment section of DTIRIS in accordance with *Condition 11* of ML 1618.

### Mining

During the next reporting period, mining will focus upon continued first workings within Panels 26, 27, 28, 29, 30, 31 and the West Mains. Second workings are planned to be completed within Panel 25 and commenced in Panels 26, 27 and 28. The planning mining activities are shown in **Plan 2**. It is estimated that in the order of 2,624,991t of ROM coal will be extracted during the next reporting period

### Rehabilitation

No specific rehabilitation works are planned during the next reporting period and no major rehabilitation work will be able to be undertaken until the decommissioning of the site. Any surface cracks that appear will be backfilled, compacted, topsoiled and seeded.

### Monitoring

The following monitoring will be undertaken during the next reporting period.

- Air Quality – ongoing deposited dust, TSP and PM<sub>10</sub> monitoring will be undertaken by Donaldson Coal.
- Surface water – ongoing surface water quality and flow monitoring at a range of routine monitoring sites located within Blue Gum Creek, Viney Creek, Buttai Creek, Four Mile Creek and a number of local water storages. This monitoring will be undertaken by Donaldson Coal as part of the integrated monitoring with the Bloomfield, Donaldson and Tasman Mines.
- Groundwater – ongoing groundwater quality and level monitoring will be undertaken by Donaldson Coal as part of the integrated network of monitoring bores for the Bloomfield, Donaldson and Tasman Mines. Measurement of the quality and volume of inflow water to the underground workings will also continue to be undertaken by Company personnel.



- Noise – SLR Consulting Australia Pty Ltd will undertake quarterly noise monitoring and review the frequency for ongoing monitoring.
- Flora & Fauna – Kleinfelder Australia Pty Ltd will undertake flora and fauna surveys and reporting in accordance with approved Flora and Fauna Management Plan.
- Meteorological – the on-site meteorological station at Donaldson Mine will be maintained and data collated.
- Subsidence monitoring will continue.

### **Community Consultation and Liaison**

The community consultative committee will continue to be convened during the next reporting period. It is expected that meetings will continue to be held quarterly. The 24hr environmental hotline will be maintained and a register retained of any complaints received.

## 7. REFERENCES

- Australia and New Zealand Environment and Conservation Council (ANZECC), 2000, *Australia and New Zealand Guidelines for Fresh and Marine Water Quality*.
- Australian Standards (2004), *AS 1940-2004 The Storage and Handling of Flammable and Combustible Liquids*.
- Donaldson Coal Company (2014a), *Abel Mine Subsidence Management Plan End of Year Report 2013*.
- Donaldson Coal Company (2014b), *Abel Mine Subsidence Management Status Report Four Monthly Update, 31 May 2014*.
- Kleinfelder (2014), *2013 Abel Underground Coal Mine Dam Monitoring and Management Survey*.
- Kleinfelder (2014b), *Fifth Annual Invasive Weed Monitoring Report*.
- Mineral Resources NSW (1997), *Borehole Sealing Requirements on Land – Coal Exploration*.
- National Health and Medical Research Council (NHMRC) (2003), *National Environmental Protection Measures (NEPM)*.
- NSW Department of Primary Industries (2006), *Guidelines to the Mining, Rehabilitation and Environmental Management Process*.

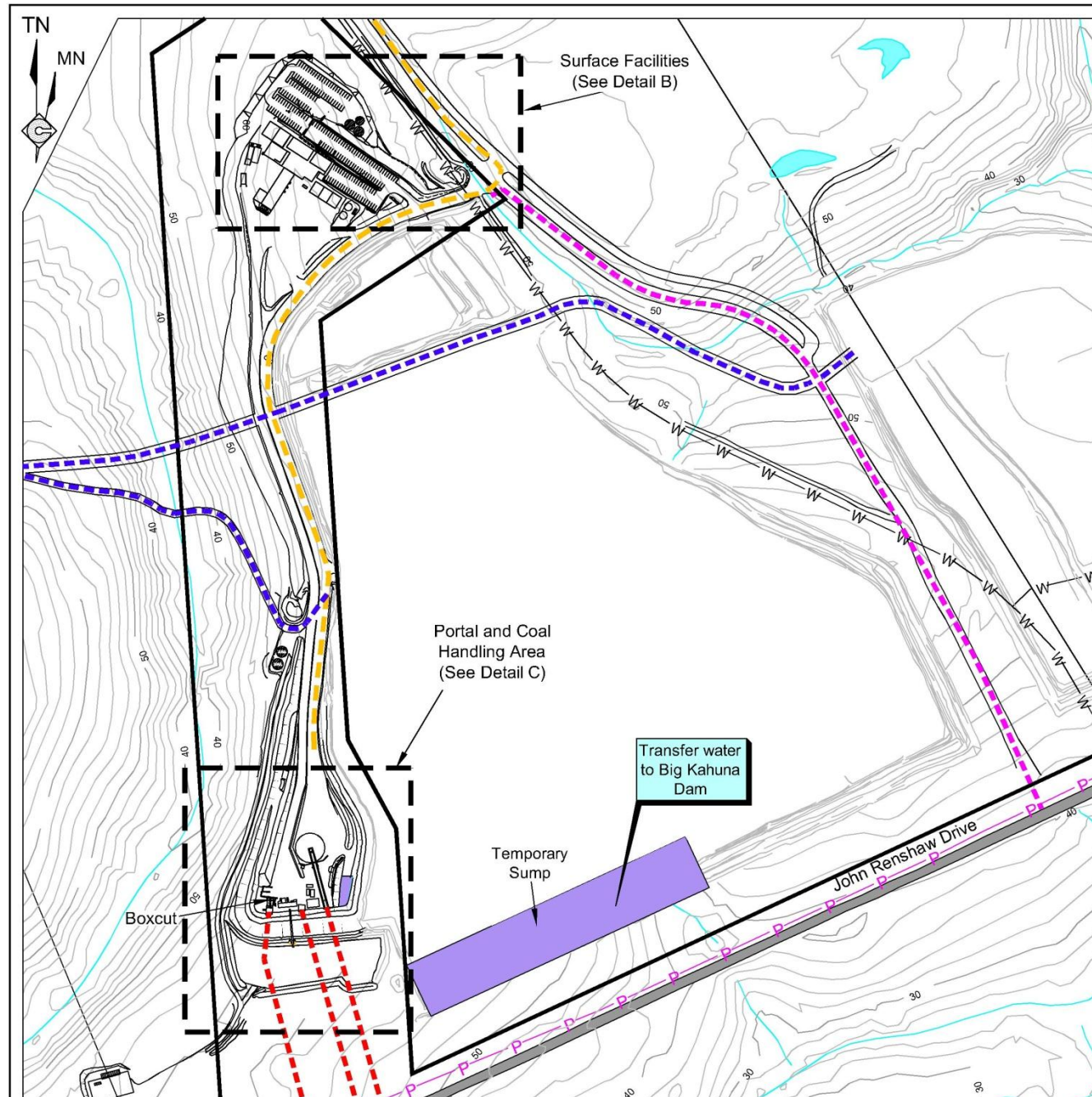
# Plans

- Plan 1: Site Activities
- Plans 2A & 2B: Mining Activities
- Plan 3: Rehabilitation Activities  
(1 June 2013 to 31 May 2014)

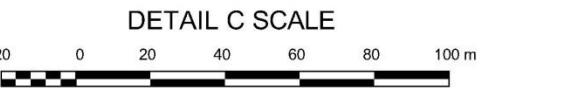
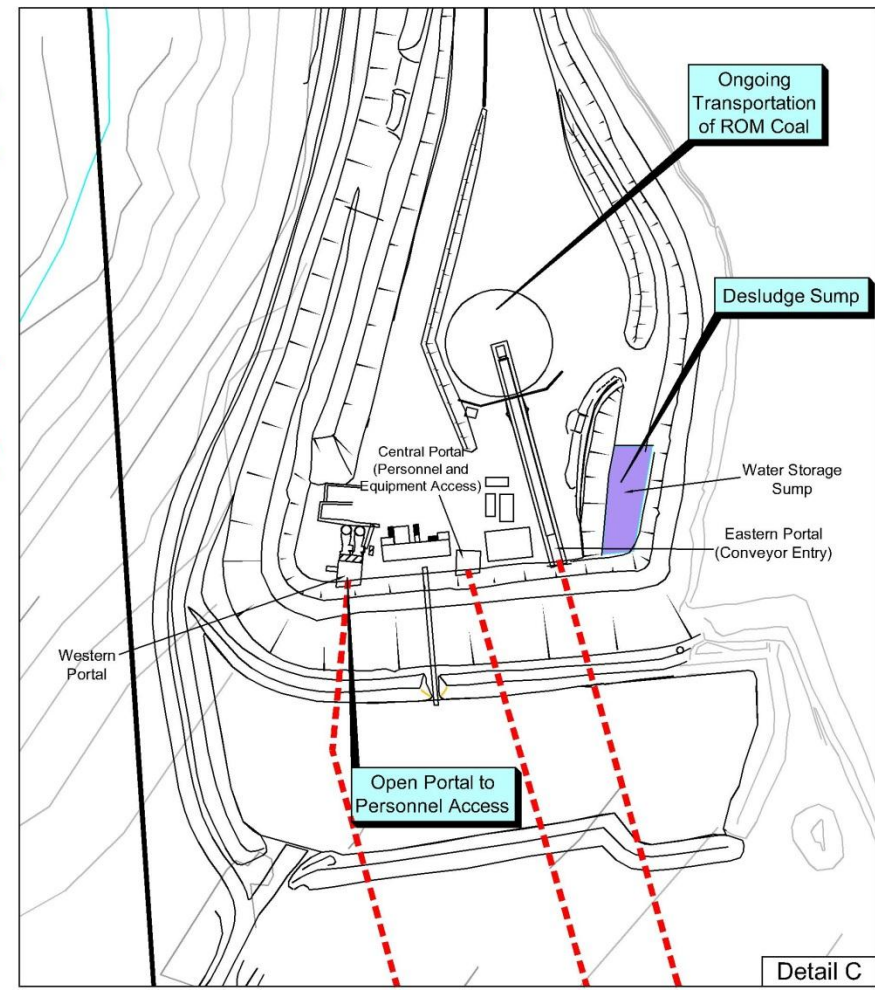
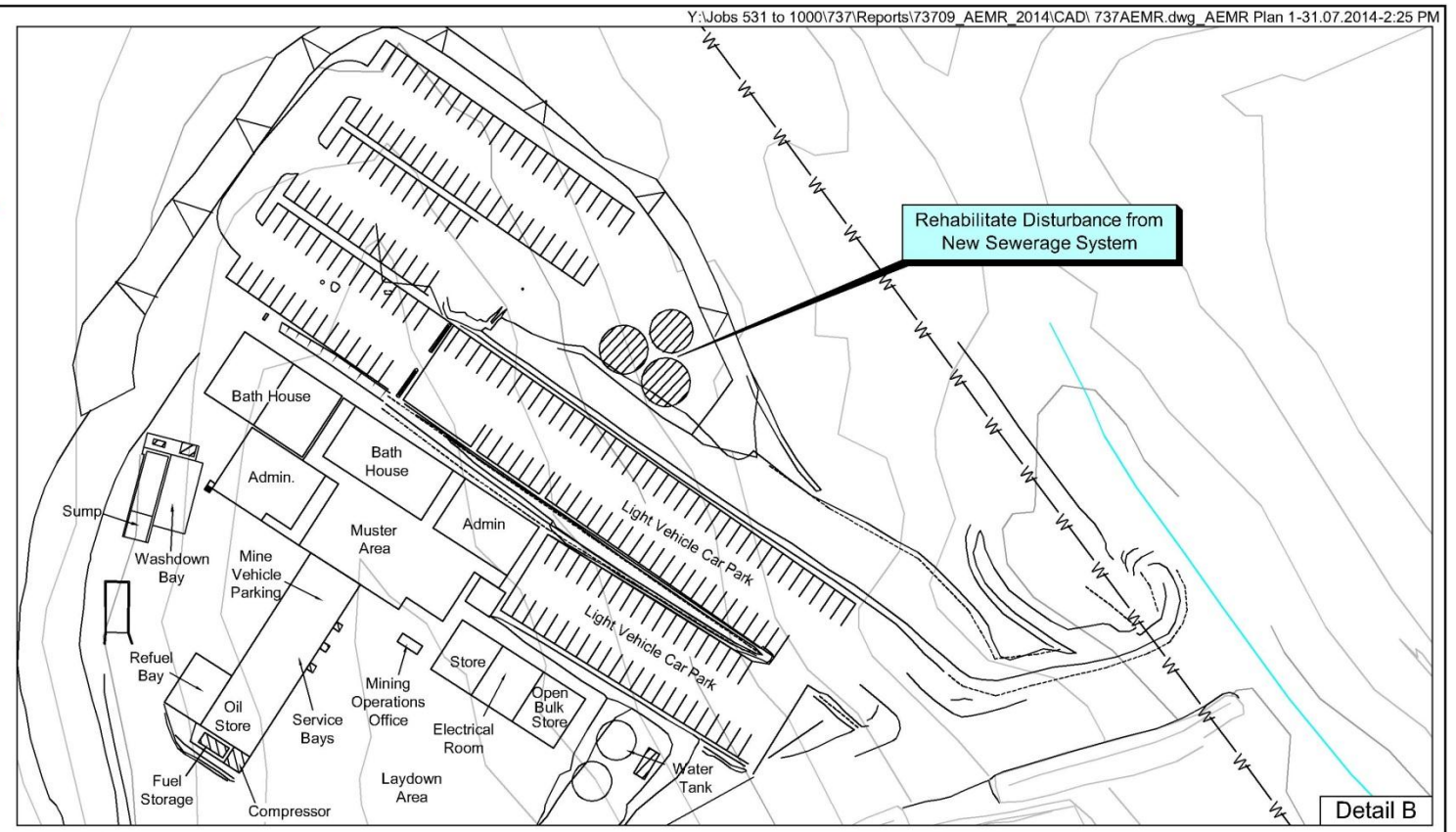
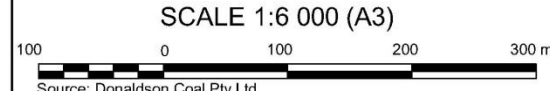
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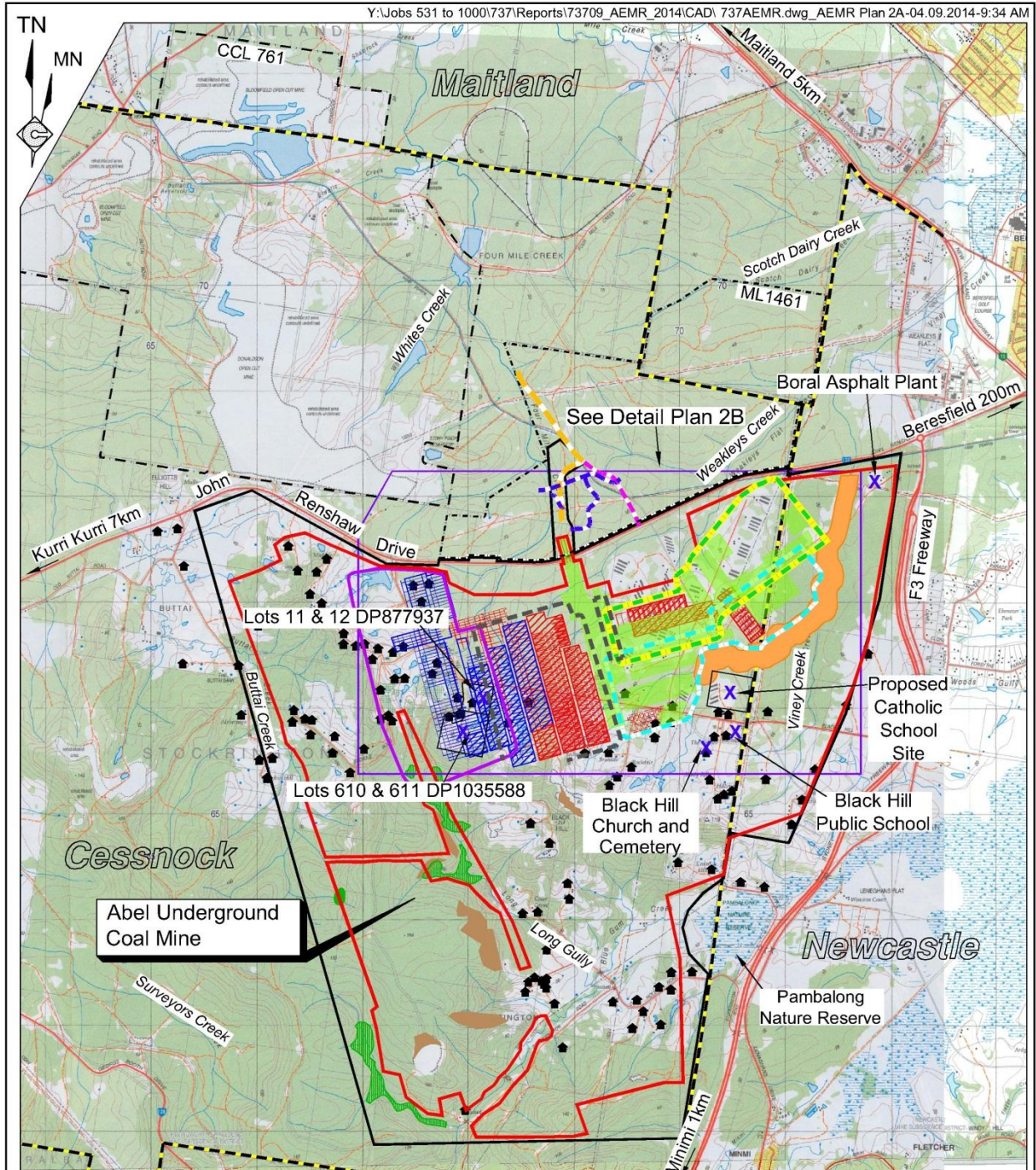


- REFERENCE**
- Mining Lease Boundary (ML1618)
  - Mine Access Road
  - Coal Haul Road
  - Donaldson Open Cut Access Road
  - Mine Access Drift
  - Contour (m AHD)(Interval = 2m)
  - Creek / Drainage Line
  - Existing Dam
  - Sump
  - Sealed Road
  - Unsealed Road / Track
  - P Energy Australia Services
  - W Hunter Water Services
  - Activity 2013 / 2014



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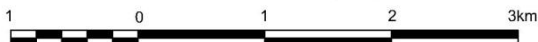




REFERENCE

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>--- LGA Boundary (offset for clarity)</li> <li>- - - CCL 761 Boundary</li> <li>..... ML 1461 Boundary</li> <li>— Mining Lease Boundary (ML1618)</li> <li>█ Underground Workings (Prior to this AEMR)</li> <li>█/█ Underground Workings 2013 / 2014<br/>1st Workings / 2nd Workings</li> <li>█/█ Underground Workings (2014 / 2015 - Indicative)</li> <li>█ Underground Workings (Mine Life - Indicative)</li> </ul> | <ul style="list-style-type: none"> <li>█ Viney Creek Subsidence Control Zone</li> <li>█ Coal Haul Road to Internal Mine Road</li> <li>█ Donaldson Open Cut Access Road</li> <li>█ Mine Access Road</li> <li>█ Rainforest</li> <li>█ Cliffs</li> <li>█ Place of Interest</li> <li>█ SMP Area 1 Boundary</li> <li>█ SMP Area 2 Boundary</li> <li>█ SMP Area 3 Boundary</li> <li>█ SMP Area 4 Boundary</li> <li>█ Residence</li> </ul> |
|--|---|

SCALE 1:60 000 (A4)



Data Source: Donaldson Coal Pty Ltd  
Base Map Source: Beresfield (2001) 1:25 000 Topographic Map

Plan 2A  
MINING ACTIVITIES

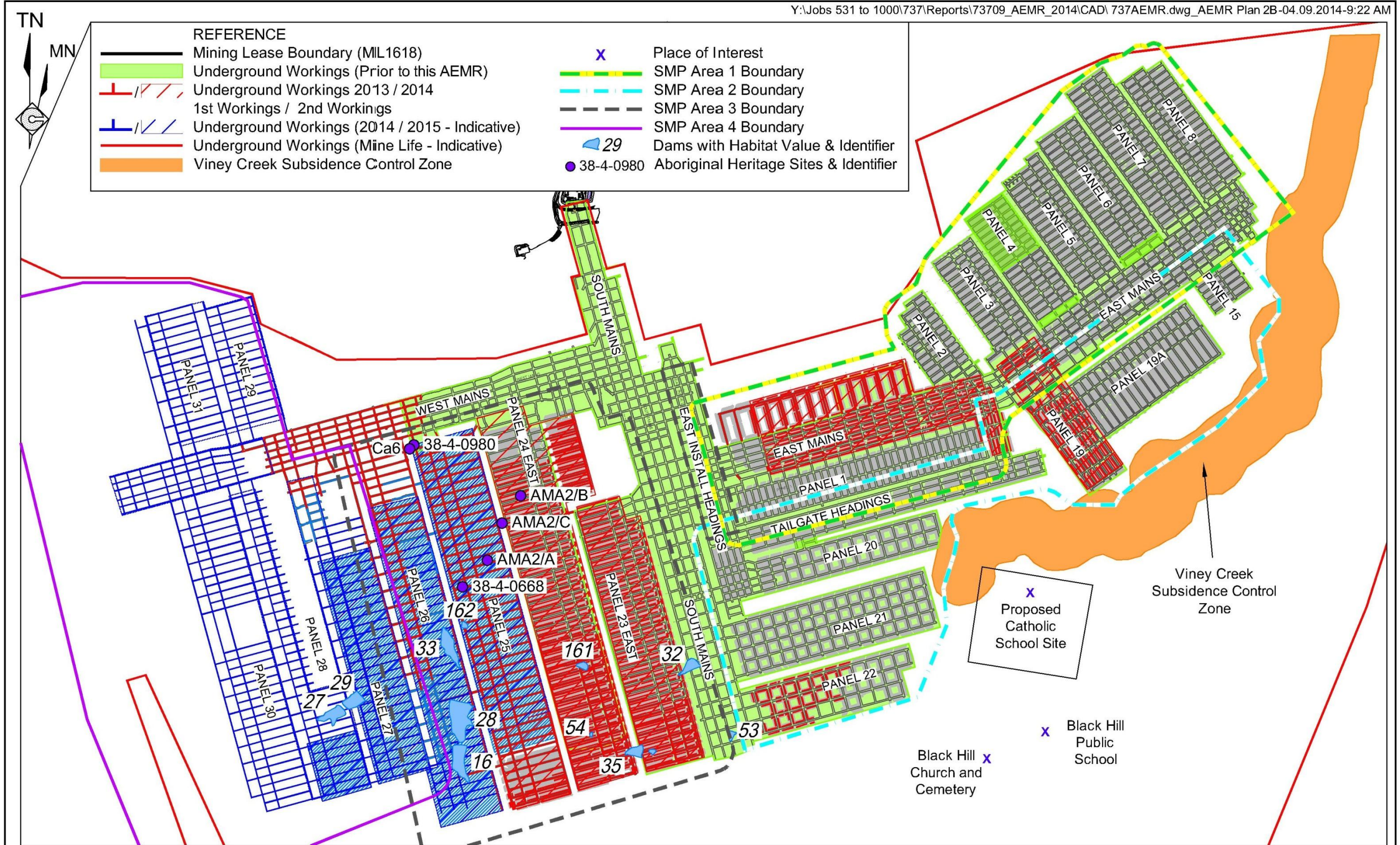


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REFERENCE	
	Mining Lease Boundary (ML1618)
	Underground Workings (Prior to this AEMR)
	Underground Workings 2013 / 2014 1st Workings / 2nd Workings
	Underground Workings (2014 / 2015 - Indicative)
	Underground Workings (Mine Life - Indicative)
	Viney Creek Subsidence Control Zone
	Place of Interest
	SMP Area 1 Boundary
	SMP Area 2 Boundary
	SMP Area 3 Boundary
	SMP Area 4 Boundary
	29 Dams with Habitat Value & Identifier
	38-4-0980 Aboriginal Heritage Sites & Identifier

SCALE 1:20 000 (A4)

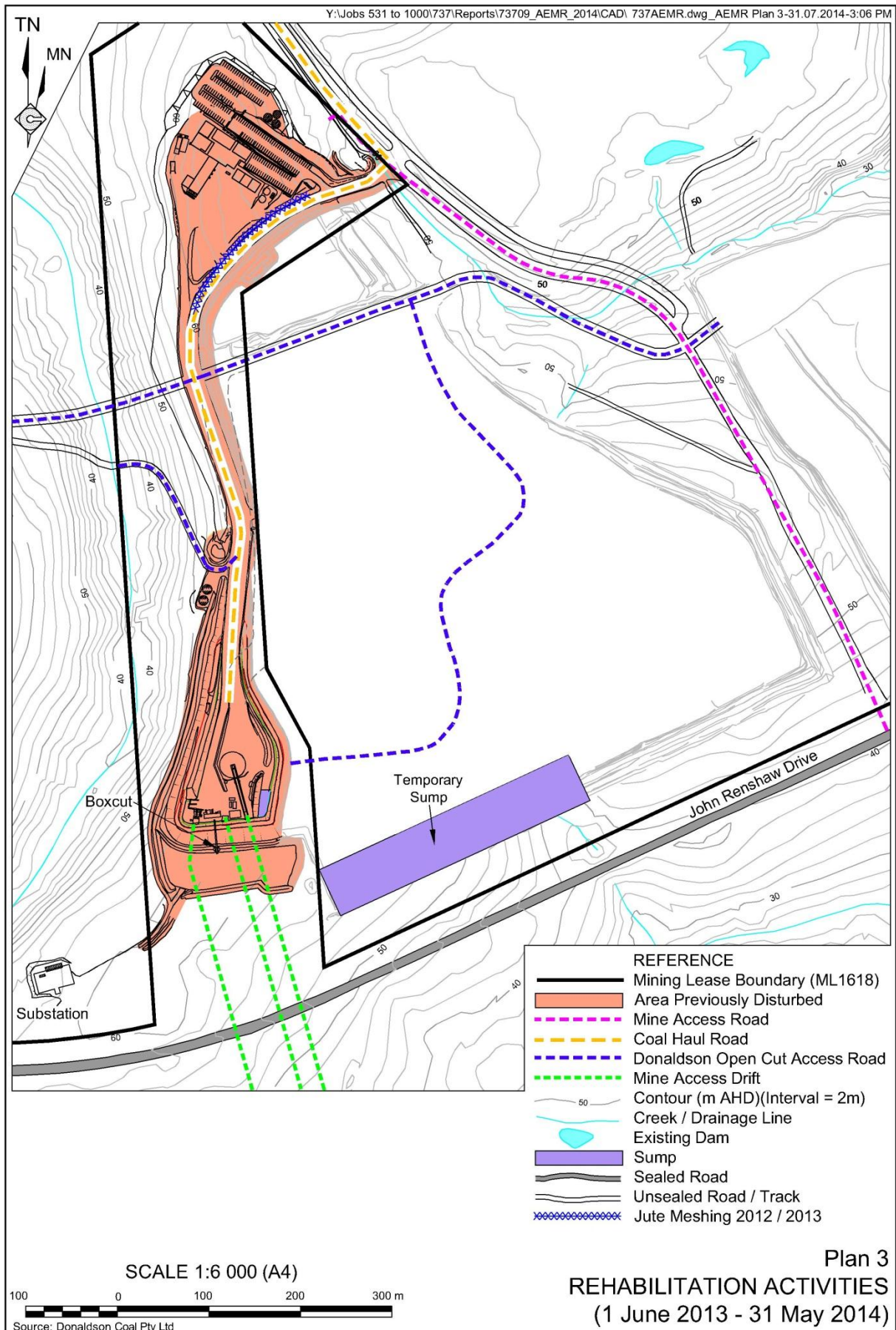


Data Source: Donaldson Coal Pty Ltd

Plan 2B  
MINING ACTIVITIES



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