DONALDSONCOAL

Part of the Yancoal Australia Group

ABN: 87 073 088 945

Annual Review

Donaldson Coal Mine

1 November 2018 – 31 October 2019

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DONALDSON COAL

PTY LTD

ABN: 87 073 088 945

Annual Review

for the

Donaldson Coal Mine

1 November 2018 – 31 October 2019

Compiled for:

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Ref No. 737/23a

January 2020

DONALDSONCOAL
Part of the Yancoal Australia Group

TITLE BLOCK

Name of Operation	Donaldson Coal Mine
Name of Operator	Donaldson Coal Pty Ltd
Development consent / project approval #	DA 98/01173 and 118/698/22
Name of holder of development consent / project approval	Donaldson Coal Pty Ltd
Mining Lease #	ML 1461
Name of holder of mining lease	Donaldson Coal Pty Ltd
Water licence #	20WA218980, 20WA211590 and WAL41522
Name of holder of water licence	Donaldson Coal Pty Ltd
MOP/RMP start date	16/05/2014
MOP/RMP end date	16/05/2021
Annual Review start date	1/11/2018
Annual Review end date	31/10/2019

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 Donaldson Coal Mine for the period 01 November 2018 to 31 October 2019 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	30 January 2020

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1. STATEMENT OF COMPLIANCE

The compliance status of relevant approvals was reviewed for the reporting period (see **Appendix 3**) and is summarised in **Table 1.1**. It was determined that there were no non-compliances during the reporting period.

Table 1.1
Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	Yes / No
Development Consent (combined DA 98/01173)	Yes
Mining Lease 1461	Yes

2. INTRODUCTION

2.1 OVERVIEW OF OPERATIONS

The Donaldson Coal Mine ("the mine") was an open cut coal mining operation located ~23km from the Port of Newcastle, north of John Renshaw Drive and west of Weakleys Drive. The mining lease is contained within the Cessnock and Maitland Local Government Areas. A locality plan and aerial photograph showing the location of the mine in a regional context is attached as **Appendix 1** of this report.

The mine commenced operation on 25 January 2001, following approval by the (then) Minister of Urban Affairs and Planning (now known as the Department of Planning, Industry and Environment) in 1999.

The first load of coal was railed from the mine on 26 March 2001. Up to 31 October 2013, approximately 13,002,548 tonnes of coal had been railed to both Hunter Valley power stations and international customers, through the Port of Newcastle.

Mining operations at the mine were completed in April 2013. Progressive rehabilitation activities have been undertaken throughout the operation of the mine and a final rehabilitation project commenced in May 2013. This involved removal of roads, excavation of contaminated material, decommissioning of the fuel storage area, buildings and other surface infrastructure, reshaping surfaces to the final landform, topsoil spreading, drainage line construction and seeding with local tree and shrub species. The rehabilitation works at the mine were completed in March 2014.

2.2 SCOPE AND FORMAT

This Annual Review for the Donaldson 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 is a fully owned subsidiary of Yancoal Australia Limited.

This is the fourth Annual Review submitted for the mine, following 12 Annual Environmental Management Reports, and is applicable for the period 1 November 2018 to 31 October 2019 ("the reporting period").

This Annual Review generally follows the format and content requirements identified in the *Annual Review Guideline* dated October 2015.

2.3 KEY PERSONNEL CONTACT DETAILS

Donaldson Coal Pty Ltd owns the mining operation and is the holder of the current mining lease. Donaldson is also the mining operator. **Table 2.1** outlines the site personnel responsible for the various aspects of the operation during the reporting period.

Table 2.1
Site Personnel

Position	Site Personnel
Operations Manager, Donaldson Coal	Mr William Farnworth
Environment and Community Relations Superintendent, Donaldson Coal	Mr Phillip Brown

Table 2.2 outlines the contacts for the Donaldson Coal Operations Manager, Mr William Farnworth, and the Environment and Community Relations Superintendent, Mr Phillip Brown.

Table 2.2
Contact Details

Physical Address:	Donaldson Coal Mine 1132 John Renshaw Drive BLACKHILL NSW 2322
Postal Address:	PO Box 2216 GREEHILLS NSW 2323
Community Hotline (24hrs):	1800 111 271
Phone:	(02) 4015 1100
Fax:	(02) 4015 1159
e-mail:	donaldson@doncoal.com.au
Website:	www.doncoal.com.au

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

3. APPROVALS

Table 3.1 provides a current list of statutory instruments in effect, including the date of grant of all leases, subleases, consents, approvals and licenses. It also includes information relating to the current Mining Operations Plan (MOP).

Table 3.1
Donaldson Coal Mine – Approvals, Leases and Licences

Approval/Lease/Licence	Issue / Approval Date	Expiry Date	Details / Comments
Mining Lease (No. 1461)	22/12/1999	22/12/2020	Granted by the (then) Minister for Mineral Resources. Incorporates a surface area of 515.6ha (following excision of the Abel Surface Infrastructure Area from the lease in 2008). A renewal application was lodged 27 November 2019 and ML1461 was renewed for a further 21 years.
Mining Operations Plan	16/05/2014	16/05/2021	Amended MOP as approved by the (then) DTI DRE.
Development Consent (combined DA 98/01173 and 118/698/22)	14/10/1999 26/08/2005 24/06/2011	March 2011 31/12/13	• Certain conditions of the consent will continue to operate after the consent for mining operations has lapsed. • Variation to Development consent for modification to mining area. • Variation to Development Consent for extension of time for mining to be completed.
Environment Protection Licence (No. 11080).	13/09/2000	Not Applicable	Anniversary date 13 September. Current licence version dated 2 December 2011. An application to surrender EPL11080 was lodged 18 April 2018 and remains pending.
Water Supply Works Approval 20WA218980	01/07/2016	30/06/2029	Bore Licence 20BL168123 was issued to cover groundwater extraction as a result of the active mining area. Following commencement of the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016* in July 2016 20BL168123 was converted to a water supply works approval and water access licence with an allocation of 300ML/year.
Water Access Licence (WAL) 41522	01/07/2016	Continuing	
Water Supply Works Approval 20WA211590	01/08/09	31/07/22	Issued for the works associated with the open cut mining pits as located within the *Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009.*

4. OPERATIONS SUMMARY

4.1 MINING OPERATIONS

Coal mining activities ceased in April 2013 and all mining equipment was removed from site. No coal mining was undertaken during the reporting period or is planned during the next reporting period (see **Table 4.1**).

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	No longer applicable	0	0	0
ROM Coal / Ore		0	0	0
Coarse Reject		0	0	0
Fine Reject (Tailings)		0	0	0
Saleable Product		0	0	0

4.2 OTHER OPERATIONS DURING THE REPORTING PERIOD

During the reporting period no exploration, land preparation or construction activities were undertaken. Additionally, no coal processing or transportation activities were undertaken within ML1461 during the reporting period.

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

Rehabilitation activities were completed in March 2014 with no further rehabilitation work occurring during the reporting period.

Other non-operational activities during the reporting period included the review and update of the following management plans in June 2019. These plans are integrated plans with the Abel Underground Coal Mine.

- Air Quality and Greenhouse Gas Management Plan.
- Noise Management Plan.
- Flora and Fauna Management Plan.
- Tetratheca Juncea Management Plan.
- Waste Management Plan.

4.3 NEXT REPORTING PERIOD

The activities proposed for 2019/2020 will principally involve continued monitoring and, if required, maintenance activities in accordance with the approved MOP. The following provides a summary of the planned activities.

Exploration

The Company currently does not intend to undertake any drilling within ML1461 during the 2019/2020 reporting period.

Mining

No further mining will be undertaken.

Rehabilitation

All rehabilitation works have previously been completed. Any rehabilitation works during the 2019/2020 reporting period will relate to ongoing maintenance, principally erosion and sediment control, weed management and vegetation establishment.

Monitoring

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

- Surface water – ongoing surface water quality monitoring in accordance with the site Water Management Plan. Monitoring will be undertaken by CBased Environmental.
- Groundwater – ongoing groundwater level and quality monitoring will be undertaken by CBased Environmental.
- Flora and Fauna – Kleinfelder Australia Pty Ltd will continue to undertake annual flora and fauna surveys and reporting.

Community Consultation and Liaison

The 24-hour environmental hotline will be maintained and a register retained of any complaints received.

Other

A new or amended Mining Operations Plan (MOP) will be prepared and submitted prior to 31 August 2020 to reflect the outcomes of the closure strategy and mine dam water quality review (see Section 5).

5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

The 2017/2018 Annual Review was submitted to the Resources Regulator within the then Department of Planning and Environment (DPE) and the DPE compliance unit on 30 January 2019. Feedback was received from the Resources Regulator dated 16 July 2019 confirming the Annual Review was considered to satisfy the requirements of the relevant conditions of ML1461. However, the feedback noted that, during the review of the Annual Review and following a site inspection on 7 June 2019, closure planning and turbidity in water holding dams were considered "emerging risks". A separate Section 240(1)(c) Notice dated 11 July 2019 was issued with three directions required to be implemented by 31 August 2020. A summary of these directions (and subcomponents) is provided in **Table 5.1**.

Feedback from the (then) DPE compliance unit was received on 9 May 2019 confirming the Annual review was considered to generally satisfy the requirements of DA 98/01173 and DA 118/698/22 with no further actions specified.

Table 5.1
Actions from the previous Annual Review / Section 240(1)(c) Notice

Action required from previous Annual Review / Notice	Requested by	Action taken by the Operator	Where discussed in Annual Review
1. Develop a Closure Strategy ("Strategy") for the management of the West and Square Pits. The Strategy is to: i. Be developed to reflect the following separate closure pathways: a. the resumption of mining within the Abel Underground Mine and development of the voids; b. the closure of the Abel Underground Mine with no resumption of mining. ii. Include Rehabilitation Objectives and Completion Criteria for both closure pathways identified in Point (i) above. iii. Include a risk assessment that identifies and assesses risks to rehabilitation that are associated with each closure pathway identified in Point (i) above. Following the risk assessment, develop control actions that are incorporated in a Trigger Action Response Plan for each closure pathway. iv. Incorporate a timeline for completion of rehabilitation works required for each closure pathway identified in Point (i) above. v. Reflect Project Approval requirements, including completion of a gap analysis that assesses whether Project Approval modifications are required for intended post mining landforms.	Resources Regulator	Preliminary planning and consideration of this matter has been undertaken. The closure strategy will be formalised during the next reporting period.	Section 8.3.1

Table 5.1 (Cont'd)
Actions from the previous Annual Review / Section 240(1)(c) Notice

Action required from previous Annual Review / Notice	Requested by	Action taken by the Operator	Where discussed in Annual Review
2. Undertake a review of water quality within mine dams ('clean' and 'dirty') within ML 1461 against their approved final land use. The review is to: i. Assess observed water quality recorded since March 2015, including (but not limited to) turbidity, Total Suspended Solids (TSS) and Total Dissolved Solids (TDS) against relevant industry guidelines and requirements of the approved final land use (reported to the Regulator during the site inspection of 7 June 2019 as stock / fauna water source). ii. Review and assess the source of elevated turbidity / suspended solids including the construction methodology of each dam with turbidity / suspended solid concentrations greater than relevant industry guidelines and requirements of the approved final land use. iii. Should results exceed relevant industry guidelines and requirements of the approved final land use, develop and implement a strategy to address elevated turbidity / suspended solids for the long term. The strategy is to be consistent with relevant Project Approval requirements.	Resources Regulator	During the next reporting period a full review of water quality within mine dams ('clean' and 'dirty') within ML 1461 will be completed against their approved final land use and the source of elevated turbidity / TSS investigated and a strategy to address this developed. To date, the Company has ensured that all dams continue to be monitored for turbidity, TDS and TSS monthly.	Section 7.2
3. Submit an updated Mining Operations Plan (MOP) for ML 1461 - Donaldson Open Cut Mine that includes Closure Strategy and water assessment that is outlined in Directions 1 and 2. The MOP is to be submitted electronically to minres.environment@planning.nsw.gov.au to the satisfaction of the Regulator, referencing "Response to NTCE0003222" in the subject heading.	Resources Regulator	Either a new or amended MOP will be submitted prior to 31 August 2020 to reflect the outcomes of the closure strategy and mine dam water quality review.	Section 4.3 & 5

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	DA Condition 15 – approved noise limits range from 35dB(A) to 50dB(A).	No complaints.	Implies management measures are currently adequate.	No additional management action required.
Blasting	DA Condition 24 – Overpressure 115dB(A) and max 120dB(A) -Vibration 5mm/s and max 10mm/s	No blasts undertaken.	No specific management implications given no blasts undertaken.	No specific management actions required.
Air Quality	DA Condition 37 – Annual Average TSP 90ug/m^3 & deposited dust 4g/m^2/month.	No complaints. Exceedances of PM_{10} criteria due to bushfire smoke / haze.	Implies management measures are currently adequate.	No additional management action required.
Biodiversity	DA Condition 70 – Provision of compensatory habitat.	There have been no significant negative impacts on biodiversity within the Donaldson Bushland Conservation Area over the last 17 years. *Tetratheca juncea* numbers continued to decline but remain within the range previously recorded.	Trend has been an increase in biomass which has now plateaued. Overall fauna diversity consistent, however, decrease in birds with an interior habitat speciality since 2012 (possibly due to large-scale clearing associated with adjacent industrial estate in 2012). Continued maturation of mine rehabilitation areas may reverse this trend. Continued increase in ground species density appears to be the probable cause for the decline in the *Tetratheca juncea* population.	Continued monitoring of flora and fauna trends.
Heritage	DA Condition 81-86 – Aboriginal Heritage Conservation Area & Management Plan	No heritage items identified or disturbed during the reporting period. No complaints or other management issues.	Implies no specific management actions were necessary.	No additional management action required.

6.2 METEOROLOGICAL MONITORING

An on-site automated weather station continued to be operated recording rain, wind speed and direction. **Figure 6.1** presents the monthly wind roses for the reporting period whilst **Table 6.2** provides the monthly rainfall data.

Figure 6.1a Monthly Wind Roses 2018/2019

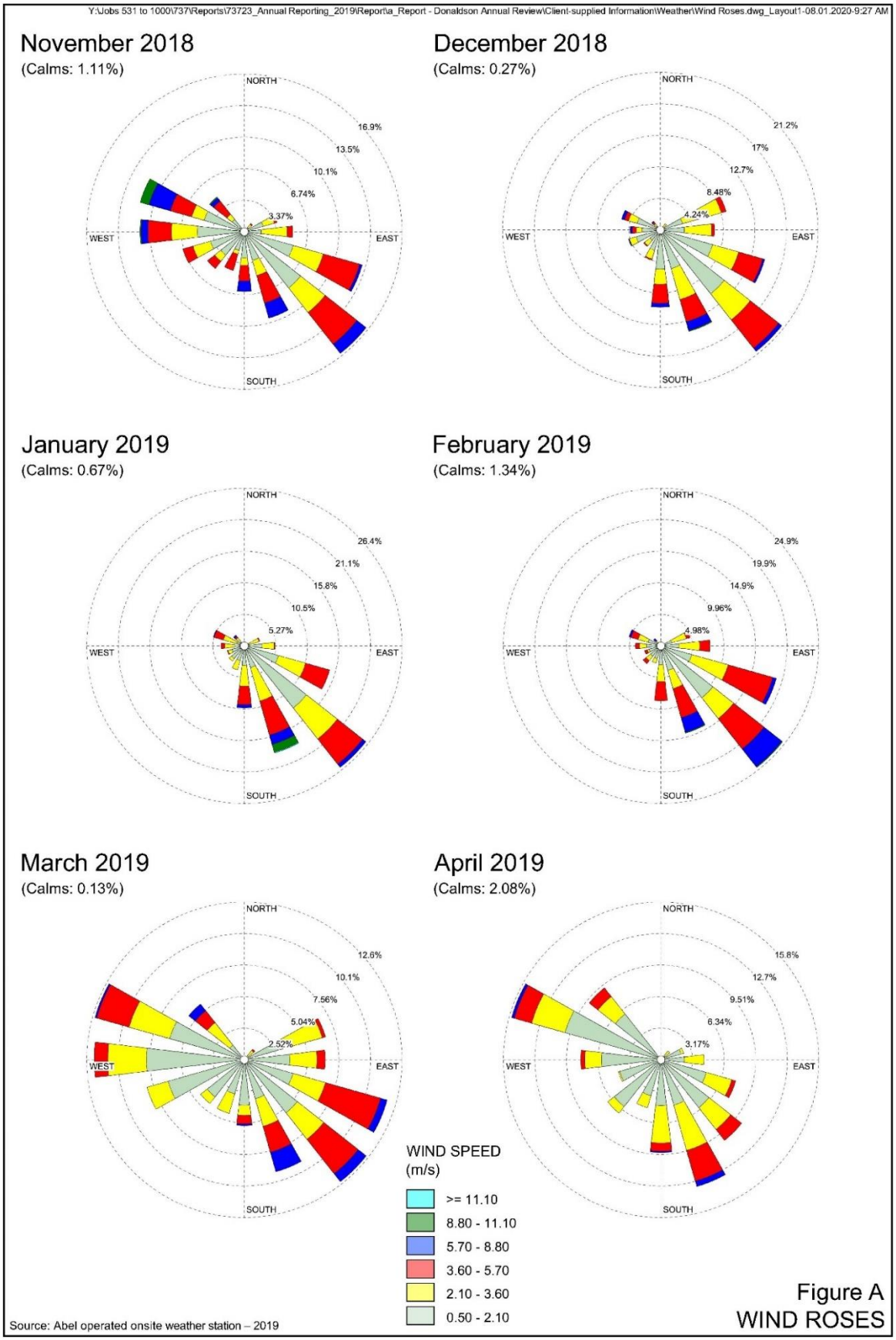

Figure 6.1b Monthly Wind Roses 2018/2019

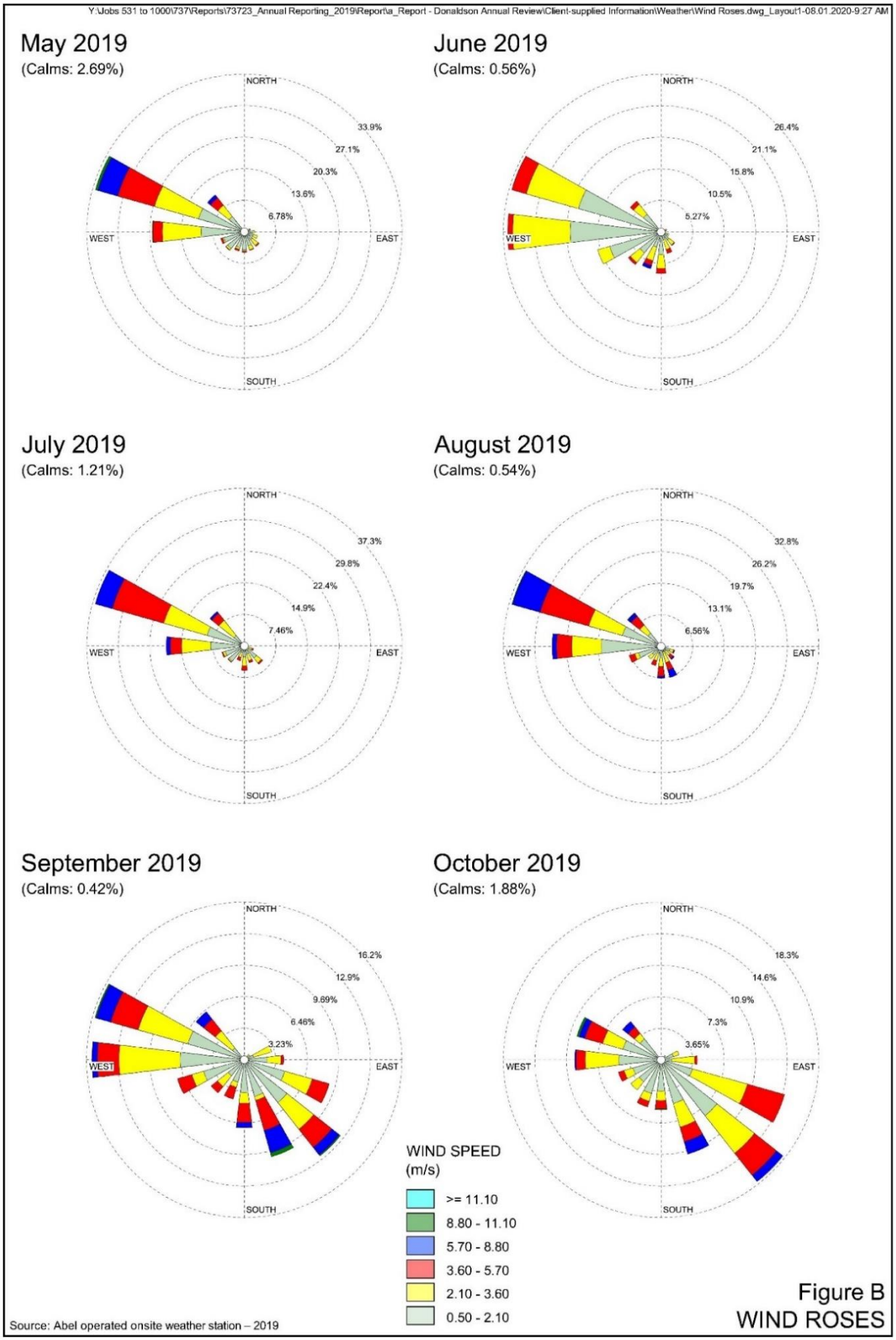

Table 6.2
Monthly Rainfall

Average Monthly Rainfall (mm)													
Period	**Jan**	**Feb**	**March**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Total**
2000	61.0	32.0	279.0	146.0	45.0	24.0	27.0	31.0	33.0	47.0	106.0	32.0	863.0
2001	46.0	169.0	193.0	114.0	244.0	3.4	63.0	22.0	12.0	31.0	91.0	38.0	1026.4
2002	48.0	281.0	184.0	66.4	62.1	30.0	30.0	21.0	17.4	18.8	56.2	149.2	964.1
2003	6.0	90.0	22.2	77.0	135.0	13.2	43.0	27.4	0.0	63.2	137.6	39.0	653.6
2004	86.0	176.6	80.0	33.6	17.4	9.4	15.4	43.1	61.2	136.0	77.4	69.8	805.9
2005	64.4	95.8	127.8	57.4	61.8*	56.8	7.2	0.8	37.0	84.0	22.8	9.6	625.4
2006	29.8	47.4	63.6	4.6	7.8	43.8	42.6	49.2	162.4	25.4	37.8	35.6	550.0
2007	13.4	88.0	102.0	86.0	60.0	301.0	17.0	79.6	19.8	17.2	163.8	49.5	997.3
2008	153.4	154.3	46.0	237.6	2.2	122.9	30.0	28.5	195.3	62.2	73.3	62.6	1168.3
2009	11.3	97.7	136.5	157.2	125.7	75.7	32.1	1.8	29.2	59.8	51.4	62.0	840.4
2010	0.0	52.1	83.9	37.1	89.4	112.8	65.3	38.5	26.4	80.6	171.1	39.9*	797.1
2011	26.0	34.5	65.6	137.9	98.8	152.0	129.0	49.0	103.0	100.0	171.9	75.9	1143.6
2012	96.1	207.0	137.6	114.7	11.8	172.3	53.8	26.6	18.7	5.7	21.8	1.2	867.3
2013	1.0	100.0	64.2	65.8	59.8	63.8	71.8	9.6	21.8	27.0	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	44.5	41.8	1001.5
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	624.2
2018	6.6	120.0	191.4	52.8	7.0	107.4	4.2	21.4	55.4	109.0	**92.2**	**65.0**	832.4
2019	**17.2**	**32.8**	**158.0**	**27.0**	**19.4**	**97.4**	**26.0**	**66.6**	**69.4**	**22.0**	-	-	-
Minimum	*0.0*	*26.0*	*22.2*	*4.6*	*2.2*	*3.4*	*3.2*	*0.8*	*0.0*	*5.7*	*21.8*	*1.2*	*550.0*
Average	*67.3*	*101.6*	*117.5*	*102.6*	*60.3*	*85.2*	*37.4*	*36.5*	*51.7*	*56.2*	*92.4*	*56.3*	*886.1*
Maximum	*430.8*	*281.0*	*279.0*	*412.0*	*244.0*	*301.0*	*129.0*	*104.0*	*195.3*	*136.0*	*261.8*	*149.2*	*1172.2*
Note: Results relevant to this reporting period are in **bold**.													

During the reporting period winds dominated from the southeastern quadrant in November and December 2018 and in January, February and October 2019 whilst between April and September 2019 winds dominated from the west/northwest. Total rainfall during the reporting period was 693.0mm, 193.1mm less than the average rainfall recorded to date.

6.3 NOISE

As mining ceased in April 2013, no noise monitoring was undertaken for the Donaldson Open Cut Coal Mine during the reporting period. Based on the absence of activities and community complaints, no specific noise management measures were required and no further improvements are currently considered necessary. No further monitoring is currently proposed.

6.4 BLASTING

No blasting was undertaken during the reporting period.

6.5 AIR QUALITY

Environmental Management

The Donaldson Air Quality Management Plan (Holmes Air Sciences, 2007) details the range of measures employed to control airborne dust. As there were no operational activities during the reporting period and the majority of the site has been rehabilitated, no specific air quality management measures were required throughout the reporting period.

Environmental Performance

The Company operates the following dust monitoring equipment.

- Nine Depositional Dust Gauges measuring insoluble solids.
- Two HVAS measuring PM_{10}.
- One High Volume Air Sampler (HVAS) measuring TSP.
- One continuous Dustrak monitor measuring PM_{10}.

The locations of dust monitoring equipment are outlined in **Appendix 1** and the results of monitoring presented as follows. It is noted that measurements taken at any of these locations will include all background air pollution relevant to those locations, as well as any contribution occurring from the mine.

Depositional Dust Gauges

A summary of the deposited dust results for the reporting period is presented in **Table 6.3**. Results were generally obtained with acceptable levels of contamination from other sources such as insects, bird droppings and vegetation.

Table 6.3
Depositional Dust Monitoring Results Nov 2018 to Oct 2019

Sample Site	No. Samples Required	No. samples collected and analysed	Maximum Insoluble Solids (g/m^2/month)	Minimum Insoluble Solids (g/m^2/month)	Annual Average Insoluble Solids (g/m^2/month)
DG1	12	12	1.3	0.3	0.7
DG2	12	12	2.9	0.4	1.4
DG3	12	12	3.0	0.4	1.4
DG4	12	12	1.5	0.3	0.9
DG7	12	12	2.0	0.5	1.1
DG8	12	12	3.0	0.5	1.7
DG9	12	12	2.4	0.6	1.4
DG11	12	12	2.4	0.7	1.5
DG12	12	12	2.6	0.4	1.6
Average	**12**	**12**	**2.3**	**0.5**	**1.3**

During the reporting period, all gauges were in compliance with the Donaldson Air Quality Management Plans targeted air quality goals, with annual average insoluble solid results for each gauge substantially below the Annual Average criteria of 4g/m^2/month. Given that all mining and earthmoving activities have been completed at the Donaldson Coal Mine, results are indicative of the background environment inclusive of other local or regional sources. **Figure 6.2** shows the historical rolling annual averages for each depositional dust gauge. Results are generally consistent with the trends and ranges previously recorded.

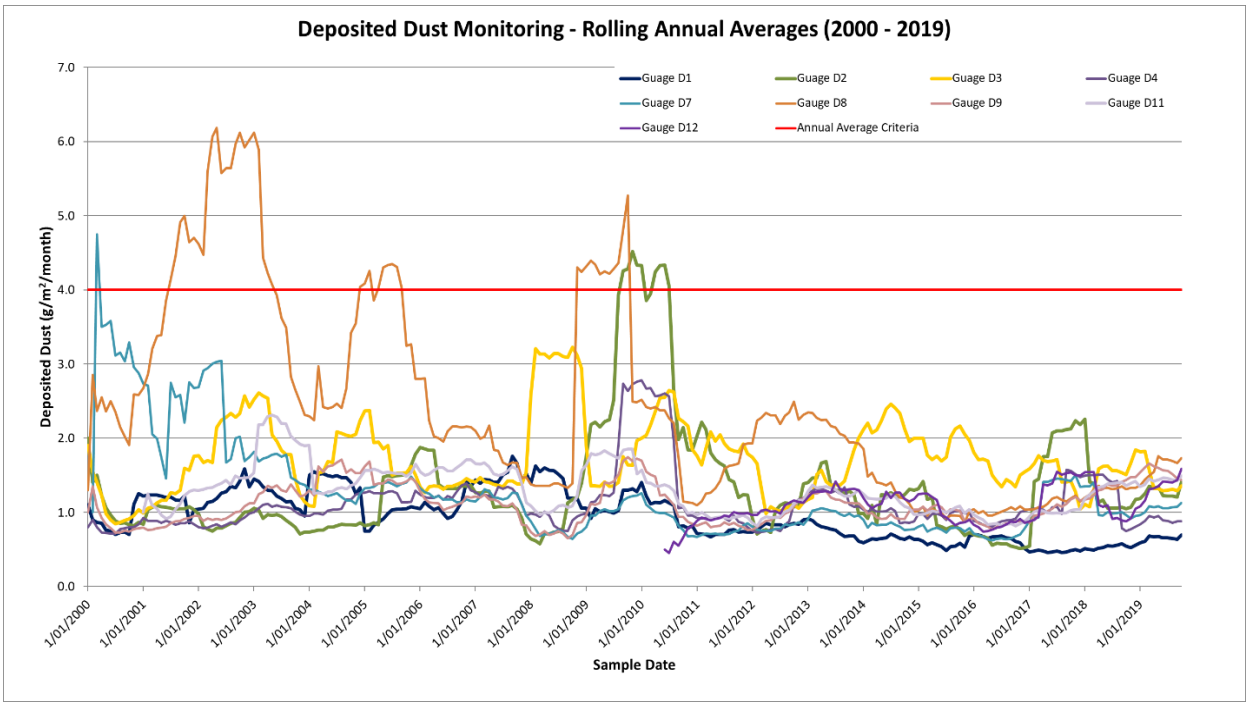

Figure 6.2 Deposited Dust Monitoring 2000 to 2019

High Volume Air Samplers

This section outlines the results of the HVASs located at Blackhill Primary School and the Beresfield Golf Course. Two sets of measurements have been performed during the reporting period, PM_{10} (particulate matter of diameter less than 10µm) and TSP (total suspended particulate matter). **Table 6.4** displays the data capture rate for the three high volume air sampler units during the period.

Table 6.4
High Volume Air Sampler Data Capture Rate

Monitoring Location	Data Capture Rate (%)
Blackhill Primary School (PM_{10})	100
Blackhill Primary School (TSP)	100
Beresfield Golf Course (PM_{10})	100

PM_{10}

Table 6.5 provides a summary of the PM_{10} monitoring results for the reporting period whilst **Figure 6.3** displays the monitoring results since commencement of monitoring.

Table 6.5
HVAS Monitoring Results – PM_{10} (Nov 2018 to Oct 2019)

Sample Site	No Samples Required	No samples collected and analysed	Maximum PM_{10} Value ($\mu g/m^3$)	Minimum PM_{10} Value ($\mu g/m^3$)	Average PM_{10} Value ($\mu g/m^3$)
Blackhill Primary School	61	61	75.1	2.4	19.5
Beresfield Golf Course	61	61	67.4	2.8	20.6

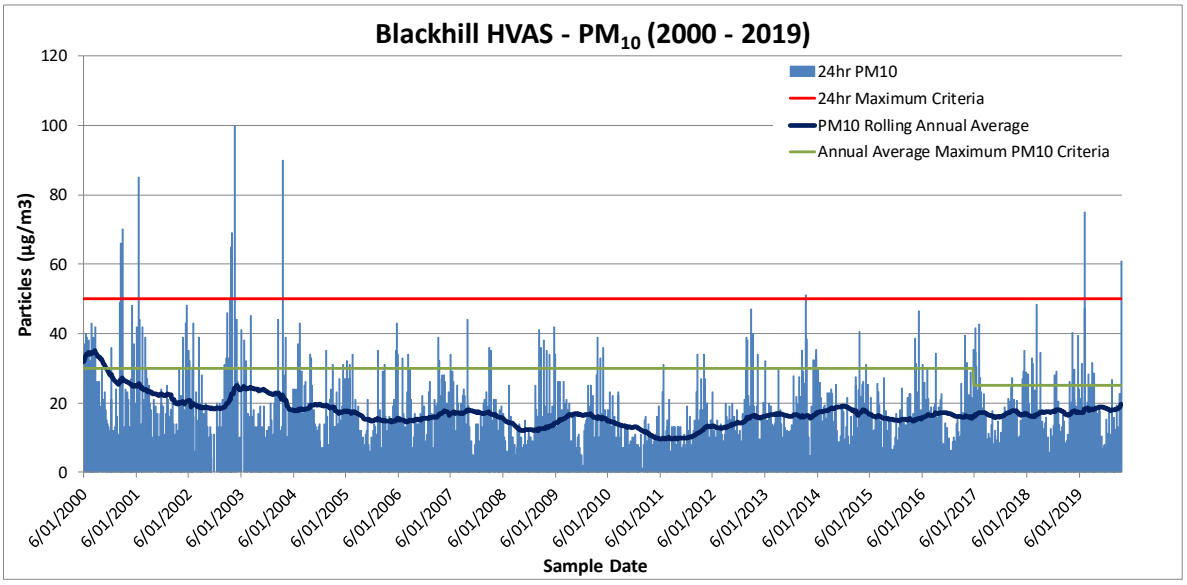

Figure 6.3 HVAS Results – PM_{10} (2000 to 2019)

Two exceedances of the *National Environment Protection Measures* (NEPM) 24hr maximum PM_{10} goal (50µg/m^3) were recorded at each of the Blackhill Primary School and Beresfield Golf Course monitoring locations during the reporting period. Exceedances at the Blackhill Primary School location included measurements of 75.1µg/m^3 on 13 February 2019 and 60.9µg/m^3 on 29 October 2019. At the Beresfield Golf Course exceedances were 53.2µg/m^3 on 19 February 2019 and 67.4µg/m^3 on 29 October 2019. The October 2019 exceedances are consistent with high PM_{10} levels recorded at the DPIE monitoring stations at Wallsend, Beresfield and Newcastle due to bushfires. The February 2019 exceedances are considered to be the result of both elevated regional and local PM_{10} levels and follows dry conditions throughout January 2019.

No exceedance of the annual average maximum criteria[1] of 25µg/m^3 occurred during the reporting period.

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, rolling annual average PM_{10} levels have remained relatively consistent since 2005.

Total Suspended Particles

TSP results for the reporting period are displayed in **Table 6.6** with the results since the commencement of monitoring shown in **Figure 6.4**.

Table 6.6
HVAS Results – TSP (Nov 2018 to Oct 2019)

Sample Site	No Samples Required	No samples collected and analysed	Maximum TSP Value (µg/m3)	Minimum TSP Value (µg/m3)	Average TSP Value (µg/m3)
Blackhill Primary School	61	61	195.0	5.7	37.9

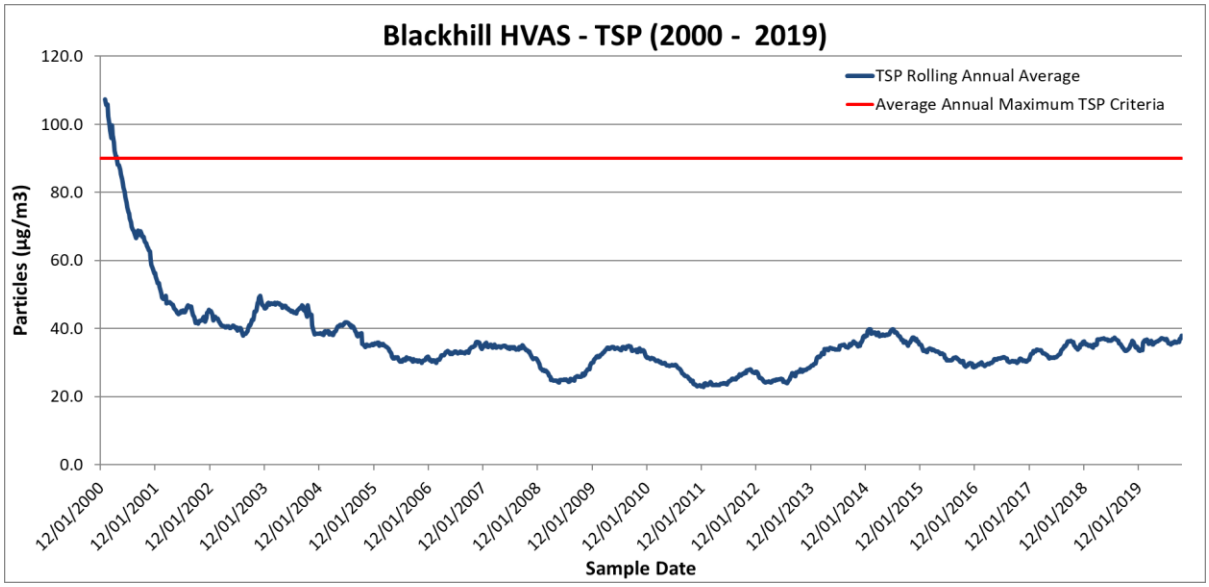

Figure 6.4 HVAS Results – TSP (2000 to 2019)

[1] The Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, published January 2017 reduced the annual average PM_{10} criteria from 30µg/m^3 to 25µg/m^3.

The annual average TSP result at Blackhill Primary School during the reporting period was 37.9µg/m^3, well below the annual average criteria of 90µg/m^3. While there are no specified criteria for a 24-hr TSP maximum in the development consents or Environment Protection License, the maximum TSP of 195.0µg/m^3 results is well below the US EPA short term good air quality criteria of 260µg/m^3.

The ratio of the average PM_{10} to TSP over the 2018/19 Annual Review reporting period was approximately 53%, which is generally consistent with the previous reporting period (49%). No long-term trends are evident within the TSP data.

In summary, when reviewing the results in light of there having been no mine-related dust producing activities since March 2014, this indicates that between 2005 and 2014 Donaldson's operational activities had a low contribution to both PM_{10} and TSP. This is consistent with the previous environmental assessments which predicted no exceedance of air quality goals as a result of the operations.

Dustrak Monitor

Donaldson operates one continuous Dustrak air quality monitor at Blackhill Primary School. **Table 6.7** and **Figure 6.5** summarise the Dustrak monitoring data for the reporting period. The measurement of PM_{10} by optical methods (such as the Dustrak monitors) is known to be particularly sensitive to rainfall or high humidity events. Monthly inspections of the Dustrak monitor and regular servicing of the instrument assist with reducing occasions when the measurements become unstable or drift from sensible values.

Table 6.7
Dustrak Results – PM_{10} (Nov 2018e to Oct 2019)

Site	Data Collection	Days Sampled	Highest 24-hour average PM_{10} (µg/m^3)	Annual average PM_{10} (µg/m^3)	Lowest 24-hour average PM_{10} (µg/m^3)
Blackhill Primary School	Continuous	365	336.7	13.8	0.0
Note: Data in this table is for the annual reporting period 1 November 2018 to 31 October 2019.					

As can be seen from **Table 6.7**, samples were successfully collected for 365 days or 100% of the sampling period.

The average annual PM_{10} result of 13.8µg/m^3 from Dustrak monitoring is similar to the 19.5µg/m3 obtained from the PM_{10} HVAS at the Blackhill Primary School and therefore below the annual average criteria of 25µg/m^3. However, on seven days during the reporting period the 24hr results exceeded the 24-hour NEPM maximum criteria of 50µg/m^3, the highest being 336.7µg/m^3 recorded on 31 October 2019.

All exceedances were recorded during periods of bushfire smoke and/or haze within the area. Given that no mining or earthmoving activities occurred and rehabilitation has been completed, the Donaldson Coal Mine is considered to have not contributed to these exceedances.

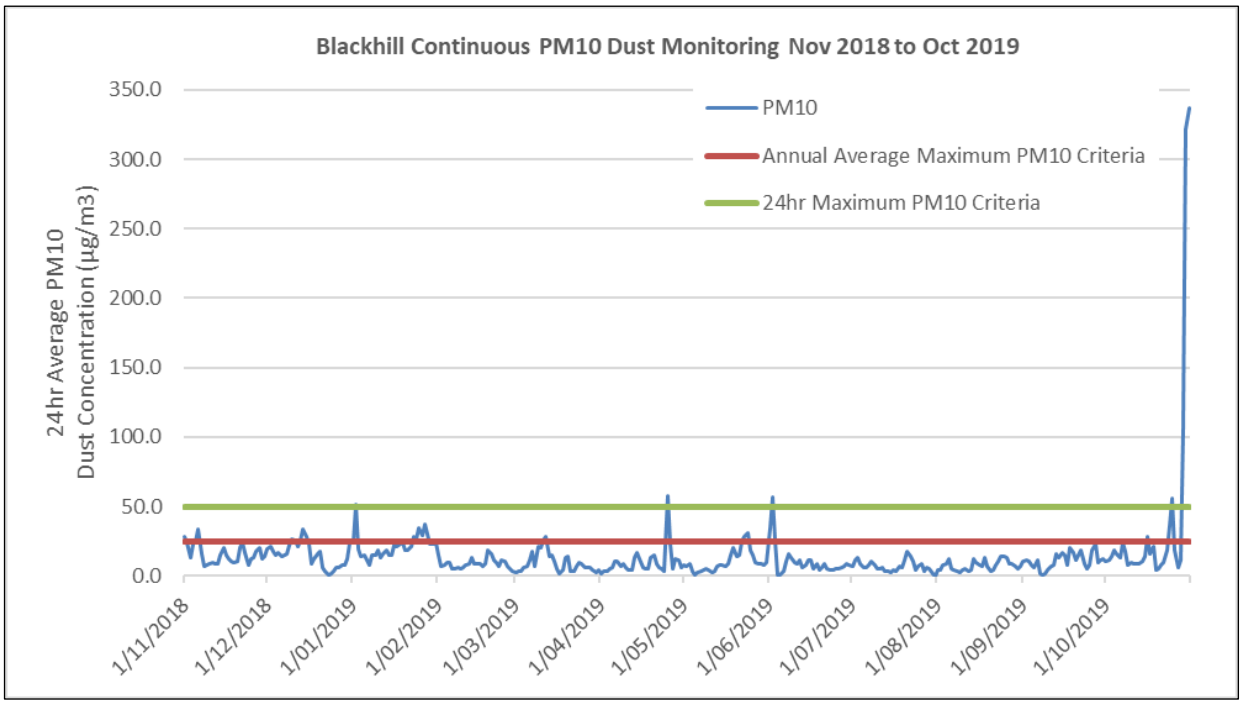

Figure 6.5 Results of Dustrak Continuous Monitoring

Reportable Incidents

No reportable air quality incidents were recorded during the 2018/19 Annual Review reporting period.

Further Improvements

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

6.6 BIODIVERSITY

During the reporting period, biodiversity values have principally been managed through the ongoing implementation of the flora and fauna monitoring program. These management measures are outlined in detail within the 'Flora and Fauna Management Plan' (dated May 2007) prepared for the mine. Full copies of the monitoring reports are provided as **Appendices 4** and **5**.

6.6.1 Flora

Environmental Management

Flora monitoring has been conducted through several flora surveys throughout the reporting period. Surveys have been conducted in the Bushland Conservation Area (BCA), rehabilitation areas, and on *Tetratheca Juncea*. Management and monitoring of flora within rehabilitation areas is discussed in Section 8.2.

Bushland Conservation Area

Annual flora quadrat monitoring has been conducted in the BCA since 2001. In 2018, nine 20m x 20m quadrats were monitored for species richness, density, floristic composition and biomass parameters. Quadrat monitoring occurs in late spring to early summer each year and aims to monitor the influence of mining activities on flora around the mine site.

Regular inspections for weeds were also undertaken during the reporting period. Weed control measures were undertaken during the reporting period, including targeted Pampas grass (*Cortaderia* sp.) treatment and opportunistic treatment of *Lantana camara* (West Indian Lantana). The primary means of controlling weeds was through herbicide use and manual removal.

Tetratheca Juncea

There was one species of threatened flora identified during the preparation of the Environmental Impact Statement (EIS), namely *Tetratheca juncea* (Black-eyed Susan). As a result, a Tetratheca Juncea Management Plan was developed (Gunninah, 2000a) and a survey and identification report (Gunninah, 2000b) was completed, which located the boundaries of the population and defined the limit of the conservation precinct. Subsequent works during 2001 and 2002 extended the boundary and up to an additional two hundred (200) plants were found during routine monitoring and vegetation characterisation.

In addition, approximately four hundred (400) plants were discovered during routine pre-clearing surveys and monitoring episodes. A large proportion of these plants fell outside of the active mine area, adding further conservation significance to the area(s) identified and managed by Donaldson as the Tetratheca Juncea Conservation Area (TJCA).

In addition to the creation of the TJCA, the following additional control measures have previously been employed.

- The protection of 650ha of bushland around the mine to conserve habitat.
- Ongoing mapping and management protocols.
- Pre-clearing surveys by a qualified biologist prior to any clearing activities.

In 2005, a design was also developed for the experimental translocation of *Tetratheca Juncea* from the planned mine disturbance area. The experimental design for the translocation was based on a study being conducted in the Gwandalan area (Ecobiological, 2005). The ongoing monitoring of the translocated plants focused upon collecting data and information about the circumstances under which the plants are growing. Each plant and each recipient site was photographed following translocation and every twelve months for 5 years. The plants were monitored and watered on a weekly basis for 6 weeks post planting to help ensure maximum initial survival and inspected twice per year for the 5 year period.

Environmental Performance

Bushland Conservation Area

The following summary of environmental performance has been extracted and compiled from Kleinfelder (2019a). A full copy of this report, including survey methodology, data and statistical analysis, is presented in **Appendix 4**.

The 2018 flora survey results show that the floristic composition of the monitoring sites is similar to the previous year, with an overall increase in plant species richness and structural components since the baseline survey in 2001. To date, a total of 291 flora species have been recorded across all survey events with 134 species recorded during the baseline survey and 180 species recorded during the 2018 survey. The cumulative number of species steadily increased until 2009 and has since levelled and stabilised. This is consistent with expected ecological processes and variables and minor variations from year to year are most likely due to fluctuations in flowering times, particularly of annual herbaceous and orchid species, most likely caused by variation in climatic conditions and/or the life cycle of the species.

Despite minor year-to-year fluctuations, all biomass variables examined (i.e. basal area, height, foliage projective cover (FPC), and stand volume) have also shown substantial increases over the last 17 years since the baseline survey in 2001. The regression analyses also confirmed that the relationship between time and increases in FPC and stand volume were highly significant indicating that the community biomass has increased substantially over time.

Notwithstanding the significant increase since 2001, the progressive increase in biomass variables has slowed in recent years although a slight increase was recorded in 2018 for parameters including stand volume and FPC compared to the previous 2 years. The plateau, which began from approximately 2010, may be a result of the system reaching equilibrium and suggests that the vegetation may have reached the maximum biomass that conditions will allow. The protection of the Bushland Conservation Area from a history of logging, clearing, frequent fire, firewood collection and rubbish dumping has likely contributed to the significant increase in biomass at all monitored sites since 2001.

Overall, the recorded trends are indicative of a dynamic plant community with high recruitment from the seed pool, normally an indicator of a healthy, regenerating native plant community. Overall, Kleinfelder conclude that there have been no significant negative impacts on floristic diversity within the Donaldson Bushland Conservation Area over the last 18 years.

Tetratheca Juncea

A baseline report was completed in January 2003 by Barker Harle. This report describes the implementation of the Tetratheca Juncea Management Plan and includes baseline information for use in subsequent reports. Subsequent monitoring and reporting is undertaken on an annual basis.

The 2018 annual monitoring was completed by Kleinfelder (see **Appendix 5**). Kleinfelder (2019b) reported that the monitoring data has shown a declining population between 2005 and 2014, with a small recovery, followed by a continued decline. The probable cause for the continuing reduction was a measured increase in the density of ground species outcompeting *Tetratheca juncea*. The monitoring indicates that the *Tetratheca juncea* population would benefit from a fire which would both reduce the current level of competition and provide more nesting areas for tunnelling native bee pollinators.

Notwithstanding the overall decline, Kleinfelder note that there is a core of clumps that have survived over all, or the majority of, the 14 year monitoring period potentially representing a permanent population. A broad scale analysis found that the number of flowers per clump was not influenced by temperature or rainfall at a regional scale, however, the impact of local climatic factors has not yet been determined.

Reportable Incidents

No reportable flora related incidents were recorded during the 2018/19 Annual Review period.

Further Improvements

Excluding continued weed control, including targeting of *Lantana camara*, there are no proposed improvements to the management of flora in the BCA or TJCA in the next reporting period. It is noted that Kleinfelder (2019a) considered that sufficient data had been collected within the BCA for ongoing flora (and fauna) surveys to be extended to between every 3 and 5 years. However, at this stage, the Company will continue annual monitoring as requested by the (then) Office of Environment and Heritage during the consultation for the update of the Flora and Fauna Management Plan.

In response to recommendations from Kleinfelder, applications have been submitted to the NSW Rural Fire Service (RFS) for 'hazard reduction burns' in several areas including the TJCA in order to improve the *Tetratheca juncea* habitat. The hazard reduction burns may be conducted during the next reporting period depending upon climatic conditions and the availability of the RFS pending other resourcing requirements for protection of existing physical infrastructure or assets.

6.6.2 Fauna

Environmental Management

Several species of threatened fauna were identified during the EIS and supplementary reports, including both the areas proposed for mining and the immediate environs. They include the following.

- The Powerful Owl.
- The Masked Owl.
- The Barking Owl.
- Sooty Owl.
- Varied Sittella.
- Yellow-bellied Sheathtail Bat.
- Eastern Bent-wing Bat.
- Eastern Freetail Bat.
- Eastern Cave Bat.
- Greater Broad-nose Bat.
- Little Bent-winged Bat.
- Southern Myotis.
- Little Lorikeet.
- Squirrel Glide.
- Eastern False Pipistrelle.

To ensure a high level of conservation for the threatened fauna species found on the site, the following measures have been taken.

- The protection of 650ha of bushland around the mine to conserve habitat.
- Ongoing survey and management protocols.
- Routine annual quadrant monitoring.
- Wild dog and fox baiting programs.

- Placement of nest boxes in the Bushland Conversation Area to replace nesting sites destroyed by clearing.
- Ongoing and progressive rehabilitation of disturbed areas.

The following fauna monitoring activities were undertaken during the 2018/19 reporting period.

- Terrestrial and arboreal mammal trapping.
- Microbat trapping.
- Microbat call detection.
- Owl call playback.
- Spotlighting.
- Bird surveys.
- Nest box monitoring.
- Opportunistic herpetofauna recording.

These monitoring activities were carried out during summer and winter surveys, as well as during recolonization surveys of rehabilitated areas at the mine.

As a result of the 2018 winter nest box monitoring program (see below) identifying the need for nest box maintenance following the deterioration of nest boxes which had previously been installed on site, 15 nest boxes were replaced in September 2018 and a further three damaged nest boxes were repaired within the Bushland Conservation Area bringing the total back to 45 nest boxes.

During the reporting period two wild dog and fox baiting programs were also undertaken. In 2018, baits were placed between November 2018 and December 2018 at 20 locations surrounding the mine. The 2019 baiting program occurred between the 30 September 2019 and 1 November 2019.

Environmental Performance

The following summary of environmental performance has been extracted and compiled from Kleinfelder (2019a). A full copy of this report, including survey methodology, data and statistical analysis, is presented in **Appendix 4**.

A total of 173 fauna species have been recorded since monitoring began in 2001. The 2018 survey detected a total of 81 fauna species consisting of 55 bird, three arboreal and five terrestrial mammal, 12 bat, four amphibian and two reptile species. Four of the bat species are listed as threatened under the *NSW Biodiversity Conservation Act 2016*. The fauna survey results were found to be similar to previous years with no significant decrease or increase in species richness during the 2018 survey. Two threatened owl species, Powerful Owl (*Ninox strenua*) and Masked Owl (*Tyto novaehollandiae*) were detected in 2018.

Similarity analysis of faunal assemblages recorded in 2018 indicates a similarity of 72% compared to all previous years, representing an increase in similarity of 4% compared to 2017. Analysis of assemblage similarity for various faunal groups revealed the following.

- Arboreal Mammals
  - Species assemblages for all years show a minimum similarity of 69% and a maximum similarity of 83% between 2010 and 2011.
  - Variation can likely be attributed to sporadic detections of highly mobile or less common species.
- Terrestrial Mammals
  - Species assemblages for all years show a minimum similarity of 60%, with several clusters of years showing similarities ≥80%.
- Bats
  - Species assemblages for all years show a minimum similarity of 60%, with several clusters of years showing similarities ≥80%.
- Birds
  - Bird assemblages from the years 2013, 2015 and 2016 were the most dissimilar compared to other years.
  - Further breakdown based on habitat preferences indicates that birds with generalist habitat preference have remained consistent, however, there has been an approximately 12.5% decrease in the number of forest-interior specialist bird species but a 25% increase in forest edge/open grassland species since 2012 (with mining having ceased in April 2013).

In relation to similarity of bird species assemblages, it is possible that changes in disturbance from mining have resulted in specialist species to move in or out of the area. However, it is possible that the change is a result of the large-scale clearing that occurred in the neighbouring industrial precinct in 2012. The creation of more edge habitat along nearly the entire eastern edge of the Bushland Conservation Area as a result of the industrial precinct may have made the habitat less suitable for interior specialists. Notwithstanding, with the continued maturation of the adjacent mine rehabilitation areas, these interior specialist species may return or recover to previous population levels.

Nest box surveys in 2018 (winter and summer average) recorded 38.5% of all available boxes showing signs of use (both actual animals present and evidence of usage). Since installation in 2005, nest box utilisation steadily increased until 2012 and has since steadily decreased. This pattern has been observed in several other nest box monitoring programs in native forest suggesting the effective lifespan of the current nest boxes is 8 to 10 years. As discussed above, as a result, a nest box replacement and repair program was completed in September 2018. It is expected that the utilisation rate will increase over the next 3 to 4 years as the new / repaired nest boxes are occupied.

During the 2018 wild dog and fox baiting program a total of two bait takes by wild dogs and four takes by foxes was recorded, representing a baiting efficiency of 10% confirmed takes by target species.

Reportable Incidents

No reportable Fauna related incidents were recorded during the 2018/19 reporting period.

Further Improvements

Improvements during the next reporting period will principally be the ongoing assessment of the effectiveness of the installed and repaired nest boxes and continued general fauna survey within the Bushland Conservation Area together with statistical analysis of trends. There are no other proposed improvements to the management of fauna in the next reporting period**.**

6.7 HERITAGE

The following section outlines the commitment made by Donaldson for the protection of cultural and natural heritage of the area. A copy of a plan along with a summary table showing the known Aboriginal cultural heritage sites is attached as **Appendix 2** of this report.

To date thirty-one (31) sites of Aboriginal Cultural Heritage have been identified on property owned by Donaldson. None of these sites were in areas that were impacted on by site activities during the 2018/19 Annual Review period.

No European heritage sites have been identified at the mine.

Archaeological Studies

The mine has been the subject of four archaeological studies since 1998. During each study the principal aims have been to:

- consult and involve the Aboriginal Community at every stage of the investigation and to provide continuous opportunities for the Aboriginal Community through the Mindaribba Local Aboriginal Land Council (MLALC) to participate in the interpretation and decision making process;
- identify and record by field survey the material evidence of Aboriginal cultural heritage or locations of potential evidence with the land owned by Donaldson;
- assess the archaeological significance and understand the Aboriginal significance of material evidence of Aboriginal cultural heritage of the study area; and
- assess the impacts of the mine on Aboriginal Cultural Heritage.

Management

In accordance with Conditions 84, 85 and 86 of the Development Consent, Donaldson has prepared an Aboriginal Sites Management Plan for the mine. Separate plans were produced for each year of operation at the mine. This provided a better opportunity to address specific issues for each year as well as an opportunity to review and address the management of Aboriginal Sites both inside the mine impact area and within associated bushland areas surrounding the mine.

The following control measures have been employed at the mine in order to ensure that reasonable duty of care is taken to ensure sites of Aboriginal cultural significance are not knowingly disturbed or destroyed.

- The MLALC is actively involved in the management of Aboriginal Sites at Donaldson.
- Representatives of the Lands Council are invited on site to monitor clearing and topsoil stripping activities.

Performance

Donaldson and MLALC enjoy a good working relationship and to date there have been no complaints or incidents recorded in relation to the management of sites of Aboriginal cultural heritage.

Reportable Incidents and Further Improvements

No reportable incidents were recorded during the 2018/19 reporting period and no further improvements are currently considered necessary.

7. WATER MANAGEMENT

7.1 WATER BUDGET

The Donaldson Open Cut Mine is primarily free draining with runoff from rehabilitated areas returning to local catchments. All rehabilitated areas to the east of the site access road are now clean water and drain off site except for the Big Kahuna Dam. Water from the Abel underground, Square Pit and West Pit are pumped to the Big Kahuna for storage.

During the reporting period the Abel underground mine transferred a total of 207ML into the Donaldson's Big Kahuna Dam and a total of 311ML of water was transferred from the Big Kahuna Dam to the Bloomfield mine site to be stored and used for operational purposes. There was no water discharged from Donaldson's licenced discharge point into Four Mile Creek.

There was no water used or imported to Donaldson mine for operations or rehabilitation. **Table 7.1** summarises the status of water storage at the beginning and end of the reporting period.

Table 7.1
Water Stored at Donaldson

	Volumes Held (m^3)		
	Start of Period	**End of Period**	**Storage Capacity**
Big Kahuna	209	232	400
Discharge to Creek	0	0	0
Contaminated Water	N/A	N/A	N/A

This data assumes that water in the West and Square Pits are managed and used by the Abel Underground Coal Mine. Water take is reported as part of the Annual Review for the Abel Underground Coal Mine

7.2 SURFACE WATER

Environmental Management

The Water Management Plan (Perrens, 2000) details the measures employed by Donaldson to ensure protection of surface water on and around the mine site. Surface water monitoring has been ongoing since June 2000. A plan showing the location of the water monitoring sites is provided in **Appendix 1**. Routine sampling and analysis is undertaken at six (6) permanent surface water stream monitoring locations, when in flow. Opportunistic samples are also taken from various other locations around the mine area as required (sediment dams and mine water storage dams). The surface stream water monitoring sites include:

- Four Mile Creek Upstream (EM1);
- Four Mile Creek Downstream (EM2);
- Scotch Dairy Creek Upstream (EM3);
- Scotch Dairy Creek Downstream (EM4);
- Weakley's Flat Creek Downstream (EM5); and
- Weakley's Flat Creek Upstream (EM6).

Samples collected from the six existing stream sites are analysed for Electrical Conductivity (EC), pH, Total Dissolved Solids (TDS), Total Suspended Solids (TSS) and Sulfates (SO_4), on a monthly basis. A full suite analysis is also carried out on a quarterly basis and includes analysis for EC, pH, TDS, TSS, SO_4, Calcium (Ca), Magnesium (Mg), Sodium (Na), Potassium (K), Chloride (Cl), Fluoride (Fl), Arsenic (As), Aluminium (Al), Barium (Ba), Cadmium (Cd), Cobalt (Co), Copper (Cu), Chromium (Cr), Iron (Fe), Manganese (Mn), Lead (Pb), Zinc (Zn), Total Alkalinity as $CaCO_3$, Turbidity, Nitrates and Phosphates (total).

In addition to the physical and chemical water quality work, biological monitoring (macroinvertebrates) has been ongoing as part of the environmental impact assessment. The program consists of:

- a pre-mining baseline survey;
- a construction survey; and
- twice yearly operational surveys.

Two monitoring surveys were completed during the 2018/19 reporting period, during May 2019 and September 2019.

In addition to water quality and biological monitoring, the following control measures are employed at Donaldson to ensure an appropriate level of protection to surface water on and around the mine site.

- Minimal disturbance and progressive rehabilitation (noting operational activities have now ceased).
- Source separation in order to separate water of differing quality.
- Collection and containment of mine water for dust suppression and/or transfer to the Bloomfield Colliery for operational use.
- Grey water and sewage is treated by bio-cycle technology.

In addition to these measures, inspections of drainage channels and structures were undertaken throughout the reporting period. No stabilisation or remedial works were required.

Environmental Performance

Chemical and Physical Monitoring

A summary of three key parameters, required by the EPA Environmental Protection Licence, for the reporting period as well as the pre-mining baseline is included in **Table 7.2**. Monitoring results for pH and EC since the year 2000 are also presented graphically in **Figure 7.1** to assist in identifying trends.

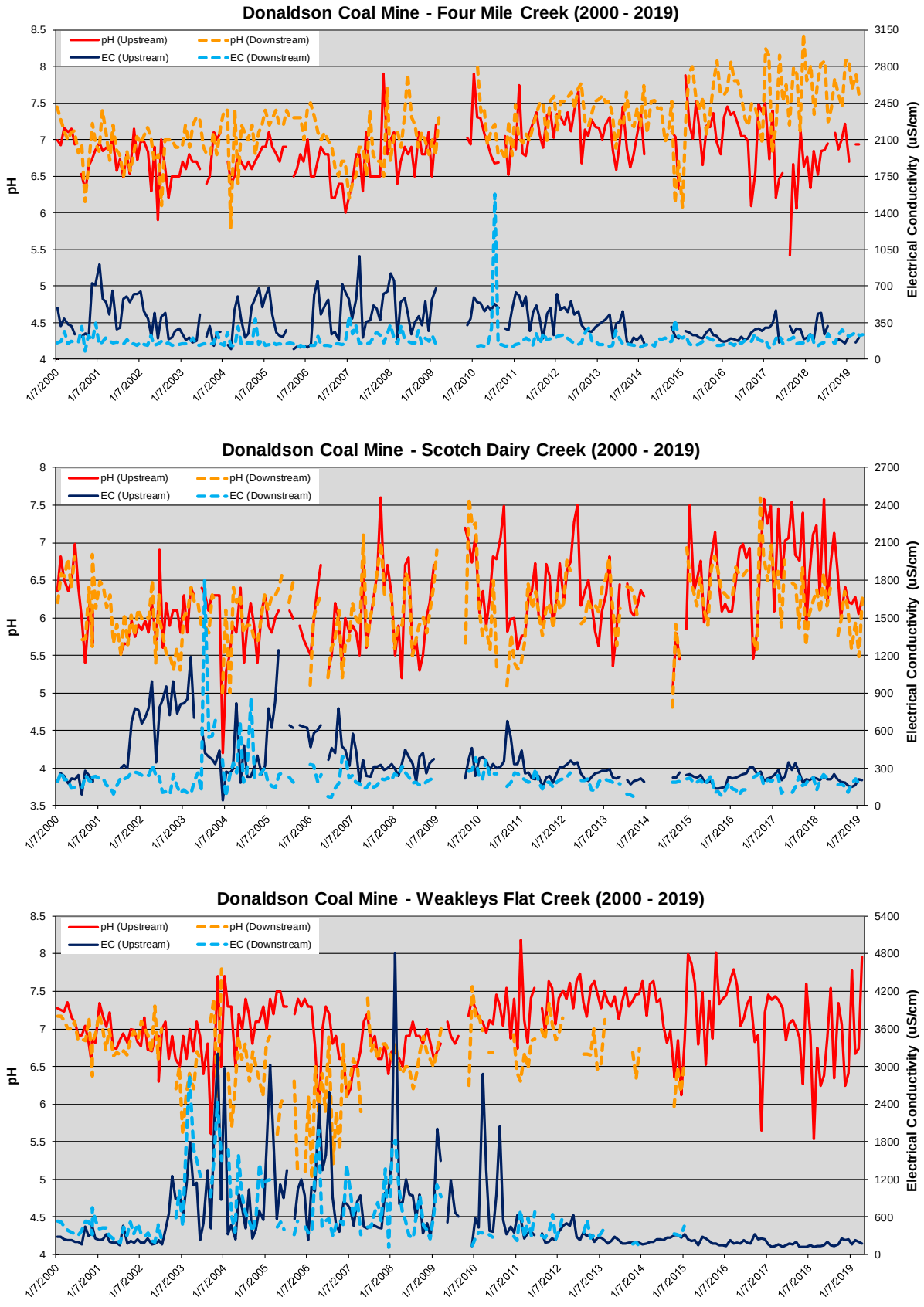

Figure 7.1 Surface Water Monitoring – 2000 to 2019

Table 7.2
Summary of Surface Water Quality Monitoring Results – 2018/2019

Sample Site	Pre-mining	2018		2019										*Average 2018 / 2019*	*Long-term Average*
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct		
Rainfall (mm)															
-	-	**92.2**	**65.0**	**17.2**	**32.8**	**158.0**	**27.0**	**19.4**	**97.4**	**26.0**	**66.6**	**69.4**	**22.0**	-	-
pH															
FMCU	*6.70 - 7.44*	6.85	6.86	6.95	Dry	7.09	6.87	7.00	7.22	6.70	Dry	6.93	6.93	*6.94*	*6.86*
FMCD	*6.40 - 7.73*	**8.08**	7.24	7.44	**7.84**	7.64	7.45	8.07	8.10	7.69	**7.88**	7.57	7.68	*7.72*	*7.20*
SDCU	*5.90 - 6.81*	**7.58**	6.20	6.72	**7.13**	6.63	6.00	6.41	6.21	6.19	6.28	6.05	6.24	*6.47*	*6.24*
SDCD	*5.80 - 6.80*	6.60	6.16	6.39	Dry	**5.77**	5.99	6.35	6.10	**5.59**	5.94	**5.49**	6.30	*6.06*	*6.11*
WFCU	*6.60 - 7.49*	**6.38**	6.89	**7.54**	**6.34**	7.34	7.06	**6.24**	**6.41**	**7.78**	6.67	6.74	**7.96**	*6.95*	*7.05*
WFCD	*6.40 - 7.28*	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	*6.61*
Electrical Conductivity (µS/cm)															
FMCU	*265 – 522*	440	**239**	314	Dry	**163**	**189**	**179**	**152**	**219**	Dry	**163**	**211**	***227***	*362*
FMCD	*120 - 265*	167	240	190	148	224	**283**	241	219	237	256	225	233	*222*	*182*
SDCU	*71 - 200*	**239**	**213**	**209**	**250**	**213**	193	181	160	152	167	**211**	**204**	*199*	***357***
SDCD	*145 - 270*	246	222	189	Dry	167	173	152	**107**	175	213	175	179	*182*	*217*
WFCU	*200 - 310*	**147**	**195**	**152**	**127**	**153**	248	226	234	**158**	230	205	**175**	***188***	***550***
WFCD	*230 - 546*	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	***613***
Total Suspended Solids (mg/L)															
FMCU	*32 - 180*	**15**	**<5**	**28**	Dry	**10**	**<5**	**12**	**10**	**<5**	Dry	**18**	**21**	***16***	***24***
FMCD	*2 - 32*	5	26	<5	<5	26	<5	<5	6	<5	<5	5	<5	*14*	*32*
SDCU	*9 – 47*	19	26	36	30	13	**<5**	**<5**	**8**	**<5**	12	14	**<5**	*20*	***150***
SDCD	*12 - 1283*	26	26	44	Dry	30	18	16	15	23	**11**	32	20	*24*	*94*
WFCU	*1 – 3*	**14**	<5	**8**	<5	<5	<5	<5	**5**	<5	<5	**5**	<5	***8***	***24***
WFCD	*3 - 17*	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	-	***56***

Bold values exceed pre-mining levels. Red values exceed ANZECC Guideline criteria.

FMCU = Four Mile Creek Upstream, FMCD = Four Mile Creek Downstream, SDCU = Scotch Dairy Creek Upstream

SDCD = Scotch Dairy Creek Downstream, WFCU = Weakly's Flat Creek Upstream, WFCD = Weakly's Flat Creek Downstream.

During the reporting period monthly pH values have been variable with a number of pH values recorded below the ANZECC Guideline criteria for freshwater 95% level protection (pH 6.5). The lowest pH of 5.49 was recorded at the Scotch Dairy Creek downstream site on 25 September 2019 with the average pH for both Scotch Dairy Creek upstream (pH 6.47) and downstream (pH 6.06) also below the ANZECC Guideline. However these values are consistent with the long-term average and within the pre-mining range and are not considered to be affected by the mine.

The pH values recorded at all other locations also remained within previously recorded operational ranges and are consistent with the long-term averages recorded since the commencement of monitoring in July 2000.

As noted during previous reporting periods, the lower pH's appear to be correlated to periods of low flow within the creeks and could be the result of acidification from the surrounding soils which naturally have a pH in the order of 4.5 to 4.8 (GSS, 2015).

It is also noted that the divergence of the pH between the Four Mile Creek Upstream and Downstream locations continued to be present during the reporting period. 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 upstream 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.

Electrical Conductivity

During the reporting period, the average electrical conductivity (EC) values at all monitoring locations remained below the long-term averages with the exception of Four Mile Creek Downstream which was slightly higher than the long-term average. EC values recorded during the reporting period were also typically within or lower than pre-mining values with the exception of Scotch Dairy Creek Upstream which were typically slightly higher than pre-mining values but below the long-term average EC value.

Since monitoring commenced in July 2000, at the Four Mile Creek and Scotch Dairy Creek sites, with a few exceptions, the EC at the downstream sites has been consistently lower or similar to the upstream sites with no obvious trends evident (see **Figure 7.1**). No downstream samples for Weakleys Flat Creek have been able to be collected since 2015 due to dry conditions. However, previous monitoring results showed that, between 2003 and 2010, both the upstream and downstream EC levels varied to a substantially greater extent than the Four Mile and Scotch Dairy Creek sites. Since 2011, EC levels in Weakely's Creek have remained relatively consistent. Overall, the available results suggest that the mine has had a negligible impact on the EC of surface waters in the surrounding area.

Total Suspended Solids

During the reporting period, TSS values at monitoring locations were generally low and similar to the respective pre-mining levels. TSS did not exceed the criteria of 50mg/L at any location during the reporting period. These results suggest that the mine had a negligible impact on the TSS of surface waters in the surrounding area.

Biological Monitoring

Assessment of aquatic habitat and stream condition as well as the diversity of the macroinvertebrate population is utilised in addition to water quality monitoring to assesses steam health and potential impacts. Monitoring during the reporting period was undertaken in autumn (May 2019) and spring (September 2019) by Niche Environment and Heritage. Six sites are targeted on the three major tributaries traversing the mine site (see **Appendix 1**). **Table 7.3** summarises the results for the reporting period whilst **Figure 7.2** provides a graphical summary of the results since monitoring commenced in spring 2000. Full copies of Niche's reports are provided in **Appendices 6** and **7**.

Table 7.3
Summary of Stream Biological Monitoring - 2019

Site	Number of Taxa		SIGNAL2		RCE	
	Autumn	Spring	Autumn	Spring	Autumn	Spring
SDCU	12	10	3.42	4.00	41	40
SDCD	9	10	3.67	3.60	40	40
WFCU	17	10	3.59	4.60	42	42
WFCD	10	10	3.40	3.70	43	42
FMCU	12	14	2.75	3.64	42	42
FMCD	14	17	3.14	3.47	42	42

SIGNAL (Stream Invertebrate Grade Number Average Level) assigns a grade number to each macroinvertebrate family or taxa based on their response to a range of environmental conditions. A SIGNAL2 score of <4 indicates severe pollution, >4 & <5 indicates moderate pollution, >5 & <6 indicates mild pollution and >6 indicates healthy habitat.

As for previous years, the streams in the study area continued to show moderate diversity of fauna. The SIGNAL2 scores indicate that all sampling sites may have a dominance of pollution tolerant macroinvertebrate taxa, however, all sites with the exception of Scotch Dairy Creek Downstream were also populated by pollutant sensitive taxa (Leptophlebiidae which has a SIGNAL grade of 8). Additionally, pollution sensitive taxa including Leptoceridae (SIGNAL grade of 6) and Scirtidae (SIGNAL grade of 6) were found at all sites with the exception of Weakly's Flat Creek Upstream.

Despite some low to moderate SIGNAL scores, the scores are consistent with previous assessments[2] and Niche conclude that the streams are in reasonable health given they exhibit characteristics, macroinvertebrate fauna and stream condition that are typical of an ephemeral stream under natural low flow stress. They also conclude that there appears to be no obvious impairment or disturbance resulting from the Donaldson Coal operations.

The Riparian, Channel and Environmental (RCE) inventory assessment provides a comparative measure of stream condition by assessing both the stream and its riparian environment (i.e. land adjacent the stream) in terms of habitat diversity, habitat condition and degree of human-induced disturbance. Scores are allocated against 13 categories to provide an overall score. An The maximum possible RCE score is 52 with an RCE score greater than 40 indicating a stream in good condition. RCE Scores of 20-40 indicate a stream is in moderate condition and below 20 indicates that the stream is in very poor condition.

[2] It is noted that the use of the SIGNAL2 index was adopted in 2015 and results in a lower score than the original SIGNAL index (i.e. the apparent drop in SIGNAL index from 2015 is methodological not biological).

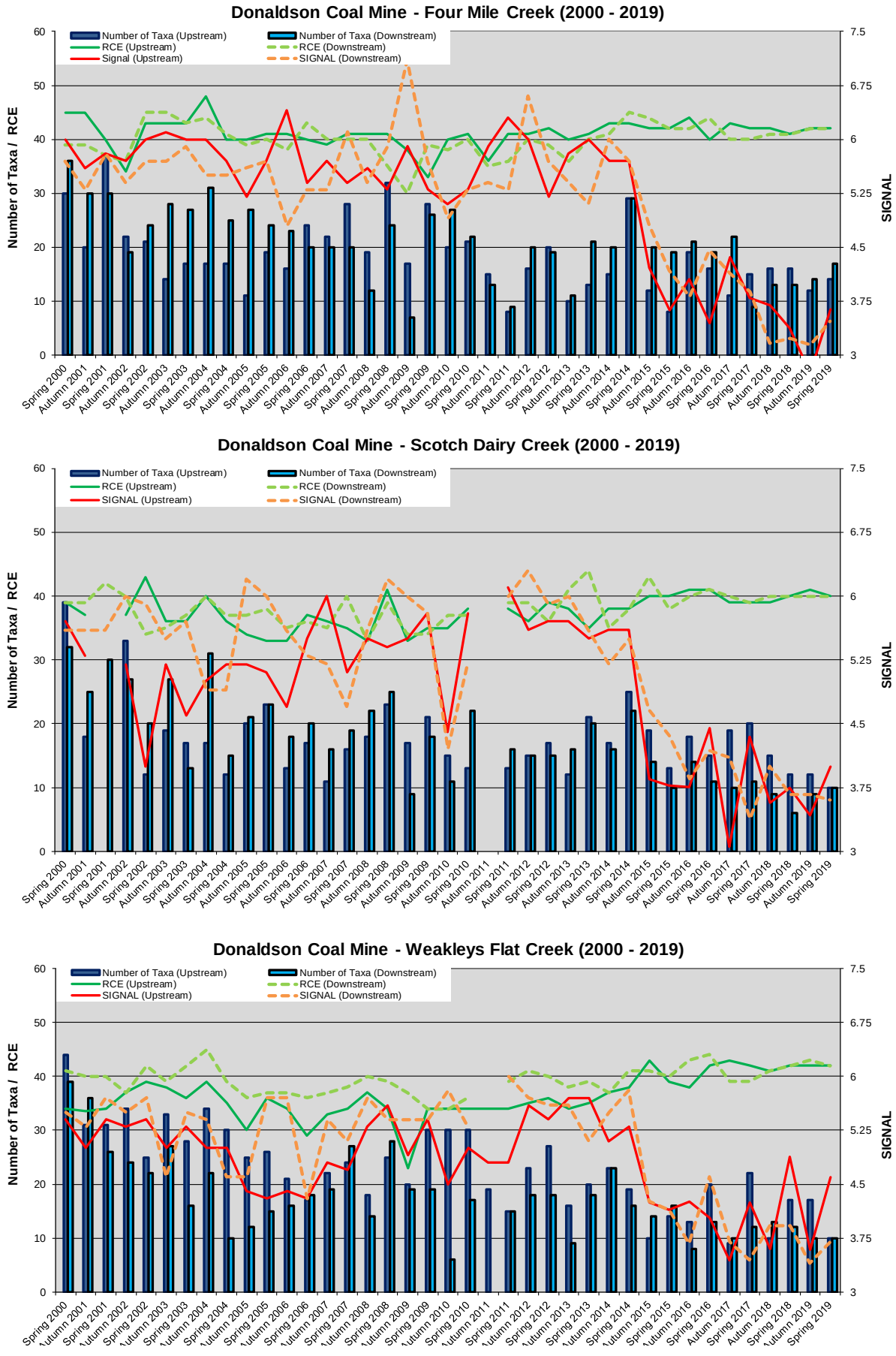

Figure 7.2 Biological Monitoring 2000 – 2019

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The RCE scores during the reporting period are similar to previous results and ranged between 40 and 43 indicating all sites were in good or near good condition. However, Lantana , Crofton Weed and *Tradescantia* sp. were observed to be abundant at the Weakley's Flat Creek Downstream location. A half day spraying program to control Lantana and Crofton Weed was previously completed during the third quarter of 2018 following recommendations made by Niche during the previous reporting period.

Reportable Incidents and Further Improvements

No reportable incidents were recorded during the 2018/19 reporting period. During the next reporting period a full review of water quality within mine dams ('clean' and 'dirty') within ML 1461 will be completed against their approved final land use and the source of elevated turbidity / TSS investigated and a strategy to address this developed.

7.3 GROUNDWATER

The Water Management Plan (Perrens, 2000) details the measures employed by Donaldson to ensure protection of groundwater on and around the mine site.

Groundwater monitoring has been ongoing since June 2000. The groundwater monitoring locations at the mine were reviewed by the (then) DEC (EPA) as part of the EPL license review. There are currently seven (7) current monitoring sites, the locations of which are provided in **Appendix 1**.

Environmental Management

The groundwater piezometers are monitored to determine impacts on both Standing Water Levels (SWL) and groundwater quality. A regional site, REG DPZ1, is also included in the monitoring program and is located in Avalon Estate approximately 1.2km north of the mine.

Samples collected from the seven (7) bores are analysed for EC, pH, TDS, TSS and Sulfates (SO_4), on a monthly basis. A full suite analysis is also carried out on a quarterly basis and includes analysis for E), pH, TDS, TSS, Sulfates (SO_4), Calcium (Ca), Magnesium (Mg), Sodium (Na), Potassium (K), Chloride (Cl), Fluoride (Fl), Arsenic (As), Aluminium (Al), Barium (Ba), Cadmium (Cd), Cobalt (Co), Copper (Cu), Chromium (Cr), Iron (Fe), Manganese (Mn), Lead (Pb), Zinc (Zn), Total Alkalinity as $CaCO_3$ and Turbidity.

The standing water level of each of the monitoring wells is measured each month, as metres below ground level.

Environmental Performance

There were no groundwater-related complaints received by Donaldson during the reporting period. In addition, monthly water monitoring results were routinely reviewed to determine whether there were any changes as a result of activities at the mine.

A summary of the three key parameters required by the EPL (Standing Water Level, pH and EC) for the 2018/19 reporting period, along with the pre-mining baseline, is included in **Table 7.4**. Monitoring results since commencement of monitoring are also presented graphically in **Figure 7.3**.

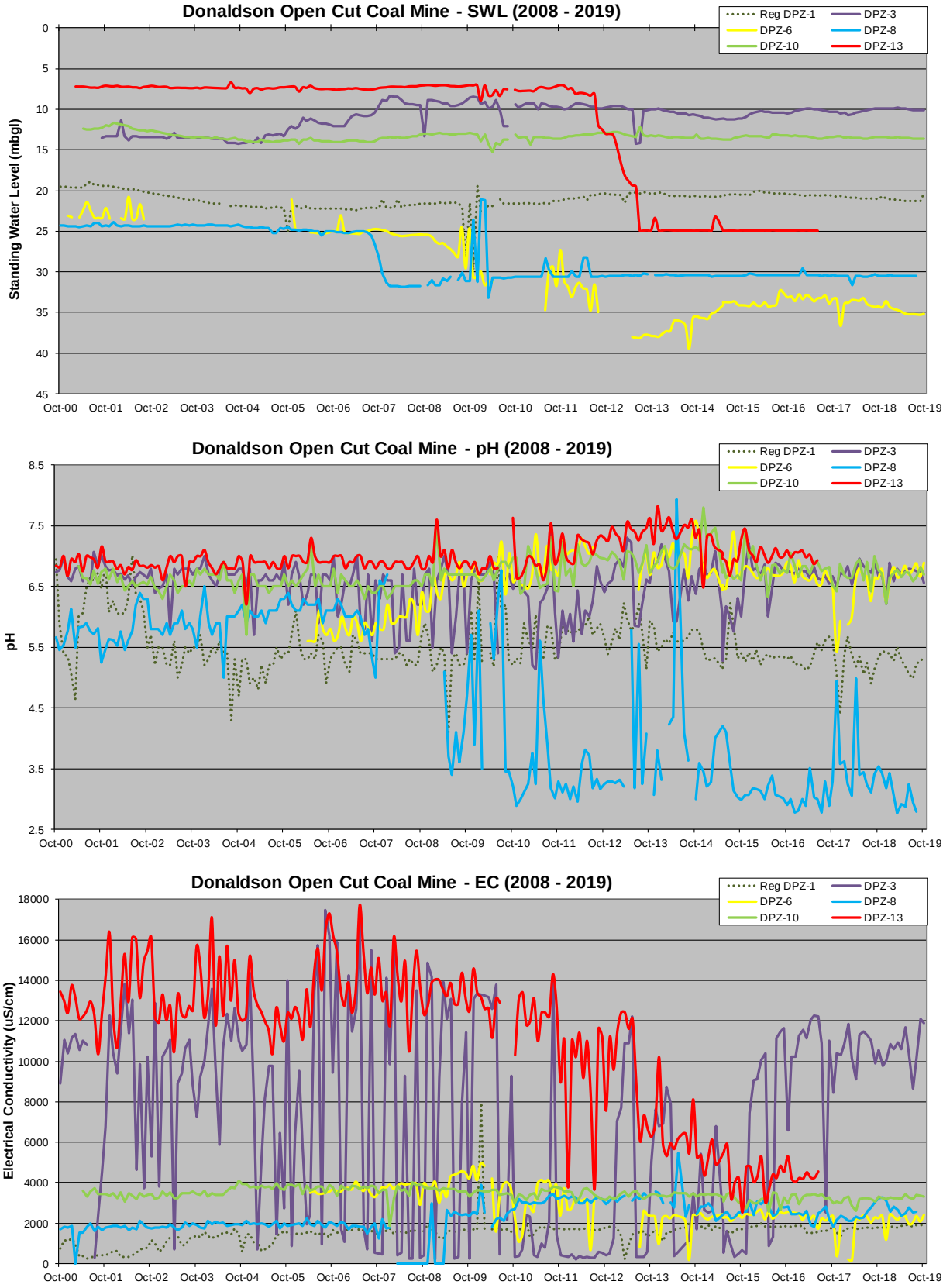

Figure 7.3 Groundwater Monitoring – 2000 to 2019

Table 7.4
Summary of Groundwater Monitoring Results – 2018/2019

Sample Site	Pre-mining	Site Average[1]	2018		2019									
			Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Standing Water Level (m below natural ground surface)														
REG DPZ-1	*N/A*	*21.12*	20.67	21.0	21.06	21.13	21.16	21.23	21.25	21.27	21.27	21.26	21.32	20.32
DPZ3	*12.05 - 11.51*	*11.00*	9.84	9.92	9.94	10.02	10.07	10.11	10.09	10.12	10.12	10.26	10.48	10.52
DPZ6	*N/A*	*30.40*	34.39	33.63	34.34	34.59	34.72	34.91	35.16	35.25	35.24	35.26	35.31	35.20
DPZ8	*24.35*	*28.20*	30.32	30.49	30.47	30.49	30.41	30.50	30.48	30.48	30.49	30.51	30.53	30.46
DPZ10	*12.40*	*13.38*	13.45	13.47	13.48	13.57	13.64	13.66	13.67	13.67	13.69	13.73	13.74	13.71
DPZ13	*7.01 - 7.25*	*12.00*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
pH														
REG DPZ-1	*N/A*	*5.51*	5.42	5.43	5.38	5.28	5.51	5.29	5.18	5.05	4.98	5.24	5.26	5.36
DPZ3	*5.99 - 6.96*	*6.50*	6.80	6.71	6.75	6.80	6.78	6.75	6.74	6.56	6.64	6.75	6.57	6.92
DPZ6	*N/A*	*6.60*	6.78	6.26	6.59	6.82	6.65	6.70	6.84	6.70	6.77	6.88	6.66	6.89
DPZ8	*5.46 - 5.66*	*4.60*	3.41	3.53	3.43	3.17	3.42	3.05	2.76	2.91	2.87	3.25	2.94	2.79
DPZ10	*6.48 - 6.97*	*6.72*	6.78	6.66	6.74	6.73	6.58	6.65	6.82	6.70	6.74	6.59	6.81	6.71
DPZ13	*6.67 - 7.22*	*7.30*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Electrical Conductivity (µS/cm)														
REG DPZ-1	*N/A*	*1 498*	1 783	1 724	1 853	1 769	1 772	1 860	1 887	1 887	1 831	1 915	1 923	1 904
DPZ3	*10200 - 11350*	*7 290*	10 940	10 600	11 670	10 410	8 670	10 110	10 110	11 870	11 870	12 030	10 430	11 620
DPZ6	*N/A*	*2 856*	2 360	1 177	2 420	2 310	2 170	2 340	2 360	1 960	1 997	2 350	2 080	2 404
DPZ8	*1690 - 1820*	*2 380*	3 050	3 230	3 250	3 100	2 550	2 810	2 630	2 370	2 480	2 760	2 540	2 551
DPZ10	*3670*	*3 442*	3 240	3 190	3 420	3 250	3 200	3 400	3 370	3 320	3 320	3 400	3 300	3 190
DPZ13	*12200 - 13750*	*5 838*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

1. Since monitoring commenced at that site. N/A = Not Accessible

Standing Water Levels

REGDPZ-1: Regional control bore located in strata well below the Donaldson Seams. Shows gentle change in SWL in response to long-term rainfall pattern, declining gradually from 2000 to 2005 (a period of below average rainfall), and rising gradually from 2007 to 2013 (a period of slightly above average rainfall). Since 2013 the SWL has been relatively stable.

DPZ3: Located in the open cut area and screened in coal measures below Donaldson Seam. An unexplained rise in water level was recorded from 2004 to 2010 followed by a decline which was a response to mining from the Donaldson Open Cut. Over the past 2 years the SWL has remained relatively stable and slightly higher than pre-mining levels.

DPZ6: Showed drawdown during latter stages of the Donaldson Open Cut and then more pronounced drawdown once development of the Abel Underground South Mains started in April 2008. A partial recovery was subsequently evident during 2013 to 2016, probably due to recovery within in the completed Donaldson Open Cut. Levels during the reporting period have gradually and slightly decreased, likely a result of ongoing dry conditions regionally.

DPZ8: Screened in Donaldson and Big Ben Seams. Responded to mining in the Donaldson Open Cut in 2007 and then slight post-mining recovery. The water level has remained steady since 2014.

DPZ10: Screened in the Beresfield Seam. and shows modest open cut mining effect from 2001 to 2006, then modest recovery, and more recent response to Abel Underground mining from 2011. The SWL has remained stable over the past 12 months.

DPZ13: Screened in Donaldson Seam overburden, and showed no response to open cut mining, but clear response to Abel Underground mining from early 2012. Groundwater level has remained consistent since 2013. Access has not been available to DPZ13 since April 2017 due to ongoing restricted access to the landholding. As a result, DPZ13 will no longer form part of the monitoring network.

Water Quality

Salinity varies over a wide range from bore to bore, but within each bore, salinity generally is quite stable over time. Some of the monitored bores have reported occasional outliers of significantly lower salinity (EC and TDS) which are likely due to ingress of rainwater temporarily lowering the salinity in the bore.

A downward trend in EC is observed at bores DPZ6 and DPZ13, starting in 2010 or 2011, which could be due to enhanced recharge following drawdowns in the coal measures as a result of open cut mining. The downward trend has levelled out from the start of 2015.

Conversely, a rise in EC was observed at DPZ8, starting in 2008 or 2009, which is almost certainly related to open cut mining. However, the EC in DPZ8 has not continued rising, having stabilised at about 500µS/cm to 1 000µS/cm higher than pre-2008.

Apart from the EC rise in DPZ8 in 2008, the monitoring has not indicated any rising trend in salinity in any bore, apart from the regional control bore REGDPZ1, which is unrelated to any mining activity, and is probably a result of increased urbanisation.

Likewise, although there are some pH variations from bore to bore, the monitoring has generally reported consistent pH values at individual bores over the past 3 to 4 years. In the past, both DPZ3 and DPZ8 show changes in pH that are probably related to mining or associated activities.

The pH values reported from DPZ3 were generally in the range 6.5 to 7.0 until around 2006, when the pH started to be more erratic, and more frequent lower pH values than previously, possibly indicating slightly more acidic conditions. Since around May 2006, pH values at DPZ3 have been generally in the range 5.2 to 7.2. During the reporting period, pH levels within DPZ3 remained relatively stable between 6.56 and 6.92.

The pH values reported from DPZ8 were generally in the range 5.0 to 6.5 until late 2007, when the pH started to be more erratic, and generally much lower than previously, indicating more acidic conditions. Water levels in DPZ8 dropped sharply in September 2007, at the same time that EC noticeably increased and pH started to be erratic and eventually fell to a much lower level. Since February 2009, pH values at DPZ8 have been generally in the range 3.0 to 4.0 albeit with a number of higher outlier values, but significantly lower than the pre-mining levels. This is most likely due to the open cut exposing sulphides or other acid-forming minerals present in the coal seams or interburden strata to oxidation, leading to the reduction in pH at the time that mining reached the vicinity of this bore. This is an expected outcome given the nature of the geology, of which some strata are known to be net acid producing, and the predicted drawdown resulting from mining operations.

Reportable Incidents and Further Improvements

No reportable incidents were recorded during the 2018/19 reporting period and no future improvements to groundwater management are currently planned.

8. REHABILITATION

8.1 REHABILITATION PERFORMANCE DURING THE REPORTING PERIOD

Assorted infrastructure had been removed from site as part of the final rehabilitation project during the 2013/14 reporting period. This included the removal of fuel storage tanks, traffic control boom gates and a number of bitumen and dirt roads. No additional infrastructure was removed during the reporting period. As at the end of the reporting, the mine-related infrastructure remaining within ML1461 included the following.

- Administration office.
- Workshop.
- Core shed.
- Selected access roads.

As outlined within the current MOP, these infrastructure are not proposed to be removed during the MOP term and may be retained for future land uses as discussed below.

Other rehabilitation works previously completed, as outlined in the Mine Closure Plan for Donaldson Open Cut, include the following.

- Excavation of waste rock and contaminated material to the west pit.
- Reshaping of the land surface to as near as possible to natural topography.
- Spreading of topsoil on reshaped surfaces.
- Spreading of a seed mix of local tree and shrub species, as well as fast growing, sterile groundcovers which grow rapidly to provide erosion control, of the remaining 27.7 ha of rehabilitated area.

The post rehabilitation land uses for Donaldson include conservation area, open spaces and light industrial area. The rehabilitated open cut area is completely vegetated with native shrubs and trees. These areas will be conserved and managed similar to the adjacent Bushland Conservation Area. Subject to future approval, the areas around the former open cut maintenance workshop and administration building may be used as a light industrial area.

The West Pit and Square Pit have been made safe and left for use by the Abel Underground Mine who will be responsible for its ongoing management.

No further areas remain to be rehabilitated as part of the Donaldson Coal Mine operation and no additional rehabilitation works were undertaken during the 2018/2019 reporting period.

Figure 8.1 shows the final landform and current revegetation status. A summary of the total area of rehabilitation is provided in **Table 8.1.**

Figure 8.1 Status of Rehabilitation - 2019

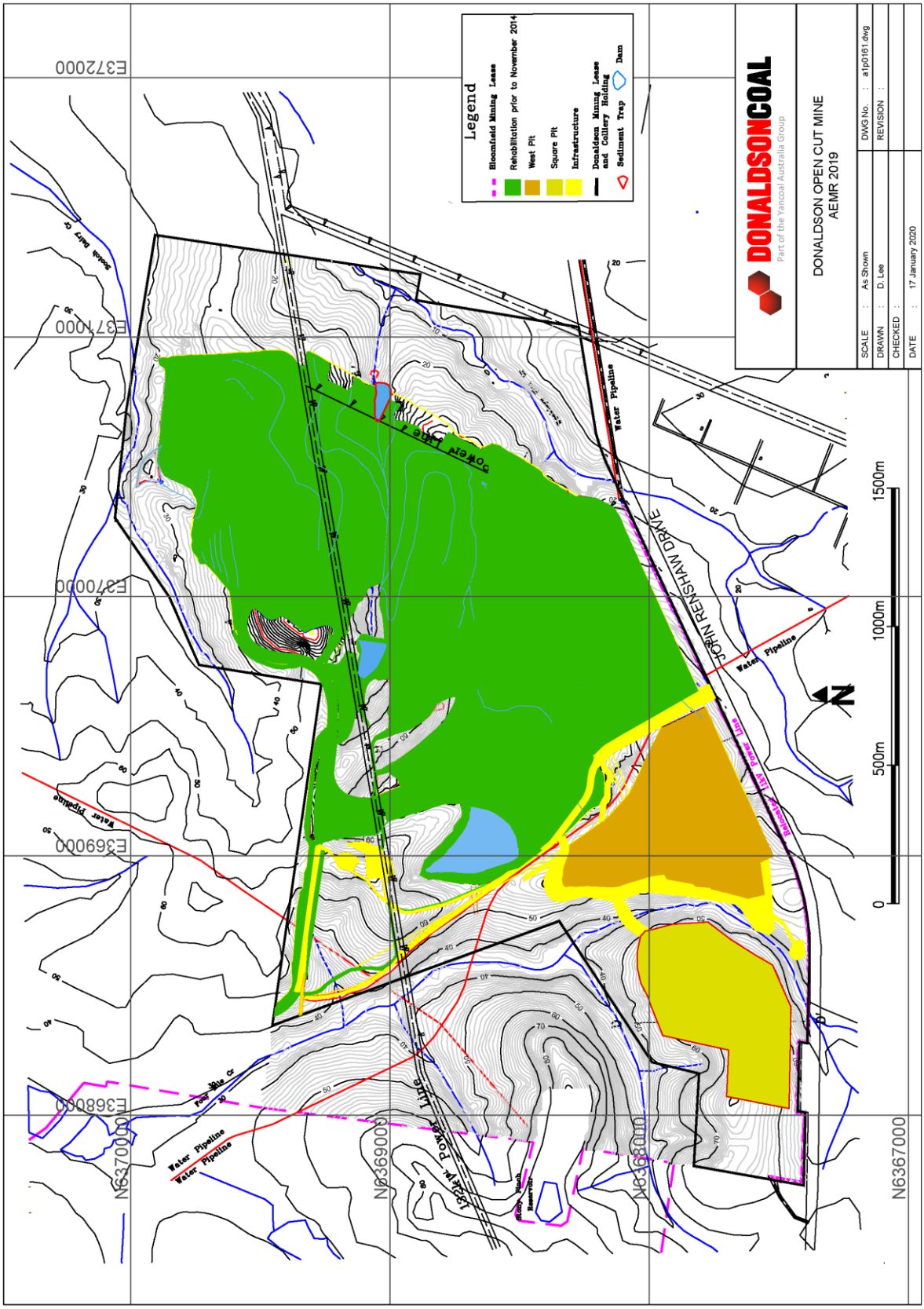

Table 8.1
Rehabilitation Summary (Cumulative)

Mine Area Type	Previous Reporting Period (Actual)	This Reporting Period (Actual)	Next Reporting Period (Forecast)
	Year 16 (ha)	Year 17 (ha)	Year 18 (ha)
Total mine footprint	307.3	307.3	307.3
Total active disturbance	77.3[1]	77.3[1]	77.3[1]
Land being prepared for rehabilitation	0	0	0
Land under active rehabilitation	230	230	230
Completed rehabilitation	0	0	0

Notes:
1. Includes 60.2ha for the Square Pit and West Pit and 17.1ha for other retained infrastructure. These areas are not being actively mined, however, final rehabilitation is not planned until future land use options are finalised.

The areas shown in **Table 8.1** are consistent with the approved MOP which states:

- the total 'active disturbance' would total ~78ha at both the beginning and end of the MOP term (comprising retained infrastructure areas, the Square Pit and West Pit); and
- 'land under active rehabilitation' would total ~230ha at both the beginning and end of the MOP term (comprising 220ha of revegetated land and 10ha of water management).

As outlined in the approved MOP and noted in **Table 8.1**, the 'active disturbance' area for the Donaldson Coal Mine includes the Square Pit and West Pit. The areas encompassing these pits are planned to be transferred to the Abel mining lease during the MOP term and will be utilised for ongoing mining uses, including stockpiling and receipt of washery rejects from the Bloomfield Colliery. These uses were detailed in the 2013 modification (MOD3) of Project Approval 05_0136 for the Abel mine. Until this transfer is undertaken the rehabilitation security for these areas will continue to be held against Mining Lease 1461 issued for the Donaldson Coal Mine.

8.2 REHABILITATION MONITORING

Assessment of rehabilitation performance (fauna and habitat) was conducted by Kleinfelder in December 2018 (see **Appendix 8**). Rehabilitation performance (flora) monitoring, scheduled on a 2-yearly basis and previously undertaken in July 2017, was undertaken by Global Soil Systems in September 2019 (see **Appendix 9**). A summary of the results of this monitoring is presented as follows.

The monitoring undertaken by Kleinfelder aims to determine the effectiveness of the rehabilitation program in re-establishing pre-mining / natural biodiversity levels. Surveys are undertaken within a total of four monitoring plots, including one control plot, and four nesting box plots. Monitoring commenced in 2008.

The monitoring undertaken by Global Soil Systems included one control plot in the remnant bushland (Plot 1) and nine monitoring plots in the rehabilitated areas of the mine (Plots 2 to 10). The plots have been established for between 5 and 16 years. The monitoring techniques employed in the rehabilitation assessment were:

- general assessment of vegetation;

- 2m x 2m quadrat survey of plant numbers, vegetation cover and groundcover;
- 20m x 10m quadrat survey of tree/shrub numbers, canopy cover measurement, tree health and new plant species;
- analysis of soil samples for pH, EC, nitrogen, potassium, phosphorus, sulphur, major cations, major anions, cation exchange capacity, exchangeable sodium percentage and total organic carbon;
- 50m erosion transect; and
- photographic record of plots.

The results of these assessments have been compared with the completion criteria adopted by Donaldson. These criteria cover soil quality, vegetation, growth rates, species diversity and stem densities. The assessment found that several of the rehabilitated areas have already met the completion criteria and that all rehabilitated areas assessed are on track to meet the required completion criteria. A summary of the results and outcomes of the surveys compared to the completion criteria are provided in **Table 8.2**.

Table 8.2
Status of Monitoring Against Completion Criteria – 2018/19

Page 1 of 2

Feature	Completion Criteria	Current Status
General	Stable landform.	All monitoring plots were observed to be 'stable' with no signs of significant erosion.
	Effective drainage.	The rehabilitated areas are effectively drainage without pooling water.
	Resilience to drought episodes in rehabilitated area.	Decreasing canopy cover and increasing leaf litter indicate some drought stress.
Flora	Re-establishment of a dense and diverse mixture of local native understory and overstorey vegetation species, specifically four overstorey and four understorey species in each monitoring plot.	Plot 1 (control) = 11 understory & 5 overstorey species. Plots 2 to 10 = 4 to 13 understorey and 4 to 19 overstorey species.
	Limited presence of weeds.	Increasing evidence of weeds (*Lantana camara, Cortaderia selloana, Senecio madagascariensis* and annual weeds) noted in Plots 2, 5, 7, 8, 9 and 10.
	Tree/shrub densities of 3000 stems/ha after 5 years and 1000 stems/ha after 15 years.	Plot 1 (control) = 6 600. Plots 2 to 10 range from 2 400 to 11 100.
	Evidence of natural regeneration in at least four species.	Natural recruitment was observed in most plots and evidence of flowering and seed production in some eucalypts and acacias.
Fauna	Reinvasion of rehabilitated area by native fauna.	The similarity of fauna diversity between the rehabilitation quadrats and the analogue site has increased from 20% similarity in 2011 to greater than 40% in 2016. Since 2017 some variability has been recorded with similarity ranging between 40% and 60%. These results show that the rehabilitation areas are moving towards the remnant forest, although it is noted the process is expected to take several decades.

Table 8.2 (Cont'd)
Status of Monitoring Against Completion Criteria – 2018/19

Feature	Completion Criteria	Current Status
Soil Loss	Minimal erosion and soil movement, specifically soil loss from less than 40t/ha/year	Soil loss per annum for Plots 2 to 10 (ranged between 210 and 40 tonnes/ha) was generally lower than the analogue plot (175 tonnes/ha).
Soil Quality	Soil pH to be no lower than 10% of analogue plot pH after 5 years.	Plot 1 (analogue) – pH 5.3 Plots 2 to 10 – pH 5.1 to 5.6
	Conductivity of replaced soil to be below 900uS/cm after 5 years	EC for all plots ranged from 29 to 81µS/cm.
	Surface layer to be free of any hazardous material to a depth of at least 1m.	There has been no evidence of hazardous material following deep ripping.
	Runoff water conductivity to be less than 1 000uS/cm after 5 years.	Internal monitoring of the retained on-site sediment dams confirms ECs generally ranging between 118µS/cm and 175µS/cm.
	Soil nitrogen and phosphorous levels to be within 20% of levels in analogue site after 5 years.	The phosphorous levels within all rehabilitation plots remained lower than the analogue site. Phosphorous levels at both the analogue and rehabilitation plots decreased to levels previously recorded in 2015 (following a spike in 2017 – potentially due to sampling technique). All plots had nitrogen levels similar to or above the analogue plot value.
Pollution	Soil should not be a source of pollutants. Quality of water leaving the site to be in accordance with EPL requirements.	No non-compliance with EPL 11080 surface water quality requirements have been recorded with no discharges required. Internal due diligence monitoring within the on-site sediment dams confirms that all measured ECs and the majority of pH and total suspended solid results during the reporting period would be compliant with discharge criteria.
Source: GSS (2019), Kleinfelder (2019c), Donaldson Coal.		

Natural recruitment was also evident in most plots and particularly older plots where canopy thinning, as a result of Acacia die back and the 2015 April severe storm, has resulted in more light reaching the forest floor. While some of these species appear to have originated from sown species, other plants appear to have originated from re-spread topsoil and from introduction through natural vectors such as birds and wind etc. Flowering and seed production was evident in some eucalypt species as well as Acacias although there is currently only minimal evidence of second generation eucalypts. Control of woody weed species including Lantana is planned to address progressive invasion of rehabilitated areas.

8.3 ACTIONS FOR THE NEXT REPORTING PERIOD

8.3.1 Rehabilitation

The primary activity planned to occur in the next reporting period is the monitoring and maintenance of the final rehabilitation areas, as outlined in the current Mining Operations Plan

for the Donaldson Open Cut Mine. This will include weed control activities as identified in the 2019 rehabilitation monitoring.

In addition to these works, a closure strategy will be developed for the West and Square Pits addressing the closure pathways should mining recommence at the Abel Underground Coal Mine or if mining does not recommence.

8.3.2 Monitoring

Rehabilitation monitoring required to be undertaken at Donaldson Coal Mine under the development consent and other regulatory documents will continue to be carried out in the 2019/20 reporting period.

9. COMMUNITY

No complaints were received and no matters of concern or environmental queries were raised with the Company during the 2018/2019 reporting period.

In accordance with the conditions of the mine's development consent, the Company established a community consultative committee for the mine. The last committee meeting was held on 7 August 2013. No meetings were held during the reporting period and further meetings are currently deemed unnecessary.

No other specific community engagement activities relating to the mine were undertaken during the reporting period.

Given that coal mining activities ceased in April 2013 and rehabilitation was completed by March 2014, there has been negligible social impact to the community throughout the reporting period. As a result, during the reporting period Donaldson did not:

- provide community donations;
- need to conduct mitigation works to address any community impacts; or
- undertake any mine-related property acquisitions.

However, continued community benefits have occurred as a result of the utilisation of locally based employees for completion of maintenance activities within the rehabilitated areas. Additionally, contractors who are engaged to conduct routine and non-routine land management works are also sourced locally.

10. INDEPENDENT AUDIT

The last and final independent environmental audit of the mine was undertaken in March 2015 following the completion of mining in 2013 and rehabilitation in 2014. The audit found a high degree of compliance and identified the conditions of the development consent which were considered to remain active following the completion of mining. These remaining conditions have been treated as 'recommendations' and the status of these conditions is outlined within the 2014/2015 AEMR and further updated in **Table 10.1**.

Table 10.1
2015 Independent Audit Recommendations & Status Update

Cond No.	Development Consent Condition	Comment	Update
63(xiv)	**Biological Monitoring** The Applicant shall prepare and implement a detailed monitoring program for groundwater and surface water (xiv) monitoring of macro-invertebrates and vegetation in accordance with protocols developed for the Hunter SIGNAL biological assessment criteria, with an assessment of inflows to the wetlands.	The biological monitoring will continue in accordance with Development Consent condition 63(xiv) "for a period of at least five years after the completion of mining, or other such period as determined by the Director- General."	Monitoring has been undertaken for period of at least 5 years from completion of mining (i.e. until April 2018). Annual monitoring is presently planned to continue and will continue to be reviewed.
69	**Tetratheca juncea Management Plan** The Plan shall be consistent with the Flora and Fauna Management Plan and include measures for fire management.	The ongoing control measures employed at the Donaldson Coal Mine site ensure a high level of conservation for the *Tetratheca juncea*.	The *Tetratheca juncea* area is contained within the Bushland Conservation Area (BCA). Refer to comment below.
72(ii) & (iii)	**Bushland Conservation Area Management** (ii) retain management and ownership of the land for a minimum of 36 years from the commencement of construction, unless other arrangements are agreed in accordance with Condition 73; and (iii) prepare and implement a Management Plan for that area in consultation with OEH and to the satisfaction of the Director-General, during the period in which the Applicant is responsible for management.	Donaldson Coal Pty Ltd will retain management and ownership of the land for a minimum of 36 years from the commencement of construction, unless other arrangements are agreed in accordance with Development Consent condition 73.	The BCA is currently being managed in accordance with the BCA Management plan and will be maintained for the period as per Condition 73 (i.e. until January 2037 or as agreed).

Table 10.1 (Cont'd)
2015 Independent Audit Recommendations & Status Update

Cond No.	Development Consent Condition	Comment	Update
78	**Rehabilitation** The Flora and Fauna Management Plan shall also include a Rehabilitation Plan that details the measures to be undertaken to progressively rehabilitate disturbed areas of the mine to replicate the original vegetation cover that existed before mining occurred. The Applicant shall be responsible for the management and monitoring of the rehabilitated mine site until such time as the Director-General agrees that restoration has been successful.	The Rehabilitation Plan is included in the Mining Operations Plans (MOP) and amendments for the Donaldson Coal Mine. The current MOP is for May 2014 to May 2021. Recommendation: As the reporting on the Mining Operations Plan is required under the Mining Lease, the rehabilitation progress and monitoring will be reported to the DRE and it is recommended that approval be sought from DPE to submit this MOP report to DPE to satisfy this condition.	Currently the Annual Reviews are provided to both Resources Regulator and the DPIE compliance team and will continue to be provided.
114	**ANNUAL ENVIRONMENTAL MANAGEMENT REPORT** The Applicant shall prepare and submit an Annual Environmental Management Report (AEMR) throughout the life of the mine to the satisfaction of the Director-General. The AEMR shall review the performance of the mine against the Environmental Management Strategy and the Conditions of this Consent, and other licences and approvals relating to the mine.	The preparation of the Annual Environmental Management Report for the Donaldson Coal Mine will be required unless an exemption is obtained from the Director-General/Secretary of DPE. *Recommendation:* It should be considered that reporting on the rehabilitation progress, the biological monitoring and bushland conservation area could be achieved by submitting the expert consultant reports and placing the reports on the Donaldson Coal website.	The Company is continuing to prepare the full Annual Review, however, this recommendation will be further considered in future reporting periods.

Email correspondence from the Department of Planning dated 31 October 2018 confirms that, given the completion of mining in 2013 and the previous independent audit in 2015, no further independent audits are required unless otherwise directed by the Secretary (see **Appendix 10**).

11. INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

During the reporting period there were no:

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

As discussed in Section 5, a Section 240(1)(c) notice was received directing the Company to undertake a range of actions. This notice is not a non-compliance or penalty notice. The status of the required actions is discussed in **Table 5.1**.

12. ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

Activities planned to be completed during the next reporting period are outlined in Section 4.3 and planned improvements in environmental management practices in Sections 6 and 7. In summary, the key activities planned for the next reporting period are as follows.

- Continued environmental monitoring.
- Continued weed control within the BCA and rehabilitation areas. Lantana will be the primary targeted weed in the next reporting period.
- Completion of a full review of water quality within mine dams ('clean' and 'dirty') against their approved final land use and the source of elevated turbidity / TSS investigated and a strategy to address this developed.
- Development of a closure strategy for the West and Square Pits addressing the closure pathways should mining recommence at the Abel Underground Coal Mine or if mining does not recommence.
- Preparation and submission of a new or amended MOP to reflect the outcomes of the closure strategy and mine dam water quality review.