DONALDSONCOAL

Part of the Yancoal Australia Group

ABN: 87 073 088 945

Annual Environmental Management Report

Abel Underground Coal Mine

1 June 2014 – 31 December 2014

Prepared by

R.W. CORKERY & CO. PTY. LIMITED

DONALDSON COAL

PTY LTD

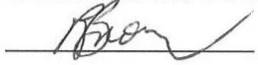
ABN: 87 073 088 945

Annual Environmental Management Report

for the

Abel Underground Coal Mine

1 June 2014 to 31 December 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	01/06/14	**AEMR Completion date**	31/12/14
Name of leaseholder	Donaldson Coal Company Pty Ltd		
Name of mine operator (if different)	NA		
Reporting Officer	Mr Phillip Brown		
Title	Environment and Community Manager		
Signature			
Date	31 March 2015		

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FOREWORD

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 eighth AEMR submitted for the Abel Mine and is applicable for the 7 month period 1 June 2014 to 31 December 2014 ("the reporting period"). This follows from the previous AEMR reporting period ending on 31 May 2014 and reflects a request from the Department of Planning & Environment to change the reporting period to calendar years. Future AEMRs will address the full 12 month calendar year period.

This AEMR has been prepared in accordance with the requirement for an Annual Review under *Schedule 5 Condition 4* of Project Approval 05_0136 and for an annual Environmental Management Report under *Conditions 4* and *5* of Mining Lease 1618. This AEMR 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.

The information presented within this AEMR has been compiled based on information and advice provided by the Company.

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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.**			

No changes or modifications to these approvals, leases and licences occurred during the reporting period.

Conditions within the 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.

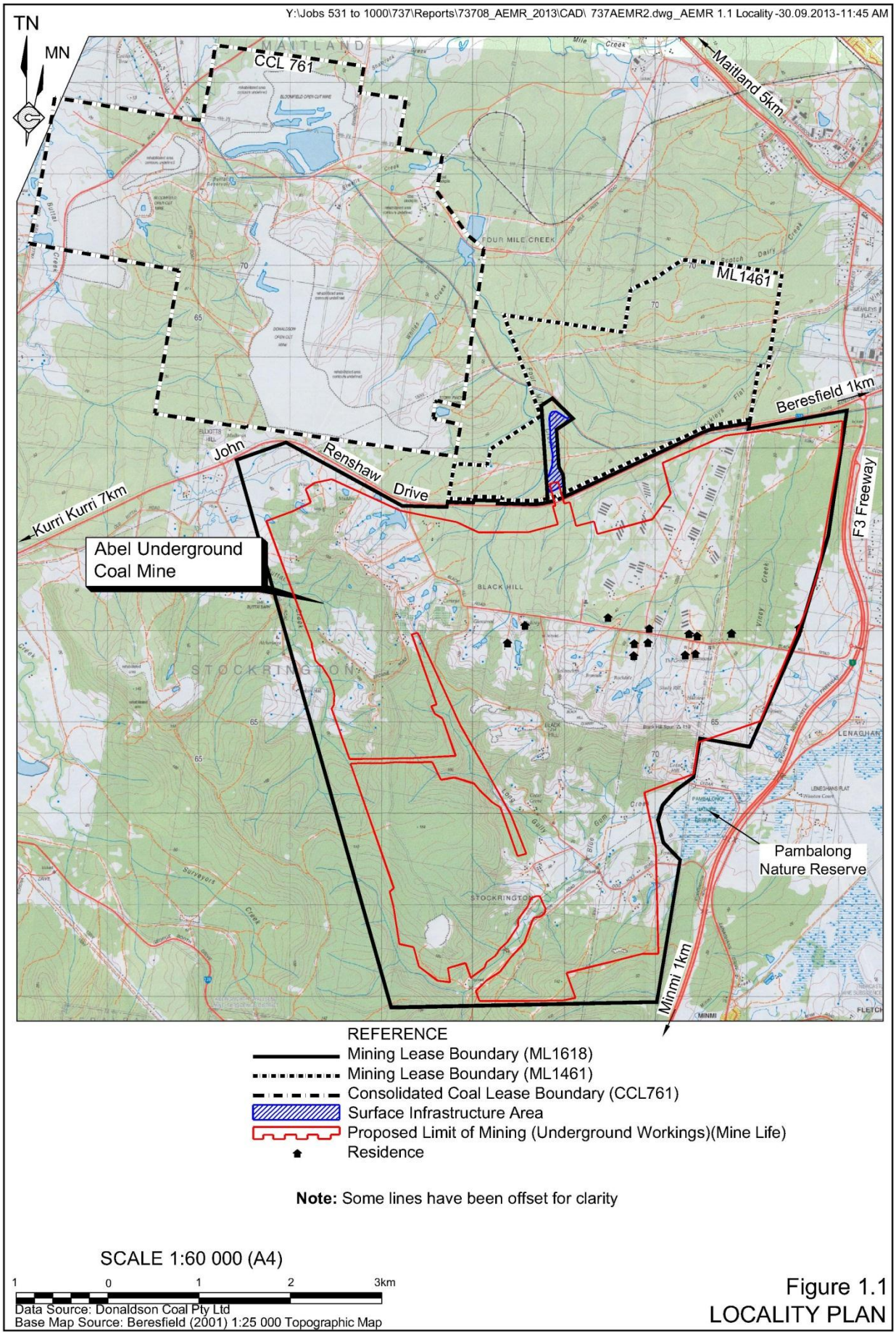


Figure 1.1
LOCALITY PLAN

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 by the end of March 2015.

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 Environment and Community 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 2013/2014 AEMR REVIEW

The 2013/2014 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 Environment (DPE) on 09 September 2014. Feedback was received from the DRE dated 02 October 2014. The following sets out the issues raised by the DRE in its feedback to the 2013/2014 AEMR, and how these have subsequently been addressed (in *italics*).

1. Include a statement that management of treated sewage effluent is undertaken in accordance with Council approvals – *sewage is treated by a system approved by Council on 24 August 2011 - see Section 2.6.*

2. Include a spatial estimate of area subject to weed management – *a spatial estimate is now provided in **Table 5.2** - see Section 5.2. This estimate essentially provides for the entire surface infrastructure area which is spot sprayed. No specific areas of weed infestation or broadcast spraying was undertaken during the reporting period.*

At the time of this report no feedback or actions had been raised by DPE.

2. OPERATIONS DURING THE REPORTING PERIOD

2.1 EXPLORATION

During the reporting period, three exploration holes (LD01, LD02 and LD04A) were drilled within ML 1618 (see **Plan 2A**). Sub-surface geophysical surveys and gas testing were completed on these holes for the purpose of validating estimated coal resource quantities and gathering data on coal quality and geological conditions.

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

Plans 2A and **2B** presents the mining-related activities undertaken during the reporting period. Mining activities concentrated on first workings within Panels 26, 27, 28 and West Mains and second workings within Panels 24, 24A, 25, 26, 27, East Install Headings and East Mains. A total of 1,470,195t (1,053,393m^3) 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 2014 to 31 December 2014

	Cumulative Production (m^3)		
	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	6,300	7,300	8,300
ROM Coal	5,551,449	6,604,842	8,294,868
Processing Waste	0	0	0
Product Coal[1]	5,551,449	6,604,842	8,294,868

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)	9	Forming underground roadways and secondary extraction.
Shuttle Cars	18	Transporting cut material away from Continuous Miner.
Driftrunners	13	Transporting people underground.
Coaltrams	9	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, 1,557,649t[1] of coal from the Abel Mine was processed at Bloomfield CHPP producing approximately 1,179,140t of product coal (based on 75.7% recovery). 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.

[1] 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^3 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 haul trucks and placed within the West Pit in accordance with the approved final landform.

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^3 and 3.0m^3 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. The treatment system was approved by Council on 24 August 2011.

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 former 1.5ML sump within the box cut area was decommissioned in September 2014 with all water runoff from within the box cut area (incorporating the surface facilities) together with excess underground water now diverted directly to a water storage sump within the 'West Pit' (located within ML 1461 for the Donaldson Mine).

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. The sump has sedimentation and oil separation systems and treated water is pumped out as required 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.

The water management procedures are presented in further detail within the Water Management Plan prepared for the Abel Mine.

Table 2.3
Stored Water

	Volumes Held (m^3)[#]		
	Start of Reporting Period	**At end of Reporting Period**	**Storage Capacity**
Clean Water	400	400	450
Dirty Water*	1,000	0	0
Controlled Discharge Water	0	0	0
Contaminated Water	0	0	0

Source: Donaldson Coal Pty Ltd. [#] Within Abel Surface Infrastructure Area (ML 1618).
*As of September 2014, all dirty water is diverted directly to the sump within the 'West Pit' located within ML 1461.

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

	Average Monthly Rainfall (mm)												
Period	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Total**
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	96.5	11.2	9.7	21.2	49.5	261.8	2.6	1094.0
2014	15.6	108.3	112.8	99.3	44.3	**31.4**	**24.6**	**104**	**42.4**	**55**	**38.4**	**133.4**	**809.5**
Note: Results relevant to this reporting period are in bold.													

Total rainfall during the 2014 calendar year was 809.5mm, 284.5mm less than 2013.

3.2 AIR POLLUTION

Environmental Management

Management of air quality during the reporting period 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. Total Suspended Particulates (TSP) and Particulate Matter <10µm (PM_{10}) monitoring was also undertaken at the existing High Volume Air Sampling (HVAS) station located approximately 2,300m southeast of the surface infrastructure area at Blackhill (located at 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**.

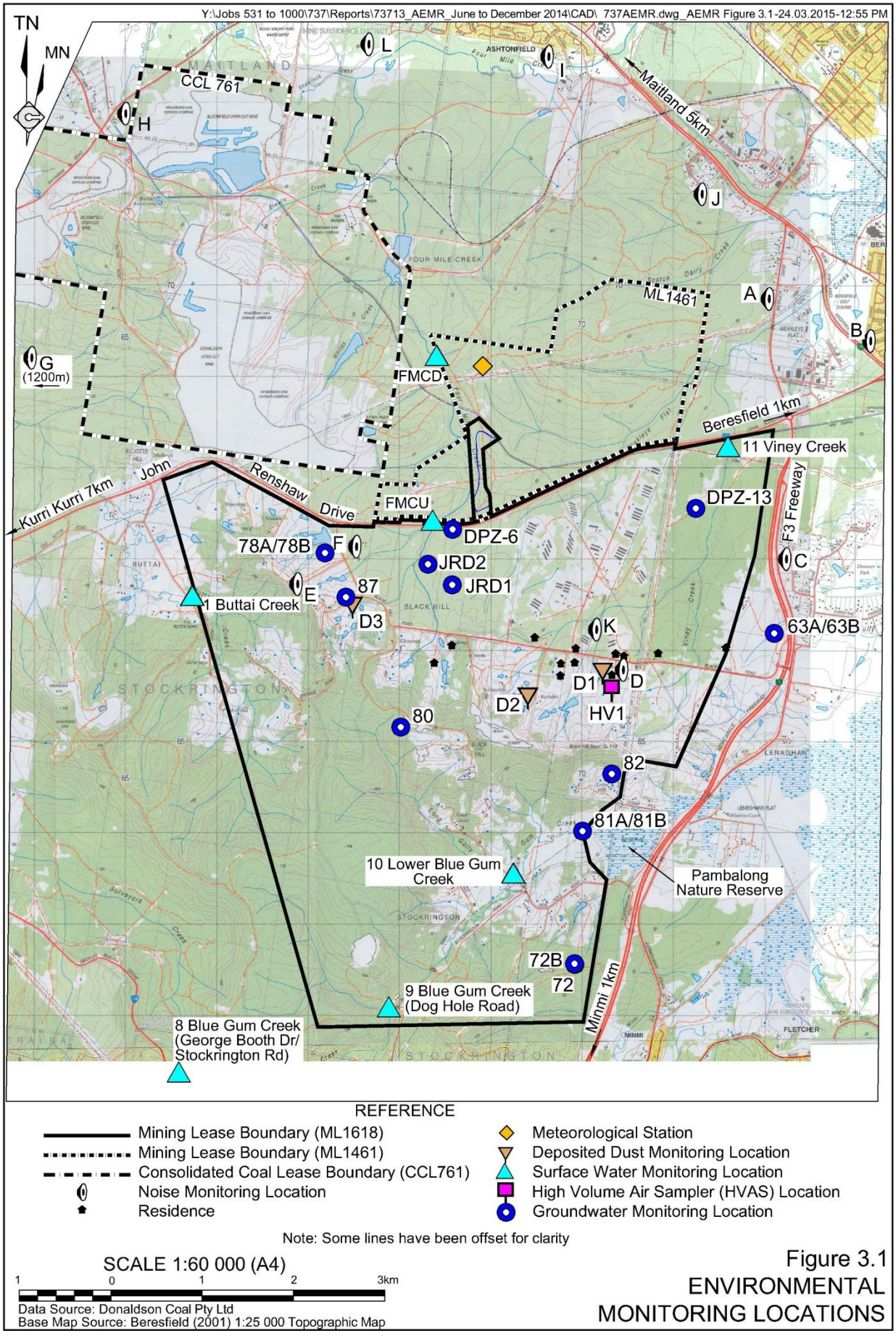


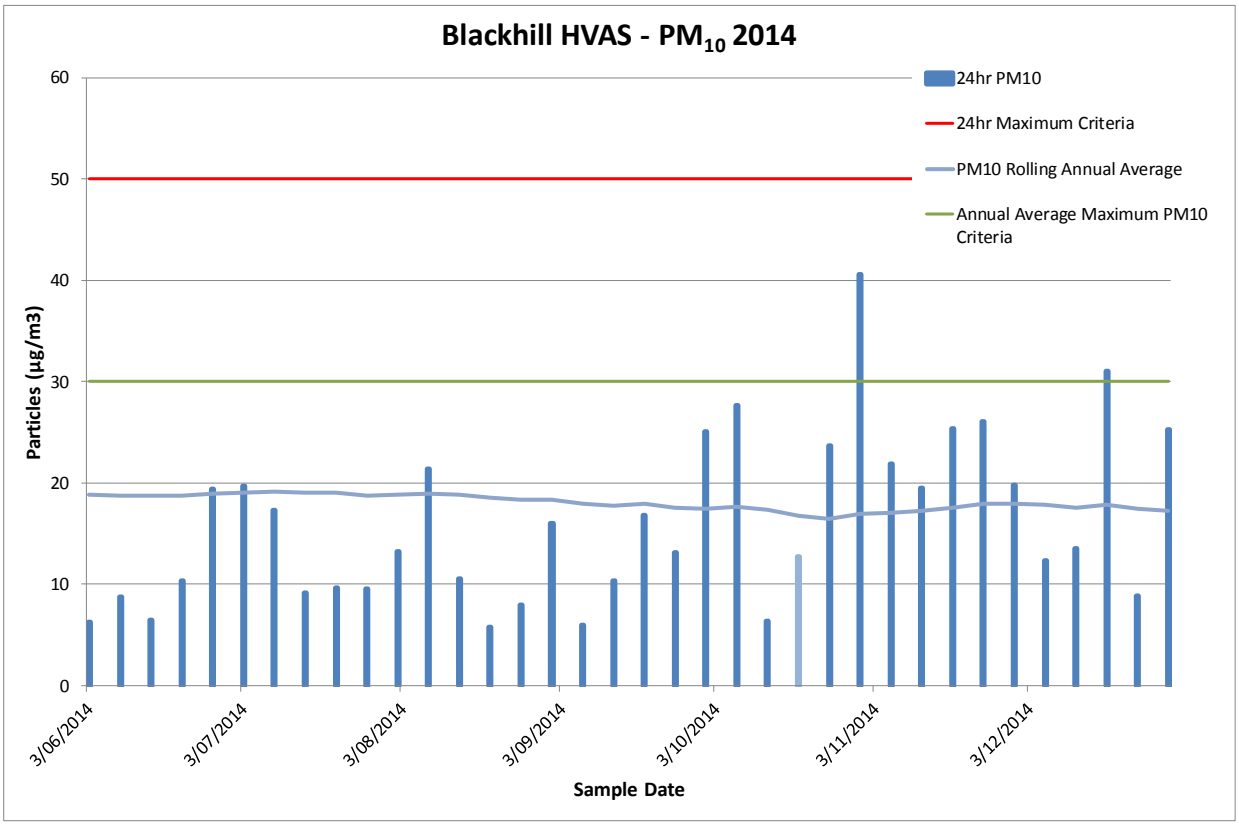
Figure 3.1
ENVIRONMENTAL MONITORING LOCATIONS

Table 3.2
Deposited Dust Monitoring Results

Reporting Period	Month	Monthly Dust Deposition Rate (g/m^2/month)		
		D1	D2	D3
2007/2008	Monthly Minimum	0.4	0.1	0.6
	Monthly Maximum	4.5	0.9	3.7
	Annual Average	**1.65**	**0.56**	**1.51**
2008/2009	Monthly Minimum	0.2	0.4	0.1
	Monthly Maximum	2.8	5.8	2.7
	Annual Average	**0.9**	**2.1**	**1.3**
2009/2010	Monthly Minimum	0.2	0.1	0.1
	Monthly Maximum	4.3	11.3*	5.6
	Annual Average	**1.1**	**2.8**	**2.4**
2010/2011	Monthly Minimum	0.3	0.5	0.7
	Monthly Maximum	1.0	4.1	5.4
	Annual Average	**0.7**	**1.7**	**2.1**
2011/2012	Monthly Minimum	0.4	0.1	0.4
	Monthly Maximum	1.3	1.3	2.8
	Annual Average	**0.8**	**0.7**	**1.1**
2012/2013	Monthly Minimum	0.3	0.5	0.4
	Monthly Maximum	1.6	4.1	4.7
	Annual Average	**0.8**	**1.7**	**1.4**
2013/2014	Monthly Minimum	0.2	0.2	0.5
	Monthly Maximum	1.0	5.6	4.0
	Annual Average	**0.65**	**1.24**	**2.23**
2014	Jun-14	0.5	0.4	2.4
	Jul-14	0.8	0.7	1.3
	Aug-14	0.2	0.2	0.6
	Sep-14	0.4	0.6	0.6
	Oct-14	0.6	1.3	1.1
	Nov-14	1.4	1.6	6.2*
	Dec-14	0.3	0.7	3.8
	Monthly Minimum	**0.2**	**0.2**	**0.6**
	Monthly Maximum	**1.4**	**1.6**	**3.8**
	Average	**0.60**	**0.79**	**1.65**

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

The highest uncontaminated monthly dust deposition measurement was $3.8g/m^2$/month at D3 and occurred in December 2014. Monthly deposition rates were generally well below this level. Average monthly deposition rates during the reporting period were between $0.60g/m^2$/month and $1.65g/m^2$/month which is significantly below the goal of $4g/m^2$/month, indicating good air quality with respect to dust deposition.



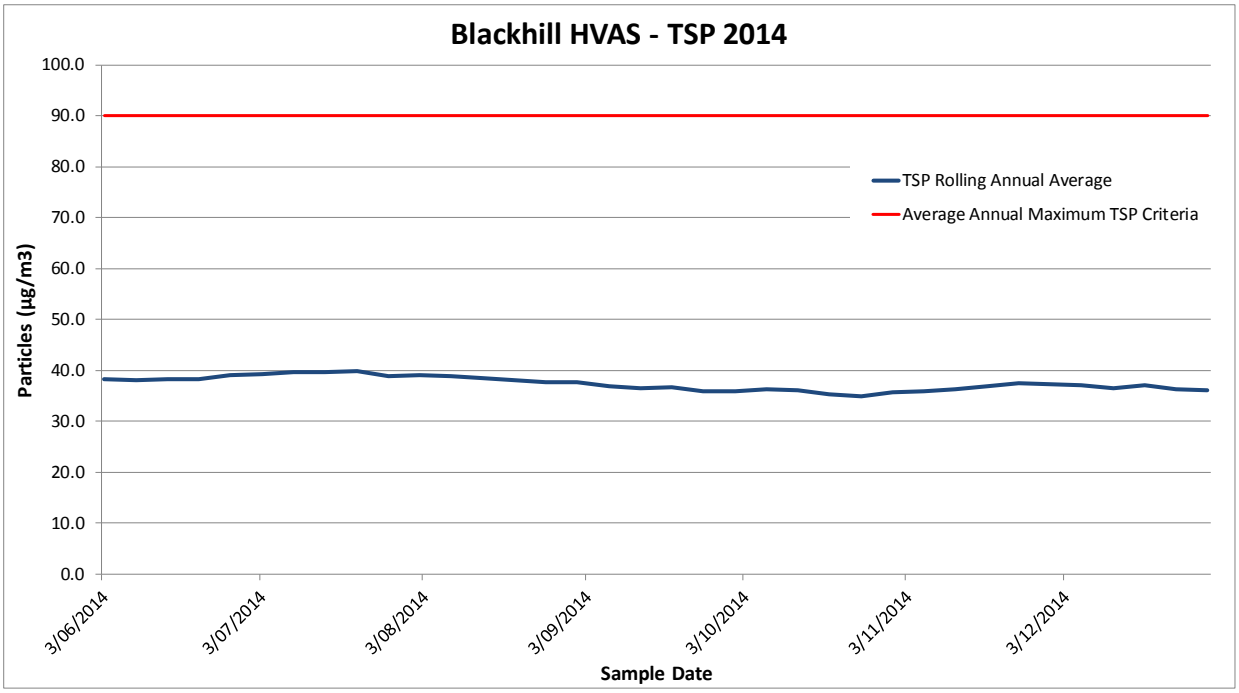


Figure 3.2 Suspended Particulate Monitoring Results – 2014

The suspended particulate monitoring results show that the highest 24-hour average PM_{10} concentration was 40.6µg/m^3, measured on 31 October 2014 which is well below the 50µg/m^3 24-hour *National Environment Protection Measures* (NEPM) goal.

The annual average PM_{10} concentration for Blackhill was 17.2µg/m^3 for the 12 months to 31 December 2014 whilst the annual average TSP concentration was 36.1µg/m^3. The monitoring results indicate that suspended particulate concentrations are well below the annual average criteria of 30µg/m^3 and 90µg/m^3 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) Diversion of 'dirty' surface water flows within the box cut area to the water storage sump.

ii) 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 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 – 2014[1]

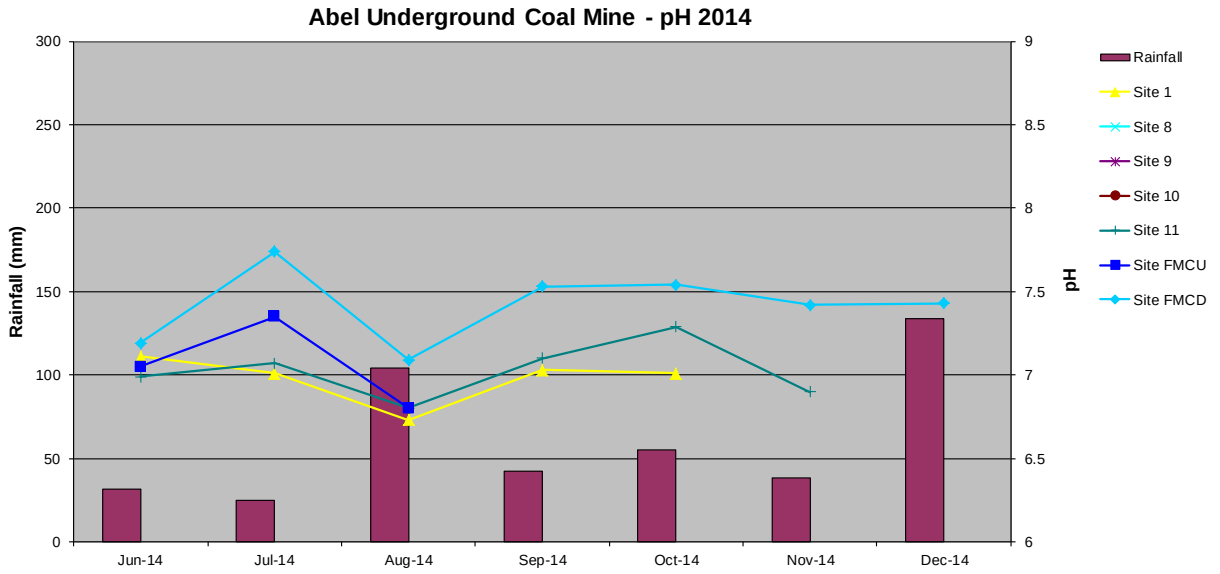
Sampling Site^	pH[#]	EC (µS/cm)[#]	Turbidity (NTU)	TSS (mg/L)
1	7.01 to 7.11	420 to 530	29.4 to 48	<5 to 18
8	No Flow	No Flow	No Flow	No Flow
9	NS	NS	NS	NS
10	6.71 to 7.67	931 to 1490	3.9 to **180**	<5 to 40
11	6.8 to 7.29	352 to 860	16.6 to **329**	<5 to **290**
FMCU	6.8 to 7.05	151 to 185	NS	<5 to 7
FMCD	7.09 to 7.74	119 to 203	1.5 to 2.6	<5 to 25
Trigger Level	6.5 – 8.5*	125 to 2,200*	6 – 50 (NTU)*	50[@]

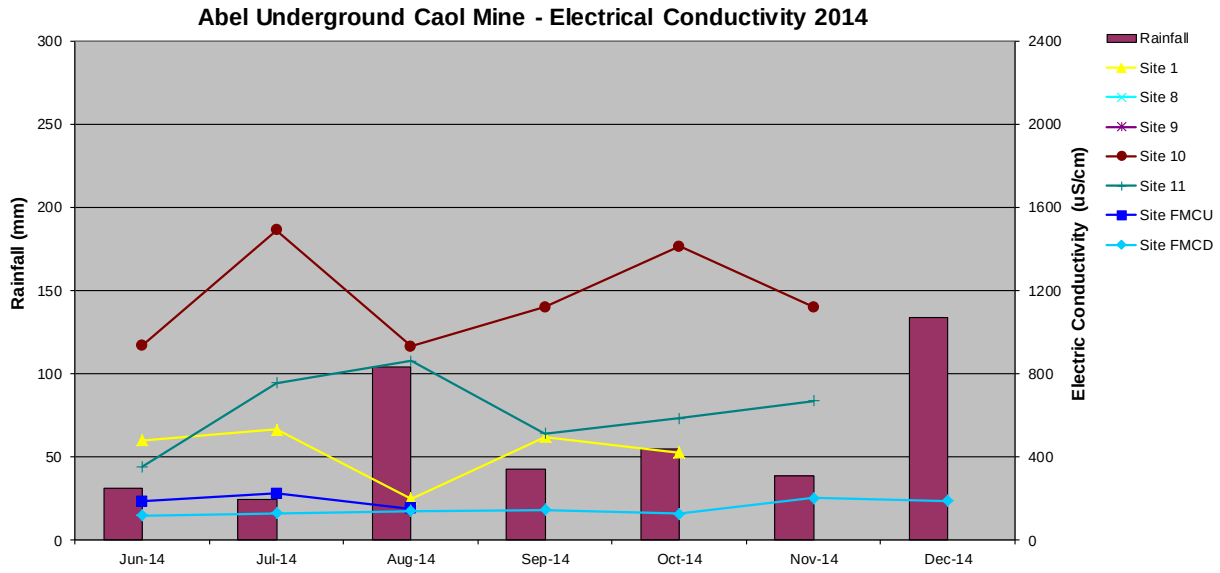
^ See **Figure 3.1** [@]Standard Industry Criterion * ANZECC Chapter 3 – Aquatic Ecosystems – Lowland Rivers in NSW
Bold Text – Exceedance of Trigger Level [#] Field Measurement NS – Not Sampled
1. Results cover period 01/6/2014 to 31/12/2014 Source: Donaldson Coal Pty Ltd

It is noted that access to Site 9 continued to be restricted due the construction of the Hunter Expressway. The construction of the Hunter Expressway has now been completed and recommencement 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 119µS/cm and 1,490µS/cm. One sample for FMCD was slightly below the water quality trigger values, however, all other 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.





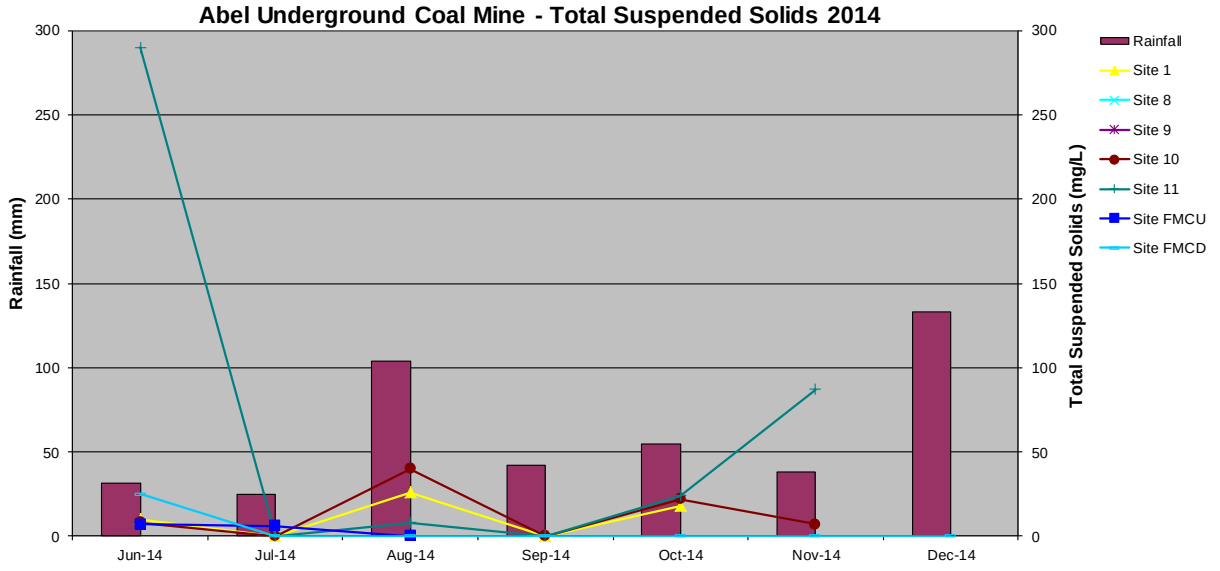


Figure 3.3 Surface Water Quality Monitoring Results – 2014

3. Turbidity results for two sites (Sites 10 and 11) and total suspended solids (TSS) levels at one site (Sites 11 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 Site 10 is currently substantially upstream of underground mining activities this site would not have been influenced by any Abel Mine activities. Baseline monitoring results for Sites 10 and 11 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 fluctuations observed in 63B remain minor and are an indication of extremely low permeability with no significant influence by mining stresses.

Table 3.4
Groundwater Levels

Piezometers[#]		Standing Water Level (m AHD)							
		2007 / 2008	**2008 / 2009**	**2009 / 2010**	**2010 / 2011**	**2011 / 2012**	**2012 / 2013**	**2013 / 2014**	**2014[4]**
63A	Average	-0.46*	-0.4*	-0.003*	0.49*	-0.98	0.07	-0.02	0.01
	Range	0.17*	0.18*	1.43*	2.55*	0.95	0.23	0.17	0.03
63B	Average	-6.6*	-9.36*	-9.88	-10.65*	-10.04*	-10.09	-10.7	-10.84
	Range	3.49*	1.71*	2.13	6.74*	0.39*	0.24	0.70	0.15
72	Average	23.16*	25.24*	27.71*	29.84*	26.68	NA[2]	31.52[3]	32.62
	Range	5.54	4.86	2.46	3.82	1.26	NA[2]	1.66	0.45
72B	Average	50.51*	50.61*	50.52*	50.05*	50.06	NA[2]	50.43[3]	50.38
	Range	0.29	0.37	1.08	0.44	0[1]	NA[2]	0.14	0
78A	Average	31.13*	32.26*	34.4*	31.5*	31.69	33.70	15.72	3.98
	Range	0.67	5.85	5.53	0.34	0[1]	2.03	25.54	0[1]
78B	Average	68.3*	69.49*	68.1*	68.34*	68.23*	68.46	68.76	68.30
	Range	1.04*	0.52*	0.72*	0.35*	0[1]	0.38	0.51	3[1]
80	Average	25.97*	25.34*	21.65*	17.94*	17.14	19.48	9.60	-5.85
	Range	0.65	2.08	4.69	1.78	0.74	1.56	21.88	0[1]
81A	Average	17.59*	11.68*	7.06*	-2.68*	-5.12	NA[2]	-20.04[3]	ND[5]
	Range	1.19	9.49	10.28	4.52	0[1]	NA[2]	1.42	ND
81B	Average	2.13*	1.97*	1.57*	0.79*	0.38	NA[2]	1.69[3]	ND[5]
	Range	0.25	0.61	1.52	0.87	0[1]	NA[2]	0.54	ND
82	Average	24.20*	24.90*	25.02*	24.83*	NA[2]	NA[2]	24.68[3]	24.96
	Range	0.78	1.15	1.66	0.88	NA[2]	NA[2]	1.00	0[1]

Notes: 1. Only a single record collected during this period. * 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.
4 Results cover period 01/6/2014 to 31/12/2014
5. No data collected during reporting period due to access issues.
Source: Donaldson Coal Pty Ltd.

Piezometers 81A and 81B are located south of the mining activities completed during the reporting period within the Abel Mine. During the reporting period no monitoring events occurred due to access issues. Previous monitoring results from 81A (single vibrating wire transducer placed within the Lower Donaldson Seam) showed a drawdown response to mining the Donaldson Seam within the Abel Mine. Piezometer 81B is screened within overlying shallow Permian strata with water levels previously remaining stable. Monitoring has recommenced during 2015.

Piezometer 80 is located southwest of the mining activities completed during the reporting period 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 that has occurred since mid-2013 has continued during the reporting period. This punctuated lowering of groundwater pressure is consistent with expectations as active mining areas approach this monitoring location.

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, although this appears to have stabilised since 2013. 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 commencement of mining during 2013 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 previously has shown a marked decrease in salinity levels when compared with levels observed during initial mining activities with Electrical Conductivity levels falling from approximately 4,000µS/cm in June 2013 to 2,000µS/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 within the areas initially mined. Groundwater inflow quality within this reporting period have increased from the 2,000µS/cm in June 2014 to 2,670µS/cm at the end of December 2014 and a peak of 2,800µS/cm at the end of October 2014. The variability observed also being due to the water management strategy.

Similarly, groundwater inflow rates decreased from approximately 1,100m^3 per day in June 2013 to approximately 400m^3 in June 2014 as a direct result of the short term water management strategy whereby water is being stored underground within the areas initially mined. Groundwater inflow rates within this reporting period have remained steady at these reduced levels, averaging approximately 500m^3 in the period for July to December 2014. In any event, the water inflow rates are well within the predicted mine inflow rates.

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 (6.48) and alkaline (8.51), EC values ranged between 174µS/cm and 6,130µS/cm and TSS levels ranged between 18mg/L and 2,220mg/L. 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 – 2014[1]

Sampling Site[#]	pH	EC (µS/cm)	TSS (mg/L)
DPZ - 6	6.64 to 7.58	174 to 2,500	63 to 2,220
DPZ – 13	6.48 to 7.43	4,350 to 6,130	22 to 415
JRD1*	8.35 to 8.51	3,990 to 4,100	18 to 63
JRD2	6.57 to 7.80	439 to 2,380	71 to 693

Source: Donaldson Coal Pty Ltd *Bore damaged August 2014 – no further sampling # see **Figure 3.1**
1. Actual report dates 1/6/2014-31/12/2014

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 the 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

Underground workings occurred wholly or partly beneath five dams of habitat value during the reporting period, namely Dams 16, 28, 29, 33 and 162. At the time of the 2014 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.

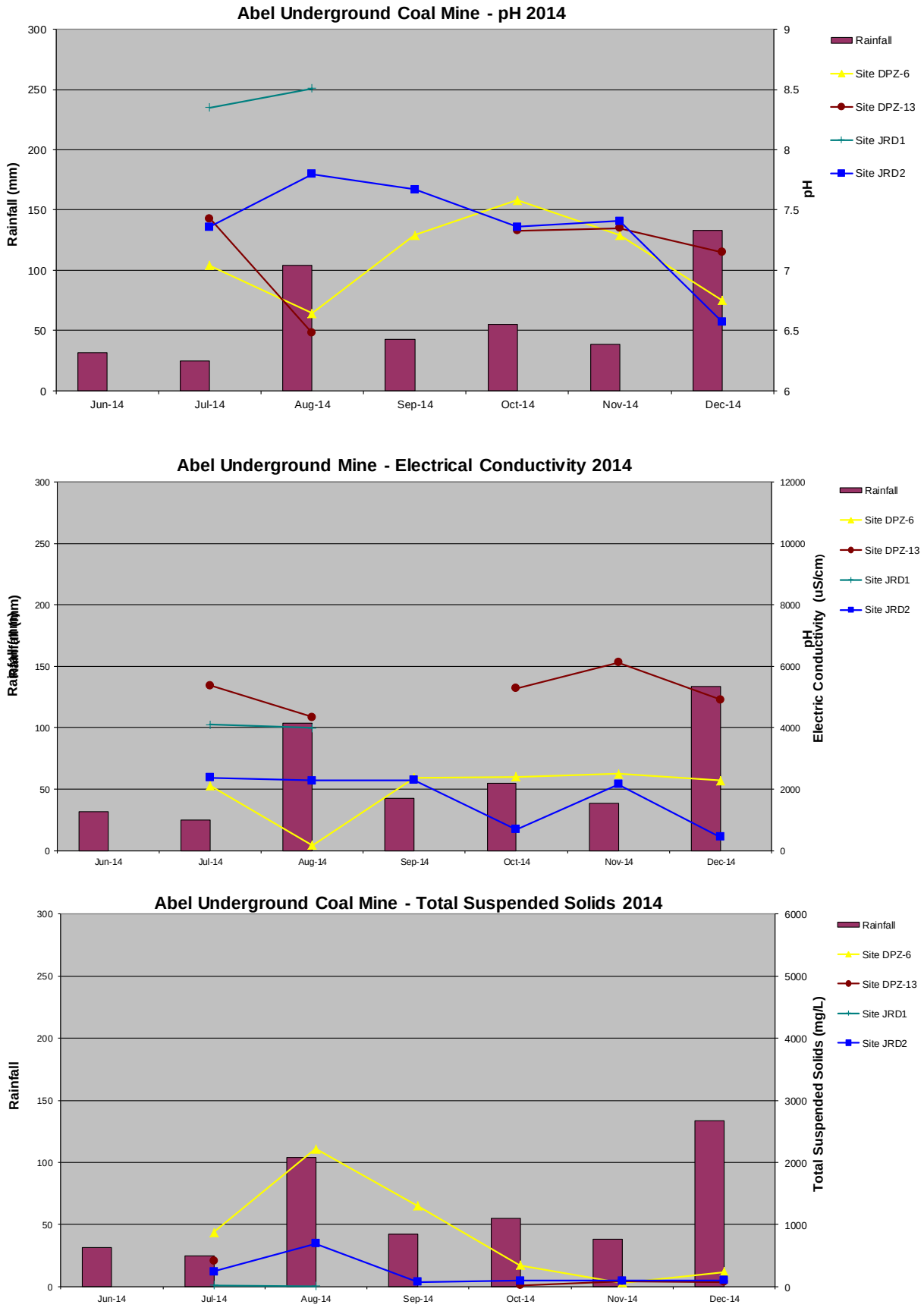


Figure 3.4 Groundwater Quality Monitoring Results – 2014

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.

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 and Sub-tropical Rainforest Monitoring Plan (see **Appendices 2** and **3**). Annual monitoring undertaken as part of the Pambalong Nature Reserve Monitoring Plan was last completed between November 2013 and March 2014. The 2014/2015 survey work remained ongoing at the completion of the current reporting period and will be reported as part of the 2015 AEMR.

Macroinvertebrate sampling also continued to be undertaken within Blue Gum Creek upstream of the Pambalong Nature Reserve by Robyn Tuft and Associates during Spring 2014 (see **Appendix 4**). 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 diversity. The RCE ranking reflected a slight deterioration in the bed condition at Dog Hole Road, probably due to increased sedimentation, however, bank and overall stream conditions remained unchanged.

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
	15/09/14	20	13

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

Parameter	Date	Blue Gum Creek at Stockrington Road (upstream)	Blue Gum Creek at Dog Hole Road (downstream)
SIGNAL Index	01/08/08	-	5.1
	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
	15/09/14	5.2	4.8
Predominant Species Types	15/09/14	Atyidae (shrimp) Chironomidae (midge larvae) Leptophlebiidae (mayfly nymphs)	Chironomidae (midge larvae) Scirtidae (beetle larvae) Leptophlebiidae (mayfly nymphs)
Source: Robyn Tuft & Associates (2014).			

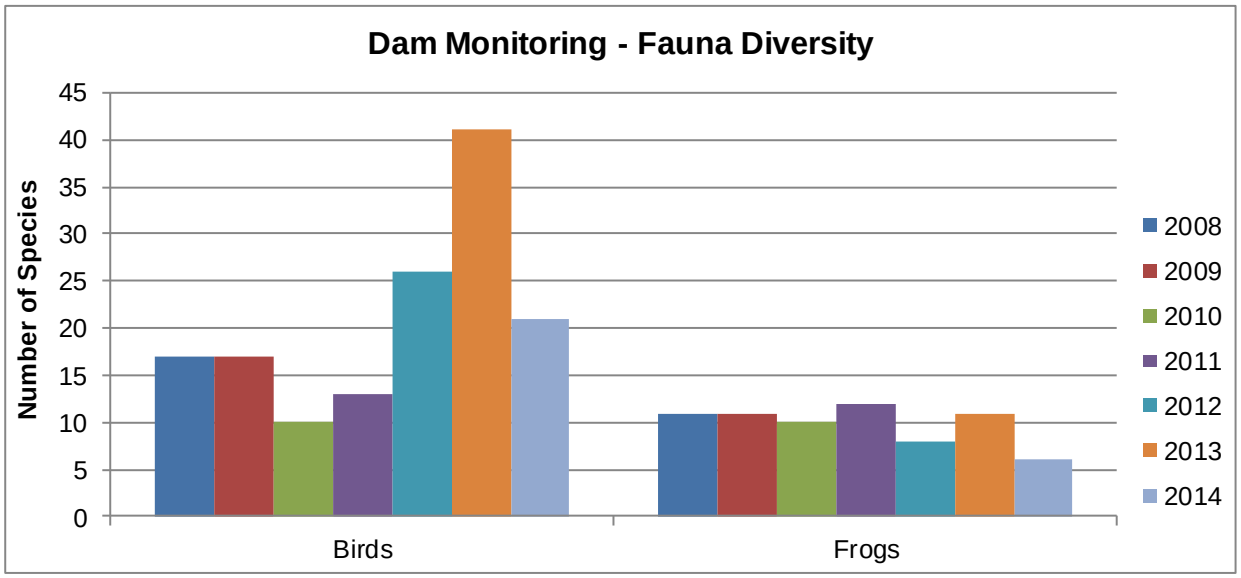
The recorded diversity showed a substantial recovery at both sites from a decline in the Autumn 2013 survey but similar diversity to the Spring 2013 survey. The SIGNAL index for upstream Blue Gum Creek site remained similar to the previous surveys with the remaining within the mildly impaired category. However, the downstream site showed a marked increase in the SIGNAL index, following a decline in Autumn 2014, improving from the severely impaired to moderately impaired ecological category. Robyn Tuft and Associates Pty Ltd report that, whilst both sites showed a predominance of moderately tolerant macroinvertebrate families, the pollution sensitive Leptophlebiidae (mayfly nymphs) were also observed at both sites.

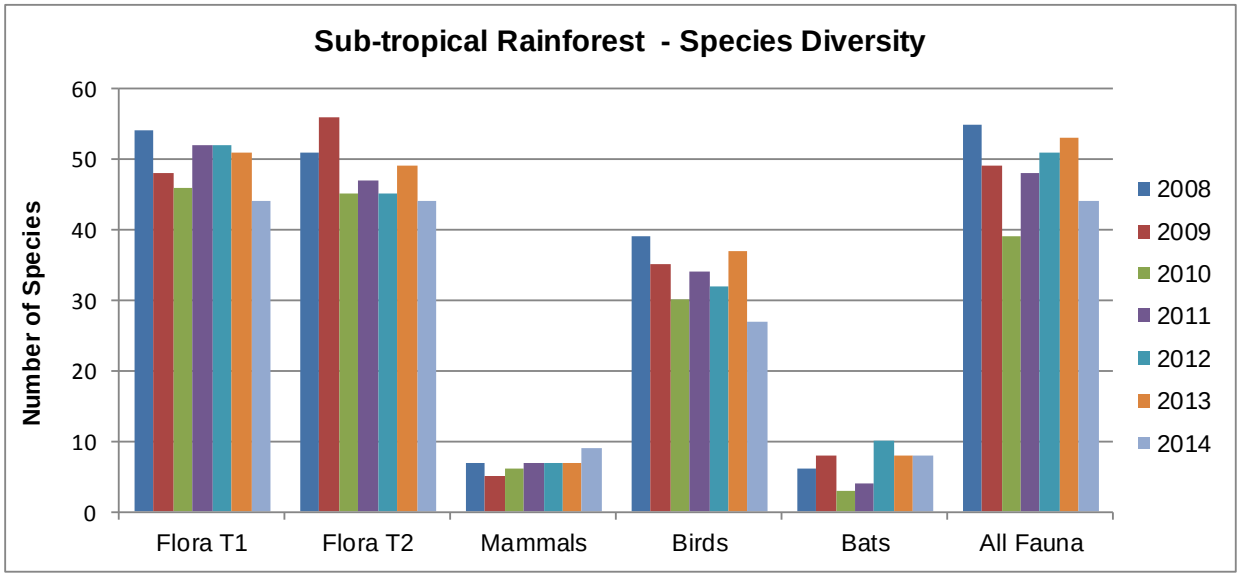
Dam Monitoring

The number of participating landholders has continued to decline (due a range of factors including lack of interest and change in ownership) with a total of 50 dams surveyed in 2014 compared to 66 surveyed during the 2008 baseline survey.

The 2014 dam monitoring recorded the lowest average diversity of frog species per dam over the seven years of survey. Frog diversity was similar in 2009, and 2012 which correlates with recorded relatively low rainfall during the breeding season. Higher rainfall leading up to the breeding season in 2008, 2010, 2011 and 2013 may have contributed to the higher calling activity and presence around breeding sites (dams) during those years.

Similarly, the 2014 bird diversity declined from the 2013 survey but remained above average with four new species being detected. A total of 52 species have now been observed at the four dams surveyed to date (see **Figure 3.5**).





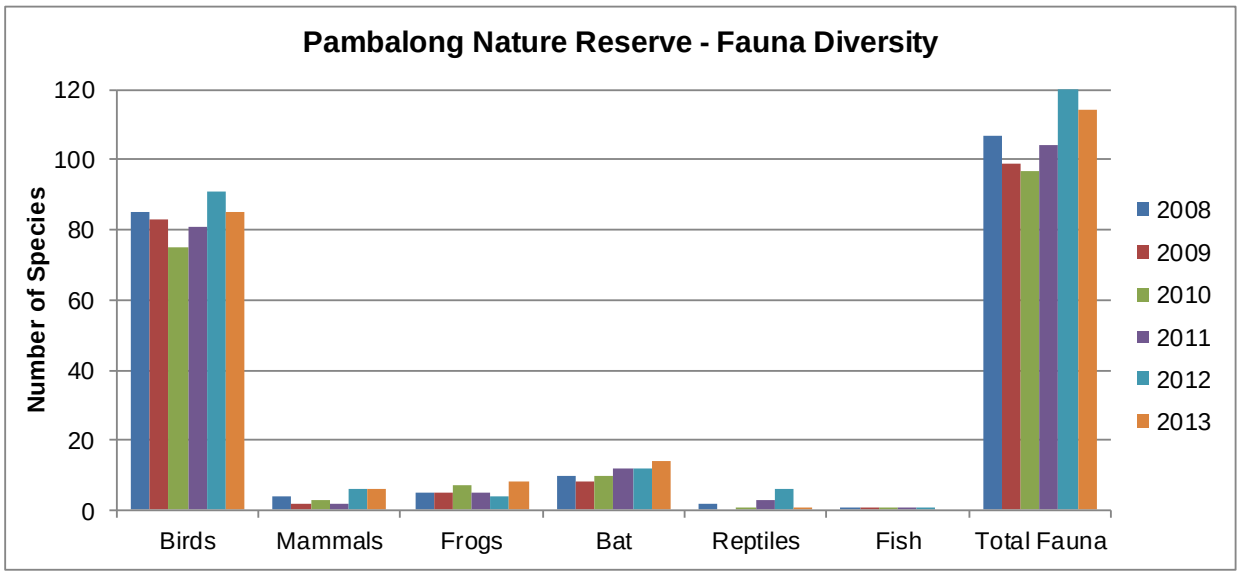


Figure 3.5 Selected Ecological Monitoring Results

During 2014 two of the four dams were surveyed due to access issues, however, the 2014 surveys recorded the second highest bird diversity over the seven year survey period at Dam 7 and the third highest at Dam 14. As noted in 2013, the higher diversity recorded since 2012 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 triglochinoides* 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.

Sub-tropical Rainforest Monitoring

The 2014 sub-tropical rainforest monitoring recorded a slight decrease in floral diversity compared to the 2008 baseline monitoring. Specifically 44 flora species were identified along each of the two monitoring transects in 2014 compared to 54 and 51 species in 2008 (see **Figure 3.5**). No threatened flora species were recorded during the survey.

The transition between dry and moist forest at Transect 1 has continued to expand slightly since the 2008 baseline survey with the width of moist forest increasing. This is likely due to natural changes in species composition. However, trend lines for Transect 2 during 2014 remained similar to the 2008 baseline survey.

The total foliage projected cover (FPC) has declined since the 2008 baseline survey, however, this is not isolated to the 2014 survey with data from 2014 relatively similar to that recorded in 2009. Changes are likely due to the loss of single trees and natural decline in shrub species rather than widespread tree decline.

In total, 44 fauna species were recorded during the 2014 survey, including five arboreal mammals, four terrestrial mammals, eight bats, and 27 birds. No amphibians or reptiles were recorded. Two species detected are listed as threatened under the NSW *Threatened Species Conservation Act 1995*, namely the Eastern Freetail Bat (*Mormospterus norfolkensis*) and Little Bentwing-bat (*Miniopterus australis*).

Fauna species richness in 2014 is higher than or on par with the average for most species groups detected across all the years except for a notable decline in bird numbers. Kleinfelder (2014) make the observation that the lack of large forest owl species in 2014 coincides with the highest number of arboreal mammal species being observed. In 2012 and 2013 when either one or both species of forest owls were detected, the arboreal mammal presence was lower. Further surveys will be required to determine if a pattern is emerging.

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

Pambalong Nature Reserve Monitoring

Annual monitoring undertaken as part of the Pambalong Nature Reserve Monitoring Plan was last completed between November 2013 and March 2014. The 2014/2015 survey work remained ongoing at the completion of the current reporting period and will be reported as part

of the 2015 AEMR. The 2013/2014 monitoring represented the sixth year of monitoring and recorded a total of 114 fauna species including eight frogs, six terrestrial mammals, one reptile, 14 bats and 85 bird species. This included 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 during the 2013/2014 monitoring 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 by the end of March 2015. 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.

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.

3.8 BLASTING

Environmental Management and Performance

Two underground blasts were undertaken during November and December 2014 with an approximate total of 60kg of explosives and 118 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 2014. Monitoring results are presented in **Table 3.7** and copies of the monitoring reports are presented within **Appendix 5**.

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 G, I and L. The estimated contribution from the Abel operations was assessed as being below the criteria.

Night time sleep disturbance criteria ($LA1_{(1min)}$) were in compliance during all monitoring events with the Abel mine either not audible or the estimated contribution being well below the criteria.

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 – 2014

Location[#]	Time	Noise Criteria	Attended Monitoring	Noise generated by Abel Mine
D Black Hill School, Black Hill	Day ($L_{A\ eq\ (15\ min)}$)	35	49 to 54	Abel not audible
	Evening ($L_{A\ eq\ (15\ min)}$)	35	54 to 58	Abel not audible
	Night ($L_{A\ eq\ (15\ min)}$)	35	48 to 50	Abel not audible
	Night ($L_{A1(1min)}$)	45	57 to 65	Abel not audible
F Black Hill Rd, Black Hill	Day ($L_{A\ eq\ (15\ min)}$)	35	58 to 59	Abel not audible
	Evening ($L_{A\ eq\ (15\ min)}$)	35	56 to 58	Abel not audible
	Night ($L_{A\ eq\ (15\ min)}$)	35	56 to 57	Abel not audible
	Night ($L_{A1(1min)}$)	45	45 to 70	Abel not audible
G Buchanan Rd, Buchanan	Day ($L_{A\ eq\ (15\ min)}$)	35	46 to 62	Abel not audible or contribution estimated at 32dB(A)
	Evening ($L_{A\ eq\ (15\ min)}$)	35	44 to 68	Abel not audible or contribution estimated at 34dB(A)
	Night ($L_{A\ eq\ (15\ min)}$)	35	38 to 42	Abel mine audible 34 to 35dB(A)
	Night ($L_{A1(1min)}$)	45	43 to 49	Abel mine estimated $L_{A1(1min)}$ contribution 34 to 35dB(A)
I Lord Howe Drive, Ashtonfield	Day ($L_{A\ eq\ (15\ min)}$)	36	52 to 55	Abel not audible
	Evening ($L_{A\ eq\ (15\ min)}$)	36	46 to 53	Abel not audible
	Night ($L_{A\ eq\ (15\ min)}$)	36	41 to 48	Abel mine not audible or contribution estimated at 34 to 35dB(A)
	Night ($L_{A1(1min)}$)	45	45 to 51	Abel mine not audible or estimated $L_{A1(1min)}$ contribution 35dB(A)
J Parish Drive, Thornton	Day ($L_{A\ eq\ (15\ min)}$)	35	40 to 53	Abel not audible
	Evening ($L_{A\ eq\ (15\ min)}$)	35	43 to 44	Abel not audible
	Night ($L_{A\ eq\ (15\ min)}$)	35	39 to 44	Abel not audible
	Night ($L_{A1(1min)}$)	45	44 to 50	Abel not audible
L 7 Kilshanny Av, Ashtonfield	Day ($L_{A\ eq\ (15\ min)}$)	40	45 to 49	Abel not audible or audible 33 to 35dB(A)
	Evening ($L_{A\ eq\ (15\ min)}$)	40	44 to 54	Abel not audible or audible 23 33d9B(A)
	Night ($L_{A\ eq\ (15\ min)}$)	40	44 to 49	Abel mine audible 34 to 35dB(A)
	Night ($L_{A1(1min)}$)	47	52 to 59	Abel mine estimated $L_{A1(1min)}$ contribution 35dB(A)

[#] See **Figure 3.1.**

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 2B**). 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. No impacts are predicted and none of the sites within SMP Area 3 are specified sample monitoring sites.

Within SMP Area 4 there are five sites (three open artefact sites, a scarred tree and cultural place) located above Panels 29, 32 and the West Mains (see **Plan 2B**). No impacts are predicted, however, one of these sites, 38-4-0670, a scarred tree, is a specified sample monitoring site for sites which no subsidence-related impacts are expected to occur. This site has not been undermined during the reporting period, however, monitoring of this site will commence prior to and following undermining in accordance with the Aboriginal Heritage Management Plan.

In accordance with the August 2014 *Abel Underground Mine: Aboriginal Heritage Management Plan* (Donaldson Coal, 2014), annual reporting documenting the results of monitoring undertaken in accordance with the plan will be prepared and provided to the Mindaribba and Awabakal Local Aboriginal Land Councils (LALCs), DPE and OEH. Additionally annual meetings with nominated executives of the Mindaribba and Awabakal Local Aboriginal LALCs will be held to discuss the operation and effectiveness of the plan, work conducted and other relevant heritage issues. The first of the annual reports and annual meetings are planned during the 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 2A** and **2B**).

- 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 2013. 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 for Panels 27 to 29 was granted on 19 September 2014.

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 24, 24A, 25, 26, 27, East Install Headings and East Mains. **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	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
Panel 19	21 December 2012	25 May 2013	7 August 2013
Panel 22	16 April 2013	19 April 2013	19 July 2013
Panel 23	16 July 2013	22 July 2013	10 March 2014
Panel 24A	**23 December 2013**	**11 March 2014**	**10 July 2014**
Panel 24	**16 July 2013**	**16 September 2013**	**10 July 2014**
Panel 25	**16 July 2013**	**11 May 2014**	**Not Yet Complete**
Panel 26	**16 July 2013**	**11 August 2014**	**Not Yet Complete**
Panel 27	**19 September 2014**	**30 September 2014**	**Not Yet Complete**
East Install Headings	**16 July 2013**	**08 July 2014**	**17 September 2014**
East Mains	**02 August 2013**	**09 September 2013**	**05 July 2014**

Source: Donaldson (2014 & 2015)
Bold Rows Indicate Panels With Secondary Workings During This Reporting Period.

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 Reports (see **Appendix 7**).

Table 3.9
Predicted versus Measured Subsidence Levels – 2014

Page 1 of 2

Panel	Monitoring Parameter	SMP Prediction	Final Measured
East Main	**100m Cover**		
	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

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

Panel	Monitoring Parameter	SMP Prediction	Final Measured
East Install Headings	**50m to 100m Cover**		
	Subsidence	900mm	**1,286mm**
	Tensile Strain	13 – 19mm/m	12mm/m
	Compressive Strain	16 – 24mm/m	9mm/m
	Tilt	24 – 35mm/m	**44mm/m**
Panel 24	**65m to 180m Cover**		
	Subsidence	1,300mm	938mm
	Tensile Strain	30mm/m	13mm/m
	Compressive Strain	30mm/m	13mm/m
	Tilt		
Panel 25	**70m to 195m Cover**		
	Subsidence	1,350mm	Not Yet Completed
	Tensile Strain	30mm/m	
	Compressive Strain	30mm/m	
	Tilt	70mm/m	
Panel 26	**65m to 165m Cover**		
	Subsidence	1,450mm	Not Yet Completed
	Tensile Strain	30mm/m	
	Compressive Strain	30mm/m	
	Tilt	70mm	
Panel 27	**70m to 170m Cover**		
	Subsidence	1,450mm	Not Yet Completed
	Tensile Strain	>30mm/m	
	Compressive Strain	>30mm/m	
	Tilt	70mm	

Source: Donaldson Coal (2014 & 2015). **Bold** values indicate exceedances.

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

During the reporting a range of additional subsidence monitoring was undertaken in accordance with the approved monitoring programs. A summary of the outcomes of this monitoring is outlined as follows.

- Surface cracking occurred above the worked panels within vegetated areas, grazing areas and access tracks. Surface cracking generally remained within predictions and remedial works were completed in consultation with the relevant landowners. The southern end of Panel 25 was observed to have abnormal surface cracking with the largest crack having widths of 200mm to 300mm. The Principal Subsidence Engineer was notified and the area remediated.
- Impacts upon Blackhill Road due to mining included cracking <100mm of the road surface and cracking of a culvert (up to 30mm). The 24hr monitoring and repair program for the road was implemented and the road remained in a safe and serviceable condition. The Principal Subsidence Engineer was notified of the

cracked culvert and remediation will occur once subsidence in that area is completed.

- All subsidence impacts on the Hunter Water Corporation Waterline and Ausgrid Power Poles were within predicted levels with no subsidence impacts or management actions required during the reporting period.
- 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 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 2014 and 31 December 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 (received in 2009 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 at each meeting (Mr Phillip Brown, Tony Sutherland, David Gibson, Adam Heeney [present June] and Mrs Alarna Bristow [present September and December]);
- a representative from Bloomfield Colliery (Mr Greg Lamb); 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. One representative from Cessnock Council, Ian Turnbull, attended the September and December committee meetings. No representative from the Maitland City Council was present at the committee meetings during the reporting period.

The committee held a total of three meetings during the reporting period (30 June, 15 September and 15 December 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 other relevant matters.

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)		
A:	**MINE LEASE AREA**	**Total Area, start of Reporting Period**	**Total Area, end of Reporting Period**	**Area Estimated end of next Reporting Period**
A1	**Mine lease(s) Area**	2755	2755	2755
B:	**DISTURBED AREAS**			
B1	**Infrastructure area** (other disturbed areas to be rehabilitated at closure including facilities, roads)	11.02*	11.02*	11.02*
B2:	**Active Mining Area** (excluding items B3 - B5 below)	342 (underground)	386 (underground)	470 (underground)
B3	**Waste emplacements**, (active/unshaped/in or out-of-pit)	0	0	0
B4	**Tailings emplacements**, (active/unshaped/uncapped)	0	0	0
B5	**Shaped waste emplacement** (awaits final vegetation)	0	0	0
	Previous Mining Activities	0	0	0
TOTAL ALL DISTURBED AREAS		353.02	397.02	481.02
C	**REHABILITATION**			
C1	**Total Rehabilitated area^** (except for maintenance)	0.75	0.75	0.75
D:	**REHABILITATION ON SLOPES**			
D1	**10 to 18 degrees**	0.7	0.7	0.7
D2	**Greater than 18 degrees**	0.05	0.05	0.05
D3	**Less than 10 degrees**	0	0	0
E:	**SURFACE OF REHABILITATED LAND**			
E1	**Pasture and grasses**	0.7	0.7	0.7
E2	**Native forest/ecosystems**	0.05	0.05	0.05
E3	**Plantations and crops**	0	0	0
E4	**Other** (include non-vegetative outcomes)	0	0	0

* Includes 0.41ha associated with the extended light vehicle car park, 0.23ha for the downcast ventilation shaft and 0.58ha relating to the upcast ventilation shaft.
^ 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 generally 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. All road cracking was within predicted levels. Cracking to a 1,500mm culvert for Blackhill Road was also observed and reported. The Company will remediate the culvert following the completion of subsidence in that area.

Table 5.2
Maintenance Activities on Rehabilitated Land – Surface Infrastructure Area

Nature of Treatment	Area Treated (ha)		Comments/control strategies/treatment detail[#]
	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	20	20	No areas were specifically 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) across the entire surface infrastructure area (i.e. ~20ha). 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, three exploration holes were drilled within ML 1618 during the reporting period. All three holes were sealed in accordance with the *Borehole Sealing Requirements on Land: Coal Exploration* guidelines and standard industry practice. Any disturbance resulting from the drilling of the holes and equipment used was rehabilitated in accordance with landholder requirements. No issues relating to the rehabilitation 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

The Rehabilitation Management Plan was updated in August 2014 and submitted on 07 August 2014 in accordance with modified Project Approval 05_0136. Approval of the updated plan by DRE and DPE remains pending.

An updated Mining Operations Plan, prepared in accordance with the *Mining Operations Plan Guidelines September 2013,* was subsequently approved by DRE on 13 November 2014. The Mining Operations Plan incorporates performance and completion criteria for rehabilitation in accordance with guidelines and consistent with the Rehabilitation Management Plan.

6. ACTIVITIES PROPOSED DURING THE NEXT AEMR PERIOD

The activities proposed for 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 no further exploration is currently planned, however, drilling may be undertaken if required for resource definition.

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 first workings within Panels 28, 29, 30, 31, 32, 33, 35 and the West Mains. Second workings are planned to be undertaken within Panel 25, 26, 27, 28, 30, 31 and 33. The planned mining activities are shown in **Plans 2a** and **2b**. It is estimated that in the order of 2,358728t 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_{10} 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 (2014), *Abel Mine Subsidence Management Status Report Four Monthly Update, 30 September 2014.*

Donaldson Coal Company (2015), *Abel Mine Subsidence Management Status Report Four Monthly Update, 31 January 2015.*

Kleinfelder (2014), *2014 Subtropical Rainforest Monitoring.*

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 2014 to 31 December 2014)

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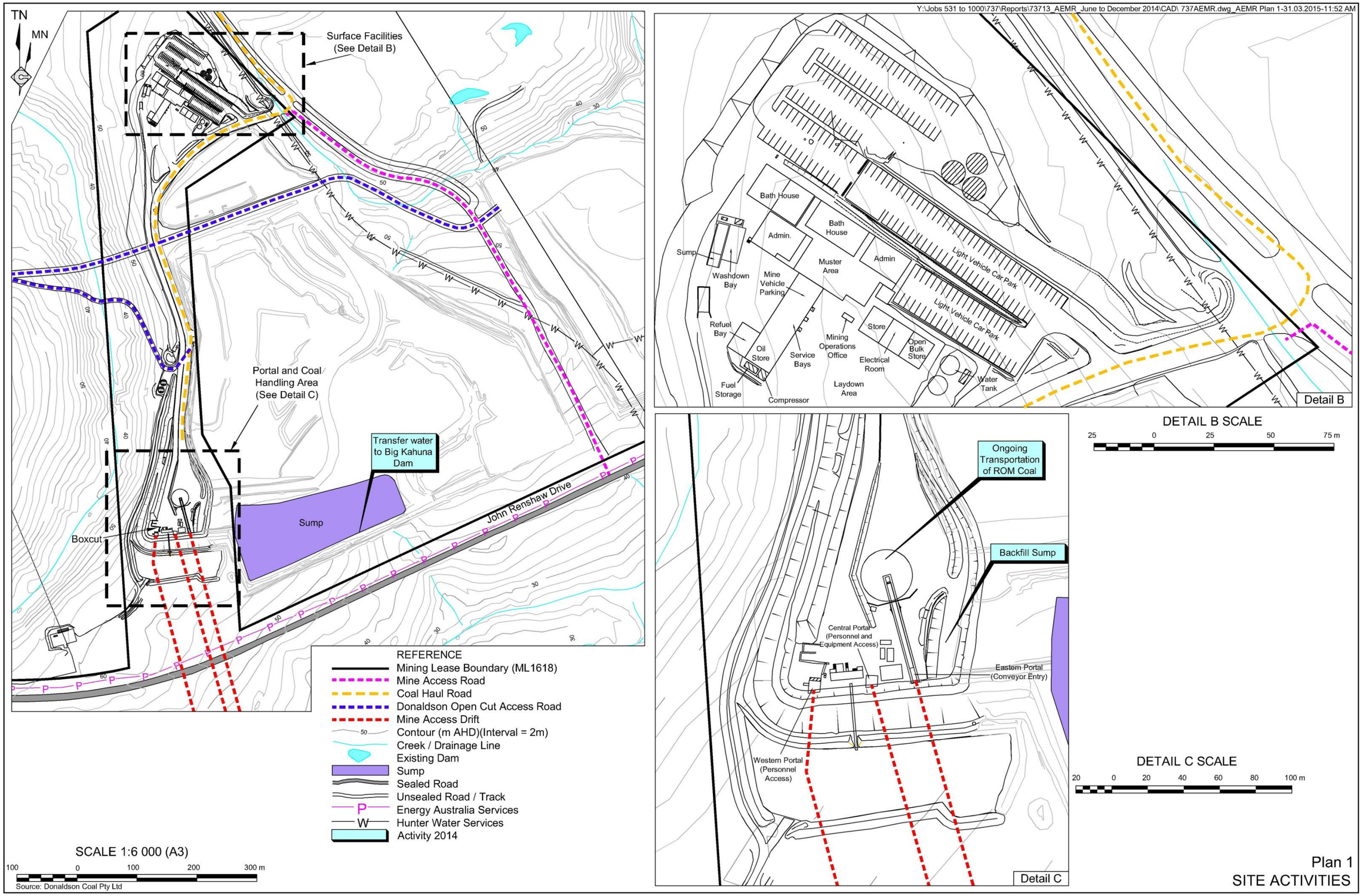
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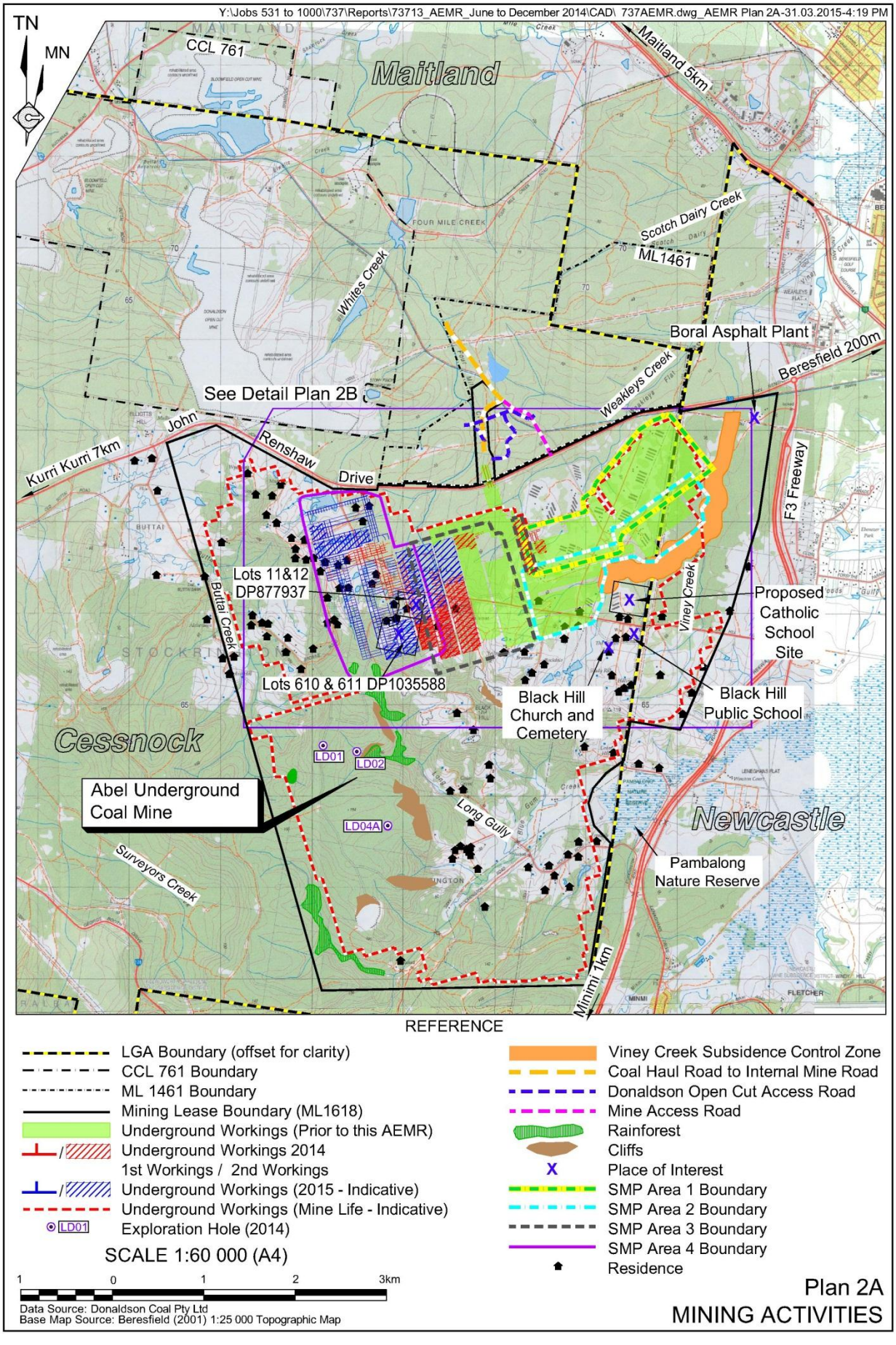
TN
MN
Surface Facilities
(See Detail B)
Portal and Coal
Handling Area
(See Detail C)
Transfer water
to Big Kahuna
Dam
Sump
Boxcut
John Renshaw Drive
Bath House
Bath
House
Admin.
Sump
Washdown
Bay
Mine
Vehicle
Parking
Muster
Area
Admin
Light Vehicle Car Park
Light Vehicle Car Park
Refuel
Bay
Oil
Store
Service
Bays
Mining
Operations
Office
Store
Open
Bulk
Store
Electrical
Room
Fuel
Storage
Compressor
Laydown
Area
Water
Tank
Detail B
DETAIL B SCALE
25 0 25 50 75 m
Ongoing
Transportation
of ROM Coal
Backfill Sump
Central Portal
(Personnel and
Equipment Access)
Eastern Portal
(Conveyor Entry)
Western Portal
(Personnel
Access)
Detail C
DETAIL C SCALE
20 0 20 40 60 80 100 m
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
Energy Australia Services
Hunter Water Services
Activity 2014
SCALE 1:6 000 (A3)
100 0 100 200 300 m
Source: Donaldson Coal Pty Ltd
Plan 1
SITE ACTIVITIES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TN
MN
CCL 761
Maitland
Maitland 5km
Scotch Dairy Creek
ML1461
Whites Creek
Boral Asphalt Plant
Beresfield 200m
See Detail Plan 2B
Weakleys Creek
John
Renshaw
Drive
Kurri Kurri 7km
F3 Freeway
Lots 11&12
DP877937
Buttai Creek
Viney Creek
Proposed
Catholic
School
Site
Lots 610 & 611 DP1035588
Black Hill
Church and
Cemetery
Black Hill
Public School
Cessnock
LD01
LD02
Abel Underground
Coal Mine
LD04A
Long Gully
Newcastle
Surveyors Creek
Pambalong
Nature Reserve
Minimi 1km
REFERENCE
LGA Boundary (offset for clarity)
CCL 761 Boundary
ML 1461 Boundary
Mining Lease Boundary (ML1618)
Underground Workings (Prior to this AEMR)
Underground Workings 2014
1st Workings / 2nd Workings
Underground Workings (2015 - Indicative)
Underground Workings (Mine Life - Indicative)
LD01 Exploration Hole (2014)
Viney Creek Subsidence Control Zone
Coal Haul Road to Internal Mine Road
Donaldson Open Cut Access Road
Mine Access Road
Rainforest
Cliffs
X Place of Interest
SMP Area 1 Boundary
SMP Area 2 Boundary
SMP Area 3 Boundary
SMP Area 4 Boundary
Residence
SCALE 1:60 000 (A4)
1 0 1 2 3km
Data Source: Donaldson Coal Pty Ltd
Base Map Source: Beresfield (2001) 1:25 000 Topographic Map
Plan 2A
MINING ACTIVITIES

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TN
MN

PANEL 35
PANEL 33
PANEL 29
PANEL 31
PANEL 32
PANEL 30
PANEL 28
PANEL 27
PANEL 26
PANEL 25
PANEL 24 EAST
PANEL 23 EAST
PANEL 22
PANEL 21
PANEL 20
PANEL 19
PANEL 19A
PANEL 15
PANEL 8
PANEL 7
PANEL 6
PANEL 5
PANEL 4
PANEL 3
PANEL 2
PANEL 1

WEST MAINS
SOUTH MAINS
EAST MAINS
EAST INSTALL HEADINGS
TAILGATE HEADINGS

38-4-0670
38-4-0669
CA7
Ca6
38-4-0980
AMA2/B
AMA2/C
AMA2/A
38-4-0668
38-4-0106

Lots 11 & 12 DP877937
Lots 610 & 611 DP1035588

Proposed Catholic School Site
Black Hill Church and Cemetery
Black Hill Public School
Viney Creek Subsidence Control Zone

REFERENCE

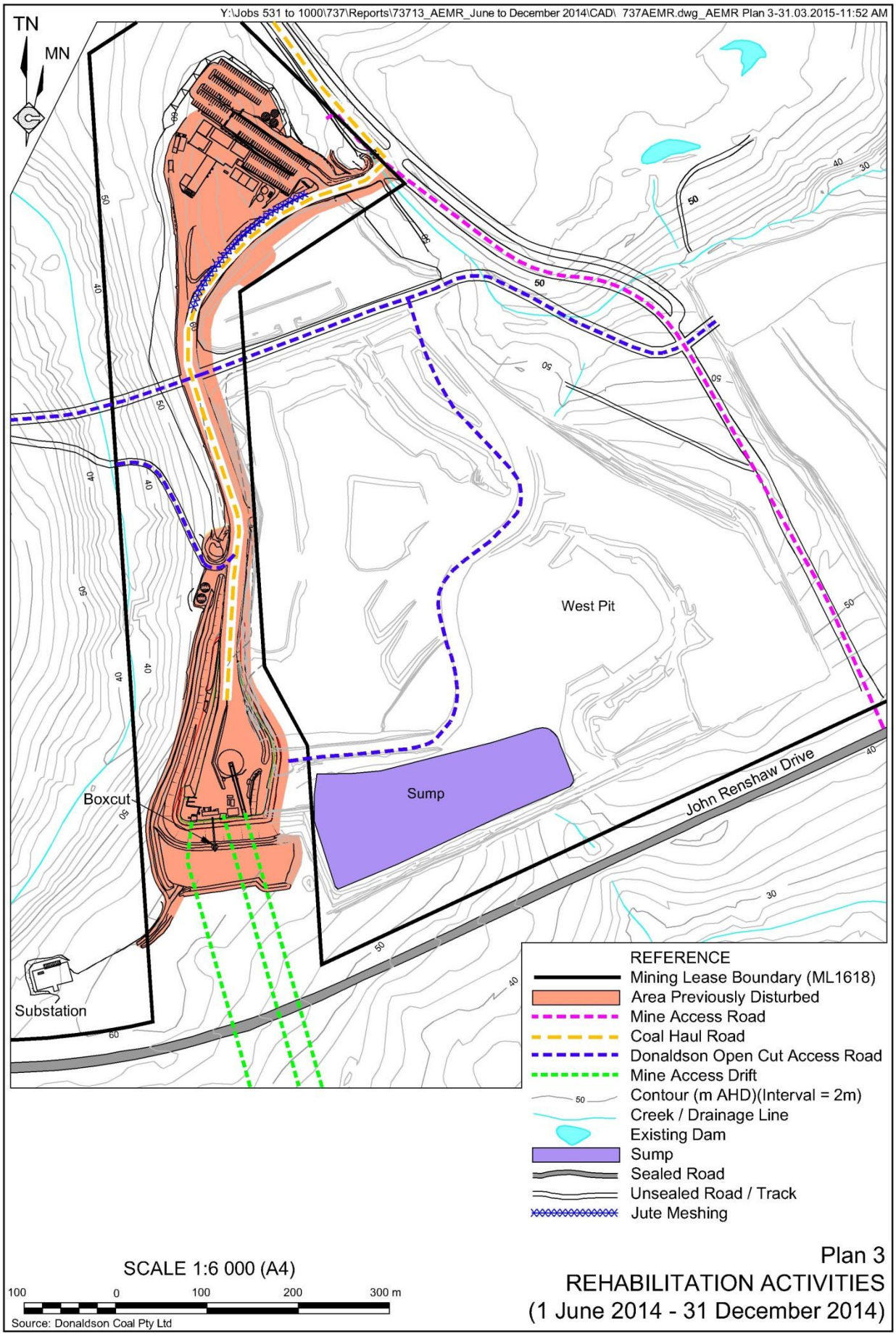
- Mining Lease Boundary (ML1618)
- Underground Workings (Prior to this AEMR)
- Underground Workings 2014
- 1st Workings / 2nd Workings
- Underground Workings (2015 - Indicative)
- Underground Workings (Mine Life - Indicative)
- Viney Creek Subsidence Control Zone
- Place of Interest
- SMP Area 1 Boundary
- 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 1:25 000 (A4)

250 0 250 500 750 1000 1250 m

Data Source: Donaldson Coal Pty Ltd

Plan 2B
MINING ACTIVITIES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TN
MN
West Pit
Sump
Boxcut
Substation
John Renshaw Drive
REFERENCE
Mining Lease Boundary (ML1618)
Area Previously Disturbed
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
Jute Meshing
SCALE 1:6 000 (A4)
100 0 100 200 300 m
Source: Donaldson Coal Pty Ltd
Plan 3
REHABILITATION ACTIVITIES
(1 June 2014 - 31 December 2014)

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