DONALDSONCOAL

Part of the Yancoal Australia Group

ABN: 87 073 088 945

YANCOAL

兖煤澳大利亚有限公司

Annual Review

Abel Underground Coal Mine

1 January 2018 – 31 December 2018

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DONALDSON COAL

PTY LTD

ABN: 87 073 088 945

Annual Review

for the

Abel Underground Coal Mine

Compiled for:

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Ref No. 737/21

March 2019

DONALDSONCOAL
Part of the Yancoal Australia Group

TITLE BLOCK

Name of Operation	Abel Underground Coal Mine
Name of Operator	Donaldson Coal Pty Ltd
Development consent / project approval #	05_0136
Name of holder of development consent / project approval	Donaldson Coal Pty Ltd
Mining Lease #	ML1618 and ML 1653
Name of holder of mining lease	Donaldson Coal Pty Ltd
Water licence #	20WA218986 and WAL41525
Name of holder of water licence	Donaldson Coal Pty Ltd
MOP/RMP start date	02/05/2016
MOP/RMP end date	01/05/2019
Annual Review start date	01/01/2018
Annual Review end date	31/12/2018

I, Phillip Brown, certify that to the best of my knowledge this report is a true and accurate record of the compliance status of the Abel Underground Coal Mine for the period 1 January 2018 to 31 December 2018 and that I am authorised to make this statement of behalf of Donaldson Coal Pty Ltd.

Note.

a) *The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.*

b) *The Crimes Act 1900 contains other offences relating to false and misleading information: Section 192G (Intention to defraud by false or misleading statement – maximum penalty 5 years imprisonment); Section 307A, 307B and 307C (false or misleading application/information/documents – maximum penalty 2 years imprisonment or $22,000, or both).*

Name of authorised reporting officer	Phillip Brown
Title of authorised reporting officer	Environment and Community Relations Superintendent
Signature of authorised reporting officer	
Date	29 March 2019

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APPENDICES

FIGURES

TABLES

1. STATEMENT OF COMPLIANCE

The compliance status of relevant approvals was reviewed for the reporting period and is summarised in **Table 1.1**. It was determined that there were five non-compliances during the reporting period. The non-compliances recorded during the reporting period have been ranked according to the risk matrix included in **Table 1.2**.

Table 1.1
Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	Yes / No
Project Approval 05_0136	No
Mining Lease 1618	Yes
Mining Lease 1653	Yes
Water Supply Works Approval 20WA218986 and Water Access Licence 41525	Not Determined[1]

1. Updated licence with conditions not yet received.

Table 1.2
Non-compliances

Relevant Approval	Cond #	Condition Description (summary)	Compliance Status	Comment	Where Addressed in Annual Review
PA 05_0136	2/11a	Ensure that all new buildings and structures, and any alterations or additions are constructed in accordance with the relevant requirements of the BCA.	Non-compliant	Construction Certificates have been received but not Occupation Certificates. Certifying body inspected once and requested changes. Changes have been made and the Certifying body requested to reinspect. Certificates yet to be issued.	Section 11
PA 05_0136	3/1	The Proponent shall ensure that the project does not result in any exceedances of the performance measures	Non-compliant	Not all monitoring locations specified within the Water Management Plan have continued to be monitored due to access or damage to piezometers. A revised monitoring program is being prepared as part of the updated Water Management Plan.	Sections 10 and 11
PA 05_0136	4/10b	Operate an air quality management system on site to ensure compliance with the relevant conditions of this approval.	Non-compliant	Siting requirements at DDG7 and DDG9 are likely not within Australian Standards due to trees obstructing the minimum clear sky angle of 120°. Location of dust gauges will be reviewed by monitoring contractor.	Sections 10 and 11
PA 05_0136	4/24c	Ensure that all external lighting complies with *AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting* or its latest version, to the satisfaction of the Director-General.	Non-compliant	Whilst no lighting complaints or issues have arisen to date, a lighting audit will be completed to demonstrate compliance	Sections 10 and 11
PA 05_0136	6/10	Submit a copy of the independent audit report to the Director-General, together with a response to any recommendations.	Non-compliant	No evidence that the 2015 audit and the Company's response to the recommendations was submitted within six weeks of completion of audit.	Section 11

Compliance Status Key

Risk level	***Colour code***	***Description***
High	*Non-compliant*	*Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence.*
Medium	*Non-compliant*	*Non-compliance with:* • *potential for serious environmental consequences, but is unlikely to occur; or* • *potential for moderate environmental consequences, but is likely to occur.*
Low	*Non-compliant*	*Non-compliance with:* • *potential for moderate environmental consequences, but is unlikely to occur; or* • *potential for low environmental consequences, but is likely to occur.*
Administrative non-compliance	*Non-compliant*	*Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions).*

2. INTRODUCTION

2.1 OVERVIEW OF OPERATIONS

The Abel Underground Coal Mine (the "mine") is located approximately 23km northwest of Newcastle, New South Wales (see **Figure 2.1**). Following the grant of Project Approval 05_0136 in June 2007, the Company undertook construction and mining activities until **the mine was placed in care and maintenance from 2 May 2016**. Activities undertaken to date include the following.

i) Construction of surface infrastructure and facilities, including the administration offices, amenities, service and storage facilities and car parking area, within the surface infrastructure area.

ii) Initial mine construction involving the formation of three mining portals and underground roadways and construction of the ventilation, conveying and coal stockpiling systems.

iii) Coal recovery using bord and pillar methods including first and second workings.

iv) Processing of recovered coal at the Bloomfield Colliery CHPP and transportation via the Bloomfield Rail Loop and Spur and subsequently via the Main Northern Railway.

Several of the earlier activities relating to the mine, involving the formation of the box cut within which the surface facilities and ROM stockpiles are located, were undertaken as part of the approved Donaldson Open Cut Coal Mine.

2.2 SCOPE AND FORMAT

This Annual Review 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 2012.

This is the third Annual Review submitted for the mine, following eight Annual Environmental Management Reports, and is applicable for the period 1 January to 31 December 2018 ("the reporting period"). The information presented within this Annual Review has been compiled based on information and advice provided by the Company.

This Annual Review generally follows the format and content requirements identified in the Department of Planning and Environment's (DPE) *Annual Review Guideline* dated October 2015.

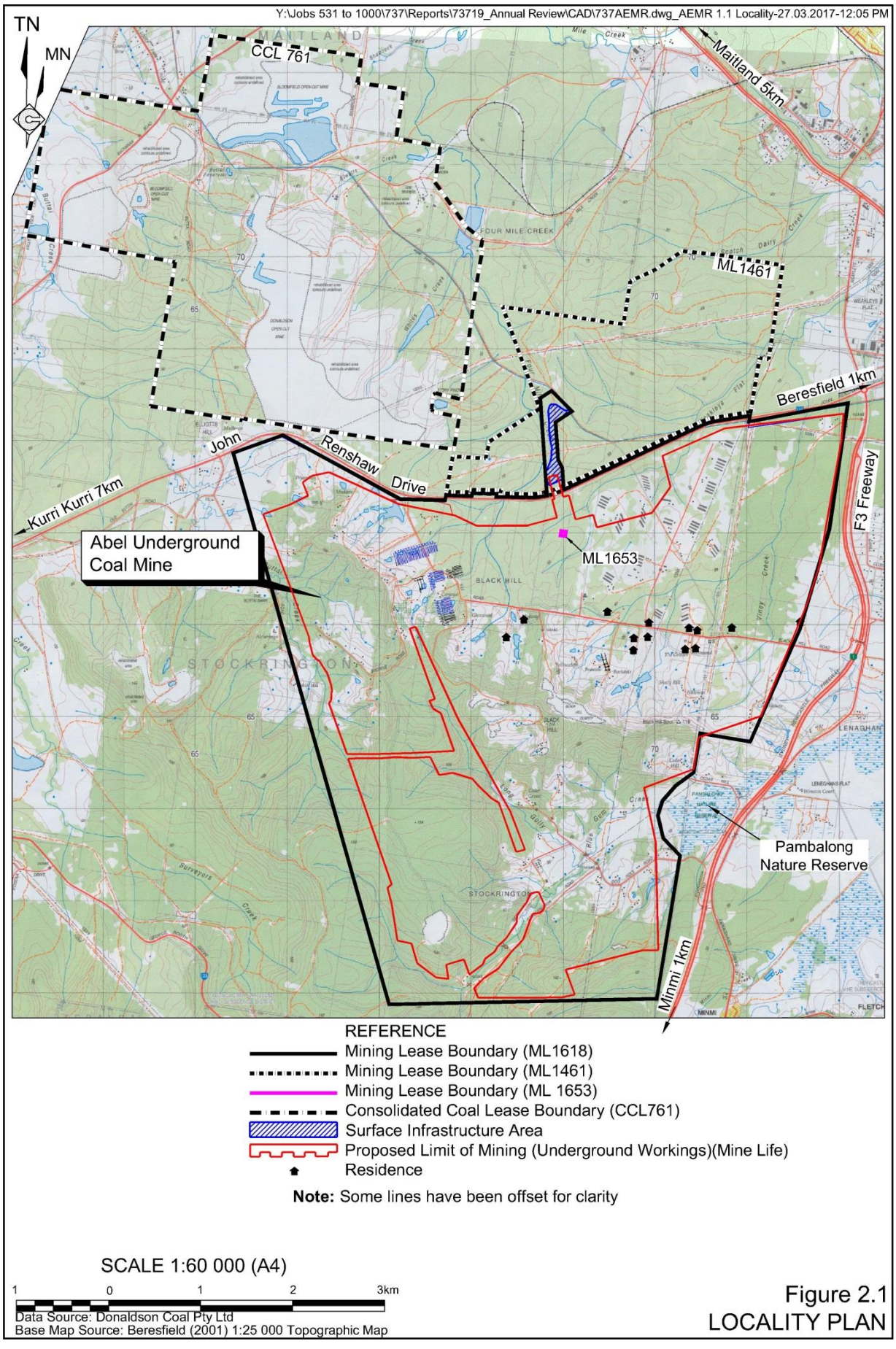


Figure 2.1
LOCALITY PLAN

2.3 KEY PERSONNEL CONTACT DETAILS

The Manager, Mining Engineering, Mr William Farnworth is the primary mine contact (Tel: 02 4015 1100). Mr Farnworth is currently the Manager Mining Engineering for legislative purposes and as such, is responsible for the environmental management of the mine and ensuring compliance with all relevant legislative obligations. Mr Phillip Brown (Tel: 0439 909 952) is the nominated Environment & Community Relations Superintendent and is also responsible for the environmental management of the mine. The contact details for the mine office are as follows.

Postal Address:	Donaldson Coal Pty Ltd PO Box 2216 GREENHILLS NSW 2323	Tel: 02 4015 1100 Fax: 02 4015 1159
Email:	donaldson@doncoal.com.au	
Physical Address:	Abel Underground Coal Mine 1132 John Renshaw Drive BLACKHILL NSW 2322	

A 24-hour Environmental Hotline (Tel: 1800 111 271) is maintained by the Company. Details of calls taken on this number are forwarded to the Environment & Community Relations Superintendent for further actioning, if required.

3. APPROVALS

The Company has operated the approved activities at the mine under the approvals listed in **Table 3.1**.

Table 3.1
Abel Underground Coal Mine – Consents, Leases and Licences

Consent/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 Minister for Primary Industries. Incorporates 2755ha of surface area.
Mining Lease ML 1653*	21 January 2011	21 January 2032	Granted by the Minister for Primary Industries. Incorporates 0.25ha of surface area. Issued construction of ventilation shaft.
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 Supply Works Approval 20WA218986	01/07/2016	30/06/2019	Bore Licence 20BL171935 was issued for the interception and inflow of groundwater due to the underground mining operations. Following commencement of the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016* in July 2016 20BL171935 was converted to a water supply works approval and water access licence with an allocation of 500ML/year.
Water Access Licence (WAL) 41525	01/07/2016	Continuing	
* See **Figure 2.1**			

It is noted that this Annual Review has been prepared to fulfil the annual reporting requirements of Project Approval 05_0136, ML 1618, ML 1653, and Water Supply Works Approval 20WA218986. A separate Annual Return has continued to be submitted to the NSW EPA in accordance with the requirements of Environment Protection Licence 12856.

The Company also holds Exploration Licence 5497 (see **Figure 2.1**) which was granted on 22 July 1998, with a current expiry date of 21 July 2019.

4. OPERATIONS SUMMARY

4.1 MINING OPERATIONS

Coal mining activities ceased on 2 May 2016 when the site was placed into care and maintenance. No coal mining is planned during the next reporting period. **Table 4.1** presents a summary of the production statistics.

Table 4.1
Production Summary

Material	Approved limit (specify source)	Previous reporting period (actual)	This reporting period (actual)	Next reporting period (forecast)
Waste Rock / Overburden (m^3)	None specified	0	0	0
ROM Coal / Ore (t)	6 100 000 (PA 05_0136 Cond 2/6)	0	0	0
Coarse Reject (t)	None specified	0	0	0
Fine Reject (Tailings) (t)	None specified	0	0	0
Saleable Product (t)	None specified	0	0	0

4.2 OTHER OPERATIONS DURING THE REPORTING PERIOD

No exploration, land preparation, construction or processing activities were undertaken during the reporting period.

Environmental monitoring activities continued throughout the reporting period including surface water, groundwater, flora and fauna and subsidence monitoring. Results of this monitoring is summarised in Sections 6 and 7.

4.3 NEXT REPORTING PERIOD

The activities proposed for 2019 will principally involve continued monitoring and, if required, maintenance activities. The following provides a summary of the planned activities.

Exploration

The Company is considering further exploration but currently does not intend to undertake any drilling within ML 1618 or ML 1653 during the 2019 reporting period. In the event that drilling is undertaken, the appropriate approvals will be sought and the drilling reported as part of the next Annual Review and within the annual exploration report.

Mining

No mining is currently planned to be undertaken during the 2019 reporting period.

Rehabilitation

No specific rehabilitation activities are currently planned for the 2019 reporting period. Any rehabilitation works undertaken will relate to rehabilitation of any subsidence impacts or to ongoing maintenance, principally erosion and sediment control.

Monitoring

The following monitoring will be undertaken during the next reporting period. It is noted that some monitoring programs will be reviewed to ensure that the monitoring during the care and maintenance period remains appropriate.

- Air Quality – ongoing deposited dust, TSP and PM_{10} monitoring will continue to be undertaken.
- 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 as part of the integrated monitoring with the Bloomfield, Donaldson and Tasman Mines.
- Groundwater – ongoing groundwater quality and level monitoring will be undertaken 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.
- Noise – noise monitoring will continue, if required, or the frequency for monitoring will be reviewed.
- Flora & Fauna – flora and fauna surveys and reporting will continue to be undertaken in accordance with approved Flora and Fauna Management Plan.
- Meteorological – the on-site meteorological station at the Abel Mine will be maintained and data collated.
- Subsidence monitoring will continue to be undertaken in accordance with the approved subsidence monitoring programs.

Community Consultation and Liaison

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

Mining Operations Plan (MOP) and Management Plans

The current MOP has been prepared for the period ending 1 May 2019. An amended MOP will be prepared and submitted for approval during the next reporting period. The management plans are also planned to be updated during the next reporting period to reflect a more appropriate environmental monitoring regime during care and maintenance.

5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

The 2017 Annual Review was forwarded to the Resources Regulator within the Department of Planning and Environment (DPE) and the DPE compliance unit on 27 March 2018. Feedback was received from the DPE compliance unit dated 9 October 2018. The Annual Review was considered to generally satisfy the conditions of the approval. **Table 5.1** summarises the actions arising from the 2017 AEMR. No response or feedback was received from the Resource Regulator.

Table 5.1
Actions from the previous Annual Review

Action required from previous Annual Review	Requested by	Action taken by the Operator	Where discussed in Annual Review
Introduction - Please include any biodiversity offset areas (as required by Schedule 3 Condition 18 of the approval) on the Locality Plan	DPE Compliance Unit	The requirement for the Biodiversity Offset Strategy has not yet been triggered and therefore a biodiversity offset area is not defined.	**Table 5.1**
Noise – please include the approval criteria limits in the monitoring results table to readily identify compliance.	DPE Compliance Unit	Approved noise criteria / limits have been re-added to **Table 6.3**.	Section 6.3 / **Table 6.3**
Waste – please include previous years waste volume data in the table to readily compare reporting year data to previous years data.	DPE Compliance Unit	Presentation of waste data commenced in 2015, however, complete waste data is available from 2016. Data from 2016 to 2018 has been presented in **Table 6.8**.	Section 6.9

6. ENVIRONMENTAL PERFORMANCE

6.1 SUMMARY OF ENVIRONMENTAL PERFORMANCE

A summary of environmental performance for the principal environmental aspects is provided in **Table 6.1**. Further detail regarding specific environmental aspects is also provided in the following subsections.

Table 6.1
Environmental performance

Aspect	Approval criteria / EIS prediction	Performance during the reporting period	Trend/key management implications	Implemented/proposed management actions
Noise	No exceedance of applicable noise criteria.	No exceedances and no complaints.	Implies management measures are currently adequate.	No additional management action required.
Blasting	No exceedance of applicable blast criteria.	No complaints. Previous due diligence monitoring indicates compliance.	Implies management measures are currently adequate.	No additional management action required.
Air Quality	No exceedances of applicable air quality criteria.	No exceedances and no complaints.	Implies management measures are currently adequate.	No additional management action required.
Biodiversity	No significant impacts upon flora, fauna species, populations, communities or habitat.	No impacts upon flora, fauna species, populations, communities or habitat were recorded. No effect upon Pambalong Nature Reserve or Sub-tropical rainforest.	Implies current mining design and safeguards are currently adequate.	No additional management action required.
Heritage	Management in accordance with approved Aboriginal Heritage Management Plan.	No heritage items undermined during the reporting period. No subsidence impacts.	Implies no specific management actions were necessary.	No additional management action required.
Subsidence	Subsidence management in accordance with approved Subsidence management Plan / Extraction Plan.	No notifiable events occurred.	Implies management measures are currently adequate and predictions sufficiently accurate.	No additional management action required.

6.2 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. This station was subsequently relocated in March 2015 to adjacent the Helipad near the Abel surface facilities (see **Figure 6.1**). A summary of the rainfall data since commencement of the Abel Mine in 2007 is presented in **Table 6.2**.

Total rainfall during the 2018 calendar year was 859.6mm, close to the average rainfall of 953.8mm.

Table 6.2
Monthly Rainfall Records

Period	Average Monthly Rainfall (mm)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
2007	13.4	87.6	102.4	85.6	60.0	253.0	16.5	79.6	28.3	35.0	163.8	49.5	974.7
2008	153.4	191.8	46.0	237.6	2.2	122.9	30.0	28.5	195.3	62.2	73.3	62.6	1205.8
2009	11.3	340.7	136.5	189	143.8	75.7	32.1	1.8	29.2	59.8	51.4	62.0	1133.3
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	128.7	48.9	103.2	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	944.1
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	104.0	42.4	55.0	38.4	133.4	809.5
2015	167.0	48.0	73.3	412.0	89.4	44.6	17.9	30.6	56.8	59.0	69.8	103.8	1172.2
2016	430.8	26.0	78.0	31.8	13.4	113.0	44.2	74.2	60.0	43.8	33.2	58.6	1007.0
2017	66.9	71.7	150.4	94.5	12.7	128.5	3.2	6.0	12.6	77.7	66.8	41.6	732.6
2018	**6.6**	**120.0**	**191.4**	**52.8**	**7.0**	**107.4**	**4.2**	**21.4**	**55.4**	**109.0**	**92.6**	**91.8**	**859.6**
Average	*103.5*	*126.2*	*106.3*	*131.8*	*52.8*	*117.5*	*36.0*	*39.2*	*54.1*	*61.4*	*103.5*	*65.5*	*998.1*

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

6.3 NOISE

Environmental Management

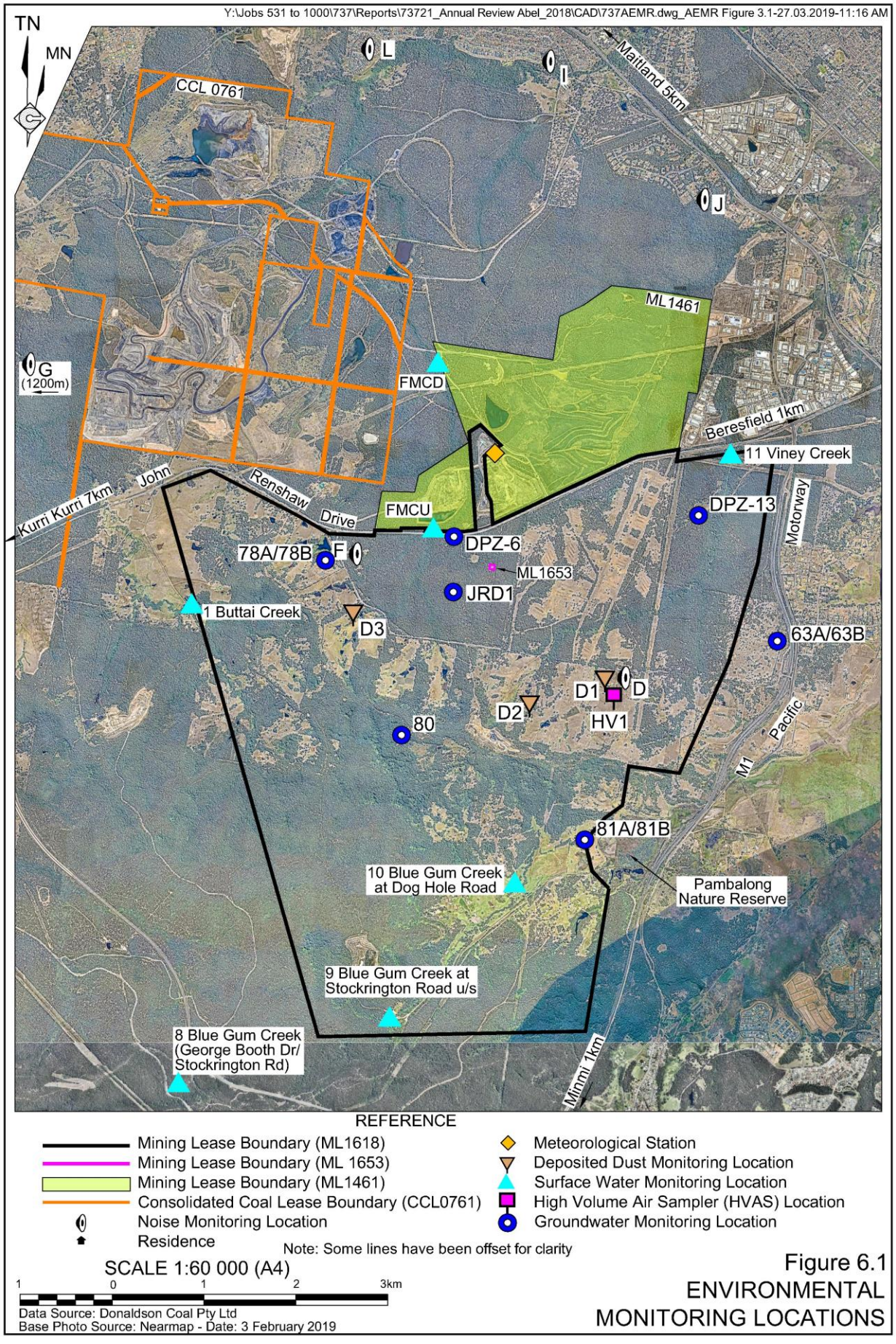
The principal noise control prior to the site entering care and maintenance was the continued use of low modulated frequency reversing alarms on mobile equipment used on the surface. Whilst mobile equipment usage during care and maintenance has been minimal this remains the principal management measure.

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 six monitoring locations relevant to the Abel Mine (see **Figure 6.1**) for quarters ending March, June, September and December 2018. Monitoring results are presented in **Table 6.3** and copies of the monitoring reports are presented within **Appendix 1**.

The findings of the monitoring surveys were that the Abel Mine operations were inaudible at the monitoring locations with noise attributable to non-mine related traffic, birds, cricket, insect and frog noise, wind and other extraneous sources. Notably, all monitoring events were undertaken whilst the Abel Mine was under care and maintenance. As the Abel operations were inaudible at all locations during all monitoring events, compliance with relevant noise criteria was considered to have been achieved. Noise associated with the Bloomfield Coal Handling Processing Plant was audible on several occasions, however, noise levels did not exceed the designated criteria levels.

Night time sleep disturbance criteria ($LA1_{(1min)}$) were also in compliance during all monitoring events with the Abel mine being inaudible at all locations during all monitoring events.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Beresfield 1km
11 Viney Creek
John
Renshaw
Drive
Kurri Kurri 7km
FMCU
DPZ-13
Motorway
DPZ-6
78A/78B
F
ML1653
JRD1
1 Buttai Creek
D3
63A/63B
D1
D
D2
HV1
80
Pacific
M1
81A/81B
10 Blue Gum Creek
at Dog Hole Road
Pambalong
Nature Reserve
9 Blue Gum Creek at
Stockrington Road u/s
8 Blue Gum Creek
(George Booth Dr/
Stockrington Rd)
Minmi 1km
REFERENCE
Mining Lease Boundary (ML1618)
Mining Lease Boundary (ML 1653)
Mining Lease Boundary (ML1461)
Consolidated Coal Lease Boundary (CCL0761)
Noise Monitoring Location
Residence
Meteorological Station
Deposited Dust Monitoring Location
Surface Water Monitoring Location
High Volume Air Sampler (HVAS) Location
Groundwater Monitoring Location
Note: Some lines have been offset for clarity
SCALE 1:60 000 (A4)
1 0 1 2 3km
Data Source: Donaldson Coal Pty Ltd
Base Photo Source: Nearmap - Date: 3 February 2019
Figure 6.1
ENVIRONMENTAL
MONITORING LOCATIONS

Table 6.3
Summary of Attended Noise Monitoring Results – 2018

Location	Time	Noise Criteria	Attended Monitoring[1]				Noise generated by Abel Mine
			Q1	Q2	Q3	Q4	
D Black Hill School, Black Hill	Day ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Evening ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Night ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Night ($L_{A1(1min)}$)	45	NA	NA	NA	NA	Operations inaudible at all times
F Black Hill Rd, Black Hill	Day ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Evening ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Night ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Night ($L_{A1(1min)}$)	45	NA	NA	NA	NA	Operations inaudible at all times
G Buchanan Rd, Buchanan	Day ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Evening ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Night ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Night ($L_{A1(1min)}$)	45	NA	NA	NA	NA	Operations inaudible at all times
I Lord Howe Drive, Ashtonfield	Day ($L_{A\ eq\ (15\ min)}$)	36	NA	NA	NA	NA	Operations inaudible at all times
	Evening ($L_{A\ eq\ (15\ min)}$)	36	NA	<30	NA	NA	Q2 - CHPP area operations <30 dBA
	Night ($L_{A\ eq\ (15\ min)}$)	36	NA	NA	NA	NA	Operations inaudible at all times
	Night ($L_{A1(1min)}$)	45	NA	NA	NA	NA	Operations inaudible at all times
J Parish Drive, Thornton	Day ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Evening ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Night ($L_{A\ eq\ (15\ min)}$)	35	NA	NA	NA	NA	Operations inaudible at all times
	Night ($L_{A1(1min)}$)	45	NA	NA	NA	NA	Operations inaudible at all times
L 7 Kilshanny Av, Ashtonfield	Day ($L_{A\ eq\ (15\ min)}$)	40	NA	NA	NA	NA	Operations inaudible at all times
	Evening ($L_{A\ eq\ (15\ min)}$)	40	<30	32	NA	NA	Q1 - CHPP area operations 28 – 32 dBA Q2 - CHPP area operations 30 – 42 dBA
	Night ($L_{A\ eq\ (15\ min)}$)	40	NA	NA	NA	NA	Operations inaudible at all times
	Night ($L_{A1(1min)}$)	47	NA	NA	NA	NA	Operations inaudible at all times

NA – Not able to be calculated as operations inaudible at all times
[1] Estimated Abel Contribution (dBA)
CHPP – Bloomfield Coal Handling Processing Plant

Whilst PA 05_0136 provides for cumulative noise criteria, given that the Abel operations were inaudible at all times no cumulative effects are considered to have occurred.

Reportable Incidents

No reportable incidents were recorded during the reporting period.

Further Improvements

Other than ongoing plant maintenance and noise monitoring (both attended and unattended), no additional management measures are planned during the next reporting period. Given the results of previous noise monitoring and the placement of the Abel Mine into care and maintenance it is intended to seek a reduction in noise monitoring frequencies until such time as operational activities recommence.

6.4 BLASTING

No blasts were undertaken during the reporting period.

6.5 AIR QUALITY

Environmental Management

As the Abel Mine is on care and maintenance the principal air quality management measure during the reporting period was maintenance of mobile equipment and on-site vehicles to reduce greenhouse and particulate emissions.

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 6.1** and results are summarised in **Table 6.4** and **Figures 6.2**, **6.3** and **6.4**.

Table 6.4
Deposited Dust Monitoring Results – 2018^

Month	Monthly Dust Deposition Rate (g/m²/month)					
	D1		D2		D3	
	Insoluble	Ash	Insoluble	Ash	Insoluble	Ash
January	0.8	0.5	1.6	0.9	1.8	1.1
February	0.5	0.4	0.8	0.5	1.2	0.8
March	0.4	0.4	0.6	0.5	5.1	1.2
April	0.5	0.3	1.0	0.7	3.9	3.1
May	0.3	0.2	0.8	0.5	0.8	0.5
June	0.7	0.3	3.1	0.8	1.0	0.5
July	0.3	0.2	0.5	0.4	0.3	0.3
August	0.5	0.4	0.5	0.4	0.6	0.5
September	0.7	0.4	0.7	0.4	0.8	0.5
October	0.3	0.2	0.5	0.4	0.7	0.5
November	0.6	0.4	2.0	1.1	3.0	2.3
December	1.1	0.8	2.0	1.1	2.9	2.0
Monthly Minimum	*0.3*	*0.2*	*0.5*	*0.4*	*0.3*	*0.3*
Monthly Maximum	*1.1*	*0.8*	*3.1*	*1.1*	*5.1*	*3.1*
Average	***0.6***	***0.4***	***1.2***	***0.6***	***1.8***	***1.1***

Source: Donaldson Coal Pty Ltd. ^ Historical data included in **Appendix 2**

Deposited Dust

The highest monthly dust deposition measurement was 5.1g/m²/month (insoluble solids) at D3 during March 2018. Although this sample was not listed as contaminated, the ash content was 1.2g/m²/month indicating that the organic component (e.g. bird droppings, insects, leaves etc.) equated to >75% of the total deposited material (see **Table 6.4**). Given that March 2018 dust deposition at D1 and D2 were 0.4g/m²/month and 0.6g/m²/month respectively, the slightly elevated result at D3 is likely to be a localised event.

The annual average monthly deposition rates for the reporting period were between 0.6g/m²/month and 1.8g/m²/month which is significantly below the criteria of 4g/m²/month, indicating good air quality with respect to dust deposition.

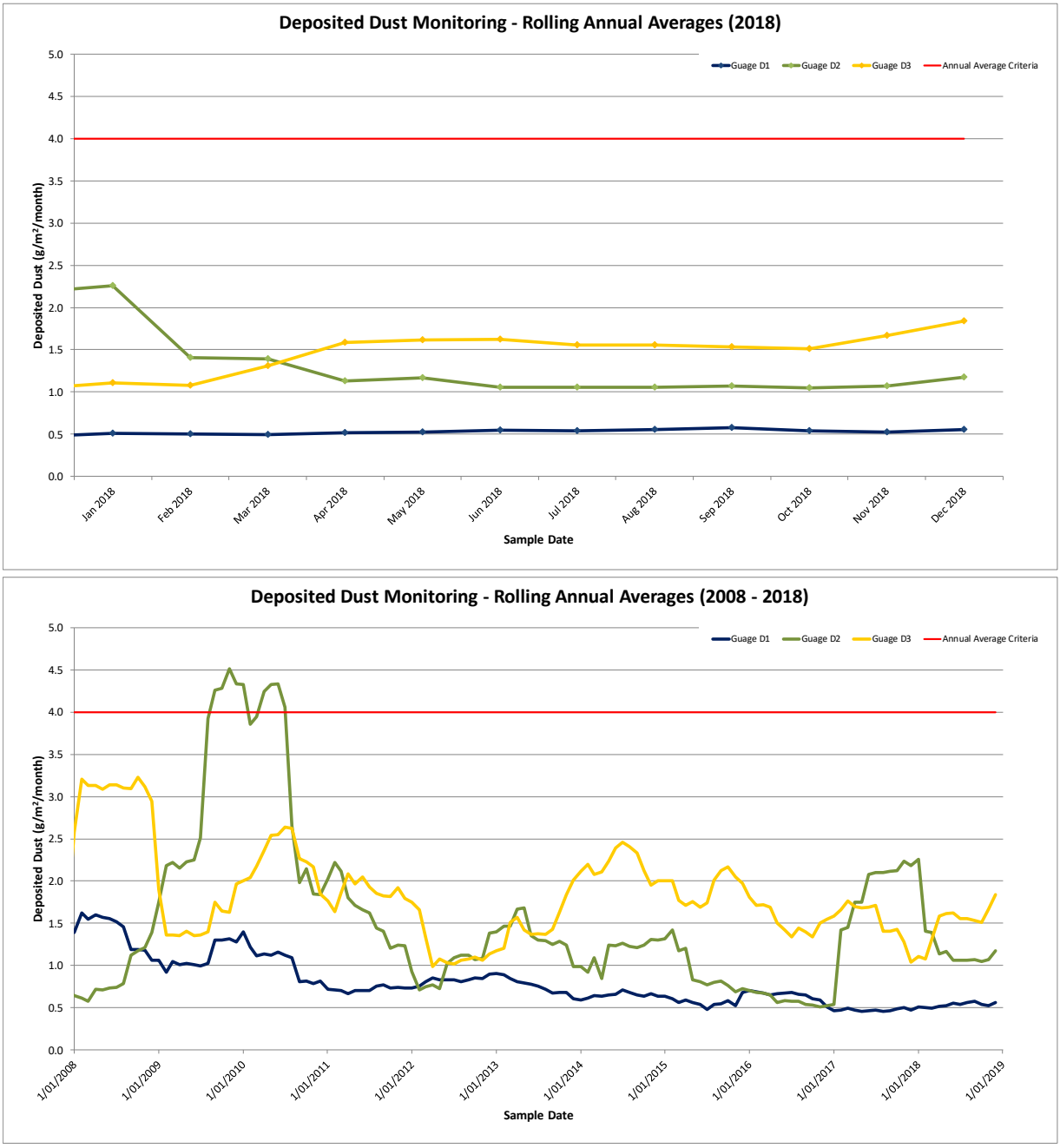
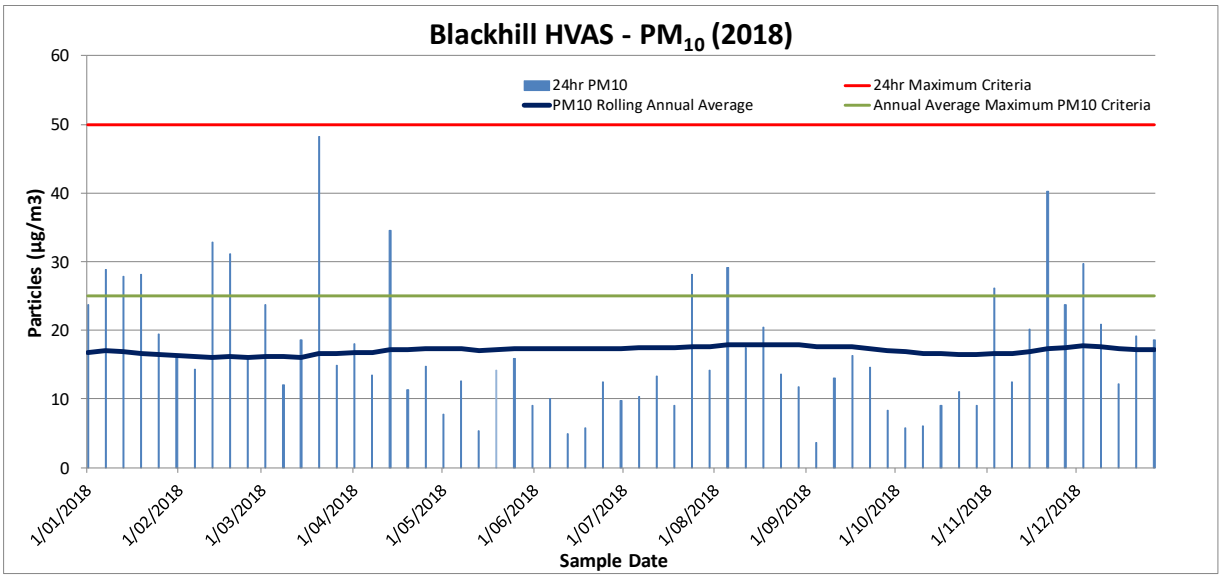


Figure 6.2 Deposited Monitoring Results

Since commencement of the Abel operations, the rolling annual average deposited dust levels have remained low although spikes are evident due to local events, particularly at sites D2 and D3. However, when accounting for such events, no specific trends are evident and deposited dust levels remain significantly below the annual average criteria.



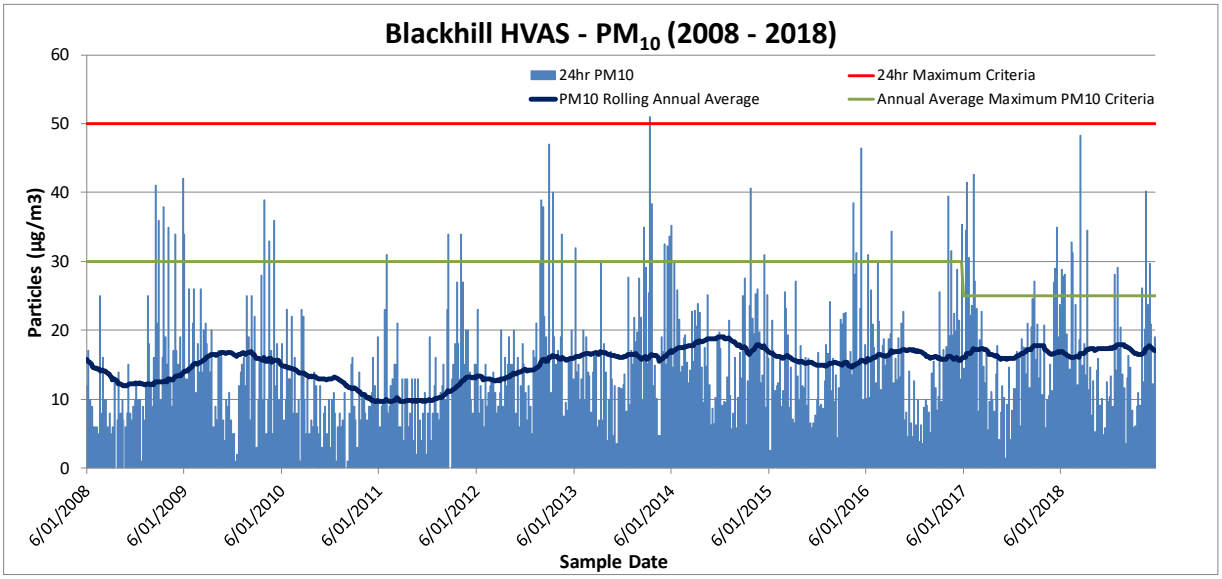
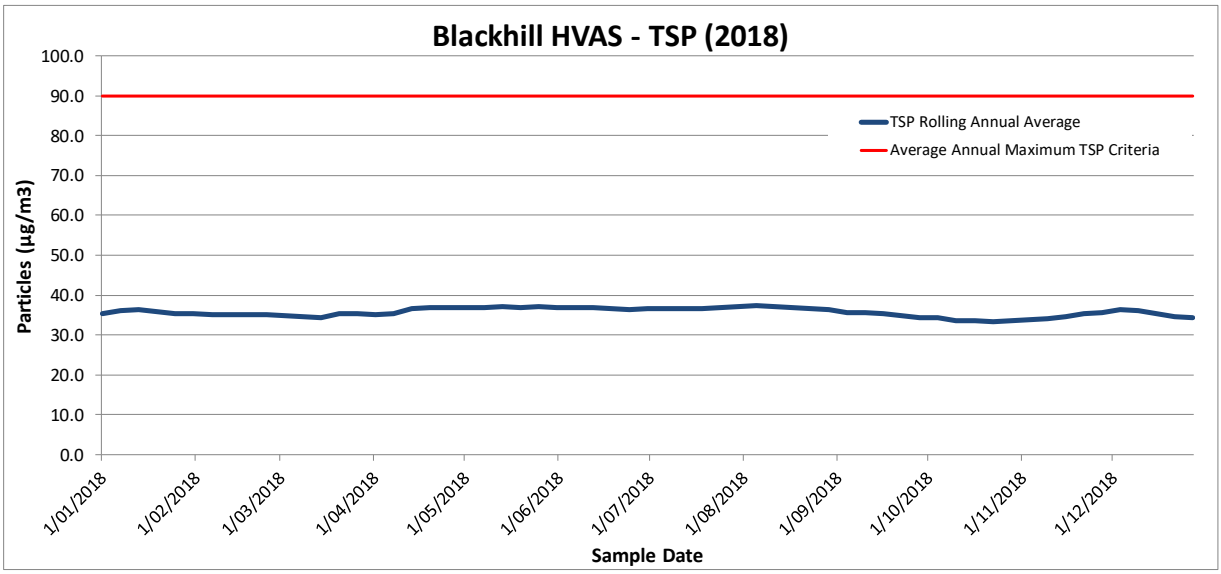


Figure 6.3 PM_{10} Monitoring Results

Suspended Particulates – PM_{10} & TSP

The suspended particulate monitoring results show that the highest 24-hour average PM_{10} concentration was 48.3µg/m^3, measured on 20 March 2018, which is below the 50µg/m^3 24-hour *National Environment Protection Measures* (NEPM) goal.

The annual average PM_{10} concentration for Blackhill was 17.1µg/m^3 for the 12 months to 31 December 2018 whilst the annual average TSP concentration was 34.4µg/m^3. The annual monitoring results also indicate that suspended particulate concentrations are well below the annual average criteria of 25µg/m^3 and 90µg/m^3 respectively.



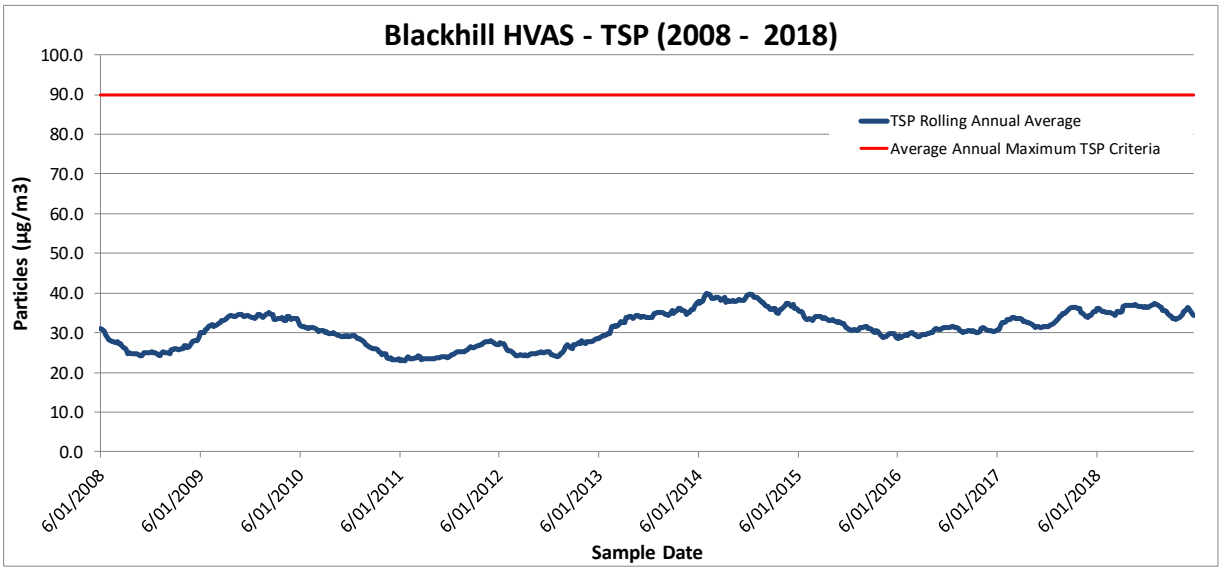


Figure 6.4 TSP Monitoring Results

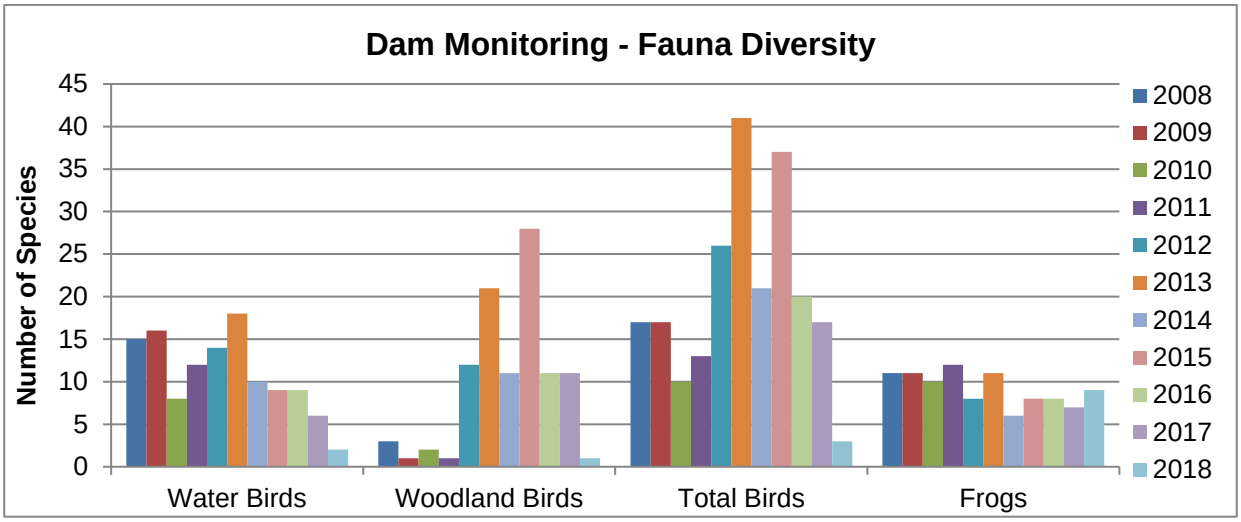
Excepting an annual trend of lower 24-hour average PM_{10} during the winter months and higher 24-hour averages during the summer months, no long-term trends are currently apparent. Similarly, the rolling annual averages for PM_{10} and TSP have fluctuated higher or lower by approximately 5µg/m^3 (see **Figure 6.3** and **6.4**). However, the annual averages remain very similar to the long-term averages (from 6 January 2008) of 15.2µg/m^3 and 31.2µg/m^3 respectively.

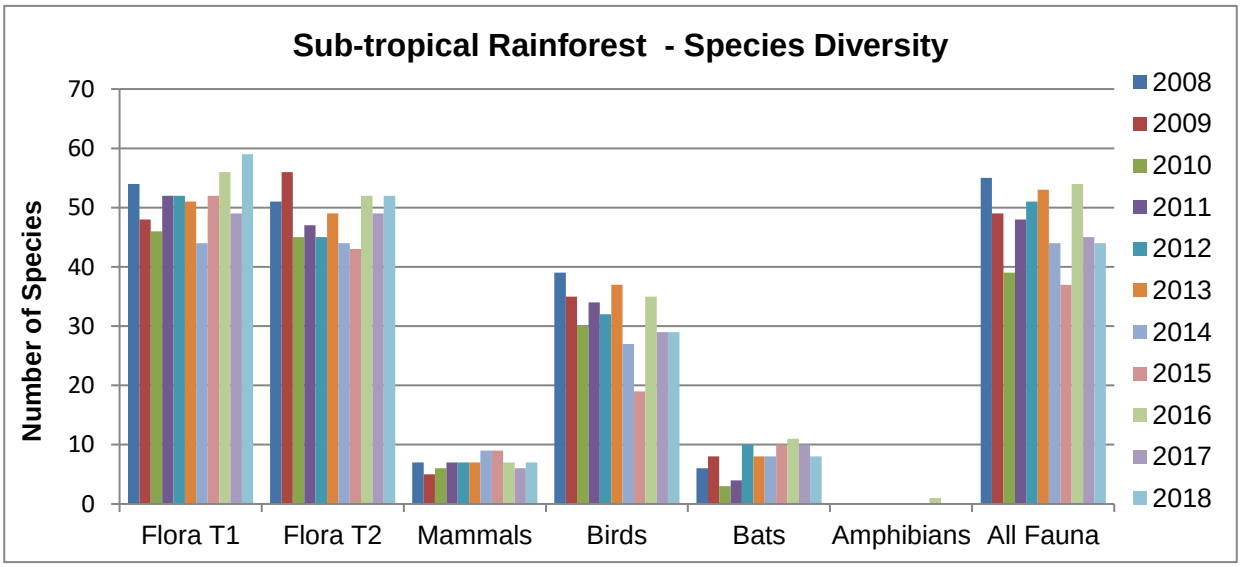
Reportable Incidents

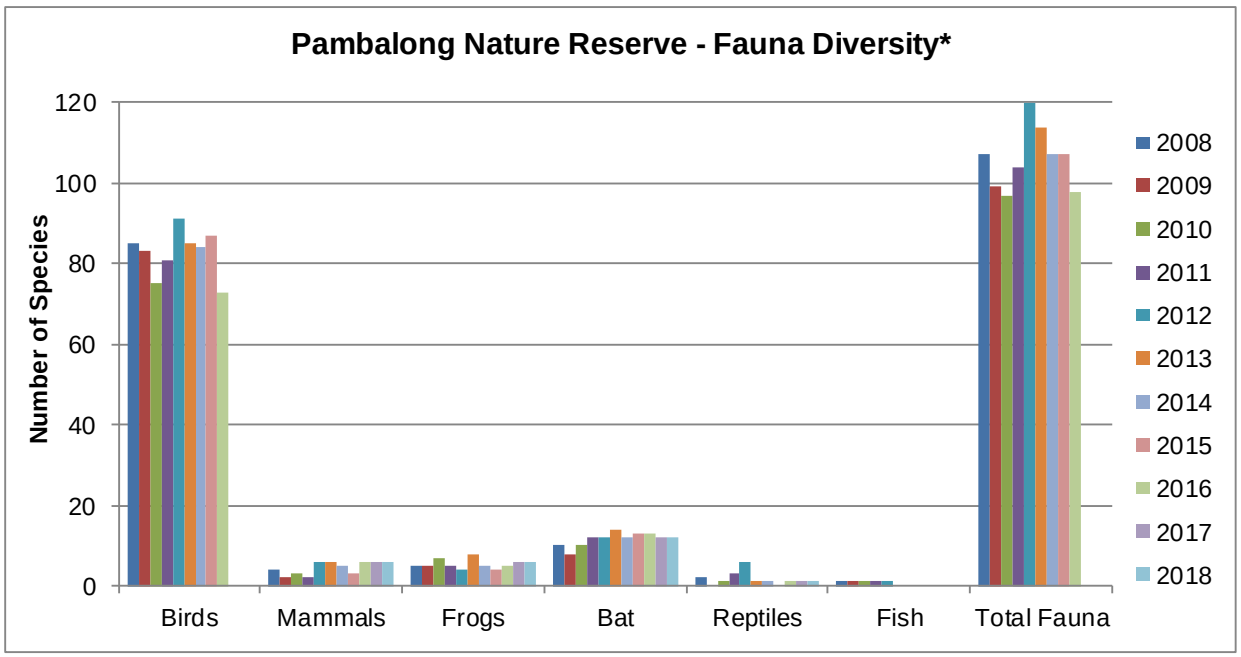
No reportable incidents relating to air pollution occurred during the reporting period.

Further Improvements

No other improvements relating to air pollution are planned or considered necessary.







*Birds and therefore total fauna yet to be finalised.

Figure 6.5 Selected Ecological Monitoring Results

6.6 BIODIVERSITY

Environmental Management

No underground workings occurred during the reporting period and no mining has previously been undertaken within areas that would lead to subsidence under or near the Pambalong Nature Reserve or under sub-tropical rainforest. Hence, no specific flora or fauna management measures have been required to date 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 (see **Appendix 3**), Sub-tropical Rainforest Monitoring Plan (see **Appendix 4**) and Pambalong Nature Reserve Monitoring Plan. It is noted that bird surveys remained in progress for the Pambalong Nature Reserve monitoring. As such, a summary of the flora data collected to date is presented with a full copy of the monitoring report to be provided with the Annual Review for the next reporting period.

Macroinvertebrate sampling also continued to be undertaken within Blue Gum Creek upstream of the Pambalong Nature Reserve by Niche Environment and Heritage during Autumn and Spring 2018 (see **Appendix 5**). A summary of the principal results is provided as follows.

Dam Monitoring

Over time, the number of participants (land holders) with surveyed dams has declined due to a range of factors including lack of interest and changing ownership. In 2018, only 36 dams were surveyed for amphibians out of a possible 65 dams surveyed in 2008, only one out of the four dams were surveyed for Blue-billed Duck, and only 30 dams out of the original 87 were surveyed for *Maundia triglochinoides*.

Species diversity and composition data for frogs, in addition to abundance for water-dependent bird species, were recorded at each of the targeted dams for the 2018 survey.

No frog species listed as threatened under State or Commonwealth legislation were recorded during field surveys. A total of nine species of frog were detected across all dams during the 2018 surveys, representing a slight increase following a general pattern of decline in total frog species recorded since 2011 (see **Figure 6.5**). Following statistical analysis, the overall decline appears to be correlated to average temperature in the 3 months preceding the survey but is not correlated to rainfall.

A total of 63 bird species, including 23 waterbirds and 40 woodland/forest birds have been recorded between 2008 and 2018 across all of the dams surveyed. The 2018 surveys detected 3 species (2 waterbirds and 1 woodland/forest bird) at the one dam surveyed. The Blue-billed Duck was not detected during the 2018 survey.

Notably, prior to 2018 the diversity and abundance of waterbirds has been relatively constant over the survey years whilst woodland/forest birds have fluctuated. Results from the 2018 survey were below averages across all survey years, however this is likely a product the survey being conducted across a single dam due to access restrictions. The high diversity of woodland/forest birds in 2015 was considered an anomaly and may have been due to increased bird activity following the cessation of a major rain event. This fluctuation as a result of rainfall prior to surveys has also been observed throughout the previous surveys.

No individuals of the threatened plant, *Maundia triglochinoides* were identified. However, Water Hyacinth, a Class 3 listed noxious aquatic weed, was identified in 11 dams. A range of other weeds were also detected including Pampas Grass (1 dam), Blackberry (24 dams), Lantana (26 dams).

Water level and quality monitoring (for pH and Electrical Conductivity) within dams that could potentially be affected by mining induced subsidence has previously undertaken pre and post mining in accordance with the individual property and dam management plans.

Sub-tropical Rainforest Monitoring

Annual monitoring has been conducted at Long Gully Creek for the past 11 years (2008 to 2018). The Subtropical Rainforest Monitoring Plan (SRMP) is designed to examine the stability of the rainforest/dry forest interface and floristic and faunal diversity. Whilst these areas have not yet been undermined, the information collected will allow best practice measures to be incorporated into the future Subsidence Management Plan(s) to be developed for this area.

The 2018 sub-tropical rainforest monitoring program recorded an increase in floral diversity at both transects compared to 2017 monitoring and a slight increase compared to the 2008 baseline monitoring (see **Figure 6.5**). Specifically, 59 species were recorded at Transect 1 in 2018 compared to 49 in 2017 and 54 in 2008. At Transect 2, 52 species were recorded in 2018 compared to 49 in 2017 and 51 in 2008. No threatened flora species were recorded during the 2018 survey.

The area of transition between dry and moist forest at Transect 1 has continued to expand since the 2008 baseline survey, with the width of the moist forest increasing. Along both Transect 1 and Transect 2, particularly at the end of each transect, there has been an increase in the number of moist species recorded and a decline in the number of dry species within each 5m segment. The reduction in the occurrence of Lantana has contributed to the reduction in dry species.

Along both Transect 1 and Transect 2 there has been a decline in Foliage Projection Cover (FPC) since the 2008 baseline survey. However, this is not an isolated occurrence in the current survey. When data from the 2018 survey are compared to that of the 2009 and 2017 surveys, the total FPC along both transects is relatively similar. Whilst severe storms occurred around Newcastle in 2015, which has likely reduced canopy cover, reduced levels of ground, shrub and midstorey cover since the baseline survey may reflect natural loss in vegetation between periods of disturbance, such as the lack of fire disturbance over a prolonged period.

In total, 44 fauna species were recorded during the 2018 survey. The recorded species comprised three arboreal mammal species, four terrestrial mammal species, eight bat species and 29 bird species. Three of these species, Little Bentwing-bat (*Miniopterus australis*), Grey-headed Flying-fox (*Pteropus poliocephalus*), and Great Glider (*Petauroides volans*), are threatened species listed under the *NSW Biodiversity Conservation Act 2016* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. No reptile or amphibian species, and no feral species, were recorded during the 2018 survey.

While the 2018 survey recorded a slight decrease in the number of bat species since 2017, total bat species results continue to display a positive trend with all years since 2015 exceeding the average number of species recorded. The number of bird species has remained relatively stable across all survey years with the exception of 2015 when only 19 species were recorded.

The total number of arboreal mammals recorded is consistent with that reported in 2017, both of which were below the average for the period since 2008. This decline may be due to a number of factors including the presence of cryptic species which are difficult to sample, possible cyclic patterns of occupancy which may influence species presence and absence across multiple years, and the regulation of mammal populations by predatory bird species. The total number of terrestrial mammals recorded in 2018 indicates a return to previous levels following a decline reported in 2016.

No undermining of sub-tropical rainforest occurred during the reporting period or will occur for a number of years. The data collated continues to contribute to the baseline data set.

Pambalong Nature Reserve Monitoring

Whilst no mining occurred which could potentially impact upon the Pambalong Nature Reserve, monitoring was undertaken as part of the Pambalong Nature Reserve Monitoring Plan. The 2017/2018 survey represents the tenth year of baseline monitoring. The monitoring plan is aimed at building a picture of what constitutes normal variation so that any impacts from mining in the future can be identified, should they occur.

A total of 109 flora species were recorded during the 2017/2018 survey, including 22 that were not recorded in the 2016/2017 survey. A total of 200 flora species have been identified since monitoring commenced in 2008. No significant changes to the spatial extent of vegetation communities were observed.

Fauna monitoring during the 2017/2018 survey recorded six terrestrial mammals, 12 bats, one reptile, and six frogs. Bird surveys had yet to be completed during the reporting period and will be reported during the next reporting period.

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 (utilising the SIGNAL index).

During the 2018 Autumn and Spring surveys, the RCE rankings were 39 and 38 respectively for the upstream sites. For the downstream sites, RCE rankings were 36 during both the 2018 Autumn and Spring periods. RCE scores above 40 reflect a stream in good condition, between 20 and 40 reflect a stream in moderate condition and below 20 indicates a stream in poor condition. The 2018 RCE rankings are consistent with previous monitoring events which range from 33 to 40.

Table 6.5 provides a summary of the biological characteristics recorded during monitoring undertaken to date. It is noted that the use of the SIGNAL2 index was adopted in 2015 and results in a lower score that the original SIGNAL index utilised in previous monitoring.

The upstream and downstream SIGNAL scores during both Autumn and Spring were <4, which is considered poor and potentially the result of pollution from erosion, siltation, weeds and elevated salinity. Additionally, taxa present indicate a dominance of pollution tolerant macroinvertebrate families. Despite the SIGNAL scores, sensitive mayfly taxa (Leptophlebiidae and Elmidae) were recorded both upstream and downstream.

Table 6.5
Summary of Biological Characteristics (Macroinvertebrates)

Parameter	Date	Blue Gum Creek at Stockrington Road (upstream)	Blue Gum Creek at Dog Hole Road (downstream)
Number of Taxa	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
	12/06/15	17	16
	07/10/15	15	2
	03/03/16	15	20
	08/09/16	22	5
	May 17	13	8
	Sep 17	-	9
	08/05/18	11	16
	14/11/18	19	11
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
SIGNAL2 (weighted) Index	12/06/15	4.45	4.1
	07/10/15	3.29	3.17
	03/03/16	3.75	3.76
	08/09/16	3.98	2.73
	May 17	3.41	2.94
	Sep 17	-	3.43
	08/05/18	3.96	3.81
	14/11/18	3.18	3.54

Source: Niche Environment & Heritage and Robyn Tuft Associates

Overall, Blue Gum Creek appears degraded and in poor stream health with the presence of weeds, siltation, and significant bank erosion. This poor stream health appears unrelated to the Able or previous Tasman mining operations and is more likely related to disturbance factors such as roadways, agriculture, and past high flow events as well as ongoing land use management issues. Given these other disturbance sources, the ongoing monitoring program will be reviewed to determine whether the current monitoring sites remain appropriate locations. Additionally, short-term adverse impacts can likely be attributed to construction work involving the upgrade of an upstream bridge which were undertaken during the Autumn survey period. While no measurable improvements in stream ecology were reported in the Spring survey results following the completion of construction works, the bridge upgrade is likely to improve bank stability and reduce erosion in the long-term.

Reportable Incidents

No reportable incidents were recorded during the reporting period.

Further Improvements

Prior to the recommencement of mining operations, relevant dams will be reassessed for frog habitat to account for changes such as eutrophication from stock, fertiliser applications or other farming practices as opposed to changes resulting from mining.

As recommended by Niche Environment and Heritage, consideration will also be given to the need for ongoing aquatic monitoring within Blue Gum Creek and/or whether the monitoring program is continued in its current form.

The ongoing monitoring program for the care and maintenance period is also planned to be reviewed for the remaining ecological aspects during the next reporting period.

6.7 HERITAGE

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 either the Mindaribba or Awabakal Local Aboriginal Land Councils (LALCs) (as applicable to the area monitored), DPE and OEH. Given that no mining was undertaken during the 2018 reporting period, no specific monitoring was completed. The first of the annual reports is therefore planned following the recommencement of mining operations.

6.8 SUBSIDENCE

Environmental Management

To date four Subsidence Management Plan (SMP) areas have been prepared for the mine. As part of each SMP, subsidence monitoring programs have 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 and Further Improvements

No mining occurred during the reporting period and no further quantitative monitoring of previous undermined panels occurred. However, photographic monitoring and visual inspections continued during the reporting period. A summary of the outcomes of this monitoring and any actions taken is outlined as follows.

- Previously remediated surface cracks above Panels 23, 28 and 30 were observed to have reopened following a significant rainfall event. These were located within the paddocks of two private properties and were remediated in consultation with the respective landowners.
- No further impacts to Blackhill Road were observed and the infrastructure remained within a safe and serviceable condition.

- All subsidence impacts on the Hunter Water Corporation Waterline, Ausgrid Powerlines and TransGrid Transmission Towers 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 or plans.

A comparison of previously surveyed subsidence levels against predicted levels for all panels within which extraction has been completed to date is provided within the annual Subsidence Management Report (see **Appendix 6**). A summary of subsidence impacts against the performance measures outlined in PA 05_0136 *Schedule 3 Condition 1* is also provided in **Table 6.6**.

During the next reporting period monitoring will be continued in accordance with the approved Subsidence Management Plans.

Table 6.6
Review of Subsidence Impact Performance Measures

Performance Measure	Status
Table 2: Subsidence Impact Performance Measures ***Water Resources*** • Hexham Swamp; Blue Gum Creek and Alluvium; and Long Gully. — • Negligible environmental consequences, including: – *negligible* reduction in the quantity of water entering the swamp or the creeks (ie baseflow or environmental flows); – *negligible* reduction in the quality of water entering the swamp or the creeks; and – *negligible* reduction in creek bed or bank stability. • No connective cracking between the surface and the mine. • All other watercourses in the mining area. — • No greater environmental consequences than predicted in the EA and EA (MOD 3).	Mining to date has occurred substantially north of these features. Groundwater level monitoring has also not recorded any drawdown of surficial aquifers (see Section 7.3). Subsidence monitoring has not recorded any impacts upon other watercourses.
Land • Cliffs. — • Minor environmental consequences (that is, occasional rockfalls, displacement of or dislodgement of boulders or slabs, or fracturing, that in total do not impact more than 3% of the total face area of cliffs within the mining area). • Minor cliffs; Rock face features; and Steep slopes. — • Minor environmental consequences (that is, occasional rockfalls, displacement or dislodgement of boulders or slabs, or fracturing, that in total do not impact more than 5% of the total face area of each such type of feature within the mining area). • Pambalong Nature Reserve. — • Negligible environmental consequences.	Mining has not yet occurred under any major cliff areas. Subsidence monitoring has not recorded any rock falls or other impacts. No impacts upon Pambalong Nature Reserve have been recorded.
Biodiversity • Threatened species; and Endangered ecological communities (including unspecified Lowland Rainforest EEC). — • Negligible environmental consequences.	No mining related impacts have been recorded to date (see Section 6.5 of this Annual Review).
Heritage Sites • Aboriginal heritage sites. — • No greater subsidence impacts or environmental consequences than predicted in the EA and EA (MOD 3). • Historic heritage. — • No greater subsidence impacts or environmental consequences than predicted in the EA and EA (MOD 3).	No impacts upon Aboriginal or historical heritage have been recorded to date.
Mine workings • First workings under an approved Extraction Plan beneath any feature where performance measures in this table require negligible subsidence impacts, negligible environmental consequences. — • To remain long-term stable and non-subsiding. • Second workings. — • To be carried out only in accordance with an approved Extraction Plan.	Subsidence control zones and second workings have been implemented in accordance with the approved subsidence management plans.

6.9 WASTE MANAGEMENT

In accordance with *Schedule 3, Condition 25* of Project Approval 05_0136, a summary of waste management during the reporting period is provided as follows.

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

- Hazardous (Recycled) - lead acid batteries and oil.
- Non-Hazardous (Recycled) – paper and cardboard, confidential documents, scrap steel.
- Hazardous (Disposal) – medical and sanitary waste, oily rags.
- Non-Hazardous (Disposal) – mixed solid waste.

Waste oil was stored within 205L drums, 1 000L IBCs or the waste oil tank within the oil store before being removed from site, along with used oil filters and oily rags, by J R Richards & Sons. Excess waste oil drums that were stored external to bunded areas were removed and a purpose built bunded storage container is now also utilised to ensure adequate bunded storage is available. 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 J R Richards & Sons on a weekly basis whilst scrap metal was also collected by J R Richards & Sons 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 J R Richards & Sons.

The approximate volume of each waste stream generated during the reporting period is presented in **Table 6.7** together with the proportion of waste recycled. The proportion of waste recycled increased from 38.54% in 2017 to 73.30% in 2018, largely due to the increased volume of steel recycled in 2018. The total volume of wastes has also decreased since the mine entered care and maintenance.

As part of the Company's Environmental Management Strategy, it is a requirement for contractors and employees to minimise waste generation wherever possible and to dispose of all waste in a satisfactory matter. Waste volumes will continue to be monitored into the future and opportunities to minimise waste or increase recycling implemented, where appropriate.

Table 6.7
Approximate Waste Volumes 2016 to 2018

Waste Class	Waste Stream	Total Volume (kg)		
		2016	2017	2018
Hazardous (Recycled)	Effluent	43,500	0	0
	Lead Acid Batteries	0	0	220
	Empty Drums	0	88	0
	Waste Oil & Oil Filters	6 046	2 900	800
	Recycled	20.55%	6.31%	1.11%
Non-Hazardous (Recycled)	Paper and Cardboard	1 960	1 170	545
	Confidential Documents	0	0	420
	Scrap Steel	116 560	14 100	66 271
	Timber	4 560	0	0
	Recycled	51.05%	32.24%	73.19%
Hazardous (Disposal)	Medical and Sanitary Waste	359	138	161
	Oily Rags	408	258	54
	Recycled	**0.35%**	**0.84%**	**0.23%**
Non-Hazardous (Disposal)	Mixed Solid Waste	67 595	28 715	23 390
	Recycled	28.04%	60.62%	25.46%
Total Waste		**241 077**	**47 369**	**91 861**
Recycled Waste		**172 633**	**18 258**	**68 256**
Recycled Waste (%)		**71.61%**	**38.54%**	**74.30%**

As part of the Company's Environmental Management Strategy, it is a requirement for contractors and employees to minimise waste generation wherever possible and to dispose of all waste in a satisfactory matter. Waste volumes will continue to be monitored into the future and opportunities to minimise waste or increase recycling implemented, where appropriate.

7. WATER MANAGEMENT

7.1 WATER TAKE

Applicable water licencing held for the Abel Mine operations include Water Supply Works and Use Approval 20WA218986 and Water Access Licence (WAL) 41525, which provide for up to 500ML of water take annually. The Abel Mine is not actively dewatered in advance of mining, rather passive inflows occur into the mine workings and are transferred from active mining areas to completed mine workings or to the surface.

The net groundwater inflow volume has been estimated to be 307ML for the current water year 01 July 2017 to 30 June 2018. No take of water from the overlying alluvial aquifers has occurred to date.

No compensatory water been required to be supplied throughout the life of the mine.

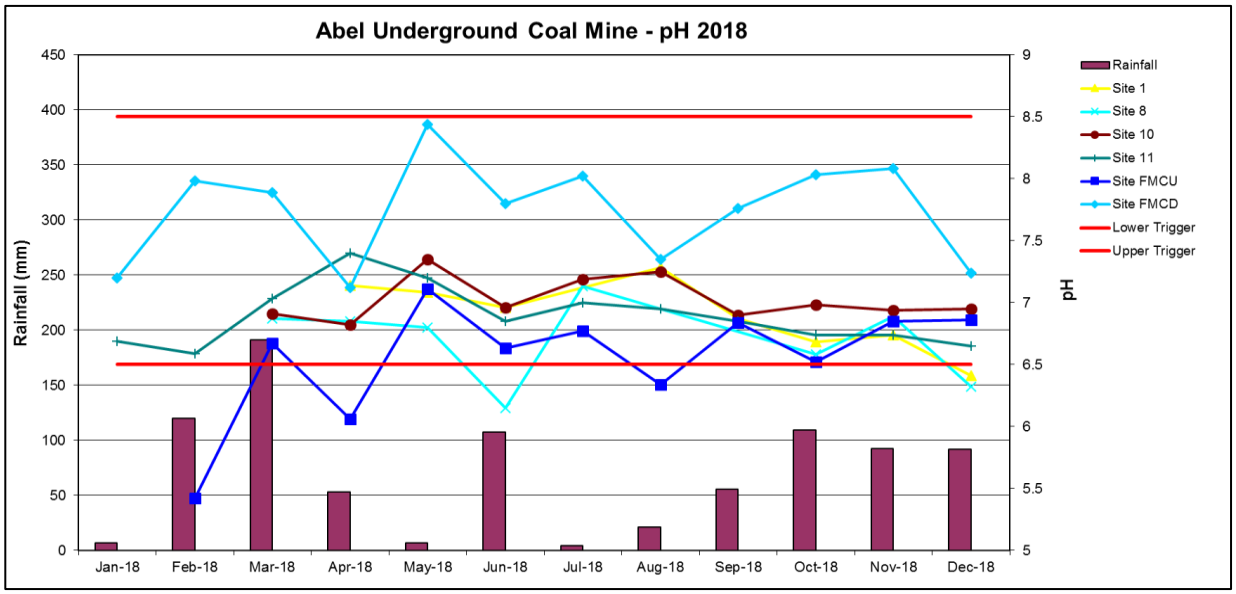
7.2 SURFACE WATER

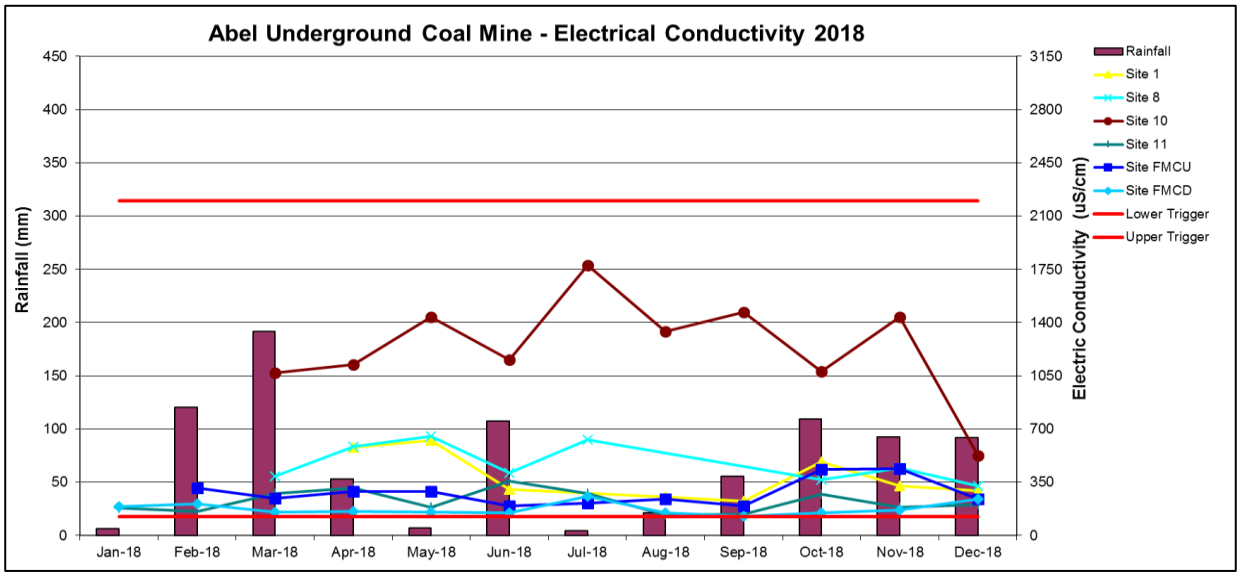
Environmental Management

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. During the reporting period, a total of 535ML was transferred from the Big Kahuna Dam to the Bloomfield CHPP. 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 Four Mile Creek Upstream (FMCU) and Four Mile Creek Downstream (FMCD) commenced prior to the commencement of the Abel Mine and serve to provide baseline data. Monitoring at Sites 1, 8, 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 7.1** and presented graphically in **Figure 7.1** with the full graphical presentation since 2008 presented in **Figure 7.2** and data set provided in **Appendix 2**. It is noted that monitoring at additional sites identified within the Integrated Environmental Monitoring Program incorporating the Abel Mine, Donaldson Mine, and Bloomfield Colliery were undertaken and will be reported within their respective Annual Reviews.





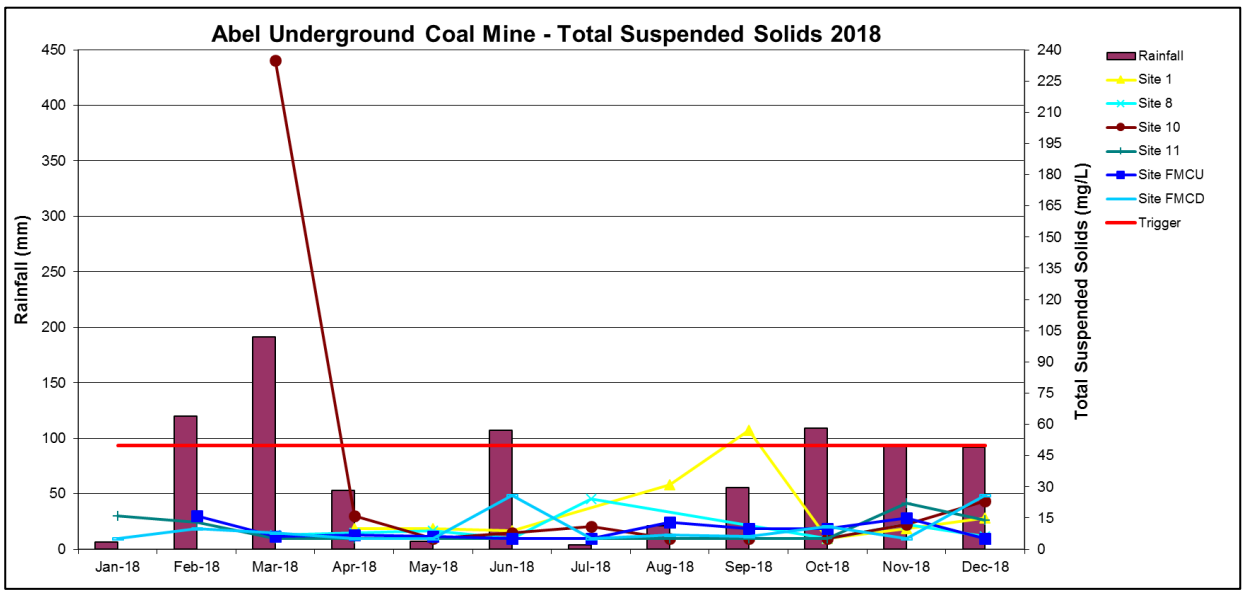


Figure 7.1 Surface Water Quality Monitoring Results – 2018

DONALDSONCOAL
Part of the Yancoal Australia Group

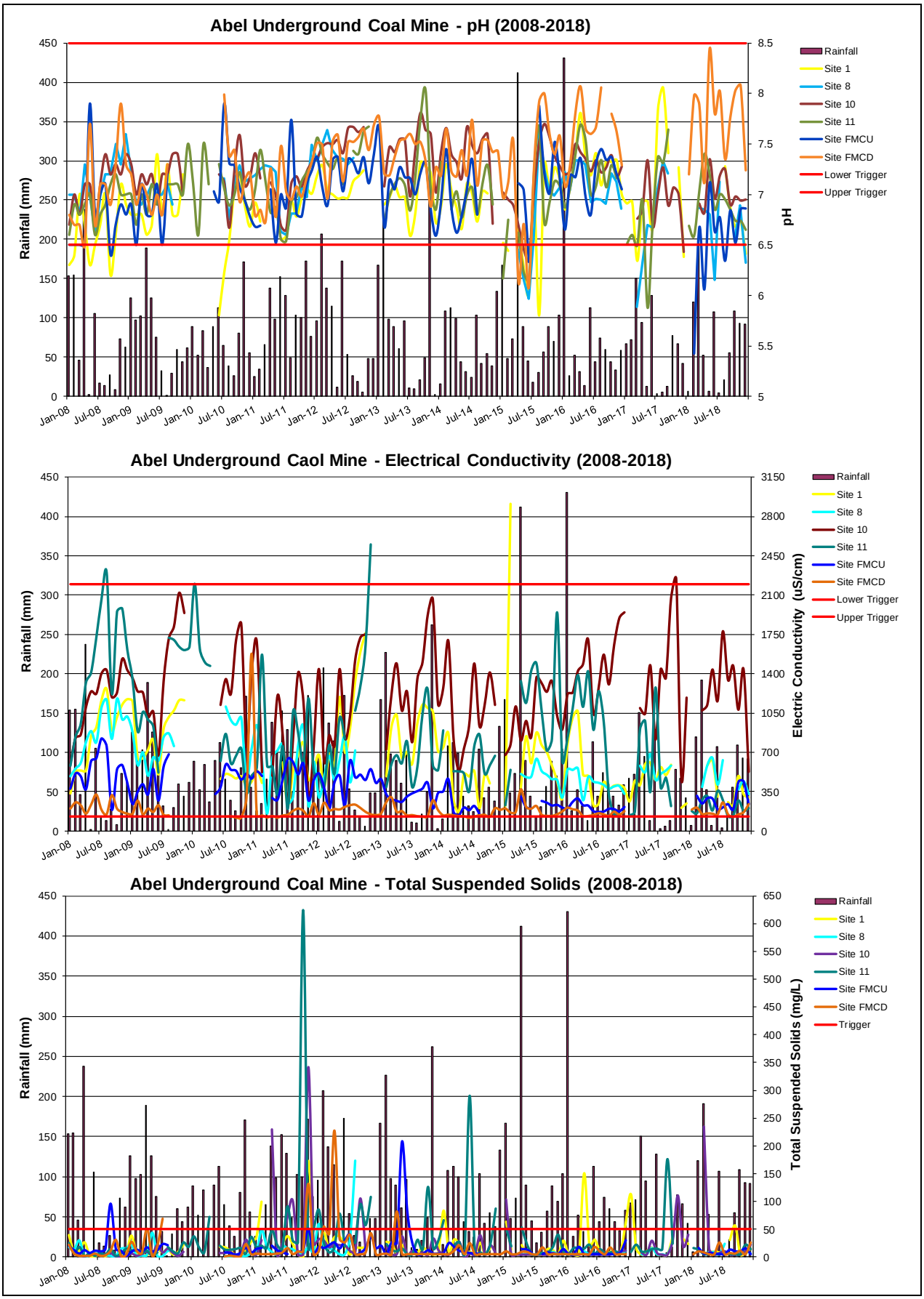


Figure 7.2 Surface Water Quality Monitoring Results – 2008 to 2018

Table 7.1
Summary of Water Quality Monitoring Results – 2018[1]

Sampling Site^	pH[#]	EC (µS/cm)[#]	Turbidity (NTU)	TSS (mg/L)
Upstream of Underground Workings				
1	**6.41** – 7.28 (6.90)	225.6 – 625.0 (386.2)	14.3 – **159.0** (59.5)	5 – **57** (18)
8	**6.15** – 7.13 (6.70)	326.0 – 650.0 (474.5)	7.5 – **63.3** (28.79)	5 – 24 (10)
10	6.82 – 7.35 (7.03)	523.0 – 1776.0 (1241.0)	NS	5 – **235** (33)
Downstream of Underground Workings				
11	6.59 – 7.40 (6.89)	134.4 – 359.0 (222.8)	**4.5** – **76.3** (25.8)	5 – 22 (9)
FMCU	**5.42** – 7.11 (6.48)	193.9 – 440.0 (267.5)	15.8 – 24.2 (21.4)	5 – 16 (9)
FMCD	7.12 – 8.44 (7.76)	126.6 – 255.0 (169.0)	**5.4** – 8.1 (7.0)	5 – 26 (9)
Trigger Level	*6.5 – 8.5**	*125 to 2 200**	*6 – 50 (NTU)**	*50[@]*

1. Results cover period 01/1/2018 to 31/12/2018 ( ) = Average
^ See **Figure 6.1** [@]Standard Industry Criterion * ANZECC Chapter 3 – Aquatic Ecosystems – Lowland Rivers in NSW
Bold Red Text – Exceedance of Trigger Level [#] Field Measurement NS – Not Sampled

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

1. Recorded pH values for three of the six monitoring sites fell below the lower pH water quality trigger value (6.5) for Lowland Rivers in NSW outlined in the *Guidelines for Fresh and Marine Water Quality* (ANZECC 2000) on one or more occasions during the reporting period (see **Figure 7.1**). Two of these sites, Site 1 and 8 are upstream of the underground works whilst the third, FMCU, is downstream. Long-term monitoring records a history of short-term declines in pH. Previously, short term declines in pH have followed significant rainfall events (see April 2015 and January 2016 in **Figure 7.2**). However, results which fall below the lower trigger value during this reporting period did not consistently follow significant rainfall events.

   It is also noted that there is a divergence of the pH between the Four Mile Creek Upstream (FMCU) and Downstream (FMCD) locations. This is thought to be the result of ongoing leakage from the Stoney Pinch Reservoir above the Four Mile Creek Downstream sample point. As can be seen from the results, the lower pH originates at the upstream location and improves to neutral / slightly alkaline downstream. This is not mine related given that no operational activities or discharges occurred from either the Donaldson Open Cut Coal Mine or Abel Underground Coal Mine.

   No other long-term trends in pH are apparent (**Figure 7.2**).

2. The electrical conductivity (EC) results range between 126.6µS/cm and 1 776.0µS/cm for all sites which are within the water quality trigger values for Lowland Rivers in NSW (125 to 2 200µS/cm) (ANZECC 2000) at all sample sites.

Whilst it is expected that rainfall will influence EC results, EC does not appear to be strongly correlated with the monthly rainfall. The average EC values upstream are significantly higher than the corresponding downstream values. No long-term trends in EC are apparent.

3. Turbidity and total suspended solids (TSS) levels at upstream Sites 1 and 10 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).

   Whilst high TSS levels recorded at Site 10 in March 2018 did coincide with the highest monthly rainfall period in 2018 (**Figure 7.1**), historically TSS levels have not coincided with rainfall (**Figure 7.2**) and exceedance at Site 1 in September 2018 did not coincide with a high rainfall period.

   Given that both Site 1 and Site 10 are upstream of the Abel Mine underground workings and that each recorded exceedance did not persist across multiple survey periods, it is considered that short-term, localised conditions rather than mine activities contributed to these levels.

   No long-term trends are apparent within the monitoring data. Widely varying results with spikes in turbidity and TSS are not necessarily correlated with monthly rainfall. Baseline monitoring results for both upstream and downstream sites have previously recorded significantly elevated TSS which are considered to form part of the natural variation.

The Environmental Assessment (Donaldson Coal, 2006) predicted no significant impacts upon surface water as a result of the mine activities. The monitoring results to date support that assessment.

Reportable Incidents

No reportable incidents occurred during the reporting period.

Further Improvements

No other surface water control measures are planned or considered necessary.

7.3 GROUNDWATER

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 graphical summary of groundwater level monitoring results relevant to the Abel Underground Coal Mine is provided in **Figure 7.3** and an interpretation of these results is provided as follows.

Monitoring indicates that there is little evidence of any drawdown response in the alluvium or regolith groundwater. In particular Piezometers 81A and 81B are located adjacent the Pambalong Nature Reserve (see **Figure 6.1**). 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. However, Piezometer 81B is screened within overlying shallow Permian strata with water levels remaining stable. The lack of response in the shallow piezometer may indicate minimal mining impact on the Pambalong Nature Reserve.

Piezometers 63A and B are located to the east of the Abel Mine adjacent to the F3 Freeway and near the Hexham Swamp (see **Figure 6.1**). It appears that the shallow Piezometer 63B has failed or the bore has collapsed and therefore this piezometer no longer provides useful data. However, Piezometer 63A is screened in the Lower Donaldson Seam and remains operational. Monitoring results from Piezometer 63A remained consistent throughout the reporting period indicating minimal impact from previous mining activities.

Similarly, monitoring results from 78A (standpipe piezometer within the Donaldson Seam) indicated minimal impact until the start of secondary extraction in Panel 23 in June 2013. Drawdown rates stabilised during 2016 and have since remained steady. As for the other nested piezometers, 78B located within the overlaying regolith indicates minimal drawdown response

Piezometer 80 is screened in the Donaldson Seam and located to the south of the mining activities completed to date. An expected drawdown commenced during secondary extraction in Panel 23 June 2013. The decline has steadied since the cessation of mining activities with a steady but modest recovery since mid-2017.

The results indicate that groundwater pressure reduction within the Lower Donaldson Seam resulting from mining has occurred as anticipated and is insulated from shallow and surficial groundwater systems in this area. This is consistent with the predictions within the Environmental Assessment.

Groundwater Inflows

As reported for 2015, between August 2013 and October 2015 inflow volumes could not be accurately estimated as a significant portion of mine water was accumulating in isolated in-mine storages. From 01 October 2015 water began reporting from the overflow of the storage areas. Based on a total in-mine storage volume of 459ML, it is calculated that average groundwater inflow ranged from 120ML/year to 240ML/year during that time.

Figure 7.3 Groundwater Level Results – All Data

During the 2018 reporting period, groundwater inflows are estimated at 307ML. Since the mine was placed on care and maintenance, water has continued to be pumped from the underground workings, however, there have been smaller volumes of inflow and declining outflows. Groundwater model predictions for this stage of mining were for between 800ML and 1,000ML/year. Therefore, the actual inflow rates remain well below the predicted maximum rate.

Groundwater Quality

Groundwater quality monitoring results are presented in **Appendix 2**. A summary of three representative bores located within the Abel underground mine area is presented in **Table 7.2** and **Figures 7.3** with the full graphical presentation since 2008 presented in **Figure 7.4**.

Table 7.2
Summary of Groundwater Quality Monitoring Results – 2018

Sampling Site#	pH	EC (µS/cm)
DPZ – 6	5.87 – 6.80 (6.47)	171 – 2 400 (1780)
DPZ – 13*	No Access	No Access
JRD2	5.88 – 7.24 (6.81)	178 – 2350 (1424)

Source: Donaldson Coal Pty Ltd ( ) = Average # see **Figure 6.1**
*DPZ – 13 inaccessible during 2018

These bores record pH values ranging from slightly acidic to slightly alkaline (5.87-7.24) and EC values between 171µS/cm and 2 400µS/cm.

Whilst some variations have occurred in pH, monitoring has generally recorded consistent pH values over time with all pH results within previously recorded baseline ranges

However, a downward trend in EC has previously been observed at bore DPZ13 (**Figure 7.4**) starting in 2010 / 2011, which may be due to enhanced recharge following drawdowns in the coal measures as a result of mining. Access to DPZ-13 was not available during the reporting period to confirm whether this trend had continued or plateaued. Conversely, EC has been relatively consistent within DPZ-6 and JRD2, monitoring indicates occasional 'outliers' of significantly lower EC. This is likely due to ingress of rainwater temporarily lowering the salinity.

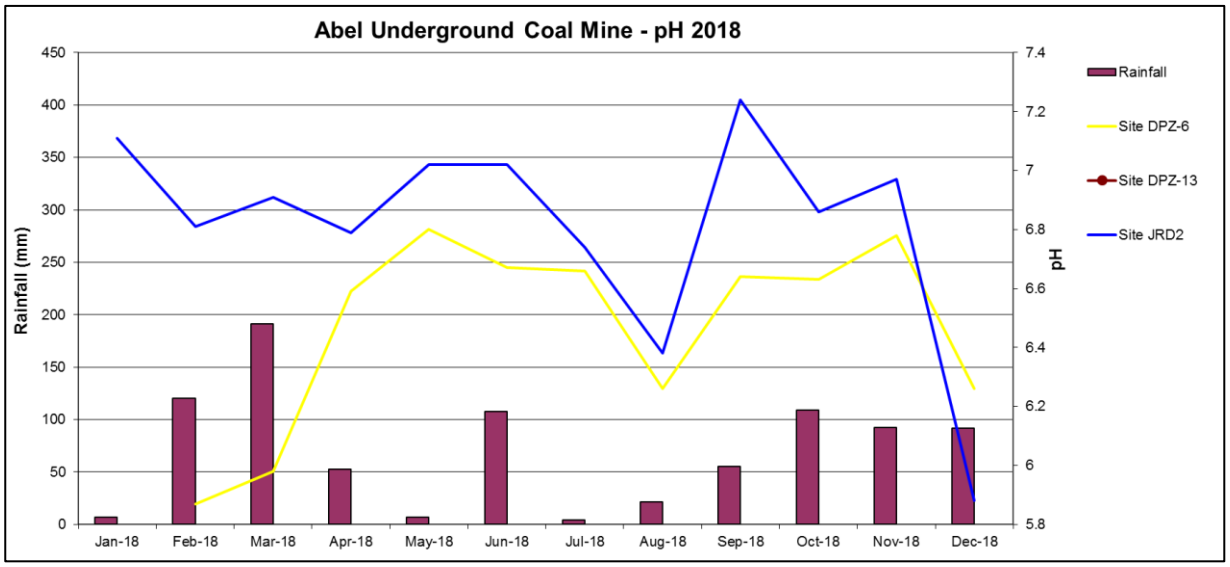
In comparison to previously recorded groundwater quality, the Environmental Assessment baseline monitoring reported that the quality of groundwater sampled within the underground mining area of the Abel Mine was variable with total dissolved solids (TDS) ranging from less than 518mg/L to 13 000mg/L,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

Reportable Incidents

No reportable incidents occurred during the reporting period.

Further Improvements

Monitoring will continue in accordance with the current Water Management Plan (WMP), with a review planned for the next reporting period.



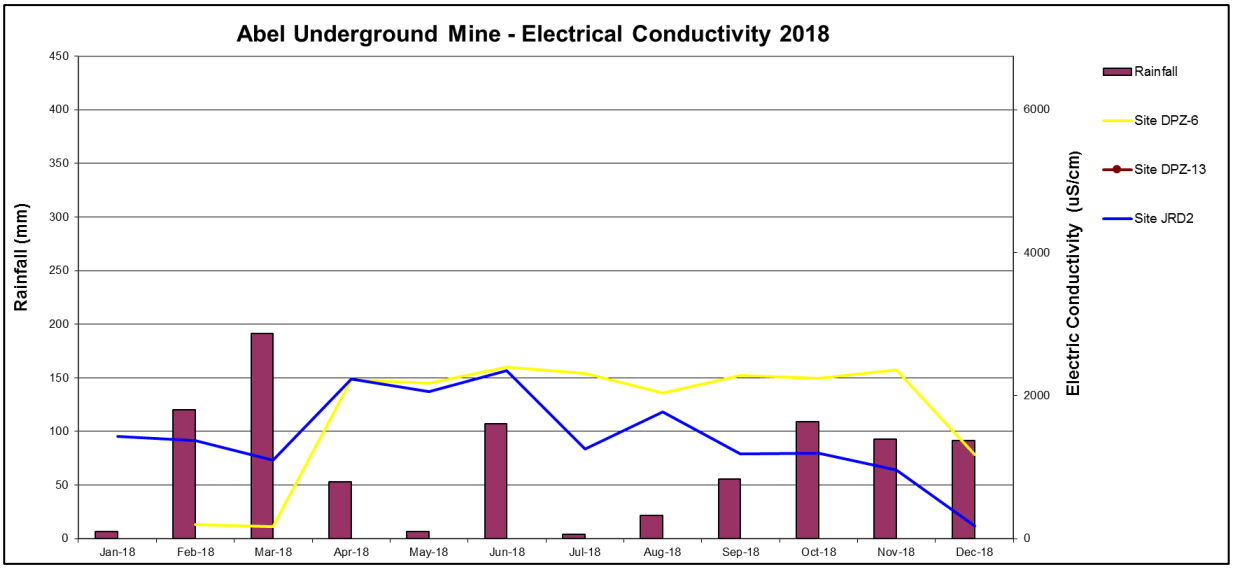
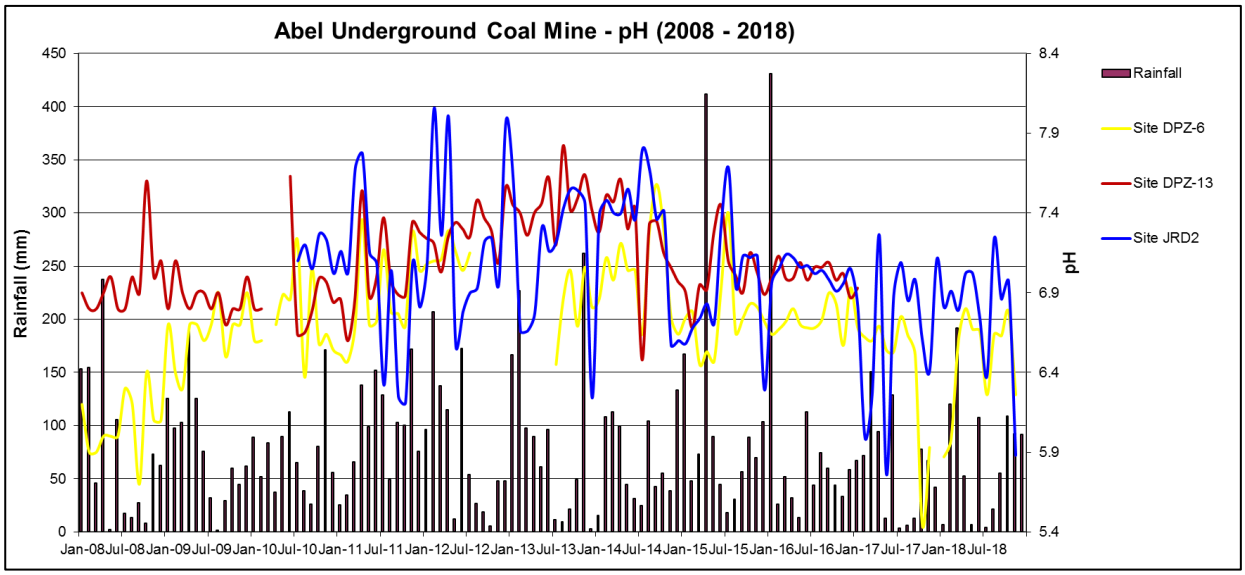


Figure 7.4 Groundwater Quality Monitoring Results – 2018



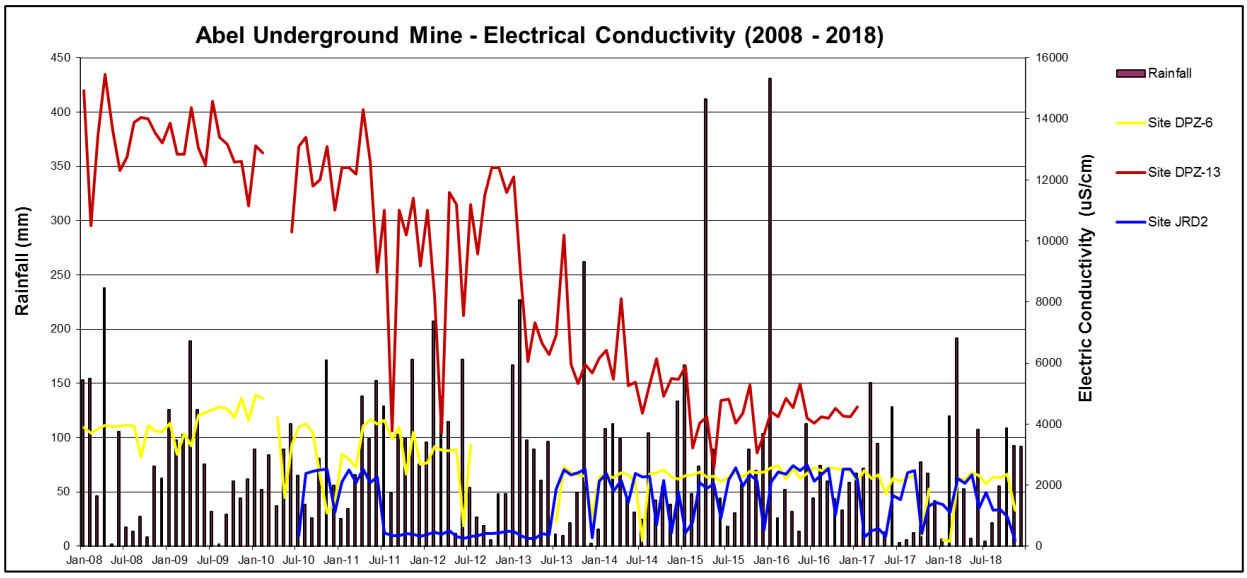


Figure 7.5 Groundwater Quality Monitoring Results – 2008 - 2018

8. REHABILITATION

8.1 REHABILITATION PERFORMANCE DURING THE REPORTING PERIOD

Figure 8.1 shows the status of rehabilitation and a summary of the areas of rehabilitation is provided in **Table 8.1**.

Table 8.1
Rehabilitation Summary

Mine Area Type	Previous Reporting Period (Actual)	This Reporting Period (Actual)	Next Reporting Period (Forecast)
	Year 10 (ha)	Year 11 (ha)	Year 12 (ha)
Total mine footprint	13.15[1]	13.15[1]	13.15[1]
Total active disturbance	13.15[2]	13.15[2]	13.15[2]
Land being prepared for rehabilitation	0	0	0
Land under active rehabilitation	0	0	
Completed rehabilitation	0	0	0

Notes:

1: 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 but excludes underground mining areas. Areas that have been temporarily rehabilitated also included.

2: Whilst some areas have been temporarily rehabilitated, all areas within ML 1618 surface infrastructure area are considered to be 'active'.

During the reporting period minor rehabilitation works were completed for surface cracks associated with subsidence on two properties in the Black Hill area. These cracks were within the predicted range and were excavated to the limit of the crack, backfilled, compacted, topsoiled and seeded.

In addition to rehabilitation of subsidence impacts, a Wild dog baiting program was undertaken in November and December 2018 in consultation with surrounding landholders.

Within the surface infrastructure area, no permanent buildings were structurally altered, renovated or removed during the reporting period and, other than regular inspection and maintenance of previously temporarily rehabilitated areas (i.e. batter slopes) and retained vegetation, no specific rehabilitation activities were undertaken. Maintenance activities completed included scheduled equipment maintenance, regular security patrols of boundary fencing to prevent unauthorised access, and ongoing control of Lantana and Pampas Grass across the entire surface infrastructure area.

No rehabilitation trials or research was undertaken during the reporting period and there were no variations to the rehabilitation activities as outlined within the approved 2016 Mining Operations Plan.

There are currently no specific issues affecting the ability to successfully rehabilitate the site and therefore no specific management measures.

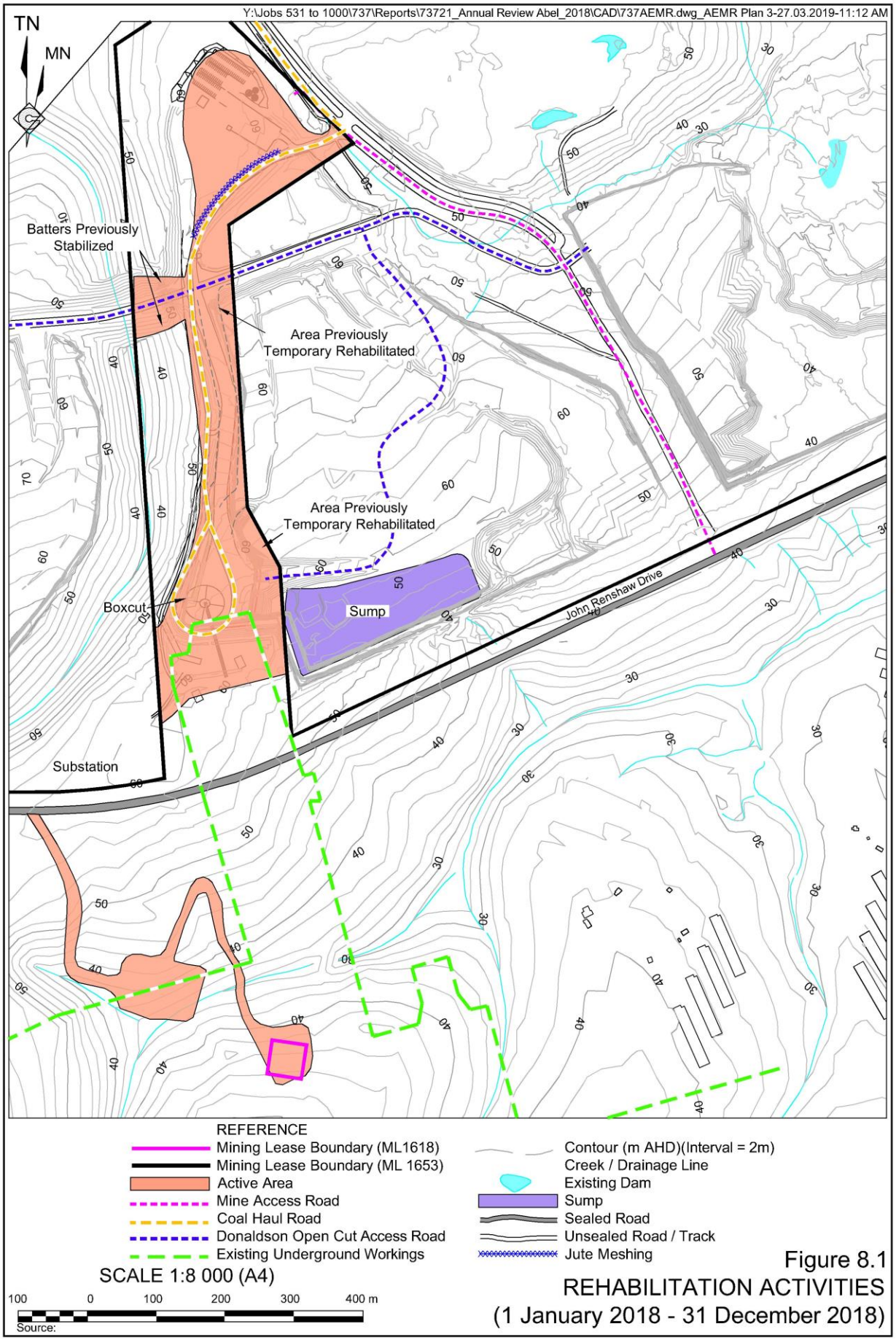


Figure 8.1
REHABILITATION ACTIVITIES
(1 January 2018 - 31 December 2018)

No rehabilitation areas became available for sign off by the Resources Regulator and no final land use objectives were met during the reporting period. As the Abel Mine is an underground operation, the only significant rehabilitation will be during mine decommissioning. As outlined within the approved 2016 Mining Operations Plan, during decommissioning the creation of the final landform will involve blasting of the western side of the Abel Box Cut (as part of final landform creation within the West Pit) followed by grading using a dozer to create a maximum slope of 18 degrees. The northern side of the Abel Box Cut will also be blasted and graded to a maximum of 10 degrees, with a permanent vehicle access and egress ramp constructed to allow access to the final void for ongoing monitoring and management.

Surface infrastructure areas located within existing forested areas, such as the substation and ventilation shafts, will be returned to native vegetation. The current post-mining land use goal for the Abel Box Cut is for use as water storage suitable for use in surrounding mining operations.

8.2 ACTIONS FOR THE NEXT REPORTING PERIOD

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 and ongoing repairs to any subsidence damage to public roads will be completed in accordance with the approved subsidence monitoring and management plans. Notably, any further rehabilitation works to Blackhill Road will be completed by the Mine Subsidence Board.

Maintenance works, such as erosion and sediment control, and ongoing control of weeds and feral pests will also be undertaken as required.

9. COMMUNITY

9.1 COMMUNITY COMPLAINTS

No complaints were received during the 2018 reporting period. The last complaint was received on 9 October 2017. Since commencement of the Abel Mine, a total of seven complaints have been received which are summarised in **Table 9.1** and presented on the Donaldson website. Given that no further complaints have been received and the Abel Mine is currently under care and maintenance, no specific actions are currently deemed necessary.

Table 9.1
Community Complaints Summary

Location	Date of Complaint	Comments
Blackhill	24/04/2009	Light from Donaldson Open Cut/Abel shining towards house and is very bright. Light was turned down.
EPA	22/06/2015	Complaint about noise from trucks on 5th and 18th June 2015. Advised the EPA officer that there had been no change to truck movements on site and that the recent noise monitoring in May 2015 showed compliance with Licence limits.
Browns Road, Black Hill	17/07/2015	A resident in Brown's Road Black Hill lodged a complaint with the EPA regarding truck noise on 16/07/15 at 20:30hrs. Quebe provided data that trucks were parked up at that time. Advised the EPA officer. No further action.
John Renshaw Drive	3/09/2015	Complaint received regarding sulphur smell for the last month. Complainant told the EPA that it was the mine on John Renshaw Drive that was owned by Ashton company. Advised EPA that there was no odour emanating from site.
Meredith Road Black Hill	1/10/2015	Concerned about subsidence to his property and Meredith Road. Repairs undertaken in accordance with the Property Subsidence Management Plan.
210 Meredith Road Black Hill	2/10/2015	Concerned about subsidence damage to Meredith Road/Blackhill Road. Repairs undertaken in accordance with Property Subsidence Management Plan.
Avalon Drive, Thornton	9/10/2017	Complainant has experienced a "dramatic increase" in coal dust around her property since moving there 4 years ago. Provided response to complainant indicating that this corresponded with the closure and rehabilitation of Donaldson Open Cut. Abel Underground has been placed in Care and Maintenance with no coal mined, processed or transported since mid-2016.
Source: Donaldson Coal		

9.2 COMMUNITY LIASION

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 of the local community (Mr Alan Brown, Mr Allan Jennings, Mr Terry Lewin, Mr Brad Ure); and
- a representative from Bloomfield Colliery (Mr Greg Lamb);
- four representatives from the Company (Mr Tony Sutherland, Mr William (Bill) Farnworth, Mr James Benson and Mr Phillip Brown).

No representatives from Cessnock Council or Maitland City Council were present at the committee meetings during the reporting period.

The committee was chaired by Mrs Margaret MacDonald-Hill, an independent chairperson appointed as the independent Chair by the Secretary, Department of Planning and Environment.

The committee held a total of two meetings during the reporting period (26 March and 3 September 2018). 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 / care and maintenance, environmental monitoring, subsidence management, planning, and other relevant matters.

Copies of minutes and presentations are available on the Donaldson Coal Website at www.doncoal.com.au

10. INDEPENDENT AUDIT

The last independent environmental audit of the mine was undertaken in December 2018, in accordance with *Schedule 5 Condition 5* of PA 05_0136 for the period 20 March 2015 to 20 December 2018. The independent audit report was finalised in February 2019 and confirmed that the areas inspected were generally satisfactory and that mining has occurred generally in accordance with the approved mine plan. The audit identified a total of six (6) non-compliances against PA 05_0136 for the audit period, of which four (4) can be considered relevant to the 2018 reporting period (see Section 11). No non-compliances were recorded against ML1683.

A range of recommendations were provided within the audit and a response plan prepared. Whilst the audit report and subsequence response plan were not finalised during the reporting period, a status review is provided in **Table 10.1** and will be updated as part of the Annual Review for the next reporting period.

The next independent environmental audit is due 2021.

Table 10.1
Independent Audit Action Response Plan Status

Ref	Description	Donaldson Response	Timeline	Status Update
Section 4	Annual groundwater reporting in the Abel Mine Annual Review should include graphical presentations of water level data to indicate trends. These should continue to be included in Annual Review's during care and maintenance phase for bores approved in the revised WMP	The Abel Annual Review will continue to provide graphical representation of relevant groundwater bores within the relevant section of the document.	31 March 2019	Graphical summaries are presented in Section 7.3 of this Annual Review.
PA 05_0136 Compliance Recommendations				
Various	Work with relevant regulators to resolve where possible all of the non-compliances.	Accept recommendation and continue to work with regulators to resolve non-compliances.	As and when required	Compliance status update provided in Sections 1 and 11 of this Annual Review.
Sch 3 Cond 1	Blue Gum Creek and Long Gully – Water Quality Recommend for future Trigger Level EC exceedances, assessment of metals (Fe, Al and Mn) are used to assess whether change in EC is mining induced. Trigger values for metals should also be included for Site 10 in Table 3.7 of the WMP. Further consideration of this trigger level in the revised WMP should be undertaken in consultation with a relevant water specialist and relevant regulators in consideration of distance to active mining. Pambalong Nature Reserve – Groundwater Levels Recommend monthly monitoring at Piezometer C081B or in accordance with approved WMP. Further consideration of this trigger level in the revised WMP should be undertaken in consultation with a relevant groundwater specialist and relevant regulators in consideration of distance to active mining. Recommend the following updates to the WMP: • Revision of Piezometer Monitoring Sites for Pambalong Nature Reserve to ensure the piezometer relevant to the feature; and • Clarify Trigger Level 1 and 2 for Groundwater levels for the Pambalong Nature Reserve.	The Water Management Plan will be reviewed and updated in 2019. This update will include a review of trigger actions that determine if a change in water quality is mining induced. Abel Coal Mine will update the Water Management Plan in 2019 and review comments provided by the audit team. A water specialist will, where relevant, incorporate comments into the updated management plan.	30 April 2019	The review and update of the Water Management Plan is currently in progress. It is noted that the audit incorrectly states that a "drawdown" of >0.5m occurred at Piezometer C082B. A review of groundwater level during the audit period (20 March 2015 to 20 December 2018) indicates there was an increase in water level by 0.77m between March and April 2018. This corresponds to significant rainfall received during February and March 2018.

Table 10.1 (Cont'd)
Independent Audit Action Response Plan Status

Ref	Description	Donaldson Response	Timeline	Status Update
PA 05_0136 Compliance Recommendations (Cont'd)				
Sch 4 Cond 10b)	Recommend dust gauges re-sited (if not being removed from program).	A dust gauge audit will be conducted to identify any non-complying dust gauges with corrective actions put in place to ensure compliance. An update to the Air Quality Management Plan will propose the removal of Dust Gauges.	31 March 2019 30 April 2019	The dust gauges are being assessed by the monitoring contractor. The review and update of the Air Quality Management Plan is currently in progress.
Sch 4 Cond 23	Coal Transport records are consistently made publicly available on website when production recommences	All coal transport records are up to date to the end of 2018 on the Donaldson Coal Website. This will occur on an annual basis at the start of the new year.	31 January 2019	The 2018 coal transport report is available on the Donaldson Coal website.
Sch 4 Cond 24c)	Audit be undertaken to confirm compliance at lighting components which will operate in next period (e.g. CHPP and rail loadout)	On recommencement of mining, including use of the Bloomfield CHPP and Rail Loadout, Abel will recommission currently disused lights for use at night time. At this point, Abel will conduct an audit against AS4282.	When mining recommences	Not yet applicable – mining has not yet recommenced.
PA 05_0136 MOD3 Continual Improvement Recommendations				
Sch 2 Cond 4	Follow up with WaterNSW to resolve Certificate of Title for WAL 41525 being incorrectly labelled to a water source.	WaterNSW will be contacted again in February 2019 to follow up on the Abel Certificate of Title for WAL 41525.	28 February 2019	Water NSW have been followed up several times since April 2018 and again during March 2019. Awaiting correctly labelled certificate with conditions.
Sch 2 Cond 9	Include a statement in the relevant Annual Review that discusses transportation of product coal produced on the Bloomfield site via the Bloomfield Rail Loop, and Rail Spur and the Main Northern Railway.	Accept recommendation and incorporate statement into the 2018/19 Annual Review.	31 March 2019	Commentary included in Section 2.1 of this Annual Review.
Sch 2 Cond 11	Include a statement in the Annual Review that discusses alterations and additions to building and structures.	Accept recommendation and incorporate statement into the 2018/19 Annual Review.	31 March 2019	Statement included in Section 8.1 of this Annual Review.
Sch 3 Cond 1	• "Minor Cliff" definition be clarified on review of EP/management plans.	• Minor Cliff's will be defined in the next update to the Subsidence Monitoring Program required under the Extraction Plan.	When mining recommences	Not yet applicable – mining has not yet recommenced.

Table 10.1 (Cont'd)
Independent Audit Action Response Plan Status

Ref	Description	Donaldson Response	Timeline	Status Update
PA 05_0136 MOD3 Continual Improvement Recommendations (Cont'd)				
	• Whilst mining, AEMR include PA 05_0136 Table 2 and a tabulated summary of impacts and conclusions.	• The 2018/19 Abel Annual Review and future Annual reviews will include a tabulated summary of impacts and conclusions as outlined in Table 2.	31 March 2019	Tabulated summary included in Section 6.8 of this Annual Review.
	• Labelling of Water Quality Monitoring Sites 9 and 10 in AEMR are consistent with that shown in the WMP.	• Water quality labels of sites 9 and 10 will be reviewed and addressed in the 2018/19 Annual Review.	31 March 2019	The labelling on Figure 6.1 of this Annual Review has been updated.
	• If mining recommences, a clear definition of GDE's in the Hexham Swamp be documented (impacts and monitoring).	• When mining recommences the Water Management Plan (WMP) will require an update. If mining recommences, a definition will be included in the WMP of Groundwater Dependent Ecosystems.	When mining recommences	Not yet applicable – mining has not yet recommenced.
Sch 3 Cond 4p)	Future TARP's include Trigger Levels for Groundwater Drawdown, especially at bores relevant to Pambalong Nature Reserve (excluded from Area 4 EP).	The next update to the Extraction Plan will review the trigger levels for TARPs relating to the Pambalong Nature Reserve.	When mining recommences	Not yet applicable – mining has not yet recommenced.
Sch 3 Cond 6	No written evidence was provided that first working in South Mains were designed to DRG's satisfaction. Recommend a response is sought for any future first workings in accordance with this condition prior to works being undertaken.	On the recommencement of mining, Abel Mine will seek a written response from the relevant authority confirming that first workings are designed to the satisfaction of the DRE	When mining recommences	Not yet applicable – mining has not yet recommenced.
Sch 3 Cond 11	When revising Service Boreholes Management Plan, include mitigation and management measures for visual impacts and compensation for noise, air and visual impacts.	Accept recommendation and incorporate mitigation and management measures into the next update of the Service Boreholes Management Plan.	When mining recommences	Not yet applicable – mining has not yet recommenced.
Sch 4 Cond 1	Remove Location K from PA 05_0136 Table 4 and any other strategy, plan or program.	There is no proposed modification to PA 05_0136 where Location K will be removed. This recommendation will be considered with any future modification.	Noted	No modification currently planned.
Sch 4 Cond 3	Include statement in AEMR that reports on Cumulative Noise Criteria.	Accept recommendation and incorporate into the 2018/19 Annual review.	31 March 2019	Statement included in Section 6.3 of this Annual Review.
Sch 4 Cond 5c)	Clarify noise mitigation process in NMP under meteorological conditions to which noise limits do not apply.	Accept recommendation and incorporate into the 2019 update of the Noise Management Plan.	30 April 2019	The review and update of the Noise Management Plan is currently in progress.

Table 10.1 (Cont'd)
Independent Audit Action Response Plan Status

Ref	Description	Donaldson Response	Timeline	Status Update
PA 05_0136 MOD3 Continual Improvement Recommendations (Cont'd)				
Sch 4 Cond 11	Energy efficiency opportunities for the Abel Underground Mine to be identified, assessed and reported through a series of five year assessment cycles in accordance with the Energy Efficiency Opportunities Act 2006 (EEO Act, 2006).	Energy Efficiencies will be identified in the updated 2019 Air Quality Management Plan. Compliance with the Energy Efficiency Opportunities Act 2006 will be managed by Yancoal Corporate who are the 'controlling corporation' as defined by the EEO Act, 2006.	30 April 2019	The review and update of the Air Quality Management Plan is currently in progress.
Sch 4 Cond 16	Recommend clearly labelling column on water transfer amounts on site spreadsheet e.g. "Transfer from Big Kahuna to Lake Kennerson (ML)" and including pumped volumes in Annual Review.	Accept recommendations and update site water spreadsheet and incorporate into 2018/19 Abel Annual Review.	28 February 2019 31 March 2019	The spread sheet has been updated as recommended. The volume transferred during this reporting period is reported in Section 7.2 of this Annual Review.
Sch 4 Cond 25b)	Recommend that refresher training provided to any personnel on site to ensure that waste management and waste bins handled correctly (see Plates 7, 8, 10, 14, 15 and 18).	A tool box talk will be provided to all operational personnel onsite in March 2019 to outline the correct handling of waste onsite.	31 March 2019	A waste management presentation was presented to all operational personnel in March 2019.
Sch 4 Cond 25c)	Investigate redundant tank (see Plate 19) and respond accordingly. Confirm source of which pipe below operating sewage system to confirm it is benign.	A review of the future requirements for the redundant tank will be undertaken and actions reported in the 2019/20 Annual Review. The contractor that services the sewerage treatment plant (STP) at Abel has been approached to determine the source of the pipe below the STP.	31 March 2019	Site personnel have inspected and do not believe the pipe is connected to the sewage system. Advice is currently being sought from the waste water treatment contractor.
Sch 4 Cond 26a)	Bush Fire Response Procedure Section be added to site induction presentation at next review.	The Abel Site Familiarisation Induction currently covers the Emergency Muster Area and what to do in the event of an emergency. It also covers fire equipment onsite.	Noted	No further action required.
Sch 4 Cond 29e)	Complete mine closure plan at least 5 years prior to closure or consent expiry date.	Accept recommendation and complete Mine Closure Plan 5 years prior to closure.	Noted	Currently no further action. Mine is currently in care & maintenance. Consent does not expire until 2030.

Table 10.1 (Cont'd)
Independent Audit Action Response Plan Status

Ref	Description	Donaldson Response	Timeline	Status Update
PA 05_0136 MOD3 Continual Improvement Recommendations (Cont'd)				
Sch 6 Cond 1f)	Recommend adding links to EMS attached documents or including as appendix to EMS.	Accept recommendation and on next update of the Environmental Management Strategy (EMS), provide a link to the 'Abel Management Plans' page on the Donaldson Coal website.	Next update of the EMS	The Environmental Management Strategy has yet to be updated but will be reviewed during the next reporting period.
Sch 6 Cond 2	Condition list made into a table and included in each revised management plan during C&M and demonstrate where each is addressed.	Accept comments and incorporate into future updates of Management Plans.	30 April 2019	The review and update of various management plans is currently in progress.
SOCs	Recommended that at next project approval modification (if mining recommences), a full review of the SOC's are undertaken and any commitments which are duplicative of development consent conditions are sought to be removed with a relevant justification.	Accept comment and action in the next modification of Abel Coal.	When mining recommences	Not yet applicable – mining has not yet recommenced.
Management Plans	Most plans required update for care and maintenance status. Detail in table A and B should be considered during this review. The plans would all benefit from clarification of what responsibilities are Bloomfield's (CHPP and rail loadout) and which are care and maintenance activities and as such the responsibility of Abel Mine. Some of the changes will be inconsistent with the SOCs which include significant detail which is more suited to inclusion in the management plans. An appendix should include evidence of consultation with relevant regulators for each plan. Address recommended changes to each plan as listed in Table A of Appendix D. The RMP should include confirmation of where topsoil is stored and confirmation that adequate volumes exist to achieve the nominated final land use.	Abel Coal Mine will update relevant management plans in 2019 and review comments provided by the audit team and where relevant, incorporate comments into the updated management plans. Updated plans will be specific for Care and Maintenance and include a clarification of the responsibility boundaries between Abel and Bloomfield. A summary of management plan status will be included in the Abel 2019/20 Annual Review.	30 April 2019 31 March 2020	The review and update of various management plans is currently in progress.

Table 10.1 (Cont'd)
Independent Audit Action Response Plan Status

Ref	Description	Donaldson Response	Timeline	Status Update
EPL12856				
A1	Recommend that consideration be given to a variation to reduce the 'coal works' scale as mine in care and maintenance status. This assumes that CHPP and rail loadout facilitates are included in Bloomfield's EPL.	Abel will review this recommendation and determine the benefits of a license variation. A variation will be applied for if it is determined there is a benefit in reducing the scale of coal works on the sites license.	Noted	Review remains in progress.
P1	Recommend updating this condition when management plans updated. Consideration should be given to seek reduction or removal of depositional dust gauges from program.	A variation to the locations of monitoring sites was submitted to the EPA in 2018. The variation is currently being assessed by the EPA. Further review of locations within site management plans may trigger another variation if required.	Noted	Review remains in progress.
L2	Recommend updating noise monitoring locations and meteorological condition limit wording to make consistent with those shown in PA 05_0136 whilst operational.	A review of the noise monitoring locations and meteorological condition limit wording will be conducted with the update to the Noise Management Plan.	30 April 2019	Review remains in progress.
O4	Seek removal/amendment to condition O4.2 as no sprays are utilised by the septic system.	There is no plan to remove condition O4.2 from the EPL. Abel Coal may utilise sprays in future adjustments to the Sewerage Treatment Plant.	Noted	No further action required.
U1.3-1.5	Recommend requesting U1 removed at next variation as it has been completed	Accept recommendation and incorporate into the next EPL variation.	Noted	An EPL variation is not yet planned.
ML1618				
11	Date of when mine entered Care and Maintenance is reported in the Annual Mining Lease Group Exploration report as being 02 May 2016, this date is not consistent with other reports e.g. the 2017 AEMR states mine entered care and maintenance on 28 April 2016. Recommend updated in next report.	Accept and incorporate into the next Annual Mining Lease Group Exploration report or Annual Review dependent on a review of the agreed date	31 March 2019	The official date the Abel Mine entered care and maintenance has been confirmed as 2 May 2016. This will be reflected in future reporting.

11. INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

During the reporting period there were no:

- reportable incidents or exceedances; or
- official cautions, warning letters, penalty notices or prosecution proceedings.

As discussed in Section 10, the Independent Audit completed in February 2019 raised a total of six non-compliance with PA 05_0136. **Table 11.1** summarises these non-compliances and provides commentary on their applicability to this reporting period.

One other administrative non-compliance was recorded for the reporting period. Project Approval 05_0136 Schedule 2 Condition 11 requires that all new buildings and structures, and any alterations or additions are constructed in accordance with the relevant requirements of the BCA. Whilst construction certificates have been received for buildings within the surface infrastructure area the occupation certificates have not yet been received. The certifying body inspected once and requested changes prior to issuing the occupation certificate. The requested changes have been made and the certifying body requested to reinspect. However, the certifying body has not yet issued the final certificate. This will be followed up during the 2019 reporting period.

Table 11.1
Review of Non-compliance Recorded in 2019 Independent Audit – PA 05_0136

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Ref	Non-Compliance	Risk	Applicability to this Reporting Period
Sch 3 Cond 1	**Blue Gum Creek and Long Gully – Water Quality** The upper bound trigger value for salinity (EC) at Site 10 exceeded for a period of three consecutive months in Oct, Nov and Dec 2016 and a further assessment of the metals (Fe, Al and Mn) to establish whether the change in EC is mining induced was not undertaken as required in Section 3.6.2.2 and Table 5.2 of the WMP. **Pambalong Nature Reserve – Groundwater Levels** An assessment of Trigger Level(s) did not occur when "an additional drawdown of 0.5m relative to normal seasonal and climatically influenced fluctuations in the near-surface groundwater levels (Table 5.2 WMP)" at piezometers C081B (as per table 5.2 of WMP). A review of groundwater data shows that groundwater levels at CO82 have not been undertaken since Oct 2015 and groundwater data at CO81A has not been collected monthly, as required under the WMP.	Low	During the 2018 Reporting Period the upper EC trigger value was not exceeded for 3 consecutive months Water level data at C082B has not recorded a drawdown of 0.5m or greater during the 2018 Reporting Period. Monthly sampling occurred throughout the reporting period at C081A and C081B. However, monitoring at C082 ceased in October 2015 and is not likely to recommence due to land access. The monitoring program is to be updated as part of the review and update of the Water Management Plan.
Sch 4 Cond 10b)	Siting requirements at DDG7 and DDG9 are likely not within Australian Standards due to trees obstructing the minimum clear sky angle of 120".	Administrative	The monitoring contractor is completing a review during the next monitoring round and will correct as required.

Table 11.1 (Cont'd)
Review of Non-compliance Recorded in 2019 Independent Audit – PA 05_0136

Ref	Non-Compliance	Risk	Applicability to this Reporting Period
Sch 4 Cond 11a)	No AQGGMP approval letter sighted.	Low	Condition 11a requires that the AQGGMP be prepared in consultation with EPA and submitted to the Department within 6 months of the MOD3 approval. The audit notes evidence of consultation with EPA and submission to the Department within the required timeframe. Therefore, the Company has complied with the requirement of this condition. Whilst the satisfaction of the Department has not been received, Abel will endeavour to seek confirmation. It is noted that the management plan is currently under review..
Sch 4 Cond 23	No coal transport records for 2015 and May-Dec 2016 on website.	Administrative	The Donaldson Website was updated, and this condition is compliant.
Sch 4 Cond 24c)	No evidence that external lighting associated with the project complies with Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting or its latest version.	Administrative	Whilst no lighting complaints or issues have arisen to date, a lighting audit will be completed to demonstrate compliance.
Sch 6 Cond 10	No evidence that the previous audit, together with the Proponent's response to any recommendations was submitted to the Director-General within six weeks of completion of audit.	Administrative	Noted.

12. ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

As outlined in Section 4.3, a range of monitoring, including surface water, groundwater, flora and fauna and subsidence monitoring are planned during the next reporting period. This monitoring represents a continuation of standard monitoring practices. However, as discussed in Section 6, the need for / frequency of monitoring is to be reviewed together with corresponding management plans to ensure that an appropriate level of monitoring and management during care and maintenance is undertaken.

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