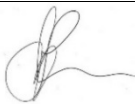




DURALIE COAL MINE ANNUAL REVIEW 2023

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Name of operation	Duralie Coal Mine
Name of operator	Yancoal Australia Ltd
Development consent / project approval #	PA (08_0203) (Duralie Extension Project) (as modified)
Name of holder of development consent / project approval	Duralie Coal Pty Limited
Mining lease #	ML1427, ML1646
Name of holder of mining leases	CIM Duralie Pty Ltd
Water licence #	WAL 41518, 20WA202053, various monitoring bore licences.
Name of holder of water licence	CIM Duralie Pty Ltd & Duralie Coal Pty Ltd
RMP start date	1st July 2022
RMP end date	N/A
Annual Review start date	1st July 2022
Annual Review end date	30th June 2023
<p>I, John Cullen, certify this audit report is true and accurate record of the compliance status of Stratford Coal Mine for the period of 1st July 2022 to 30th June 2023 and that I am authorised to make this statement on behalf of Yancoal.</p> <p><i>Note.</i></p> <p><i>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.</i></p> <p><i>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); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or \$22,000, or both).</i></p>	
Name of authorised reporting officer	Mr John Cullen
Title of authorised reporting officer	Operations Manager – Duralie Coal
Signature of authorised reporting officer	
Date	28 September 2023

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1.0 STATEMENT OF COMPLIANCE

This Duralie Coal Mine (DCM) Annual Review has been prepared in accordance with NSW Project Approval 08_0203 Schedule 5, Condition 3 for the Duralie Extension Project (DEP) for the period 1 July 2022 to 30 June 2023. This Annual Review is also prepared in accordance with the annual reporting requirements for ML 1427 Condition 3 and ML 1646 Condition 4.

Table 1 provides a statement of compliance against DCPL's relevant approvals.

Table 1 Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	
Project Approval No. 08_0203	Yes
EPL11701	Yes
ML1427, ML1646	Yes

Table 2 Compliance Status Categories

Risk	Colour Code	Description
High	Non-Compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-Compliant	Non-compliance with: <ul style="list-style-type: none"> potential for serious environmental consequences, but is unlikely to occur, or potential for moderate environmental consequences, but is likely to occur
Low	Non-Compliant	Non-compliance with: <ul style="list-style-type: none"> potential for moderate environmental consequences, but is unlikely to occur, or potential for low environmental consequences, but is likely to occur
Administrative	Non-Compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

All conditions of relevant approvals were complied with.

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2.0 INTRODUCTION

The Duralie Coal Mine (DCM) is located in the Gloucester Basin approximately 80km north of Newcastle in New South Wales, between the villages of Stroud Road and Wards River. Refer **Figure 1 (Appendix 1)**.

Duralie Coal Pty Ltd (DCPL), a wholly owned subsidiary of Yancoal Australia Limited (YAL), is the owner and operator of the DCM.

The NSW Minister for Urban Affairs and Planning granted Development Consent for the DCM in August 1997 and coal production commenced in 2003.

Development of the DCM is approved under Mining Leases (MLs) 1427 and 1646 and NSW Project Approval (08_0203). Condition 5, Schedule 2 of Project Approval (08_0203) authorises mining operations to be carried at the DCM until 31 December 2021.

Accordingly, DCPL has commenced the mine closure phase (i.e. following the cessation of mining operations on 31 December 2021). Prior to closure the DCM consisted of an open cut, truck, and excavator mine producing run of mine (ROM) coal, which was railed to the Stratford Mining Complex (SMC) and processed at the SMC Coal Handling and Processing Plan (CHPP). Mine closure activities are outlined in the current approved Rehabilitation Management Plan (RMP) and summarised in **Section 8.5**.

2.1 SCOPE

This Annual Review (AR) has been prepared in accordance with Schedule 5, Condition 3 of the Project Approval 08_0203 and Mining Leases 1427 and 1646, and in accordance with the Department of Planning and Environment (DPE) Annual Review Guidelines (October 2015).

The AR describes the environmental protection, pollution control and rehabilitation activities at the DCM for the period 1 July 2022 to 30 June 2023. As required by the Project Approval, comparisons of environmental monitoring results have been made against relevant statutory requirements, monitoring results of previous years and relevant predictions of Environmental Assessments. This AR also reports on any non-compliances, trends in monitoring data and any discrepancies between the predicted and actual impacts of the development. Environmental management activities planned for the next 12 months are also discussed.

2.2 MINE CONTACTS

The DCM is an owner operated mine site by DCPL site personnel responsible for mining, rehabilitation and environmental issues at the end of the reporting period are provided in **Table 3**.

Table 3 Site Contact Personnel

Position	Name	Contact	Email
Operations Manager, Stratford & Duralie Operations	Mr John Cullen	02 6538 4210	John.cullen@yancoal.com.au
Senior Environment & Community Advisor	Mr Thomas Kirkwood	02 6538 4208	Thomas.kirkwood@yancoal.com.au

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3.0 APPROVALS

3.1 STATUS OF LEASES, LICENCES AND APPROVALS

The DCM operates in accordance with the approvals provided in **Table 4**.

Table 4 Duralie Coal Mine – Leases, Licences and Approvals

Description	Date of Grant	Duration of Approval	Comment
NSW Project Approvals			
Duralie Extension Project – Project Approval (08_0203)	26/11/2010 (As Modified)	The Applicant may carry out mining operations on site until the end of 2021	Granted 26/11/2010. MOD 1 (Rail Hours) 1/11/2012. MOD 2 (Open Cut variations) 5/12/2014
Mining Leases and Exploration Licences			
ML1427	06/04/1998	35 years (06/04/2033)	Renewed 28 March 2023 by Regional NSW - Mining, Exploration and Geoscience
ML1646	04/01/2011	21 years (04/01/2032)	Variation of Conditions dated 20/06/2018
AUTH 315	14/10/2013	18 January 2027	Renewed 21 December 2022 by Regional NSW - Mining, Exploration and Geoscience
Environment Protection Licences			
Environment Protection Licence (EPL) 11701	04/09/2002	Until the licence is surrendered, or revoked	As modified by subsequent variations (refer to EPA website)
Commonwealth Approvals			
Commonwealth Approval (EPBC 2010/5396)	22/12/2010	31/12/2025	Commencement of Action 14/01/2011
Water Licences			
Water Supply Works Approval 20WA202053	01/07/2004	1 October 2028	Coal Shaft Creek diversion and various on-site water management structures. Renewed 17/10/2018
WAL 41518 (previously 20BL168404)	22/09/2002	Perpetuity	Groundwater Licence for the Duralie Open Cut extraction. Converted to WAL41518 under WM Act 2000 on 14/12/2017
Groundwater licences – various monitoring bores	Various	Perpetuity	Monitoring purposes only

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3.1.1 ENVIRONMENTAL MANAGEMENT PLANS

Environmental Management Plans (EMPs) have been prepared and approved for the DCM in accordance with the conditions of PA 08-0203. The current versions approved by DPE are available on the Duralie Coal website (www.duraliecoal.com.au).

- Environmental Management Strategy (revised). Approved 23 December 2021
- Air Quality and Greenhouse Gas Management Plan (revised). Approved 23 December 2021
- Biodiversity Management Plan (revised). Approved 22 February 2023
- Blast Management Plan (revised). Approved 16 December 2021
- Giant Barred Frog Management Plan (revised). Approved 5 September 2017
- Heritage Management Plan (revised). Approved 12 August 2022
- Noise Management Plan (revised). Approved 23 December 2021
- Waste Management Plan. Approved 23 December 2021
- Water Management Plan (revised). Approved 24 December 2021 & 11 March 2022 (DCCEEW)
- Pollution Incident Response Management Plan (revised), October 2022
- Rehabilitation Management Plan (revised), January 2023

3.2 AMENDMENTS TO APPROVALS/LICENCES DURING THE REPORTING PERIOD

There were no amendments to approvals and licences during the reporting period.

4.0 OPERATIONS SUMMARY

A summary of operations (Production), during the preceding and current reporting period as well as a forward forecast for the next reporting period is provided below in **Table 5**.

Table 5 Production Summary

Material	Approved limit (specific source)	Previous reporting period	This reporting period	Next reporting period
Waste Rock/ Overburden (BCM) (DCM only)	N/A	459,164	0	0
ROM Coal (tonnes) (DCM only)	3 million tonnes per annum	177,099	0	0
PAF Rehandle (BCM)	N/A	4,118	1,571,861	0
Codisposal Reject (tonnes) (Includes Stratford Consent)	Approx. 12.3 million tonnes over life of project.	50,692	87,588	291,378
Saleable product (tonnes) (Includes Stratford Consent)	N/A (Process limit of 5.6 million tonnes per annum)	874,096	587,856	501,184

No ROM coal was mined at the DCM or transported via shuttle train during the reporting period. Progressive rehabilitation and Potentially Acid Forming (PAF) material rehandling works were undertaken.

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4.1 EXPLORATION

No exploration activities were undertaken during the 2022-2023 reporting period. No exploration activities are proposed for Authorisation 315 (A315) during the 2023-2024 reporting period. Work within the exploration lease areas will focus predominately on lease management, data management, review, and interpretation.

A renewal application for A315 was approved on 21 December 2022 by Regional NSW Mining Exploration and Geoscience.

During the reporting period the application was withdrawn for Assessment Lease Application (ALA74).

4.2 ESTIMATED MINE LIFE

Condition 5, Schedule 2 of PA 08_0203 authorises mining operations to be carried at the DCM until 31 December 2021. Under this approval, DCPL is required to rehabilitate the site and carry out additional undertakings to the satisfaction of both the Secretary and the Resources Regulator. Consequently, PA 08_0203 will continue to apply in all other respects, other than the right to conduct mining operations, until the rehabilitation of the site and these additional undertakings have been carried out satisfactorily.

The removal of overburden and the extraction, processing, handling, storage and transportation of coal at the DCM was finished in December 2021. Accordingly, DCPL is now undertaking the mine closure phase (i.e. after the cessation of mining operations on 31 December 2021).

DCPL revised relevant EMPs to reflect the current stage of operations and to describe anticipated mine closure activities and describe the change to environmental impacts, mitigation measures and monitoring programs at the DCM for the mine closure phase.

A Rehabilitation Management Plan (RMP), in accordance with the requirements of the Resources Regulator's Rehabilitation Reforms was prepared for the DCM. The RMP includes the ongoing compliance requirements in accordance with PA 08_0203, ML 1427 and ML 1646 including rehabilitation obligations. A Rehabilitation Report and Forward Program for DCM has also been prepared which provides details of the scheduled surface disturbance and rehabilitation activities at the DCM from 1 July 2022 to 30 June 2025.

4.3 MINING

No mining was undertaken during the 2022 – 2023 reporting period. As DCM has commenced the mine closure phase, Duralie PAF rehandle and bulk shaping recommenced in October 2022 and continued throughout the reporting period. PAF material was rehandled from the old waste emplacement and bulk pushed into the Weismantel Pit.

Surface facilities at the mine and current mine development and rehabilitation as 30 June 2023 are indicated within **Figure 4**, provided in **Appendix 1**.

4.3.1 Product Coal Transport

No product coal was transported during the reporting period.

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4.3.2 Hours of Operation

Closure operations, including the recommencement of bulk material rehandle and shaping, commenced in October 2022. The hours of operation at the DCM involve two shifts on Monday to Friday between 6:30am – 1:30am.

4.3.3 Fleet

The rehabilitation mobile fleet utilised during the reporting period included the following:

- 1 x Excavator (Liebherr 994)
- 3 x Haul trucks (CAT 785C)
- 1 x Dozer (CAT D10T)
- 1 x Water cart (CAT D11T)
- 1 x Grader (CAT 773F)
- 1 x Loader (CAT 18M)

The total listed fleet is not all use concurrently.

4.4 WASTE MANAGEMENT AND RECYCLING

All waste streams generated at the DCM have historically been managed in accordance with the DCM Waste Management Plan. Key waste streams (apart from waste rock) generated at the DCM comprise:

- Recyclable and non-recyclable general wastes;
- Sewage and effluent; and
- Other wastes from mining and workshop activities (e.g. waste oils, scrap metal and used tyres).

All general domestic waste (e.g. general solid [putrescibles] waste and general solid [non-putrescible] waste as defined in Waste Classification Guidelines Part 1: Classifying Waste [EPA, 2014]) and general recyclable products will continue to be collected by an appropriately licensed contractor. DCPL will maintain a register of regulated waste collected by the licensed waste contractor.

Waste tyres have been stockpiled and disposed in the backfilled sections of pit voids. Tyres will be placed in discrete lots and buried with a minimum cover of 20m, and avoid other combustible material. Records of buried locations and depths are maintained.

Scrap metal is collected by a licensed waste contractor for recycling.

Sewage and wastewater from ablution facilities on-site is collected and transferred via a sewerage system to the existing on-site sewage treatment plant. Sewage is treated in the on-site sewage treatment plant (that consists of an aerobic treatment system) and is disposed of in a manner to the satisfaction of the EPA (i.e. EPL 11701) and the MidCoast Council.

4.4.1 WASTE MINIMISATION AND PERFORMANCE

The waste management contractor provides monthly reporting on all waste streams disposed from the DCM. The monthly reports also provide details of recycling achieved and hazardous substances.

During the reporting period the DCM recycled 85.5% of the total waste generated. This is consistent with previous reporting periods. The main waste stream increases where non-hazardous recycled waste and mixed-solid waste.

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4.5 OTHER INFRASTRUCTURE MANAGEMENT

4.5.1 PRESCRIBED DAMS – NSW DAMS SAFETY

The Main Water Dam, Auxiliary Dam 1 and Auxiliary Dam 2 are all declared under the Dams Safety Act 2015. Main Water Dam and Auxiliary Dam 2 are proposed as retained non-declared water structures in the final landform. Auxiliary Dam 1 was dewatered in February 2018 and fully decommissioned in 2020.

During the reporting period, DCPL updated the DCM Prescribed Dams Safety Emergency Plan (DSEP) and completed a Dam Safety Management System Audit with Dams Safety NSW. During the next reporting period routine visual inspections and monthly monitoring of piezometers will continue.

5.0 ACTIONS REQUIRED FROM THE PREVIOUS ANNUAL REVIEW

DPE provided notification on 28 February 2023 that the DCM Annual Review 2021-2022 was generally in accordance with the Project Approval requirements and the Department’s Annual Review Guidelines. One further action, that the most recent aerial photography is used as a base for maps and plans, was requested.

No response was received from the Resources Regulator.

The follow up actions to the commitments made in the 2021/2022 Annual Review are summarised below in **Table 6**.

Table 6 Actions required from previous Annual Review

Action Required from Previous Annual Review	Action taken by DCPL	Where Discussed
In accordance with PA 08_0203 Schedule 3 Condition 45, DCPL will review the conservation bond during the next reporting period.	A revision of the Duralie Offset Conservation bond has commenced within the reporting period. The revised conservation bond will be lodged with DPE in the next reporting period.	Section 6.4.10

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6.0 ENVIRONMENTAL PERFORMANCE

6.1 REVIEW OF ENVIRONMENTAL PERFORMANCE

A brief review of environmental performance in relation to EPL 11701, together with Project Approval 08_0203 conditions, is provided below. This performance is further discussed in the sections on environmental management activities and environmental monitoring.

6.1.1 PROJECT APPROVAL CONDITIONS PA 08-0203

DCPL continues to operate in accordance with the existing PA 08_0203.

Project Approval conditions which were met during this reporting period are described in the following sections. These include administrative and reporting conditions, environmental management and monitoring conditions, community engagement and progressive rehabilitation. Environmental monitoring data was regularly reported as required by the Project Approval and associated EMPs.

An Independent Environmental Audit (IEA) of the DCM was conducted in December 2020 by Ken Holmes of Barnett & May, in accordance with PA 08_0203 Schedule 5, Conditions 8, 9, 9A and 9B. This includes both the Independent Environmental Audit and the Rail Haulage Audit.

A status update of DCPL's responses to the recommendations contained in the IEA 2020 Report are included in **Appendix 8**.

A summary of compliance during the reporting period is included in **Section 1**.

6.1.2 EPA ENVIRONMENT PROTECTION LICENCE 11701

DCPL continues to operate in accordance with the conditions of EPL 11701. During the reporting period there were zero identified non-compliances at the DCM. Refer to **Section 1** for further details.

- All monitoring has been carried out in accordance with licence conditions.
- Records of environmental monitoring activities have been kept.
- A record of environmental and pollution complaints has been maintained.
- Dust suppression measures are in place. Dust monitoring to date (dust deposition gauges, high volume (PM10) air samplers and a TEOM monitor) shows that current dust suppression systems have been effective and dust levels were below limits set by EPA (upon exclusion of non-dust contamination of dust deposition gauges).
- Noise compliance monitoring was undertaken in December 2022, February 2023 and June 2023. The surveys determined that mine noise emissions at the time of the surveys complied with EPA noise level criteria at all monitored locations.
- A Pollution Incident Response Management Plan (PIRMP) was maintained and is available on the Duralie Coal website.
- An Annual Return for EPL 11701 was prepared.

6.2 METEOROLOGICAL MONITORING

A meteorological station (i.e. weather station) is operated at the mine site as required by the Project Approval conditions. The location of the meteorological station and the two inversion monitoring towers is shown on **Figure 3 (Appendix 1)**.

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6.2.1 RAINFALL

Table 7 summarises the rainfall record obtained from the site weather station rain gauge. Graphical representation of the historical average and monthly recorded rainfall during the reporting period is provided in **Appendix 2**.

Table 7 Duralie Mine - Monthly Rainfall Records

MONTH	YEAR				STROUD DISTRICT
	2023 (to end reporting period)		2022		AVERAGE ²
	Monthly Total (mm)	No. of Rain Days/Month ¹	Monthly Total (mm)	No. of Rain Days/Month ¹	1889-2010
January	129	11	69.8	10	115.3
February	52.2	6.0	184.4	18	125.0
March	235	10.0	379.6	16	147.3
April	68.8	17.0	55.8	9	100.9
May	29.2	3.0	31.6	6	91.5
June	11.4	5.0	16.4	6	101.1
July			240	15	75.1
August			57.2	10	65.3
September			137.4	11	63.1
October			124.2	17	78.3
November			55.2	6	83.3
December			34.8	8	100.8
TOTAL			525.6	52	1386.4

Notes:

1. No. of Rain Days/Month - the number of days in the month on which rain fell. (When tipping bucket rain gauge data used, a "rain day" by definition requires a minimum recording of >0.25mm comprising dew, heavy fog or light rain (or a combination thereof).
2. Average based on Stroud Post Office records until mine site weather station commissioned in 2002.

The 2022 calendar year rainfall total was higher than the long-term district average and lower than the 2021 calendar year rainfall total (1479mm). Five of the twelve months in 2022 exceeded their respective long-term average.

The rainfall total for the reporting period (July 2022 to June 2023) was 1174.4mm which is similar to the historical average.

6.2.2 EVAPORATION

Table 8 shows minimum, average and maximum evaporation rates for the reporting period. The graphical representation of the daily minimum, average and maximum evaporation rates recorded for each month during this review period is provided in **Appendix 2**.

Table 8 Monthly Minimum, Average and Maximum Evaporation Rates

MONTH	MINIMUM EVAPORATION RATE (mm/day)	AVERAGE EVAPORATION RATE (mm/day)	MAXIMUM EVAPORATION RATE (mm/day)
July 2022	0.1	3.1	1.2
August 2022	0.5	3.1	2.0
September 2022	0.3	4.8	2.5
October 2022	1.0	6.6	2.9
November 2022	2.3	7.7	4.7
December 2022	1.7	7.3	4.6

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MONTH	MINIMUM EVAPORATION RATE (mm/day)	AVERAGE EVAPORATION RATE (mm/day)	MAXIMUM EVAPORATION RATE (mm/day)
January 2023	1.1	6.6	4.4
February 2023	0.8	6.8	4.9
March 2023	0.6	6.7	3.6
April 2023	0.8	4.6	2.2
May 2023	0.4	3.9	2.1
June 2023	0.4	3.5	1.7

6.2.3 WIND SPEED AND DIRECTION

Table 9 below indicates the monthly average and maximum wind speeds and dominant wind directions for the reporting period. The graphical representation of the daily average and maximum wind speeds recorded and monthly wind roses for each month during this period are provided in **Appendix 2**.

Table 9 Monthly Average and Maximum Wind Speeds and Dominant Wind Directions by Month

MONTH	AVERAGE WIND SPEED (km/hr)	MAXIMUM WIND SPEED RECORDED (km/hr)	DOMINANT WIND DIRECTIONS
July 2022	6.5	50.2	SSW & WNW
August 2022	7.5	45.1	WNW
September 2022	7.9	38.2	WNW
October 2022	7.5	59.7	WNW
November 2022	9.2	49.7	WNW
December 2022	8.4	53.1	WNW
January 2023	7.6	44.6	WNW
February 2023	7.9	82.9	WNW
March 2023	7.1	39.5	WNW
April 2023	6.1	37.5	WNW
May 2023	6.7	45.1	SSW & WNW
June 2023	6.0	34.2	WNW

6.2.4 TEMPERATURE

Table 10 summarises monthly air temperatures. The graphical representation of the daily minimum, average and maximum atmospheric temperatures recorded for each month is provided in **Appendix 2**.

Table 10 Monthly Average and Maximum Wind Speeds and Dominant Wind Directions by Month

MONTH	MINIMUM AIR TEMP RECORDED (deg C)	AVERAGE AIR TEMP (deg C)	MAXIMUM AIR TEMP RECORDED (deg C)
July 2022	2.4	11.2	21.0
August 2022	4.2	12.9	23.2
September 2022	4.9	14.6	23.9
October 2022	6.6	17.2	27.5
November 2022	7.6	18.5	31.4

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MONTH	MINIMUM AIR TEMP RECORDED (deg C)	AVERAGE AIR TEMP (deg C)	MAXIMUM AIR TEMP RECORDED (deg C)
December 2022	10.1	19.9	32.3
January 2023	12.4	21.9	35.5
February 2023	10.8	22.9	36.8
March 2023	12.5	22.3	37.1
April 2023	9.6	17.0	24.9
May 2023	2.8	13.3	23.5
June 2023	0.5	12.1	22.9

6.3 AIR QUALITY

6.3.1 AIR QUALITY CONTROL PROCEDURES

DCM has an approved Air Quality and Greenhouse Gas Management Plan (AQMP) that establishes a dust management strategy which:

- Identifies air quality criteria;
- Outlines proactive and responsive dust management and control measures;
- Establishes dust management protocols;
- Formulates an air quality monitoring programme;
- Establishes stakeholder consultation protocols; and
- Details reporting and review requirements.

The following dust control procedures are used during mining operations to control dust emissions from wind erosion on exposed areas and dust generated from mine closure activities.

- Progressive rehabilitation including prompt reshaping, topsoiling and revegetation;
- Watering of haul roads and other trafficked areas;
- Watering dig faces prior to and during digging;
- Real-time monitoring with alarm triggers set to enable implementation of reactive dust control management measures; and
- Modifying operations during adverse weather conditions.

6.3.2 AIR QUALITY MONITORING AND CRITERIA

DCPL monitors air quality (dust) surrounding the mine site by means of a network of nine (9) static dust fallout gauges, four (4) high volume PM10 air samplers, one real-time dust monitor (TEOM) and a meteorological monitoring station (i.e. weather station). The locations of these monitoring sites are shown on **Figure 3 (Appendix 1)**.

Monthly dust fallout levels are measured so that dust deposition rates in g/m²/month can be determined at each monitoring site. The nine (9) gauges are located around the DCM, except for gauge D7 which is located within the Village of Wards River.

The high volume air samplers (HVAS) (PM10) are located at locations representative of surrounding sensitive receivers, along Johnsons Creek Road (“Hattam” – located to the northeast of the mine, “Twin Houses” – located to the east of the mine and “High Noon” – located to the south of the mine). A HVAS unit is also located on private land along the Bucketts Way (“Edwards” – located west of the mine).

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HVAS sampling occurs for a 24 hour period every 6 days in accordance with AS 2724.3. The EPA goal for air quality is an annual average limit of 30ug/m³/day and a National Environmental Protection Measure (NEPM) 24-hour average limit of 50ug/m³/day.

A Tapered Element Oscillating Microbalance (TEOM) analyser measuring PM₁₀ and PM_{2.5} is used to continuously measure particulate matter. Real-time air quality monitoring data is used to identify when ambient PM₁₀ levels in the surrounding environment are elevated and require contingency action. Real-time response triggers have been established and are designed to provide a system to warn operation personnel (via SMS) when particulate emissions are approaching a relevant criterion and to implement a hierarchy of management/control actions to mitigate potential impacts.

6.3.3 REVIEW OF AIR QUALITY MONITORING RESULTS AND PERFORMANCE

6.3.3.1 DUST DEPOSITION GAUGES

Table 11 shows the dust deposition results for nine (9) dust deposition gauges.

Table 11 Dust Deposition Gauge Results

	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
D3	7.9 ^{I,V}	8.9 ^{I,V,B}	1.0	1.0	1.1	0.8	0.3	0.6	0.7	2.4	2.0	1.3
D4	0.5	0.4	1.8	0.2	0.6	0.5	0.4	0.3	0.3	1.5	0.4	0.6
D5	0.2	1.0	2.2	0.6	0.5	0.6	0.8	0.4	0.6	4.0	3.1	1.0
D7	0.6	0.1	0.7	0.4	0.9	0.7	1.8	1.6	1.4	1.7	1.2	1.1
D8	0.1	0.1	0.6	0.2 ^C	0.6	0.6	1.4	0.4	0.7	0.7	0.4	0.8
D9	0.1	0.1	3.4	2.2	0.8	0.5	0.6	0.7	0.4	0.7	0.6	3.2
D10	0.1	0.3	0.9	0.7	1.2 ^G	1.3	0.6	0.8	1.0	1.4	0.9	1.1
D12	0.1	0.3	0.3	0.4	0.4	0.3	0.2	0.1	0.5	0.6	0.2	1.4
D13	1.7	4.6 ^{I,B}	1.7	0.8	0.4	0.3	0.3	0.2	1.1	0.9	2.7	1.0

Notes/excluded results, Visual Description Guide:

C=result deemed contaminated due to jar being found on ground

G=result deemed contaminated due to broken funnel

I=Insects: Whole insects e.g. spiders, ants, moths or outer parts of insects including wings, legs and exoskeletons.

V=Vegetation: Plant debris and algae including trichomes, decomposed organic matter and particulates showing characteristic cellular structures.

B=Bird droppings: The most common contamination.

Dust levels recorded had an average value of 0.9 g/m²/month (contaminated results not counted). Elevated values were at times affected by various degrees of contamination from insects, bird droppings and vegetation (seeds/grasses). All dust deposition gauges complied with the total dust deposition annual average criterion of 4.0 g/m²/month and the incremental annual average increase criterion of 2.0 g/m²/month.

6.3.3.2 HIGH VOLUME (PM₁₀) AIR SAMPLERS

HVAS PM₁₀ monitoring results show that all monitoring locations (in terms of monitored days) did not exceed the National Environmental Protection Measure (NEPM) of 50ug/m³/day, listed under Condition 19, Schedule 3 of the Project Approval. **Figure 3-3 (Appendix 3)** shows the recorded PM₁₀ 24hr results across the four HVAS monitoring sites during the reporting period.

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The HVAS annual rolling averages remained low and fluctuations generally reflect changes in meteorological conditions throughout the year, i.e. rainfall and wind. Annual rolling averages are presented in **Table 13**.

6.3.3.3 HIGH VOLUME (TSP) AIR CALCULATION

Concentrations of TSP are calculated, based on the results of the PM10 HVAS and the assumption that 40% of TSP is PM10, as per the relationship obtained from co-located TSP and PM10 monitors operated in the Hunter Valley (NSW Minerals Council, 2000) as per the approved AQMP.

The derived TSP annual rolling averages for the four HVAS are shown in **Appendix 3**. The TSP rolling average at the end of the reporting period for “High Noon” was 4.9, “Twin Houses” was 6.3, “Hattam” was 7.8 and Edwards was 5.8 ug/m³/day. Thus, annual averages for all sampling locations were well below the 90 ug/m³/day criterion.

6.3.3.4 TEOM (PM10 AND PM2.5) MONITORING

A TEOM which measures PM10 and PM2.5 on a real-time continuous basis is utilised as a management tool for operations to guide proactive and reactive mitigation measures. Real-time air quality monitoring data is used to identify when ambient PM10 levels in the surrounding environment are elevated and require contingency action. Real-time response triggers have been established and are designed to provide a system to warn operation personnel (via SMS) when dust levels are approaching a relevant criterion and to require management/control actions to mitigate potential impacts.

24-hour average results for the reporting period and graphical representation of the running/cumulative average of PM10 results are provided in **Appendix 3**. The annual average from 1 July 2022 to 30 June 2023 is 5.9 ug/m³ for PM10. The TEOM results are generally consistent with those measured by the HVAS units.

A register was maintained recording any trigger alarms from the TEOM system and the response implemented by DCPL. All alarms during the reporting period resulted from either external events such as strong winds and regional dust storms or system calibration and maintenance.

6.3.4 ANALYSIS OF DATA TRENDS AND COMPARISON WITH EA PREDICTIONS

Table 12 presents the annual average dust deposition levels at the end of the reporting period (June 2023) along with the previous five years. The 2023 reporting period annual average dust deposition levels are within the range of results recorded in the previous five years at all sites. All 2023 annual averages are well below the performance criteria. Graphical representation of dust gauge results and annual rolling averages are provided in **Appendix 3**.

Table 12 Annual Average Dust Deposition Gauge Results

Reporting Period	Total Insoluble Solids (g/m ² /month)								
	D3	D4	D5	D7	D8	D9	D10	D12	D13
Criteria	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
2019	1.7	1.0	2.2	1.0	0.8	1.5	1.1	1.0	1.5
2020	1.4	1.2	1.5	1.2	1.1	1.2	1.3	1.1	1.3
2021	1.6	0.6	0.9	0.7	0.5	0.6	0.6	0.4	1.5
2022	1.9	0.3	1.8	0.9	0.5	0.3	0.4	0.3	1.4
2023	1.1	0.6	1.3	1.0	0.6	1.1	0.9	0.4	1.0

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Results of depositional dust monitoring are in concurrence with the DCM Environmental Assessment (EA) (2010) which predicts the annual average criteria of 4 g/m²/month will not be exceeded at any receiver and that project only incremental increases in annual average dust deposition will not exceed the applicable 2 g/m²/month EPA criterion at any receiver.

Table 13 presents the reporting period (June 2023) HVAS PM₁₀ annual averages along with the previous five years.

Table 13 Annual Rolling Average HVAS (PM₁₀) Results

Reporting Period	PM ₁₀ (µg/m ³)			
	High Noon	Twin Houses	Hattam	Edwards
Criteria	30	30	30	30
2019	9.2	13.8	11.3	11.5
2020	15.6	21.0	19.6	16.6
2021	6.2	7.2	7.1	7.0
2022	5.5	7.2	6.5	5.6
2023	4.9	6.3	7.8	5.8

Annual averages for all sampling locations were below the 30 µg/m³/day criterion set under the Project Approval. Graphical representation of the annual rolling average for the four HVAS including PM₁₀ and TSP during the reporting period is provided in **Appendix 3**. The HVAS rolling averages over the 12-month period remained consistent with levels of 2022, 2021 and the years prior to the 2020 reporting period. The elevated averages in 2020 were primarily due to the poor air quality during late 2019 resulting from the widespread bushfires.

Results of HVAS monitoring are in concurrence with the DCM EA (2010) which predicts the annual average PM₁₀ criterion of 30 µg/m³ will not be exceeded at any receiver and that project only 24 hour PM₁₀ concentrations will not be above the 50 µg/m³ criterion at any privately owned receiver with the exception of “Hattam” which is now mine owned and in close proximity to the mining operations.

6.3.5 Greenhouse Gas

Measures taken to minimise GHG emissions from the DCM are described in Section 6.2 of the AQMP.

Yancoal’s operations are reported under the National Greenhouse and Energy Reporting Scheme (NGERS) each financial year. DCM Scope 1 and Scope 2 emissions calculated for the 2021-2022 financial year was 3,263 tCO₂-e. **Table 14** below shows GHG emissions at the DCM over the past three financial years.

Table 14 DCM GHG Emissions

	2019-2020	2020-2021	2021-2022
Scope 1	939	2,222	2,302
Scope 2	449	711	961
Total GHS Emissions (t CO₂-e)	1,388	2,933	3,263

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Scope 1 sources which are direct emissions from mining activities and the combustion of fuel and Scope 2 sources include electricity consumption of purchased electricity by the mine during the reporting period.

Scope 1 and Scope 2 emissions at the DCM are significantly below the Environmental Assessment (EA) for the DEP (2010) predictions. The EA predicted 0.14 Mt CO₂e per annum for Scope 1 emissions and 3.48 Mt CO₂e per annum for Scope 2 emissions.

There was an approximate overall 10% increase in emissions since the previous financial year (2020-2021). This is attributable to an increase in fugitive emissions from mining during August and December 2021 (Scope 1 emissions) and a 20% increase in electricity usage from the National Grid (Scope 2 emissions).

The main source of Scope 1 emissions at DCM during the 2021-2022 period was from diesel combusted by heavy vehicles. Mainly from haul truck use at 45% of diesel combusted followed by excavators at 25% and dozers at 21%. Drills, graders and loader usage combined totalled the remaining 9%. The heavy vehicle fleet at the DCM is detailed in **Section 4.3.3**.

Electricity usage was highest during the months where active mining was being undertaken at Duralie due to the increased use of the train loader and CHP facilities. The reporting period saw above average rainfall (refer to **Section 6.2.1**) which required the DCM to increase the usage of electric pumps to transfer water on site.

The 2022-2023 financial year GHG emissions reporting will be finalised within the next reporting period and a summary will be included in the 2023 – 2024 DCM Annual Review.

6.3.6 AIR QUALITY COMPLAINTS

No complaints relating to air quality were received during the reporting period.

6.4 BIODIVERSITY MANAGEMENT

In accordance with Condition 33, Schedule 3 of the Project Approval, DCM is required to implement the Offset Strategy and achieve the broad completion criteria to the satisfaction of the Secretary of the DPE. The management of biodiversity at the DCM in both the Mining Lease areas and the Biodiversity Offset Area is undertaken in accordance with the approved Biodiversity Management Plan (BMP).

The DCM Annual Biodiversity Report 2023 (**Appendix 7**) provides a review of the effectiveness of measures in the Biodiversity Management Plan (BMP) for the annual period ending 30 June 2023 in accordance with Section 7.2 of the BMP. The scope of this report covers biodiversity management activities across both the Mining Lease areas and the Biodiversity Offset Areas.

In accordance with the BMP, the DCM Annual Biodiversity Report 2023 is included in **Appendix 7**.

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6.4.1 VEGETATION CLEARANCE REPORT

Vegetation clearance is undertaken in accordance with the BMP Section 5.4 Vegetation Clearance Plan. Prior to any clearance operations a Clearing Plan is prepared, and vegetation pre-clearance surveys are undertaken.

Vegetation clearance for the Duralie Extension Project was finalised in 2017. During the 2022/2023 reporting period, no vegetation clearance was undertaken.

The area of disturbance at the end of June 2023 is shown in **Figure 4 (Appendix 1)**.

Information obtained during vegetation clearance activities (i.e. habitat features, hollows cleared and fauna observed) has been used to determine the requirements for nest box replacement in the Biodiversity Offset Areas.

6.4.2 NEST BOX PROGRAM

Nest box management is undertaken in accordance with the BMP Section 6.4. Nest boxes have been installed to provide habitat opportunities in the short to medium-term for a number of arboreal fauna species including the Squirrel Glider.

AMBS Ecology & Heritage (AMBS) was commissioned to implement the Nest Box Program as described in the BMP Section 5.4.2 and Section 6.4. A *Nest Box Program for the Duralie Offset Area, Annual Report 2022* was completed by AMBS in March 2023. Results are included in the DCM Annual Biodiversity Report 2022 which is included in **Appendix 7**.

6.4.3 WEED CONTROL AND MONITORING

The weed control program aims to manage weeds to minimise their impact on native flora and fauna.

Weed spraying activities are generally undertaken between the months of September and April each year. Physical management measures such as mechanical removal, slashing and/or back-burning can be undertaken at other times of the year as required.

A contractor is engaged at the DCM to undertake weed management activities on an ongoing basis. Follow-up weed treatment of all remnant enhancement and regrowth management VMUs recommenced in October 2021 and continued through to April 2022. During the reporting period, manual weed removal was completed in the native rehabilitation areas in August 2022. Weed treatment within VMUs will recommence in spring 2023 due to ongoing weather events. The key species targeted included blackberry, lantana, privet, wild tobacco and Giant Parramatta grass.

Weeds monitoring to evaluate the effectiveness of control measures is undertaken in conjunction with the annual vegetation monitoring and is documented in the DCM Annual Biodiversity Report 2022 is included in **Appendix 7**.

6.4.4 FERAL ANIMAL CONTROL AND MONITORING

The objective of feral animal control program is to manage feral animals to minimise their impact on native flora and fauna in the Biodiversity Offset Areas or the impact on agricultural production in other surrounding areas.

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MDP Vertebrate Pest Management has been engaged by DCPL since 2016 to implement feral animal control programs across property owned by DCPL including both the Stratford & Duralie Mining Leases and the Stratford & Duralie Biodiversity Offset Areas. During the reporting period no feral animal control programs were implemented at Duralie. Wild dog and fox control was last undertaken between October 2021 to November 2021. The program involved a combination of trapping and shooting. The programs were productive with a total of 6 wild dogs, 1 feral cat and 3 foxes trapped and shot over the control programs. The next scheduled round of feral animal control programs will commence in September 2023 at both DCM and SMC.

In accordance with the BMP Section 5.10 a follow-up feral animal monitoring survey was undertaken by AMBS during March 2022 to monitor the success of control programs and determine priorities for ongoing control measures. The feral animal survey covered the Duralie Mining Lease and Duralie Biodiversity Offset Area.

The next feral animal survey of the Duralie Mining Lease and Duralie Biodiversity Offset Area is scheduled to be undertaken in September 2025. Feral animal monitoring will guide the ongoing management efforts for controlling feral animals.

6.4.5 CONTROLLING ACCESS AND MANAGING GRAZING

The BMP requires works to be undertaken to exclude livestock and control access to the Biodiversity Offset Areas.

During the reporting period contractors were engaged to undertake maintenance activities on access tracks, culverts, gates and fences. The works included slashing of tracks, firebreaks and repairs to damaged gates and culverts. Additional signage was also installed on the key access points to the Biodiversity Offset Areas. Fencing repairs were completed following March 2022 flood events.

The Duralie Coal Mine Offsets Ecosystem Functional Analysis Monitoring 2023 report found fencing on external boundaries was in good condition with the exception of a single observation of a branch across the fence line and a damaged internal gate at VMU F. There were no signs of livestock at the time of the survey.

Livestock continue to be excluded from the Biodiversity Offset areas with the exception of 'crash grazing' programs in preparation for revegetation activities following a field assessment by a qualified consultant.

6.4.6 BUSHFIRE MANAGEMENT

The objective of bushfire management in the Biodiversity Areas is to prevent impacts from unplanned bushfire and to use fire to promote biodiversity.

To assist with bushfire management, access tracks and firebreaks have been constructed and maintained as shown in the BMP Figure 9.

Monitoring of fuel loads to evaluate bushfire risk and guide bushfire hazard reduction activities is undertaken in conjunction with the annual vegetation monitoring. Further detail is included in **Section 10**. Bushfire risk will continue to be mitigated through the maintenance of access tracks and fire breaks.

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The 2023 monitoring survey noted that VMUs that have been subject to multiple disturbances such as ground preparation associated with revegetation and/or bushfire (i.e. 2019) have generally recorded lower LFA indices and are still in the process of recovery and should be provided sufficient time to establish.

6.4.7 SEED COLLECTION AND PROPAGATION

Revegetation in the BMP Revegetation Areas has occurred via seed and tubestock. Local endemic species are preferentially used where a seed supply is available, however consideration will be given to the use of a high quality seed sourced further from the site as required.

Where possible, seed required for revegetation activities has been collected from within the Biodiversity Offset area and surrounds. Specific tree and shrub species which have not been available for collection have been sourced through external third-party suppliers. Further seed collection may be undertaken if found necessary to meet the completion criteria of the BMP offset revegetation and mine site rehabilitation.

Wedgetail Project Consulting, along with several nurseries, have been engaged to assist in the propagation of native plant species with tube-stock grown under controlled nursery conditions and delivered to site as required for revegetation works.

6.4.8 REVEGETATION AND REGENERATION MANAGEMENT

The aim of revegetation is to establish a range of habitat niches including native canopy, and understorey, with the goal of achieving self-sustaining vegetation communities as well as increasing the resilience to identified risks such as fire, herbivory and future weed invasion.

Revegetation works in the Duralie biodiversity offset have been undertaken progressively since the implementation of the BMP. Revegetation trials initially commenced in 2016.

During Autumn 2023, 1,200 native trees and shrubs were planted in rural lease property near the corner of The Bucketts Way and Duralie Road. The trees were planted to aid long term visual amenity from The Bucketts Way.

The three year revegetation planting and infill plan has been completed (2020 – 2022). This project included approximately 10,000 plants planted into 17 vegetation management areas to complete revegetation in the Biodiversity Offsets and Biodiversity Enhancement Areas.

A revegetation infill planting program for 2024 has been prepared to continue to progress towards the biodiversity offset completion criteria. The program will involve planting a minimum of 10,300 plants over Spring 2024 in 11 offset areas over Duralie with the purpose of infilling previously revegetated areas identified in annual monitoring that have suffered low survival rates.

6.4.9 BIODIVERSITY OFFSET MONITORING AND REPORTING

The BMP monitoring program aims to monitor and report on the effectiveness of the BMP management measures and progress against the detailed performance and completion criteria. As described in the Section 7 of the BMP an annual report reviewing DCPL's environmental performance and progress against the requirements of the BMP including monitoring and reporting is prepared annually and appended to this Duralie Coal Mine Annual Review.

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The DCM Annual Biodiversity Report 2023 for the annual period ending 30 June 2023 is included in **Appendix 7** and reports on monitoring for:

- Effectiveness of revegetation in the offset area;
- Usage of the offset by fauna;
- Effectiveness of weed control;
- Effectiveness of feral animal control;
- Nest box monitoring program.

Habitat and vegetation condition monitoring is undertaken to quantitatively measure the change in habitat and vegetation condition over time. The visual monitoring and photo monitoring programs are undertaken concurrently with the vegetation monitoring to provide additional information on the change of the Biodiversity Offset Areas over time and inform maintenance requirements.

Initial vegetation surveys were undertaken in 2013 and 2014. The annual vegetation and landscape function monitoring continues to be undertaken and was repeated in May 2023. The results are provided in the DCM Offsets Ecosystem Functional Analysis Monitoring Report 2023 prepared by Wedgetail (**Appendix 7**). The next round of monitoring is scheduled for 2024.

Monitoring of fauna usage within the Biodiversity Areas is conducted every three years to document the fauna species response to improvement in vegetation and habitat in the Biodiversity Areas and assess the performance in providing habitat for a range of vertebrate fauna. The surveys include an assessment of habitat complexity, species richness and abundance.

AMBS was engaged to undertake fauna monitoring within the Biodiversity Offset areas and native mine rehabilitation areas during Summer 2021/2022. The results are provided in the DCM Fauna Surveys of the Offset and Mine Rehabilitation Areas, January 2022. A summary of the survey results is included in the Annual Biodiversity Report 2023 (**Appendix 7**).

6.4.10 LONG TERM SECURITY AND CONSERVATION BOND

Long-term Security

In accordance with Condition 42, Schedule 3 of the Project Approval, DCPL is required to make suitable arrangements for the long-term security of the DEP Biodiversity Offset Area. DCPL used the mechanisms available under section 88E(3) of the NSW *Conveyancing Act 1919*, namely:

Registration of a Positive Covenant under section 88E(3) of the NSW *Conveyancing Act 1919*; and
Registration of a Restriction on the Use of Land by a Prescribed Authority under section 88E(3) of the NSW *Conveyancing Act 1919*.

Public Positive Covenants and Restrictions on the Use of Land for the Biodiversity Offsets have been registered on title with NSW Land and Property Information (LPI) in May 2015.

Conservation Bond

In accordance with Condition 44, Schedule 3 of Project Approval 08_0203, DCPL is required to lodge a Conservation Bond with the DPE which covers the cost of implementing the Biodiversity Offset Strategy detailed in the BMP.

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A conservation bond is in place for the Biodiversity Offset areas. The amount was calculated by Greening Australia, verified by Rider Levett Bucknell in December 2013 and approved by DPE on 12 December 2013.

A revision of the Duralie Offset Conservation bond has commenced within the reporting period. The revised conservation bond will be prepared and lodged with DPE in the next reporting period.

6.4.11 BIODIVERSITY COMPLAINTS

No complaints related to the management of biodiversity were received during the reporting period.

6.5 GIANT BARRED FROG MANAGEMENT

Management and monitoring of the Giant Barred Frog population is conducted in accordance with the approved DCM Giant Barred Frog Management Plan (GBFMP). The GBF monitoring program has been undertaken to establish baseline data of the local frog population and monitor whether a greater than negligible impact on the Giant Barred Frog population has occurred as a result of rainfall runoff from the mine's irrigation areas. Monitoring results are used to assess the DCM against performance measures detailed in the GBFMP.

Annual monitoring and reporting on the implementation of the Giant Barred Frog Management Plan was undertaken between 2011 and 2016.

As stated in Section 7 of the GBFMP the timing and frequency of GBF monitoring will be triggered upon commencement of irrigation within the DEP Additional Irrigation Areas. DCM does not propose to undertake the irrigation activities associated with the DEP and as such, the Project has not presented a potential impact on the Giant Barred Frog population. All irrigation activities at the DCM ceased in 2018 and all irrigation equipment has been removed.

No further monitoring of the Giant Barred Frog has been required since 2016 in accordance with the GBFMP.

DCPL is currently updating the GBFMP to reflect current stage of operations and incorporate revisions to describe the cessation of irrigation activities at the DCM. DCPL never commenced irrigation of the "Additional Irrigation Areas" approved under the DEP, and as such the potential impact pathway to the GBF did not commence. DCPL proposes to seek the DPE's and DCCEEW's acknowledgment/approval of redundancy of the GBFMP, following completion of rehabilitation earthworks, and this would be supported by an appropriate specialist report prepared by Dr Arthur White and relevant monitoring program results. Dr White will also review the revised GBFMP.

In accordance with Condition 31A, Schedule 3 of the Project Approval and the GBFMP, DCPL is required to prepare a long-term study on the life-cycle and population of the GBF.

DCPL did not commence irrigation of the Additional Irrigation Areas approved under the DEP, therefore the requirement for preparation of the Long-term GBF Study was not triggered. Notwithstanding, Dr Arthur White has prepared a GBF Review Report capturing all the monitoring and baseline data collected between 2011 and 2016 by DCPL; the results of which will be submitted to the DPE and DCCEEW in support of DCPL's proposal seeking redundancy of the GBFMP within the next reporting period.

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6.6 BLASTING

6.6.1 BLAST CRITERIA AND CONTROL PROCEDURES

Blasting at the DCM was conducted in accordance with Conditions 8-15, Schedule 3 of the Project Approval and respective EPL conditions and the approved Blast Management Plan (BLMP). Blasting criteria, blasting hours, blasting frequency, property inspection requirements and operating conditions are provided in Conditions 8 to 12, Schedule 3 of the Project Approval.

6.6.2 REVIEW OF BLAST MONITORING RESULTS AND PERFORMANCE

As mining ceased at the DCM in December 2021, no vibration or blast monitoring is currently required. There are no proposed closure and rehabilitation activities planned at this stage that have the potential to cause vibration impacts. Should blasting be determined to be necessary in the future for closure execution activities, the Annual Review would be updated to include monitoring requirements.

Blast monitors were removed from service at the DCM following the final blast on 9 September 2021.

No blasting was undertaken at DCM during the reporting period.

6.6.3 PROPERTY INSPECTIONS AND INVESTIGATIONS

Building condition surveys of several privately owned dwellings located in the vicinity (within 2kms) of the mine have previously been undertaken by an independent structural engineer. In addition, surveys may be commissioned following a request by a landowner concerned about dwelling damage which they consider may be related to blasting activity at the DCM (Condition 11, Schedule 3).

During the reporting period, no building inspections of private residences were undertaken. No requests were received from any landowners to undertake a building inspection or to update a previous inspection report.

Former Weismantel's Inn is a heritage listed building owned by DCPL. An inspection of the Former Weismantel's Inn was undertaken in May 2022 and reported there is no evidence that the former Weismantel Inn building has been affected by blast-induced ground vibrations.

6.6.4 BLASTING COMPLAINTS

No blast related complaints were received during the reporting period.

6.7 NOISE

6.7.1 NOISE CRITERIA AND CONTROL PROCEDURES

DCM has an approved Noise Management Plan (NMP) that establishes a noise management strategy which:

- Identifies noise criteria;
- Outlines proactive and responsive noise management and control measures;
- Formulates a noise monitoring program;
- Establishes data assessment protocols; and
- Details reporting and review requirements.

Noise emissions from the DCM are managed in accordance with the criteria and procedures described in the NMP. The noise criteria are specified in PA 08_0203 and EPL 11701.

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DCPL implements measures to ensure noise from the DCM is managed to approved levels, through a combination of the following:

- Ensuring best management practices are implemented and reviewed;
- Implementing noise controls to reduce noise from the source and attenuate noise transmission; and
- If necessary, implementing measures to control noise at receivers following a review of monitoring data.

The noise monitoring program has included both attended noise surveys and real-time noise monitoring. The results of compliance attended monitoring are used to assess compliance with relevant noise impact assessment criteria in the NMP. Real-time noise monitoring results are used for ongoing performance assessment and will assist in the implementation of pre-emptive management actions to avoid potential non-compliances. In addition, rail noise monitoring, meteorological monitoring and sound power testing is also required under the NMP.

The NMP was revised and updated during the 2021-22 reporting period to reflect the reduction in noise-generating activities as the DCM transitions to mine closure. The noise monitoring program components will continue to cease in a staged manner, as follows:

- Real-time noise monitoring ceased following the completion of mining activities in December 2021;
- Rail noise monitoring ceased following the completion of ROM coal rail movements in December 2021; and
- Attended noise monitoring and Sound Power Level monitoring would only be undertaken during periods when bulk rehabilitation earthworks are undertaken.

The locations of noise monitoring sites are shown on **Figure 3 (Appendix 1)**.

6.7.2 REVIEW OF ATTENDED NOISE MONITORING RESULTS AND PERFORMANCE

DCPL undertakes quarterly attended noise monitoring surveys in accordance with the NMP in order to determine the status of compliance with noise limits. Attended noise monitoring is only undertaken during periods when mining activities or bulk rehabilitation earthworks are occurring in accordance with the NMP. PAF rehandle works recommenced at the DCM in October 2022 triggering the resumption of quarterly attended noise monitoring. Attended noise surveys were conducted during Q4 2022, Q1 and Q2 2023.

All noise performance assessments of daytime and night-time operational noise emissions found DCM to be compliant with the relevant criteria, contained within the DCM PA 08_0203 and EPL 11701, at all attended monitoring locations.

The summary results of the attended noise surveys undertaken during the reporting period are provided in **Appendix 5**. Noise monitoring locations are shown on **Figure 3 (Appendix 1)**. The full Noise Survey Reports are available at the Duralie Coal website (www.duraliecoal.com.au).

6.7.3 ANALYSIS OF DATA TRENDS AND COMPARISON WITH EA PREDICTIONS

The 2010 EA and 2014 EA provide predictions on mine contributed noise emissions for various operational years. Year 5 (2015) was predicted as the maximum operational noise levels for the Modification Project with reduced operational noise from 2016 to 2019. In terms of the four monitoring locations (“Woodley”, “Fisher-Webster”, “Moylan” and “Oleksiuik & Carmody”) predicted

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mine contributed noise emissions were consistent with measured values for all locations, factoring in the current reduced fleet and reduced operating hours at the DCM.

Results of quarterly noise monitoring during 2016 to 2022 has shown mine contribution to be generally inaudible. During the previous reporting period the mobile plant fleet and the DCM was significantly reduced leading to a reduction in the total site sound power level and noise emissions. This is reflected in the attended noise monitoring results.

6.7.4 REAL TIME NOISE MONITORING SYSTEM

A real-time noise monitoring response protocol is described in the NMP Section 7.3.5. Real-time monitoring was used as a management tool to assist DCPL to take proactive management actions and implement additional noise mitigation measures to avoid potential non-compliances. Noise investigation triggers were in place which would send alarms when noise emissions were approaching levels which may exceed the noise criteria at privately-owned receivers. The real-time noise monitor recorded noise levels during the evening and night-time periods, on days when operations are occurring at the DCM. Noise investigation trigger thresholds were set at 42 dBA between the hours of 7.00 pm and 7.00 am.

During the reporting period, from October 2022 when PAF rehandle works recommenced, mining operations occurred between the hours of 6:30am and 1:30am. Hence, there were over six hours of operations occurring within the applicable real-time noise monitoring period.

Details of any RTN alarms and the operational responses implemented by DCPL are recorded in the RTN Response Register. No Alarms were attributed to mining or rehabilitation activities during the reporting period

6.7.5 RAIL NOISE MONITORING

The NMP requires that rail noise monitoring is undertaken on a quarterly basis at the existing Wards River and Craven locations during shuttle train operations. The transport of ROM coal from the DCM via shuttle train ceased in December 2021, with the last train railed on 9 December 2021. Therefore, rail noise monitoring was not conducted during the reporting period.

6.7.6 MOBILE PLANT NOISE MONITORING

The DCM fleet of mobile plant including haul trucks, excavators, dozers, graders and other items are required to be assessed annually for sound power levels (SWL) in accordance with the NMP. SWL's are compared to the target SWL's referred to in the 2010 EA and 2014 EA and are also compared to historical results to track performance over time. Availability of mobile plant for noise testing is subject to production requirements and servicing/maintenance/breakdowns.

The mining fleet during the reporting period is outlined in **Section 4.3.3**.

The current mobile plant fleet operating at the DCM is significantly less than fleet described in the Noise and Blasting Impact Assessment in the DCM 2014 EA. The current operational hours (6:30am to 1:30am) are also significantly less than the proposed operational hours. These changes have significantly reduced the overall sound power level from the mobile plant operations.

Mobile plant sound power monitoring was undertaken in February 2023, with additional monitoring in June 2023, by SLR. The monitoring concluded that all mobile fleet complies with noise targets.

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6.7.7 NOISE COMPLAINTS

No noise related complaints were received during the reporting period. The complaints list is included in **Appendix 6** (when applicable).

6.8 LANDSCAPE AND VISUAL SCREENING

The overall visual impacts of the DCM are described in the EA 2014 are generally considered low. However, some local impacts will occur and undertakings such as the following have been, and will continue to be, adopted to lessen these impacts:

- Minimising (where possible) disturbance to native vegetation, especially where such vegetation is providing visual screening;
- Retention specifically of ridge Open Forest and regrowth forest (where possible);
- Retention of all riparian vegetation along Mammy Johnsons River and those out of pit sections of Coal Shaft Creek;
- Ensuring out of pit emplacement design produces a landform which integrates with the adjoining natural landform;
- Painting of substantial fabricated infrastructure with a colour (“Rivergum”) that assists it to blend in with the adjoining landscape;
- Maintenance of infrastructure to retain the ability of such infrastructure to blend into the surrounding landscape over the life of the project; and
- Placement, configuration and direction of lighting to reduce offsite nuisance effects of stray light;
- Prioritising rehabilitation of exposed and outer batters of waste emplacements;

Vegetation would be established around the perimeter of the open pit voids to provide visual screening.

In accordance with Condition 51, Schedule 3 of the Project Approval, a visual screen has been constructed and maintained along a section of the Bucketts Way to the north-west of the mine in consultation with DPE, RMS, Great Lakes Council (now MidCoast Council) and DCM CCC. As predicted some additional vantage points of the mine have been exposed through the clearing of the northern extent of the Weismantel pit and landscaping works and progressive rehabilitation will continue to reduce the visual impact.

During the reporting period, 1,200 native trees and shrubs were planted in rural lease property near the corner of The Bucketts Way and Duralie Road. The addition of the new tree screens would help reduce impacts to visual amenity for road users of The Bucketts Way, Duralie Road and Martins Crossing Road. Once the tree screen is matured and established, DCM would remove the existing visual screen originally installed as part of the Project Approval.

The rehabilitation principles and objectives at the DCM are included in the Project Approval and described in the DCM RMP. This includes requirements for landscaping and visual screening to ensure the final landforms are visually consistent with the surrounding environment and meet community and regulatory expectations. The rehabilitation will be generally consistent with the proposed rehabilitation strategy described in the EA 2014.

No visual amenity related complaints were received during the reporting period. The complaints list is included in **Appendix 6** (when applicable).

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6.9 CULTURAL AND NATURAL HERITAGE CONSERVATION

Cultural and natural heritage at the DCM are managed in accordance with the approved Heritage Management Plan (HMP). The purpose of the HMP is to address the requirements of Condition 46, Schedule 3 of the Project Approval. The aim of the HMP is to ensure that the development does not cause any direct or indirect impacts on identified Aboriginal or Non-Aboriginal heritage sites located outside the approved disturbance area of the development on the site. The HMP has also been prepared to manage potential impacts on items of heritage significance at the DCM in the vicinity of the surface development.

Archaeological surveys conducted at the Duralie Mine site in the 1980's and 1990's did not identify any Aboriginal sites or items with the exception of one site. A tree, to be subsequently referred to as the "honey tree" was the subject of a site inspection involving various parties including representatives of NPWS in November 1998. The consensus at the time of inspection was that the "honey tree", an old ironbark, had had timber pieces inserted into the trunk in a spiral pattern to allow someone to scale the tree and access the crown – possibly to collect honey. It was not clear whether such timber insertion would have been performed by an Aboriginal person or early European settler. The "honey tree" was subsequently listed on the NPWS Aboriginal Heritage Information Management System (AHIMS) database.

The EA 2010 identified 9 additional sites of Aboriginal heritage significance (DM2, DM3, DM4, DM5, DM6, DM9, DM10, DM11 and the "Honey Tree") on the Mining Lease. The heritage sites outside the approved disturbance area have been protected by way of signpost and fencing where required. In addition, 4 sites (DM1, DM7, DM8 and Mammy Johnson's Grave) were identified outside of the Mining Lease.

In accordance with the HMP, topsoil disturbance during earthworks, construction and operation of the mine has been monitored utilising officers of the Karuah Local Aboriginal Land Council (KLALC). During the reporting period no topsoil disturbance was undertaken. No further topsoil stripping is proposed at the DCM.

In accordance with the HMP, monitoring of the Aboriginal heritage sites at the DCM has been undertaken. There was no change to the status of the known heritage sites during the reporting period.

Table 15 Aboriginal Heritage Sites within EA Study Area

Site Code (refer EA documentation)	Site Type	Status
DM2	Isolated Artefact	Salvaged by KLALC
DM3	Scarred Tree	Existing, no disturbance
DM4	Scarred Tree	Existing, no disturbance
DM5	Scarred Tree	Salvaged by KLALC
DM6	Isolated Artefact	Existing, not located by KLALC
DM9	Open Artefact Scatter	Existing, no disturbance
DM10	Scarred Tree	Existing, no disturbance
DM11	Isolated Artefact	Disturbed, not located by KLALC
38-1-0033	Scarred Tree – Honey Tree	Existing, no disturbance

Former Weismantels Inn is a heritage listed building owned by DCPL. A building inspection of the Weismantels Inn is conducted every two years.

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An inspection of the Former Weismantels Inn was undertaken in May 2022 and reported there is no evidence that the former Weismantel Inn building has been affected by blast-induced ground vibrations.

6.10 PAF MATERIAL MANAGEMENT AND SPONTANEOUS COMBUSTION

An assessment of the geochemical characteristics of the waste rock material associated with the development of the DEP is provided in the Geochemistry Assessment (EA 2010) prepared by EGi (2009). A further Geochemistry Assessment (EGi, 2012) concluded that the waste rock materials generated from Weismantel and Clareval open cut mining areas would be expected to include PAF material, with some potentially acid forming – low capacity (PAF-LC) and NAF materials also expected to be present.

PAF material is managed in accordance with Section 7.2 of the DCM Surface Water Management Plan. PAF waste rock material is segregated and selectively handled and then placed in either in-pit (below the predicted final water table recovery level) or out-of-pit engineered PAF waste cells. PAF waste rock material would be encapsulated within constructed containment cells and capped with a low permeability layer when placed in out-of-pit waste rock emplacements.

During operations, limestone is placed on the open pit floor and interim waste rock in-pit and out-of-pit waste rock emplacement lifts/faces where PAF material is present, to minimise the generation of acid rock drainage.

DCPL monitors the water quality of contained water storages (i.e. pH and solute concentrations) as part of the existing surface water monitoring program. If in the event acid rock drainage is identified through the surface water monitoring program, specific acid rock drainage controls will be implemented. Refer to the surface water monitoring results in **Section 7.2.2** of this report.

During the reporting period PAF materials have been appropriately managed to minimise the potential for any short-term or long-term effects of acid rock drainage.

Any incidences of spontaneous combustion at the DCM are managed in accordance with an internal Spontaneous Combustion Principal Mining Hazard Management Plan. This plan provides a comprehensive overview of processes implemented at the DCM to manage identified hazards associated with spontaneous combustion. Management and mitigation practices generally involve reducing the interaction of potentially reactive materials with water and oxygen by appropriate dumping practices, profiling and capping any materials likely to heat and reducing the time coal faces are exposed prior to mining.

During the reporting period no events of spontaneous combustion were identified at the DCM.

DCPL had previously identified areas of self-heating on the PAF waste emplacements and continue to undertake remedial works to these areas. PAF rehandle activities are ongoing to place all identified PAF material in pit below the predicted post-mining groundwater table level.

7.0 WATER MANAGEMENT

Water management is undertaken in accordance with the approved Water Management Plan (WMP) and sub-components of the plan including surface water, groundwater and site water balance required under Condition 29, Schedule 3 the Project Approval. The local and regional hydrological setting along with the baseline data is provided in the WMP.

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The main objectives of the water management system on-site are:

- Protect the integrity of local and regional water resources;
- Operate such that there is no uncontrolled overflow of contained water storages;
- Maintain separation between runoff from areas undisturbed by mining and water generated within active mining areas; and
- Provide a reliable source of water to meet the requirements of the DCM.

The main principles of the water management system on-site are to:

- Minimise the generation of mine related water and divert clean water around disturbed areas;
- Minimise storage requirements by maximising re-use of mine related water;
- Remove potential impacts on downstream water resources by provision of secure containment on site and disposal by irrigation re-use;
- Implement a fail-safe system, whereby under extreme events in excess of design capacity, mine related waters would spill to the mine pit and not to the clean water catchments; and
- Not allow sediment laden water having an elevated suspended solids concentration to be discharged off site.

Mining operations ceased at DCPL in December 2021. The Duralie Coal Water Management Plan has been revised to reflect the current stage of operations and to describe anticipated mine closure activities and associated changes to water management at the DCM for the mine closure phase.

Mining of the Clareval Open Pit has now been completed and dewatering of the pit has ceased. Mining of the Weismantel Open Pit ceased on 31 December 2021. Following the cessation of mining of the Clareval Open Pit (now final void) and the Clareval void becoming available as a water storage, Weismantel Open Pit dewatering is now preferentially transferred to the Clareval void and not stored within the Main Water Dam. As a result, all irrigation activities for the purpose of reducing the total site water inventory at the DCM have ceased. All irrigation activities at the DCM ceased in 2018 and the DCM's irrigation system has been decommissioned and removed.

Decommissioning of other redundant water management structures has also commenced. Consistent with the approved DCM final landform design, Auxiliary Dam 1 has been dewatered, decommissioned and rehabilitated.

7.1 WATER SUPPLY AND DEMAND

The DCM water management system has operated under a surplus water balance, with a trend for increasing water storage on-site over time. The main water supply storage on-site for use in irrigation and dust suppression is the Main Water Dam (MWD) (monitoring point SW3) located to the northwest of the Industrial Area. The MWD, Auxiliary Dam 1 (AD1) (decommissioned) and Auxiliary Dam 2 (AD2) are the principal permanent mine water storages on-site. Water from these dams comprises pit produced water (runoff to/rainfall/seepage to), water from specific sediment dams and surface water runoff from the Industrial area.

The principal water losses in the water system are:

- Water used for dust suppression
- Evaporation from the Main Water Dam (MWD) and Auxiliary Dam 2 (AD2).

The Main Water Dam's current storage capacity is approximately 1405 ML whilst Auxiliary Dam 2 has an estimated storage capacity of approximately 2720 ML.

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At the completion of the reporting period the MWD contained 992 ML (76.7%), and Auxiliary Dam 2 contained 1104 ML (42.6%). No mine water was disposed of to watercourses during the reporting period.

Clareval void is now available as a water storage and pit water is no longer transferred to the mine water storage dams. MWD and AD2 are currently being dewatered to the Clareval void in preparation for decommissioning.

Surface Water Licencing

The DCM is located within the mapped extent of the Karuah River Water Source under the Water Sharing Plan for the Lower North Coast Unregulated and Alluvial Water Sources 2009. DCM is a water surplus site and no extraction of surface water from any unregulated stream is proposed for the DCM.

Groundwater Licencing

The groundwater systems within which the DCM lies, specifically relate to:

- Gloucester Basin Water Source (i.e. porous rock aquifer) under the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016.
- Karuah River Water Source (i.e. alluvial aquifers) under the Water Sharing Plan for the Lower North Coast Unregulated and Alluvial Water Sources 2009.

DCPL currently hold WAL41518 in the Gloucester Basin Groundwater Source, for a total of 300 share components under the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016, to account for direct and indirect take of groundwater from the porous rock aquifer.

Groundwater Licencing

DCPL holds Water Access Licence WAL41518 granted under the North Coast Fractured and Porous Rock Water Sharing Plan, that allows for up to 300 ML of groundwater to be extracted from “works” in any 12-month period. WAL41518 was formerly 20BL168404 before being renewed in 2017 and converted under the *Water Management Act 2000*.

Table 16 Water Take

Water Licence #	Water sharing plan, source and management zone (as applicable)	Entitlement	Estimated Take Previous Period – 2021 (ML)Total	Estimated Take Current Period - 2022 (ML)Total
WAL41518 - Duralie Pit (Weismantel and Clareval)	Gloucester Basin Groundwater Source - North Coast Fractured and Porous Rock Groundwater Source 2016	300ML extraction	183ML	123ML

7.2 SITE WATER BALANCE REVIEW

A water balance model of the Duralie Extension Project (EA 2010 and EA 2014) mine operations was developed by HEC based on an operational model of the DCM water management system. The site

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water balance model of the DCM water management system has been developed to simulate the behaviour of the water management system to the end of the approved mine life.

A site water balance review is undertaken annually and captures all inflows and outflows from the water management system. The water which accumulates in the open pits through rainfall or groundwater seepage is measured at the point of dewatering. An independent Annual Water Balance Review (ATC Williams, 2023) for the DCM was conducted for the 2022 calendar year and a summary is provided below.

Open Cut Pits

A mine pit water balance analysis was undertaken for the open cut pits using data recorded during 2022. The volume of 'groundwater' (inflow other than rainfall runoff) reporting to the pits in 2022 is estimated to be 123 ML. This compared with a volume of 126 ML volume estimated/extrapolated from the groundwater model developed as part of the Duralie Extension Project (GCL, 2010), noting that no data was available from this work post 2019 and that this estimate was derived by doubling the half year forecast value to mid-2019.

Table 17 Summary Water Balance – Open Cut Pits - 2022

Component	Weismantel Pit (ML)	Clareval Pit (ML)
Start of Year Stored Water Volume*	234	6,239
End of Year Stored Water Volume*	241	9,527
Change in Stored Water Volume	6	3,289
Inflows		
Rainfall Runoff	285	492
Delayed Rainfall Runoff	583	145
Groundwater (Estimated Aquifer Interception)	65	58
Pumped Inflow (Estimated)	0	0
Pumped Inflow	0	2,400
TOTAL [†]	932	3,471
Outflows		
Evaporation	23	176
Pumped Outflow	903	0
TOTAL	926	176
Inflows minus Outflows	7	3,295

* Modelled volume.

[†] Calculated using estimated groundwater inflow.

Contained Water Storages

A water balance analysis review of the Main Water Dam and AD2 water balance 2022 (ATC Williams, 2023) is as follows: Figures are based on DCM Balance Review for the 2022 calendar year.

Table 18 Summary Water Balance – Contained Water Storages 2022

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Component	ML
Start of Year Total Storage Volume	2,965
End of Year Total Storage Volume	2,096
Change in Storage	-869
<i>Inflows</i>	
Rainfall Runoff	624
Pumped from RS6 (incl VC1 and LPCD)	180
MWD Diversion Seepage	52
First Flush Capture	49
TOTAL	905
<i>Outflows</i>	
Evaporation	380
Haul Road Dust Suppression	2
Pumped to Open Cut Pits	1,498
TOTAL	1,879
INFLOW - OUTFLOW	-974

The above indicates a significant decrease in stored water volume in these storages during 2022.

7.3 SURFACE WATER

7.3.1 SURFACE WATER MANAGEMENT

Surface water management is managed in accordance with WMP: Appendix 2 Surface Water Management Plan (SWMP) under Condition 29, Schedule 3 of the DEP Approval and is divided into the management of clean water and mine related water as outlined below. Mine related water comprises both mine water and sediment laden/turbid water.

7.3.1.1 EROSION AND SEDIMENT CONTROL

The primary objectives of the erosion and sediment control at the DCM are to:

- Minimise and control soil erosion and sediment generation in areas disturbed by ongoing mining and associated activities at the DCM; and
- Minimise the potential for sediment generated from site activities to adversely affect the water quality of the Mammy Johnsons River or the Karuah River.

Sediment generation and erosion is primarily controlled by:

- Maximum separation of runoff from disturbed and undisturbed areas;
- Timely progressive rehabilitation and vegetation establishment on disturbed areas (e.g. completed sections of the overburden dump) to minimise the area exposed to erosion;
- Construction of surface drains to facilitate the efficient transport of surface runoff;
- The direction of runoff from disturbed areas into sediment dams for settlement of suspended solids; and
- The placement of silt fences down slope of other disturbed areas (e.g. down slope of topsoil stockpiles before a grass cover has been established).

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DCM had the following dedicated erosion and sediment control structures in use during the reporting period:

- Two (2) rail siding sediment dams – designated as RS1 and RS6
- One (1) waste emplacement (rehabilitation) sediment dam – designated as VC1
- Temporary Sediment Dams in advance of mining operations (none active at the end of the reporting period).

Sediment dam sizing is described in the SWMP Section 7.1 *Erosion and Sediment Control Plan*. Erosion and sediment control structures are designed and constructed in consideration of the recommendations for site drainage works presented in “Managing urban storm water – Soils and Construction Volume 1” (Landcom, 2004) and “Managing urban storm water – Soils and Construction Volume 2e” (DECC, 2008).

Runoff in excess of the design capacity will result in a dam spilling in accordance with the design criteria. It should be noted that pumping (where possible) of sediment dams in order to prevent or limit the amount of spilling water was undertaken. Prioritisation of pumping operations also took into account the likely quality of spilling water when a dam was considered vulnerable to spilling. The quality of water collecting within sediment dam is managed (where practicable) to minimise suspended sediment load.

Sediment dams are inspected following receipt of sufficient rain whereby such dams have the potential to spill. Diversion structures and drains are also maintained, including vegetation management, to ensure integrity of the structures and capacity for flow.

During the reporting period there were no spills from sediment dams at the DCM.

In addition to dedicated sediment dams, clean water is directed around disturbed areas (where practicable) using diversion drains/bunds or in the case of Coal Shaft Creek, a creek diversion (refer discussion under Water Management) in order to minimise sediment laden water.

All elements of sediment control are regularly monitored and maintained. Sediment dams are cleaned out when the storage volume is substantially reduced by sediment deposition (i.e. when 30% of storage volume is lost to sediment build up) and inspected after major rainfall events.

Inspection of diversion structures and sediment control dams occurred during and following heavy rainfall events. The site contained all mine water on site within its water management system and control structures remained effective.

A photographic surveillance record of key structures along the existing Coal Shaft Creek diversion is undertaken annually or following large rainfall events and was conducted in August, September and October 2022 and March 2023. Regular inspections of the CSC diversion are also undertaken and in general the diversion is stable and no signs of erosion or sedimentation have been identified. Maintenance activities including weed spraying and vegetation control was undertaken on the clean water diversion drains and around the prescribed dams during the reporting period.

7.3.1.2 CLEAN WATER MANAGEMENT

The main objective of clean water management is the segregation of clean water from mine related water by the construction of diversion drains around disturbed areas, thereby minimising the quantity of water that is impacted by the operation.

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Surface water controls aim to prevent clean runoff water from entering the open mining pit and overburden dumping areas where practical. The main structures are:

- Diversion of Coal Shaft Creek. The diversion channel (built in stages) is required until the creek can be re-established at the conclusion of mining;
- Main Water Dam (MWD) diversion drain. This drain intercepts runoff from the catchment above the MWD and delivers that water to Coal Shaft Creek;
- Auxiliary Dam 1 (AD1) and Auxiliary Dam 2 (AD2) diversion drains;
- Clareval western diversion drain;
- Flood control embankments to prevent inundation of mining areas;
- A culvert under the Main Coal Haul Road which allows Coal Shaft Creek to flow through the site; and
- Various runoff control drains/bunds about disturbed areas, designed to divert clean water runoff around those areas.

The main elements of the clean water diversion system are shown in **Figure 3 (Appendix 1)**.

Inspections of diversion structures were undertaken during and after rainfall. Remedial and maintenance works were completed as required within the diversion drains and dams during the reporting period.

7.3.1.3 MINE RELATED WATER MANAGEMENT

Mine related water management refers to the control, collection and re-use of water which may have become contaminated by mining operations and associated activities. This water comprises mine water and sediment laden/turbid water. Mine water is water that has come into contact with mining activities. Sediment laden/turbid water has come into contact with disturbed areas but predominantly not core mining areas. Mine waters are typically characterised by higher salinity and on occasion lower pH. Sediment laden waters are characterised by elevated suspended solids and elevated turbidity.

During the reporting period all mine water was contained on site and no spills occurred from mine water storage dams.

The mine related water storages on site are:

- Main Water Dam (MWD)
- Auxiliary Dam 2 (AD2)
- Sediment Dam VC1 (rehabilitated waste dump)
- Sediment Dams RS1 and RS6 (rail siding dams)

The locations of mine and sediment laden water storage areas are shown in **Figure 3 (Appendix 1)**.

7.3.2 SURFACE WATER MONITORING AND PERFORMANCE

DCPL monitors surface water quality on and surrounding the mine site by sampling from a series of selected locations. These locations comprise both streams and water storage structures. A meteorological monitoring station (i.e. weather station) provides site rainfall data. The locations of these monitoring sites are shown on **Figure 3 (Appendix 1)**.

Surface water monitoring is conducted in accordance with the approved SWMP and EPL 11701.

Surface water is sampled and analysed on a monthly and event basis or following a sediment dam spill.

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Water sampling is not undertaken in no-flow conditions. Collected waters are analysed for a suite of physical and chemical parameters. Results are compared with water quality triggers for the DCM developed in accordance with the methodology in ANZECC/ARMCANZ (2000). "Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project" and EPA requirements (DCM SWMP Appendix B).

7.3.2.1 REVIEW OF LOCAL STREAMS MONITORING RESULTS

Reference should be made to accompanying data tables provided in **Appendix 4**. The routine surface water monitoring sites at the DCM are:

- SW2 – Coal Shaft Creek (CSC)
- SW2 Rail Culvert – Coal Shaft Creek Downstream
- SW6 – Former RS3/4 Culvert
- SW9 – Un-named Tributary (UNT)
- SW10 – Coal Shaft Creek Upstream
- GB1 – Mammy Johnsons River (MJR)
- Highnoon – Mammy Johnsons River (MJR)
- Site 9 – Karuah River (KR)
- Site 11 – Mammy Johnsons River (MJR)
- Site 12 – Mammy Johnsons River (MJR)
- Site 15 - Mammy Johnsons River (MJR)
- Site 19 – Karuah River (KR)
- North Drain
- South Drain

Assessment of Performance Indicators

The surface water monitoring results are used to assess the DCM against the performance indicators and performance measures as detailed in Table 7 of the SWMP. If data analysis indicates a performance indicator has been exceeded or is likely to be exceeded, an assessment will be made against the performance measure. If a performance measure is considered to have been exceeded, the Contingency Plan will be implemented (WMP Section 10). If data analysis indicates that the performance measure has not been exceeded, DCPL will continue to undertake monitoring.

Table 19 and **20** provide a summary of the surface water analysis of the monitoring data during the reporting period. The summarised data is used to assess against the surface water performance indicators and measures outlined in Table 7 of the SWMP.

Table 19 Summary of Surface Water Monitoring Results and Trigger Levels – pH, EC and TSS

Site	pH			EC		TSS	
	20 th ile	80 th ile	Trigger	80 th ile	Trigger	80 th ile	Trigger
MJR							
Site 11	7.3	7.7	7.1-7.6	367	370	36	15
GB1	7.3	7.6		344		40	
Site 12	7.2	7.6		333		30	
CSC							
SW2 (RC)	7.1	7.7	7.1-7.9	359	544	21	80
SW10	7.1	7.5		76		39	
UT							
SW9	6.7	6.8	6.4-7.1	499	461	54	57

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Site	pH			EC		TSS	
SW10	7.1	7.5		76		39	

Table 20 Summary of Surface Water Monitoring Results and Trigger Levels – Copper, Turbidity, Zinc and Aluminium

Site	Copper		Turbidity		Zinc		Aluminium	
	80 th ile	Trigger	80 th ile	Trigger	80 th ile	Trigger	80 th ile	Trigger
MJR								
Site 11	0.001	0.002	62	24	0.008	0.011	2.13	1.24
GB1	0.001		68		0.014		1.89	
Site 12	0.001		60		0.011		1.29	
CSC								
SW2 (RC)	0.002	0.003	36	119	0.044	0.064	1.49	3.02
SW10	0.004		129		0.01		5.19	
UT								
SW9	0.002	0.004	58	94	0.01	0.024	3.06	2.96
SW10	0.004		129		0.01		5.19	

Assessment of the Performance Indicators and Performance outcomes are presented in **Table 21**.

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Table 21 Surface Water Monitoring Performance Outcomes – 2022-23 Reporting Period

Performance Measure	Monitoring of Environmental Consequences			Data Analysis to Assess against Performance Indicators	Performance Indicators	Assessment of Performance Indicators	Assessment of Performance Measure	Relevant Management and Contingency Measures
	Sites	Parameters	Frequency					
No more than a negligible impact on water quality in Mammy Johnsons River as a result of the Duralie Extension Project	Site 11 GB1 Site 12	EC, pH, turbidity, Copper (total), Zinc (total), Aluminium (total). Hardness, TSS, BOD and DO.	Monthly/ Event	The 80th percentile concentration calculations for EC, pH, total copper, turbidity, total zinc, total aluminium, and TSS in addition to The 20th percentile value of pH at Site 11, GB1 and Site 12 are presented in Tables 19 & 20	Water quality at Site 11 is not worse than the pre-irrigation water quality at Site 11 whilst water quality is better at GB1 and Site 12 compared to the pre-irrigation water quality at these sites.	Data analysis indicates Site 11 exceeded the performance indicator for TSS, Turbidity, Zinc and Aluminium. Analysis of the monitoring data shows similar trends observed upstream and downstream for TSS, Turbidity and Aluminium. Whilst TSS & Turbidity at Site 11 was outside the 80 th ile triggers it was found not to be significantly different to the average TSS & Turbidity at the upstream sites GB1 and Site 12. The lower performance indicator for DO was exceeded on five occasions at Site 11. DO was also below the low trigger upstream at Site 12 and GB1 on these occasions.	No further requirement for assessment of Performance Measure.	Continue monitoring.

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Table 21 (Continued) Surface Water Monitoring Performance Outcomes – 2022-23 Reporting Period

Performance Measure	Monitoring of Environmental Consequences			Data Analysis to Assess against Performance Indicators	Performance Indicators	Assessment of Performance Indicators	Assessment of Performance Measure	Relevant Management and Contingency Measures
	Sites	Parameters	Frequency					
No more than a negligible impact on water quality in Coal Shaft Creek as a result of the Duralie Extension Project	SW2 (RC) SW10	EC, pH, turbidity, Copper (total), Zinc (total), Aluminium (total). Hardness, TSS, BOD and DO.	Monthly/ Event	The 80th percentile concentration calculations for EC, pH, total copper, turbidity, total zinc, total aluminium, and TSS in addition to the 20th percentile value of pH at SW2 (RC) and SW10 are presented in Tables 19 & 20	Water quality at Site SW2 (RC) is not worse than the pre-irrigation water quality at Site SW2 (RC) whilst water quality is better at SW10 compared to the pre-irrigation water quality at that site.	Data analysis indicates Site SW2 (RC) did not exceed any of the performance indicators. Upstream site SW10 exceeded the 80 th percentile trigger for Copper, Turbidity & Aluminium. The lower performance indicator for DO was exceeded on two occasions and the upper performance indicator for DO was exceeded on one occasion. The upstream site SW10 was dry on these sampling events.	No further requirement for assessment of Performance Measure.	Continue monitoring.

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Table 21 (Continued) Surface Water Monitoring Performance Outcomes – 2022-23 Reporting Period

Performance Measure	Monitoring of Environmental Consequences			Data Analysis to Assess against Performance Indicators	Performance Indicators	Assessment of Performance Indicators	Assessment of Performance Measure	Relevant Management and Contingency Measures
	Sites	Parameters	Frequency					
No more than a negligible impact on water quality in Unnamed Tributary as a result of the Duralie Extension Project	SW9 SW10	EC, pH, turbidity, Copper (total), Zinc (total), Aluminium (total), Hardness, TSS, BOD and DO.	Monthly/ Event	The 80th percentile concentration calculations for EC, pH, total copper, turbidity, total zinc, total aluminium, and TSS in addition to the 20th percentile value of pH at SW9 and SW10 are presented in Tables 19 & 20	Water quality at Site SW9 is not worse than the pre-irrigation water quality at SW9 whilst water quality is better at SW10 compared to the pre-irrigation water quality at that site.	Data analysis indicates SW9 exceeded the 80 th ile performance indicator for EC and Aluminium. Analysis of the monitoring data shows similar trends observed upstream and downstream for Aluminium. Only two sampling events were undertaken at SW9 due to no flow conditions with one high EC result driving the EC average up. Upstream site SW10 also exceeded the 80 th ile trigger for Turbidity. The lower performance indicator for DO was exceeded on one occasion. The upstream site SW10 was dry on this sampling event.	No further requirement for assessment of Performance Measure.	Continue monitoring.

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7.3.2.2 REVIEW OF MINE WATER MONITORING RESULTS

The management of mine related water is described in **Section 7.3.1.3** of this report. Mine water comprises water that is generated within the mine workings, waste rock emplacements (prior to reshaping and topsoiling), storage areas for such water and runoff from areas where coal is/was handled. Mine water is generally characterised by elevated EC, elevated sulphate concentrations and low turbidity/TSS.

The two principal mine water storage areas are the Main Water Dam (sampling location SW3 major), and Auxiliary Dam 2 (AD2). Monitoring of mine water quality is also conducted within the Weismantel pit (sampling location SW4).

No overflows or discharges of mine water occurred during the 2022/23 reporting period.

Monitoring for SW3 (major) during the reporting period indicated, on average, a moderate EC (1996 uS/cm), slightly alkaline pH (8.2) and low miscellaneous metals concentration. Reference should be made to **Table 22** and the water monitoring results in **Appendix 4**.

Table 22 Summary of Mine Water Monitoring Results – pH, EC and TSS

Site	pH		EC (µS/cm)		TSS (mg/L)	
	Range	Average	Range	Average	Range	Average
MWD (SW3)	7.6-8.6	8.2	1698-2249	1996	<5-137	17
AD2	7.3-8.7	8.2	1964-2647	2278	*	*
Weismantel (SW4)	7.0-8.0	7.6	3000-4900	4293	5-188	55

Notes * = TSS monitoring is not required for AD2, refer to Section 8.2 of SWMP

7.3.3 ANALYSIS DATA TRENDS AND COMPARISON WITH EA PREDICTIONS

7.3.3.1 LOCAL STREAMS MONITORING

Surface water results (**Table 19, Table 20 and Table 22**) were consistent with previous year’s monitoring and the predictions made in the EA 2010. The EA 2010 indicated that water quality in Mammy Johnsons River was variable, but was generally good. It was also found that the salinity of the stream was higher during periods of low flow and generally showed a relative reduction in EC during higher flow periods (Gilbert, 2010). The current monitoring results are consistent with these observations.

Table 19, Table 20 and Table 22 indicates some occurrences of exceedances of the performance indicators. If data analysis indicates a performance indicator has been exceeded or is likely to be exceeded, an assessment will be made against the performance measure. The data analysis shows monitoring data also shows similar trends observed upstream and downstream, i.e. exceedances were not due to DCM. Accordingly, no further assessment of the performance measure is required.

Historical monitoring data presented in the DCM EA, Surface Water Assessment (Gilbert, 2010) show that Coal Shaft Creek is generally more saline than Mammy Johnsons River and the Karuah River. Results during the reporting period generally concur with these observations. It is considered that Coal Shaft Creek is generally more saline due to its ephemeral nature and the outcropping/sub-cropping of coal seams within the catchment.

7.3.3.2 MINE WATER MONITORING

The simulated water quality for the Main Water Dam was prepared for the EA 2010 including a salinity balance and an assessment of the suitability for irrigation water (Gilberts, 2010). Mine water pH has

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remained generally near neutral or slightly alkaline for the life of the project. The Mine Water Dam EC trend has been generally consistent with the simulated EC showing a slightly increasing trend up to 2015 and then staying relatively stable through to 2022. The average EC (1996 uS/cm) in 2023 is slightly lower than the predicted EC of 2140 uS/cm. Clareval Pit was not monitored during the reporting period due to no safe access into the pit during backfilling since operations were completed in September 2017.

7.3.4 BIOLOGICAL MONITORING

Biological (macroinvertebrates) monitoring has been undertaken over a 19-year period since the start of operations in 2002 up to 2021. Monitoring was undertaken in autumn and spring each year at selected locations upstream and downstream of the DCM to monitor potential impacts from irrigation activities undertaken at the DCM.

Irrigation activities at the DCM has ceased, hence stream “health” monitoring programs, including biological monitoring is no longer required as potential impact pathways have ceased.

Biological monitoring reports to date have not indicated any significant adverse effects on the aquatic ecosystem as a result of the mine’s operations as per predictions made in the environmental assessments.

7.3.5 RIPARIAN VEGETATION MONITORING

Irrigation activities at the DCM ceased in 2018, hence the potential impact pathways identified in the EA 2014 have ceased. Riparian vegetation health monitoring is no longer required as potential impact pathways have ceased. Assessed monitoring results as part of the irrigation monitoring report showed no identified impact.

7.4 GROUNDWATER

7.4.1 GROUNDWATER MANAGEMENT

A Groundwater Management Plan (GWMP) (WMP Appendix 3) has been prepared to control potential impacts on local and regional groundwater resources and includes a monitoring program to validate and review the groundwater model predictions.

The groundwater systems within which the DCM lies, specifically relate to:

- Gloucester Basin Water Source (i.e. porous rock aquifer) under the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016.
- Karuah River Water Source (i.e. alluvial aquifers) under the Water Sharing Plan for the Lower North Coast Unregulated and Alluvial Water Sources 2009.

Groundwater characteristics of the DCM have been studied prior to and over the life of the DCM and most recently for the EA 2014. A hydrogeological characterisation of the Gloucester Basin is included in the GWMP.

7.4.2 GROUNDWATER MONITORING RESULTS AND PERFORMANCE

Groundwater monitoring is conducted in accordance with the DCM Water Management Plan (WMP) Appendix 3 Groundwater Management Plan (GWMP).

DCM monitors groundwater quality on and surrounding the mine site by sampling from a series of selected monitoring bore locations. The location of these bores is shown in **Figure 3 (Appendix 1)**.

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Collected waters are analysed for a suite of physical and chemical parameters. Results are evaluated for observable trending and compared to the predicted results from the EA 2010.

A summary of groundwater monitoring results for the reporting period can be found in **Table 23** and **Appendix 4**.

Comments on analysed parameters for monitoring conducted during the reporting period are as follows:

- Depth to groundwater was comparable with recent historical data for most monitored wells and consistent with predicted levels. The exception was DB8W with increased depth recorded during the February and May 2023 monitoring.
- pH is comparable with historical data with minor fluctuations apparent. pH in the reporting period varied from a slightly acidic 5.3 (DB10W in Aug 2022) to a neutral 7.5 (SI2W in May 2023);
- Electrical conductivity generally showed a high degree of variability across many of the wells as has historically been the case. This would appear to reflect the cycle of dry and wet conditions. Shallow wells intercept generally low conductivity alluvial aquifers, whilst deep wells associated with coal measures generally have higher conductivity;
- Calcium and magnesium concentrations across all wells tended to fluctuate within reasonably tight ranges which has historically been the case;
- Small fluctuations were also observed for Sulphate concentrations across all wells;
- Aluminium concentrations are quite low (often being close to the limit of analytical detection) in all the deeper wells but comparatively higher in the shallower wells. The highest concentration recorded was 10.1 mg/l (WR1 in Nov 2022);
- Iron concentrations showed no common trend with rises and falls across wells generally. Concentrations showed a wide range from a low of <0.05 mg/l (SI1W in Aug 2022) to a high of 38.2 mg/l (DB5W in November 2022);
- Manganese concentrations across all wells were not high with the highest being 3.71 mg/l within WR1 in May 2023; and
- Zinc concentrations were essentially low and consistent with available historical data.

Table 23 Summary of Groundwater Monitoring Results – Average depth, pH and EC

Site	Depth (m)	pH	EC (µS/cm)
DB1W	15.5	5.7	3557
DB2W	13.3	6.2	1456
DB3W	2.7	6.3	130
DB4W	6.0	6.9	3203
DB5W	10.4	5.7	1792
DB6W	20.4	6.6	5725
DB7W	9.9	7.0	2455
DB8W	11.0	*	*
DB9W	17.1	6.9	6185
DB10W	10.7	5.7	4378
DB11W	9.8	7.0	2737
BH4BW	4.3	6.0	529
SI1W	10.0	7.0	2665
SI2W	22.2	7.3	2619
SI3W	28.1	6.9	6313
WR1	13.2	6.4	2631
WR2	20.2	7.0	7298

Note * = Depth only monitored at DB8W

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Results for the reporting period are provided in **Appendix 4**. In summary, hydrographic plots (Graph 1, Graph 2 and Graph 3), indicate that groundwater monitoring results for the period are generally consistent with predicted outcomes as assessed in the EA (2010). Further review occurred in line with the GWMP where inflows to pits and water levels within bores were consistent with modelled predictions and indicators as per the GWMP. No trigger levels or exceedance of performance measures were identified during the reporting period. No complaints related to groundwater were received during the reporting period.

Assessment of Performance Indicators

Groundwater monitoring results are assessed against Performance Indicators and Measures as described Section 7.1 and Table 6 of the GWMP. Monitoring data for the reporting period was in accordance with the performance measures which indicate:

- No more than a negligible impact on stream baseflow as a result of the Duralie Project;
- No more than a negligible impact on water levels in groundwater production bores on private land.

Refer **Table 24** below.

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Table 24 Groundwater Monitoring Performance Outcomes – 2022-23 Reporting Period

Performance Measure	Performance Indicators	Assessment of Performance Indicators	Assessment of Performance Measure
No more than negligible impact on stream baseflow and/or natural river leakage of Mammy Johnsons River to the deeper groundwater system as a result of the Duralie Extension Project (incorporating the Open Pit Modification).	Groundwater inflows to open pits are consistent with Duralie Open Pit Modification Environmental Assessment (EA) predictions.	Data analysis indicates groundwater inflows to open pits have been less than the Duralie Open Pit Modification Environmental Assessment (EA) predictions. Refer to the site water balance review for 2022 (ATC Williams, 2023).	No further requirement for assessment of Performance Measure.
	Groundwater levels in alluvium bores are consistent with Duralie Open Pit Modification EA predictions (accounting for temporal changes in rainfall recharge).	Data analysis of daily alluvium bore pressure sensors indicates groundwater levels in alluvium bores are consistent with Duralie Open Pit Modification EA predictions (accounting for temporal changes in rainfall recharge). Refer to groundwater monitoring data.	No further requirement for assessment of Performance Measure.
No more than negligible impact on water levels in groundwater production bores on privately-owned land as a result of the Duralie Extension Project (incorporating the Open Pit Modification).	No groundwater related complaints received	No groundwater related complaints were received during the reporting period.	No further requirement for assessment of Performance Measure.

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7.4.3 ANALYSIS DATA TRENDS AND COMPARISON WITH EA PREDICTIONS

Depth to water information from piezometer monitoring indicates that bore water levels are generally consistent between bores and are generally consistent with EA (2010) predictions.

The four bores to the west of the open cut pit (SI1W, SI2W, SI3W & DB6W) are all above or close to maximum predicted levels.

No depressurisation has been observed to date at Bore DB11W, located north of operations.

Groundwater quality results for the reporting period indicate results consistent with EA predictions and historical groundwater data trends. For this reporting period, the groundwater pH range for bores likely to be influenced by the coal measures was between 5.3 and 7.5. Similarly, the electrical conductivity range for the bores was 101 to 8940 uS/cm. These results are generally similar to and within the range noted in the EA (pH – 6.0 to 8.0 EC – 100 to 7600 uS/cm).

Irrigation bores (SI Series) indicate no obvious signs of deep drainage generated from irrigation activities. Irrigation activities ceased during 2018 and no impacts from deep drainage would be expected.

No indication of an increase in connectivity between alluvial bores (DB3W and BH4BW) and the deeper groundwater system has been observed based on monitoring results for water quality and groundwater table level.

The waste emplacements bores (WR Series) indicate signs of recharging of the backfilled void, particularly at WR1. This is consistent with the numerical modelling of the post-mining groundwater levels (EA 2010) which shows slow but complete recovery of the groundwater system over many decades and that the Clareval void, once filled with water, would act as a sink, while the Weismantel void lake would act as a flow-through lake system. Additional detail is available within the EA for the DEP Modification 2 approved in December 2014.

Monitoring results show a drop in the depth to standing water level at DB8W. Depth reading on 15 November 2022 was 13.58m and depth on 8 February 2023 was 7.18m. The decrease in depth was consistent with the latest reading on 3 May 2023 showing a depth of 7.52m.

7.4.4 GROUNDWATER INFLOWS TO OPEN CUT MINING OPERATIONS

Groundwater seepage inflows to mining voids is directed and collected in pit sumps along with rainfall and surface water runoff and seepage through backfilled pit areas. Water level and water quality analysis of the pit sumps is undertaken on a monthly basis. The volumes of water extracted from the pit sumps is recorded where practicable.

The water quality monitoring results for the open cut pits during the reporting period is included in **Section 7.3.2.2** of this report.

A site water balance review is undertaken on an annual basis to monitor the status of inflows (including groundwater inflows to open pits), storage and consumption. A summary of the 2022 site water balance review (ATC Williams, 2022) is included in **Section 7.2** of this report.

No dewatering from the open cut pits was undertaken during the reporting period. Mining activities have currently ceased in both Weismantel and Clareval pits. Data analysis indicates groundwater inflows to open pits have been less than the EA 2014 predictions.

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7.5 IRRIGATION

Irrigation at the DCM was previously managed in accordance with the Irrigation Management Plan (IMP), Appendix 2 of the WMP. The WMP including IMP was revised during 2021 to reflect the current status of the DCM and the status of the Irrigation activities. As a result of the operational changes at the DCM, the requirement for, and the requirements of, the DCM IRP are no longer relevant to the DCM and the plan is now redundant.

All irrigation activities at the DCM have now ceased and the DCM's irrigation system has been decommissioned and removed.

8.0 REHABILITATION

Rehabilitation of disturbed land at DCM has previously been undertaken in accordance with the approved Mining Operations Plan and Rehabilitation Management Plan (MOP, 2019) required under the Mining Lease conditions and PA 08_0203. The MOP term covers mining operations and rehabilitation activities up to the end of 2021.

A RMP was prepared for DCM to satisfy the requirements of Condition 2 of ML 1427 and Condition 3 of ML 1646 (relevant to preparation of an RMP) and addresses the requirements for the DCM RMP provided within Condition 57, Schedule 3 of the Project Approval (08_0203).

An Annual Rehabilitation Report and Forward Program (ARRFP) was also prepared and submitted for DCM which provides details of the scheduled surface disturbance and rehabilitation activities at the DCM from 1 July 2022 to 30 June 2025.

DCPL is in the process of refining and optimising the final landform as a critical component to achieving a safe, stable and non-polluting landform for future lease relinquishment and sustainable post-mining beneficial land use. Completion of Yancoal's closure planning studies will inform closure execution works and the rehabilitation schedule and will be included in revised Final Landform and Rehabilitation Plan.

Condition 5, Schedule 2 of PA 08_0203 authorised mining operations to be carried at the DCM until 31 December 2021. Accordingly, DCPL has continued detailed planning for the commencement of the mine closure phase (i.e. after the cessation of mining operations on 31 December 2021). DCPL has revised relevant EMPs to reflect the current stage of operations and to describe anticipated mine closure activities and describe the change to environmental impacts, mitigation measures and monitoring programs at the DCM for the mine closure phase. A summary of the rehabilitation objectives, performance indicators and completion criteria relevant to the DCM rehabilitation domains is provided in the RMP. Plan 1 in the RMP shows the conceptual final landform, relevant primary domains and secondary rehabilitation domains.

8.1 REHABILITATION OF DISTURBED LAND

Rehabilitation of disturbed areas is undertaken progressively. Rehabilitation planning, management and implementation is described in the RMP. The overburden emplacement is rehabilitated in progressive increments to the final landform so the area of disturbed land is minimised and disturbed water catchment areas are reduced. Stage plans for the Duralie disturbance and rehabilitation areas are provided in the RMP and Forward Program.

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The DCM rehabilitation progress is generally in accordance with the planned activities described in Plan 2A Mining and Rehabilitation – Year 1 (July 2023) of the 2022 DCM Forward Program. The 2022 forward Program forecast 9.39ha of waste emplacement to be prepared for rehabilitation in 2023, this forecast rehabilitation has been reforecast to be completed following completion of the above-mentioned refined mine closure planning.

The current (June 2023) total mine footprint area (disturbance) is 404 hectares. The completed rehabilitation area is 180.3 hectares.

Table 25 presents a summary of the rehabilitation undertaken at the Duralie mine site up to the current reporting period. The current mining areas and rehabilitation as of 30 June 2023 are shown in **Figure 4**, provided in **Appendix 1**.

Table 25 Rehabilitation status

Mine Area Type	Previous RP (actual hectares) 2020/2021	Current RP (actual hectares) 2022/2023	Next RP (forecast hectares) 2023/2024*
Total Mining Lease	942.8	942.8	942.8
Total mine footprint	404	404	404
Total active disturbance	223.7	223.7	223.7
Land being prepared for rehab (Landform Establishment)	9	0	0
Land under active rehabilitation (Growth Medium Development)	0	0	0
Completed rehabilitation (Ecosystem Establishment & Sustainability)	171.3	180	180

*2023/2024 reporting period forecast hectares subject to change following completion of Yancoal’s mine closure studies and refinement and optimisation of the final landform.

8.1.1 REHABILITATION RESOURCES

Topsoil resources are managed in accordance with the RMP Section 6.2.4. No vegetation clearance or topsoil stripping was undertaken during the reporting period. No further disturbance is proposed for mining activities at the DCM. There are currently sufficient topsoil resources available to complete rehabilitation of the DCM.

The DCM’s topsoil balance will be augmented to incorporate estimates of other materials required to complete rehabilitation of the DCM, including inert capping material (i.e. NAF material) and clay for the Coal Shaft Creek Reconstruction. Estimates of clay volumes required for Coal Shaft Creek Reconstruction will be determined once the detailed design works for the revised Coal Shaft Creek Reconstruction Plan have been completed.

The requirement for a LOM rehabilitation materials register, including topsoil stocktake, is included in the RMP.

8.1.2 REHABILITATION MAINTENANCE

Recommendations for maintenance activities on rehabilitated land have been included in the rehabilitation monitoring reports, refer to **Section 8.3**.

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During the reporting period maintenance activities focussed on the improvement of pasture rehabilitation at the DCM. Maintenance works included slashing, clearing of access tracks and weeds spraying. Weed control has been undertaken across the rehabilitation areas targeting lantana, blackberry, wild tobacco and giant parramatta grass.

During the next reporting period maintenance work will focus on weed control, bushfire mitigations and improving biodiversity and stem density in the native vegetation rehabilitation areas.

8.2 REHABILITATION MONITORING

Monitoring of the DCM rehabilitation areas is described in Section 8 of the Rehabilitation Management Plan (RMP). Rehabilitation is monitored on a regular basis to ensure vegetation is establishing in the rehabilitation areas and to determine the need for any maintenance and/or contingency measures (e.g. supplementary plantings, weed or erosion control). The monitoring also aims to demonstrate the effectiveness of the rehabilitation techniques and track the progression towards achieving the performance and completion criteria.

The annual rehabilitation monitoring program includes the areas designated for agricultural (grazing) and native ecosystem final land uses.

Visual Monitoring

Rehabilitation monitoring includes a visual assessment:

- Monitoring of soil erosion status and the effectiveness of erosion control methods;
- Observing drains to determine whether substantial silting of inverts and/or any localised failure of the drain embankment has occurred;
- Assessing germination success and vegetation establishment (diversity and abundance);
- Usage of habitat enhancement features;
- Evaluating the behaviour of placed topsoil;
- Evaluating threats posed to rehabilitated areas posed by weed infestation and feral animals; and
- Opportunistic fauna observations.

The visual monitoring provides an early identification of areas requiring remedial planting or other maintenance works to maintain rehabilitation progress. The rehabilitation reports provide a list of maintenance recommendations predominantly relating to erosion control, weeds control and vegetation management and enhancement.

Ecosystem Function Analysis

The assessment of rehabilitation quality and ecosystem value is conducted via the use of Ecosystem Function analysis (EFA). EFA aims to measure the progression of rehabilitation towards self-sustaining ecosystems. EFA has been incorporated into the overall DCM rehabilitation monitoring program to provide an assessment of landscape functionality.

EFA Analogue Transects have been established in proximal areas to represent the varying landscapes (i.e. slopes and aspects) and target communities planned for each rehabilitation area. Monitoring of agricultural rehabilitation areas, including areas proposed as pasture for agricultural grazing, will also involve monitoring of LFA indices, including stability, infiltration and nutrient cycling.

The rehabilitation transects were assessed in May 2023 as part of the eighth annual round of monitoring in accordance with Section 8.12 of the RMP. A summary of the findings from the 2023

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DCM Offsets Ecosystem Functional Analysis Monitoring Report (Wedgetail Project Consulting, 2023) can be found in the Duralie Annual Biodiversity Report (**Appendix 7**). DCPL will continue to undertake annual EFA monitoring at the DCM.

Fauna Monitoring

Fauna usage of the native ecosystem rehabilitation areas is monitored and documented over time. Fauna monitoring is conducted every three years to assess the success of the rehabilitation and revegetation activities in providing habitat for a range of vertebrate fauna. The surveys include an assessment of habitat complexity, species richness and abundance.

The most recent fauna survey was conducted by AMBS Ecology during November 2021 to January 2022. A summary of the findings from the *Duralie Coal Mine: Fauna Surveys of the Offset and Mine Rehabilitation Areas* (January, 2022) can be found in the *Duralie Annual Biodiversity Report* (**Appendix 7**). The previous fauna monitoring within the Biodiversity Offset Areas and native Mine Rehabilitation Areas was undertaken in February 2018.

Surveys conducted over DCM rehabilitation areas and Biodiversity Offset Areas indicate that these areas provide habitat for a range of native vertebrate fauna, including birds, mammals, reptiles and frogs.

Habitat Enhancement and Nest Box Program

A nest box program for the Duralie Extension Project, is being implemented by AMBS Ecology & Heritage for the DCM, in accordance with the Biodiversity Management Plan (BMP). The nest boxes provide nesting habitat for birds, arboreal mammals and bats.

Installation of nest boxes has occurred over six periods with the most recent installation in March 2021. No further nest box installations were required resulting from vegetation clearance activities and the recent installations in the rehabilitation areas is to provide additional habitat enhancement.

The nest boxes are monitored annually by AMBS to observe fauna usage. The most recent annual monitoring report was completed by AMBS with works completed in March 2023 due to weather impacts. Overall a total of 247 of 269 nest boxes, approximately 92%, have been occupied or have shown signs of occupancy since their installation. A summary of the findings from the *Nest Box Programme for the Duralie Offset Area 2022* can be found in the *Duralie Annual Biodiversity Report* (**Appendix 7**).

8.2.1 THREATS TO REHABILITATION COMPLETION

During the reporting period the 2023 rehabilitation monitoring program identified a list of recommendations regarding the existing rehabilitation and future rehabilitation works (**Section 8.3**). The recommendations mostly related to increasing native tree and shrub structure and biodiversity in the native rehabilitation areas, and secondly continuing to manage weeds in both the native and pasture rehabilitation areas. The recommendations included a combination of weed control measures, assisted biomass reduction to stimulate regeneration and additional seeding with mid-story and shrub species in targeted areas.

Any emerging threats to rehabilitation success will be identified through the ongoing monitoring programs described in Section 9 of the RMP. The recommendations in the rehabilitation monitoring report (**Section 8.3**) provide recommended maintenance and management measures to address these specific issues.

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8.2.2 STATUS OF REHABILITATION RECOMMENDATIONS

A status of the implementation of the recommendations on rehabilitation and maintenance activities made in the *Duralie Coal Mine Rehabilitation EFA Monitoring Report* (Wedgetail Project Consulting, 2023) is provided below.

During the reporting period maintenance activities focussed on the improvement of pasture rehabilitation at the DCM. Maintenance works included slashing, aerating and fertiliser application. Maintenance activities also included slashing and clearing of access tracks and weeds spraying. Weed control has been undertaken across the rehabilitation areas targeting lantana, blackberry, wild tobacco and giant parramatta grass in the areas identified in the rehabilitation monitoring report.

During the next reporting period maintenance work will focus on addressing the recommendations to improving biodiversity and stem density in the native vegetation rehabilitation areas. This will include consideration of techniques for biomass reduction to stimulate regeneration of the seed bank.

8.3 REHABILITATION TRIALS AND RESEARCH

DCPL has extensive experience in both native woodland/forest revegetation and agricultural pasture rehabilitation, with successful rehabilitation areas completed over the past 20 years at both the Duralie and Stratford mine sites. Learnings from the rehabilitation works undertaken onsite to date along with industry best practice guidelines are employed in the methodology for new rehabilitation areas.

Revegetation trials continue to be implemented in the biodiversity offset area in accordance with the Biodiversity Management Plan. The program has trialled several methods for ground preparation, seeding and planting to determine the most suitable and cost-effective methods for completing the remaining offset revegetation and mine site rehabilitation. Refer the *Duralie Coal Mine Annual Biodiversity Report* (DCPL, 2023) for a summary of works undertaken during the reporting period.

8.4 REHABILITATION TARGETS

Rehabilitation targets are outlined in the Rehabilitation Management Plan and Forward Program.

The rehabilitation targets and proposed rehabilitation schedule over the life of the DCM are described in Section 6.1 of the RMP. The rehabilitation target is a cumulative total of 404.1ha.

8.5 MINE CLOSURE PLANNING

Condition 5, Schedule 2 of PA 08_0203 authorised mining operations to be carried at the DCM until 31 December 2021. Accordingly, DCPL planned for the commencement of the mine closure phase (i.e. after the cessation of mining operations on 31 December 2021).

As stated above, DCPL is in the process of refining and optimising the final landform as a critical component to achieving a safe, stable and non-polluting landform for future lease relinquishment and sustainable post-mining beneficial land use. Completion of Yancoal's closure planning studies will inform closure execution works and the rehabilitation schedule and will be included in revised Final Landform and Rehabilitation Plan.

The mine closure planning program developed for the DCM includes a schedule of all technical and/or environmental assessments that are required to undertake final rehabilitation now that open-cut mining at the DCM has ceased. The technical assessments identified in the Mine Closure Planning

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Program have been informed by the key risks and risk reduction strategies associated with rehabilitation and mine closure of the DCM.

The Mine Closure Planning Program components and completion status/schedule for each component is provided in Appendix 1 of the RMP.

A summary of the key mine closure planning items continued and commenced for the DCM during the reporting period included:

- Development of Rehabilitation Completion Criteria
- Mine Closure Stakeholder Strategy
- Socio-economic Impact Assessment
- Document and Records Control Management System
- Monitoring & Maintenance Program
- Review Environmental Management Plans (EMPs) for closure phase
- Approvals/Licences Relinquishment Strategy
- Public Safety Risk Assessment (RA)
- Develop Mine Closure Risk Register
- Decommissioning & Demolition Plan
- Water Management Infrastructure retention strategy.
- Closure waste management plan
- Contaminated Sites Assessment
- Review Historical Potentially Acid Forming (PAF)
- LOM Rehab Materials Register & Mass Balance
- Rehabilitation Methods Standard Operating Procedures (SOPs)
- Final Voids Strategy
- Final Void water balance
- Review application of erosion modelling
- Development of a Quality Assurance/ Quality Control (QA/QC) process for landform design
- Document control & Records
- Surface water infrastructure design review
- Potentially Acid Forming/Non Acid Forming Placement Model
- Coal Shaft Creek diversion design
- Geographic Information Systems (GIS) data/records of rehabilitation implementation
- Management of Heritage Sites
- Detailed final landform design

DCPL has revised relevant EMPs to reflect the current stage of operations and to describe anticipated mine closure activities and describe the change to environmental impacts, mitigation measures and monitoring programs at the DCM for the mine closure phase.

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9.0 COMMUNITY RELATIONS

DCPL is committed to a policy of regular liaison with the local community and strives to maintain positive relationships with stakeholders. DCPL’s community objectives aim to:

- Ensure employees and contractors are informed about DCPL’s policies and are made aware of their environmental and community responsibilities in relation to DCPL’s activities;
- Inform the community of DCPL’s activities and consult with the community in an open and honest fashion in relation to DCPL’s projects; and
- Address complaints/conflicts and consult to achieve mutually acceptable outcomes.

Dissemination of information to the local community and relevant agencies regarding DCPL, its progress and environmental management performance will be achieved via the following communication and reporting mechanisms.

- Community Consultative Committee
- Duralie Coal Website
- Duralie Coal Mine Annual Review
- Community Information and Complaints Line

9.1 COMMUNITY ENGAGEMENT ACTIVITIES

Yancoal Australia Ltd is committed to making a positive contribution in the areas in which it operates. To help facilitate this commitment Stratford Coal Pty Ltd have established the Community Support Program to provide assistance to local initiatives within the local area in which they operate. The aim of the Community Support Program is to help benefit a diverse range of community needs such as education, environment, health, infrastructure projects, arts, leisure and cultural heritage.

The Stratford Coal Community Support Program has granted over \$929,000 since commencing in 2010 and during 2023 a total of \$93,320 in grants was approved. The community groups to receive grants in 2023 are listed in **Table 26**.

Table 26 Community Support Program 2023

Community Support Program 2023 Recipients	Project Description
Avon Rural Fire Brigade	Firefighter training equipment
Barrington Public School	Creation of a community fruit forest
Stroud Road Community Hall & Progress Assoc. Inc.	Sponsorship of Stroud Road Spring 'Bash 'n Bang'
RYSTEM Engagement Midcoast	MidCoast Science & Engineering Challenge and Discovery Days
Barrington Public School P&C Association	New home-readers for students
Stroud Public School P&C Association	Operation Laptops! New classroom laptops
Gloucester & District Netball Association	Sponsorship of award
Gloucester District Tennis Association	Sponsorship of award
Stroud Show Association	2023 Stroud Show Sponsorship

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Community Support Program 2023 Recipients	Project Description
Gangat Rural Fire Brigade	Thermal imaging camera for Gangat fire trucks
Gloucester Chamber of Commerce and Industry Inc	"The Hub" - start up of local hot desking a meeting place for professionals and community groups to host meetings and workshops
Gloucester Worimi First Peoples Aboriginal Corporation	Portable PA system
Booral Rural Fire Service	Phone/ Wifi boosters at Rest Stop
Australian Stock Horse Society (ASHS) Gloucester Branch	Sponsorship of award
Gloucester Agriculture, Horticulture and Pastoral Association Incorporated	Installation of ceiling fans in the pavilions for the 2023 Gloucester Show
Gloucester Public School P&C Association	Upgrade of freezer storage in School Canteen
	Complete new indigenous families and community school murals
Gloucester Thunderbolts Swimming Club	Sponsorship of award
Stratford Public School	Creation of outdoor education and assembly area including adding additional flagpoles to include Aboriginal and Torres Strait Islander Flags
Stroud and District Historical Society	Stroud Heritage Walk Mobile Device App
Cancer Council NSW	Box Rallies - Car rally starting in Newcastle to Townsville via Outback NSW and QLD raising money for cancer research and treatments

Stratford Coal Pty Ltd have also continued their commitment to education and training in the Gloucester region through Stratford Coal’s Education Support Program, providing much needed funding for the next generation of young students. The Education Support Program is managed by an independent committee and the funds distributed by MidCoast Council. In 2023, \$36,500 has been allocated in funding to help support local students and businesses in university degrees, TAFE courses and apprenticeships.

Since the commencement of mining in 1995, Stratford Coal has contributed more than \$870,000 to locally based community and training initiatives via the Education Support Program. During that time, the funding has support over 230 tertiary students, 140 apprentices and 60 businesses.

Yancoal and Stratford Coal have continued their partnerships with:

- The Clontarf Foundation -Chatham Academy
- QLD University of Technology
- Westpac Rescue Helicopter.

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9.2 COMMUNITY CONSULTATIVE COMMITTEE

The Duralie Community Consultative Committee (CCC) was established in 2003 and operates under the guidance of the DPE. Meetings are held 6-monthly and provide a forum for open discussion between the community, Council, the Company and other stakeholders on issues relating to the mine's operations, environmental performance and community engagement.

The Community Consultative Committee (CCC) for the DCM is currently comprised of:

- An independent Chairperson;
- Six (6) local community representatives;
- Two (2) local government representatives (MidCoast Council); and
- Two (2) DCPL representatives.

The CCC was formed in accordance with Schedule 5, Condition 5 of the Project Approval for the Duralie Extension Project. The Committee operates in such a manner as to generally satisfy the Community Consultative Committees Guidelines for State Significant Projects (Department of Planning, 2016) and to the satisfaction of the Secretary of DPE.

In 2022 CCC meetings were held biannually in line with the completion of mining operations. Three CCC meetings were held during the reporting period in November 2022 and February 2023. A site tour was undertaken prior to the November 2022 CCC meeting. The site tour included completed rehabilitation areas, Clareval Pit and Auxillary Dam No.2.

Items raised and/or discussed during the CCC meetings held during the reporting period include but are not limited to:

- General environmental management & monitoring, including air quality, noise, surface water and groundwater
- Community complaints
- Draft Rehabilitation Management Plan
- Broader community engagement and the CCC's print media articles
- Yancoal land management
- Yancoal community support program
- Proposed draft changes to CCC Guidelines and input from CCC members

The CCC meeting agendas, presentations and minutes are available on the Duralie Coal website (www.duraliecoal.com.au).

An Annual Report for the Duralie Coal CCC was prepared by the Chair and submitted to DPE on 15 March 2022 (**Appendix 6**).

9.3 ENVIRONMENTAL COMPLAINTS

DCPL manages complaints received at the DCM in accordance with the protocol established in the Environmental Management Strategy (EMS). DCPL aims to address all complaints/conflicts and consult to achieve mutually acceptable outcomes.

Complaints may be received in any form. DCPL operates a dedicated community information and complaints hotline (1300 658 239) 24 hours per day. The number is advertised within the Sensis White Pages Directory (Newcastle), a local telephone directory (Pink Pages) and in the local newspapers (Gloucester Advocate) on a six-monthly basis.

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Complaints (by category) received by DCPL over the last 5 reporting years are shown in **Table 27**.

Table 27 Community Complaints Summary

Complaint Category	2018/19	2019/20	2020/21	2021/22	2022/23
Noise	0	0	0	0	0
Blasting	0	0	0	0	0
Air Quality	4	0	0	0	0
Water	0	0	0	0	0
Lighting	0	0	0	0	0
Visual	0	0	0	0	0
Train	0	0	0	0	0
Other	0	0	0	1	0
Total Complaints	4	0	0	1	0

There were no complaints received during the 2022/23 reporting period relating to the DCM operations.

9.4 EMPLOYMENT STATUS AND DEMOGRAPHY

At the end of the reporting period (i.e. June 2023), the total number of FTE's employed at the DCM was 16. During the reporting period two Environment and Community representatives were employed and shared with the nearby SMC.

On the basis of a review of employees' living location, 60% of mine employees resided within the greater local area (defined as being bounded by Stroud, Gloucester and Dungog).

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10.0 INDEPENDENT ENVIRONMENTAL AUDIT

An Independent Environmental Audit (IEA) of the DCM was not required during the reporting period. The next IEA is scheduled to be undertaken prior to 31 December 2023.

The previous IEA reports for the DCM along with the responses to the recommendations are available on the Duralie Coal website at <http://www.duraliecoal.com.au>.

A status update on DCPL's progress against the 2020 IEA recommendations are included in **Appendix 8**.

11.0 INCIDENTS AND NON-COMPLIANCES

Activities at the DCM continue to be carried out in accordance with the conditions of Project Approval 08_0203, ML 1427, ML 1646 and EPL 11701.

During the reporting period, there were zero non-compliances with the Project Approval 08_0203 and EPL 11701 during the reporting period.

A protocol for managing incidents and non-compliances is included in the DCM Environmental Management Strategy (EMS). A statement of compliance is included in **Section 1** of this report. The severity of the incident will determine the level of investigation required. The reporting of incidents to regulators is conducted in accordance with the EMS, Condition 6, Schedule 5 of PA 08_0203 and the POEO Act and PIRMP where applicable.

Compliance recommendations identified in the IEA 2020 are referred to separately in **Section 10** and **Appendix 8** of this report.

12.0 ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

DCPL will continue rehabilitation and mine closure activities in accordance with Project Approval 08_0203 and the relevant Environmental Management Plans for DCM.

Condition 5, Schedule 2 of PA 08_0203 authorises mining operations to be carried at the DCM until 31 December 2021. Under this approval, DCPL is required to rehabilitate the site and carry out additional undertakings to the satisfaction of both the Secretary and the Resources Regulator. Consequently, PA 08_0203 will continue to apply in all other respects, other than the right to conduct mining operations, until the rehabilitation of the site and these additional undertakings have been carried out satisfactorily.

The following key activities at the DCM are proposed within in the next 12 months:

- Completion of the DCM Detailed Mine Closure Plan
- Further Infrastructure decommissioning and demolition
- Continued shaping and rehabilitation earthworks (which may include final blasting to achieve final landform design)
- Growth medium establishment activities including topsoil spreading
- Revegetation of the final landform in accordance with the DCM RMP
- Further review and refinement of monitoring programs and environmental management plans.

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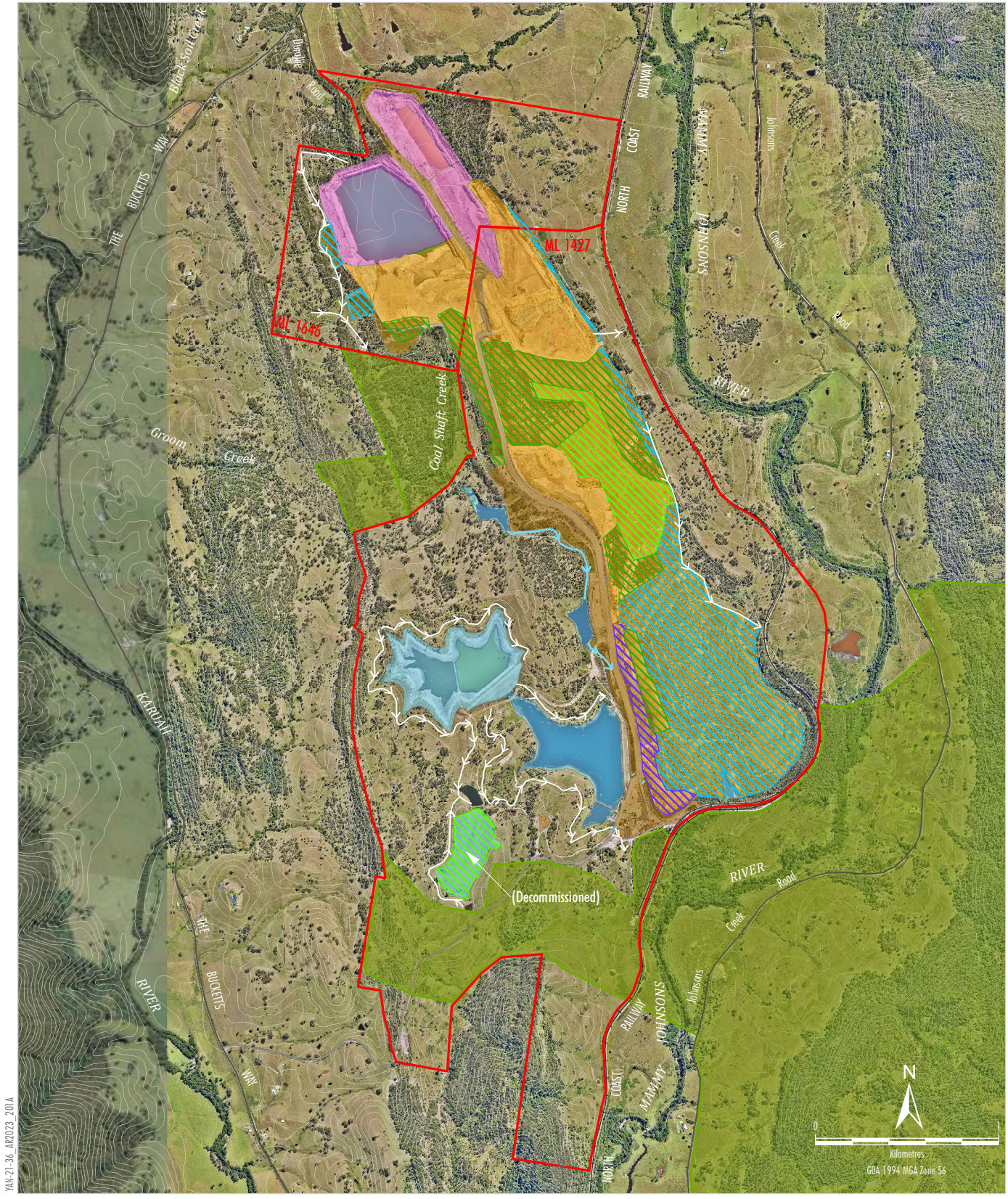
13.0 REFERENCES

- Barnett & May (2020) Duralie Coal Mine Independent Environmental Audit 2020.
- Biosphere Environmental Consultants (2015). Duralie Coal Mine Giant Barred Frog (*Mixophyes iterates*) Monitoring Results October 2014 to February 2015.
- Department of Planning and Infrastructure (DoPI) (2011). Land and Environment Court of NSW Order for Duralie Extension Project Approval, Duralie Coal Pty Ltd 10 November 2011.
- Department of Planning and Environment (DPE) (2016). Community Consultative Committee Guidelines for State Significant Developments for Mining Projects, November 2016.
- DCPL (2017). Duralie Coal Mine Giant Barred Frog Management Plan
- DCPL (2021). Duralie Coal Mine Air Quality and Greenhouse Gas Management Plan
- DCPL (2021). Duralie Coal Mine Blast Management Plan
- DCPL (2021). Duralie Coal Mine Noise Management Plan
- DCPL (2021). Duralie Coal Mine Water Management Plan
- DCPL (2022). Duralie Coal Mine Annual Biodiversity Report 2022
- DCPL (2022). Duralie Coal Mine Heritage Management Plan
- DCPL (2023). Duralie Coal Mine Mining Rehabilitation Management Plan
- DCPL (2023). Duralie Coal Mine Biodiversity Management Plan
- Freudenberger (2013). Baseline Monitoring of Landscape Function and Vegetation Structure for the Duralie Biodiversity Offset.
- GCL (2010). "Duralie Extension Project Environmental Assessment". Prepared for Gloucester Coal Ltd by Resource Strategies Pty Ltd, January.
- Gilbert and Associates Pty Ltd (2010). Duralie Extension Project, Surface Water Assessment
- Horizon Environmental Soil Survey and Evaluation (2019). Duralie Coal Mine Irrigation Area Monitoring Report 2019
- ATC Williams (2023). Duralie Coal Mine 2022 Annual Water Balance Review.
- Wedgetail Project Consulting (2023). Duralie Coal Mine Rehabilitation EFA Monitoring 2023.
- NSW Trade and Investment, Resources and Energy (2013) Guidelines to the Mining, Rehabilitation and Environmental Management Process.
- NSW Government (2015) Annual Review Guideline.















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APPENDIX 1

Figures



YAN21-36_AR2023_201A

	LEGEND Mining Lease Boundary		Rehabilitation Phase - Final Land Use Domain
	Up-catchment Diversion		Landform Establishment - Native Ecosystem
	Culvert		Ecosystem and Land Use Establishment - Agricultural Grazing
	Indicative Coal Shaft Creek Diversion		Ecosystem and Land Use Establishment - Native Ecosystem
Mining Domains			Ecosystem and Land Use Development - Native Ecosystem
	Infrastructure (1)		
	Water Management Area (2)		
	Waste Emplacement Area (3)		
	Final Void/Open Pit (4)		
	Offset Area (5)		

Source: © NSW Spatial Services (2019)
Orthophoto: Google Imagery (April 2020)

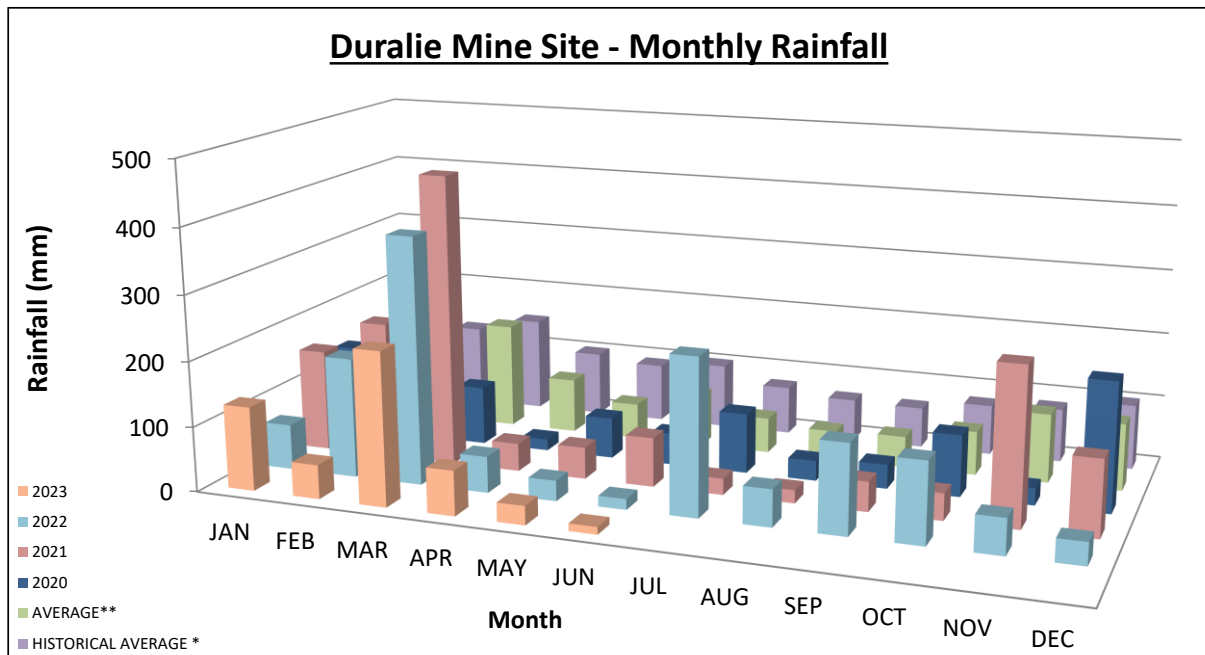


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Mining and Rehabilitation Areas

Figure 4

APPENDIX 2

Meteorological Monitoring



*Stroud + Duralie 1889 to 2010 (inclusive)

**Duralie Mine 2002 – 2023 (inclusive)

Figure 2-1: Monthly Rainfall for 2020 to 2023 and Historical Averages

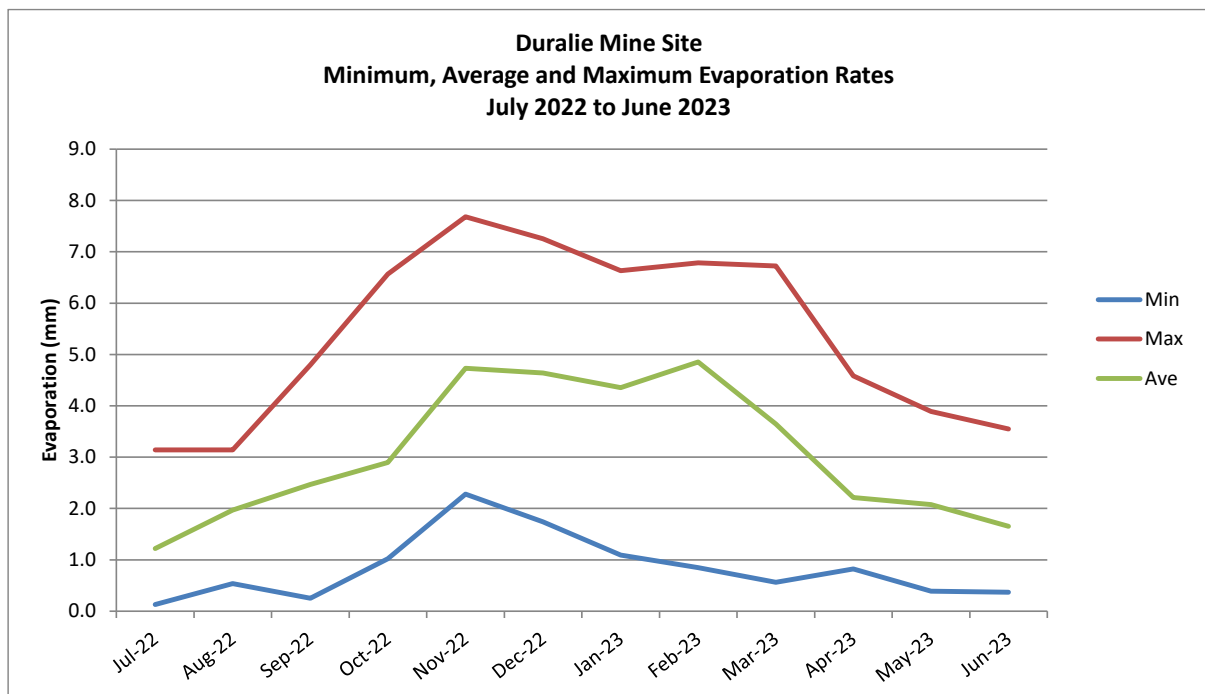


Figure 2-2: Minimum, Maximum and Average Evaporation Rates During the Reporting Period

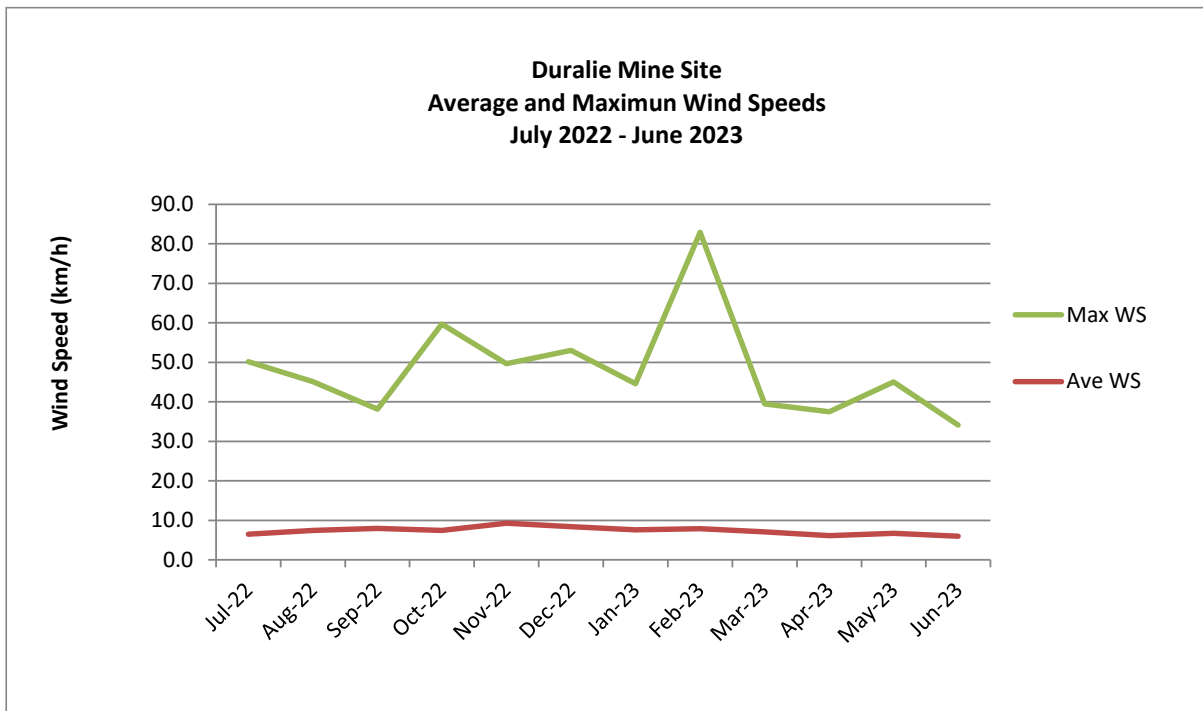


Figure 2-3: Maximum and Average Wind Speeds During the Reporting Period

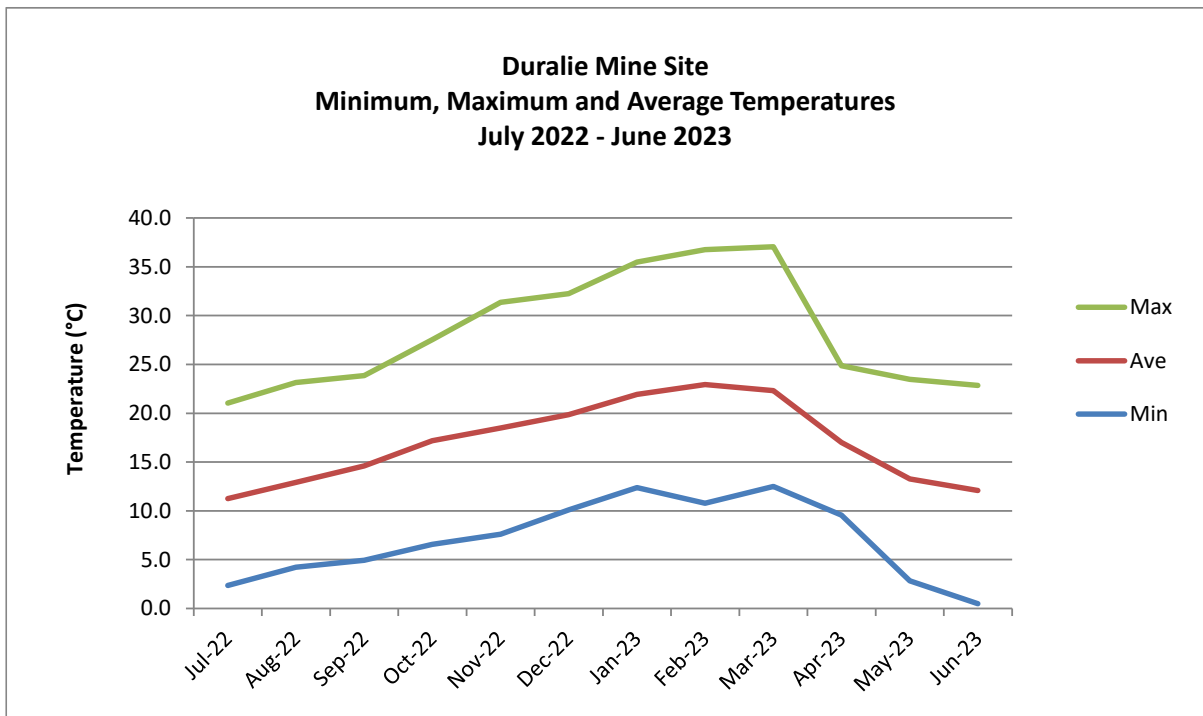


Figure 2-4: Minimum, Maximum and Average Temperatures During the Reporting Period

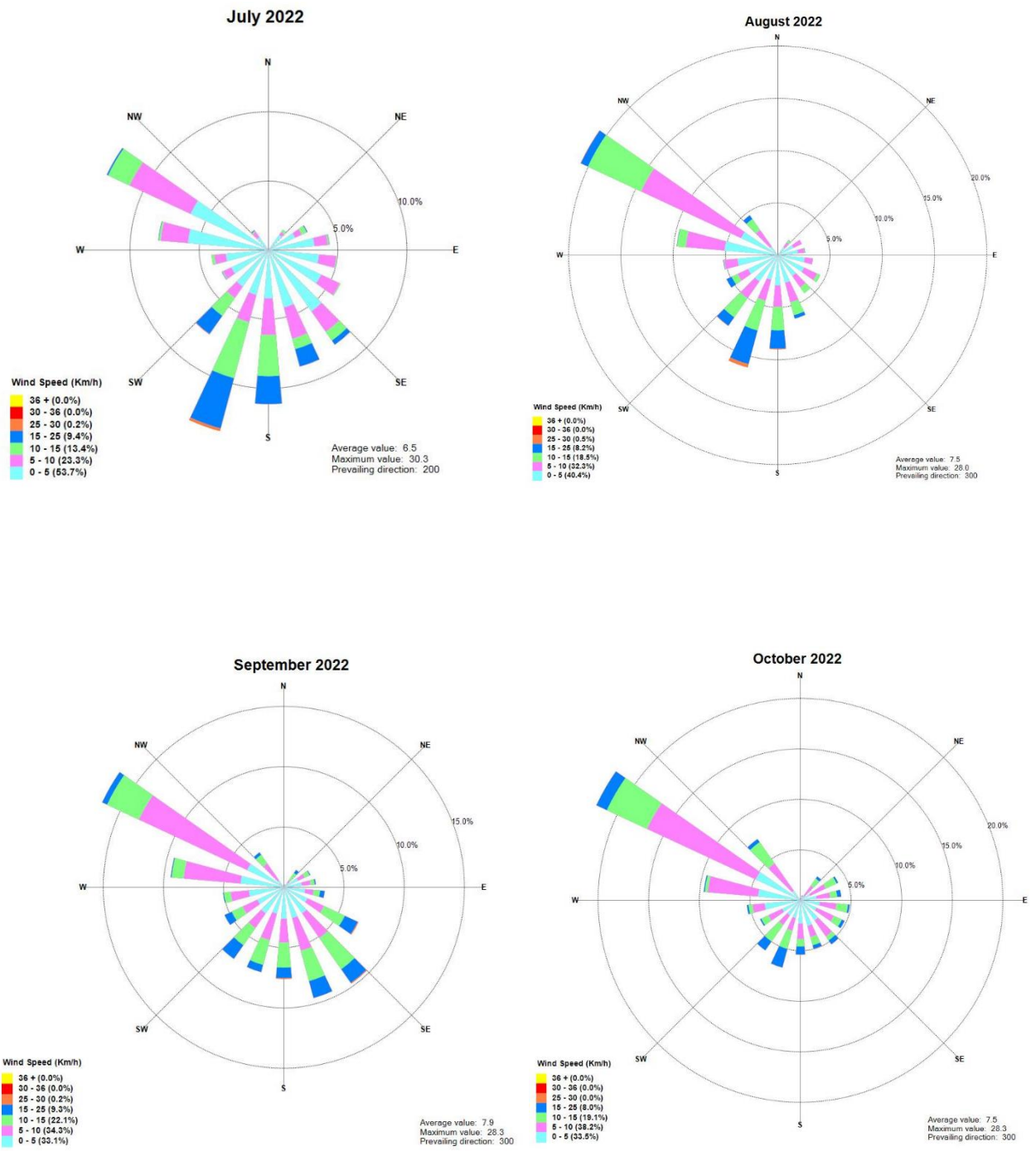


Figure 2-5: Monthly Windroses showing wind direction, speed and frequencies

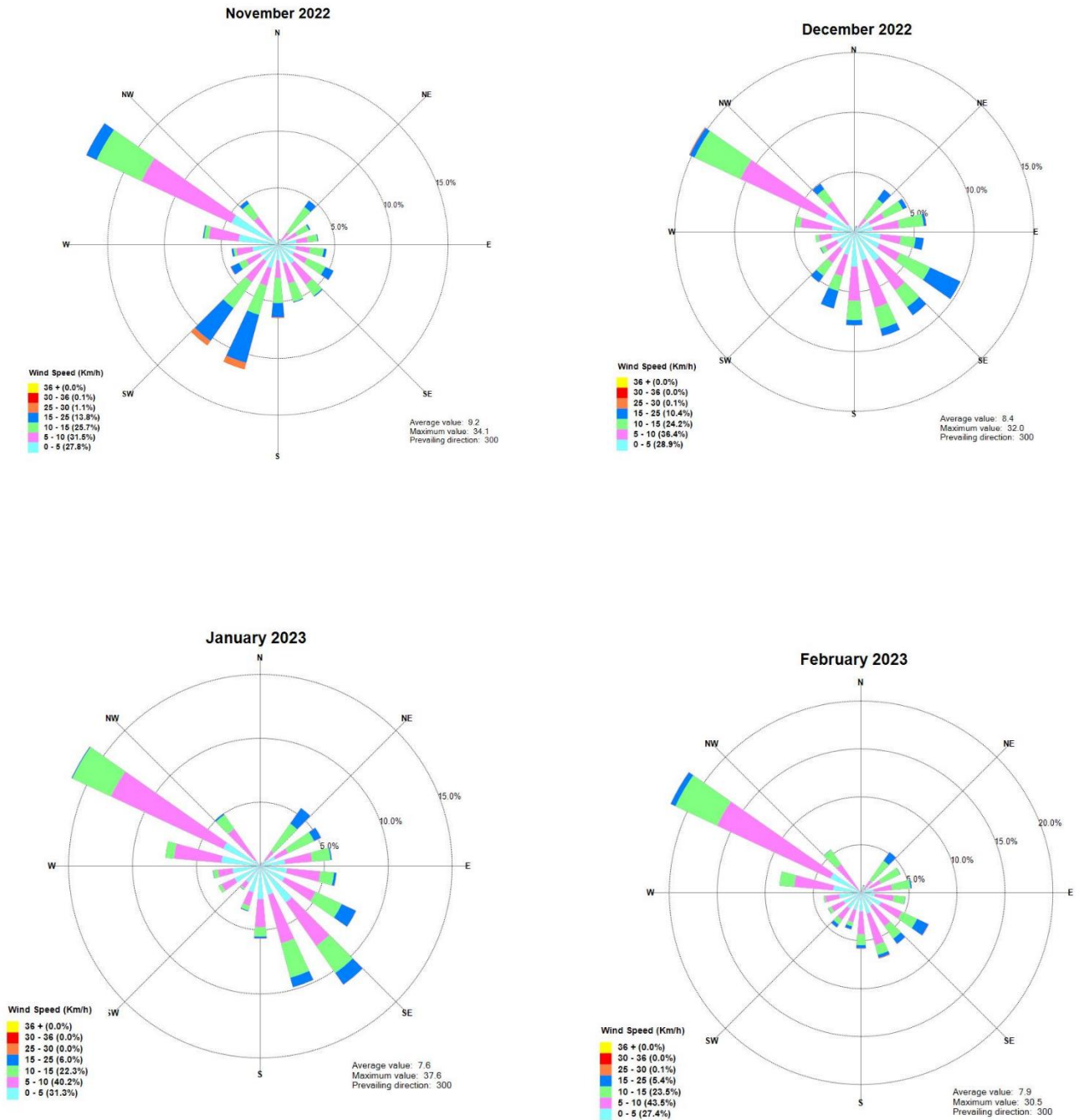


Figure 2-5 (continued): Monthly Windroses showing wind direction, speed and frequencies

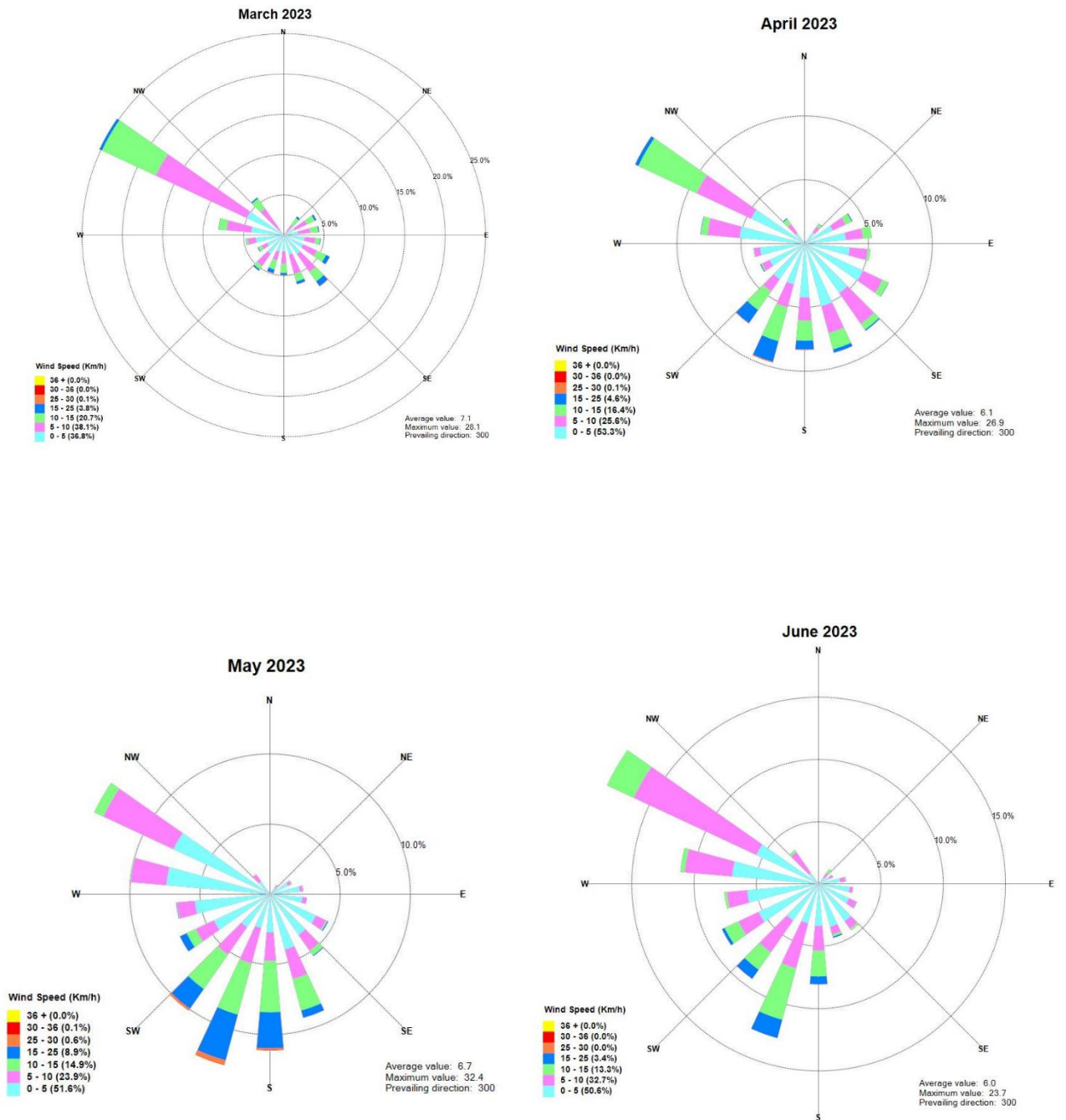


Figure 2-5 (continued): Monthly Windroses showing wind direction, speed and frequencies

APPENDIX 3

Air Quality Monitoring

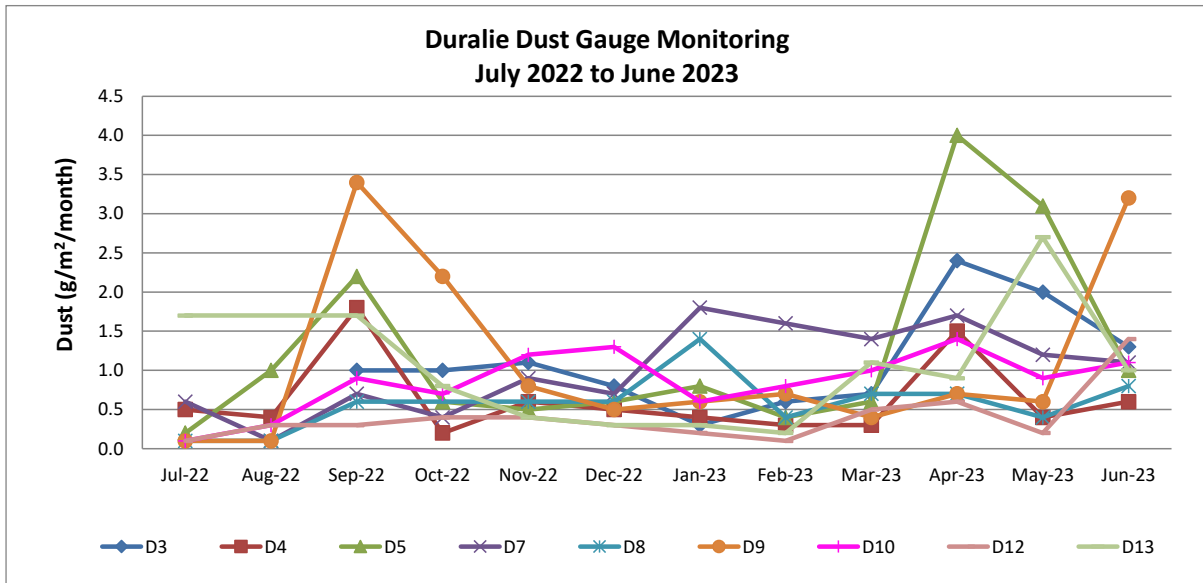


Figure 3-1: Monthly Depositional Dust Monitoring Results (minus contaminated results) during the Reporting Period

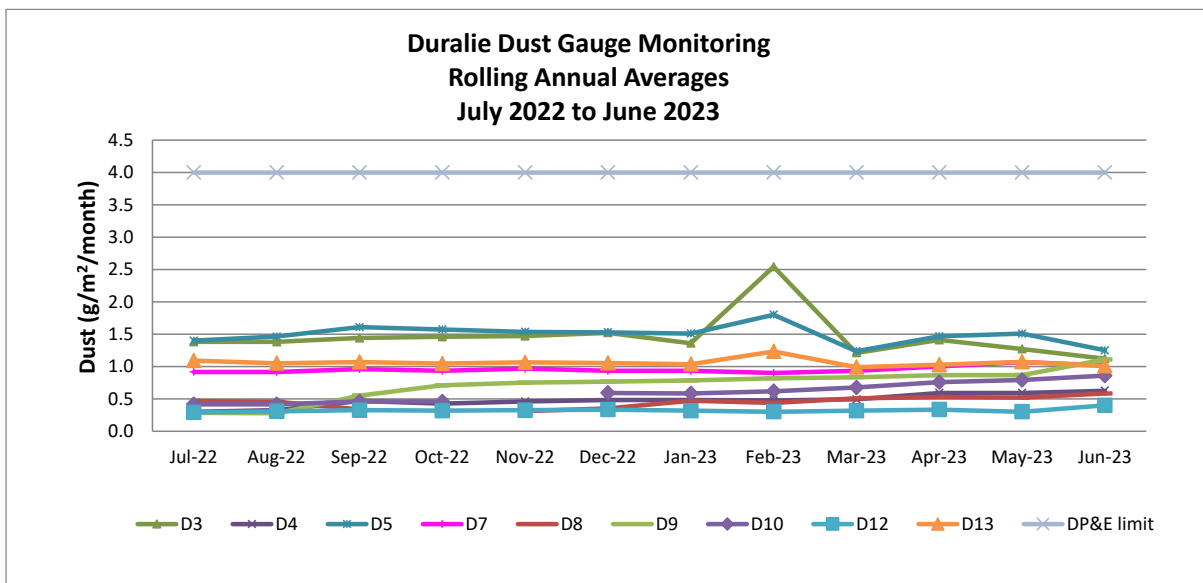


Figure 3-2: Rolling Annual Average Depositional Dust Monitoring Results (minus contaminated results) during the Reporting Period

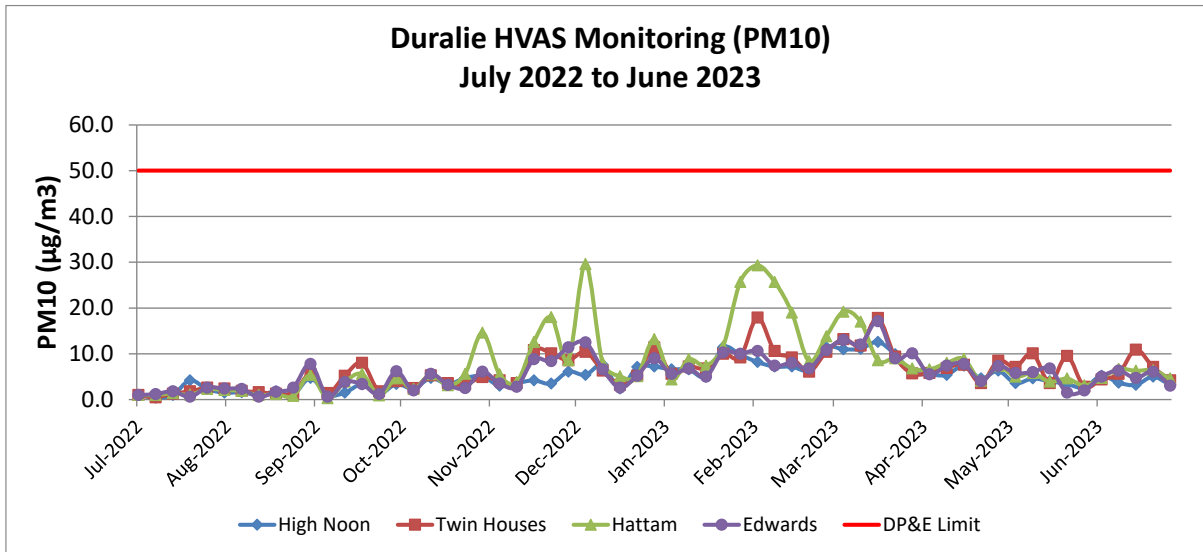


Figure 3-3: High Volume Air Sampling (PM₁₀) Results during the Reporting Period

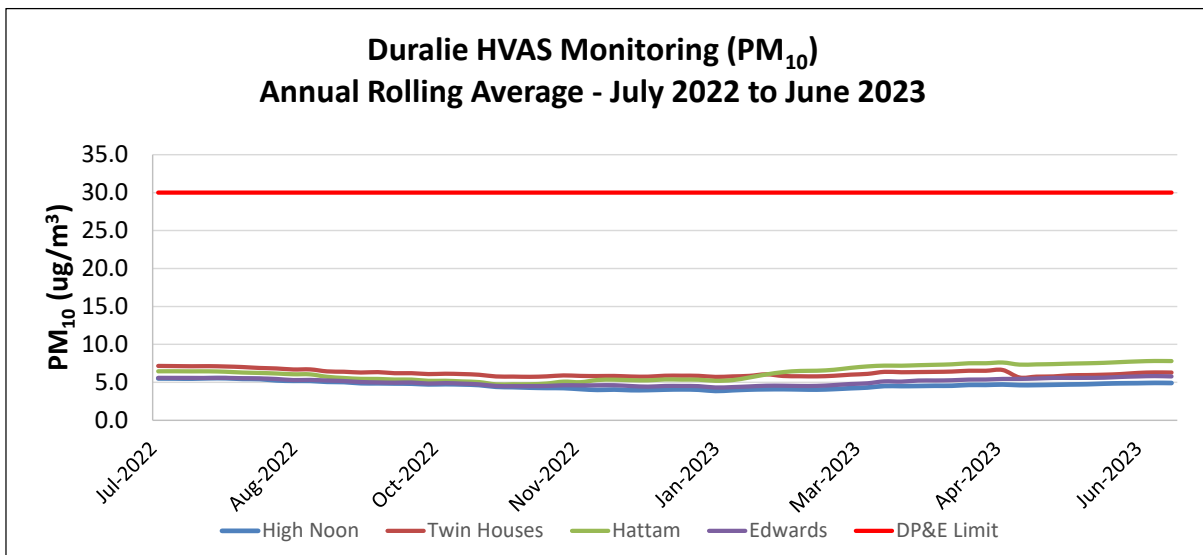


Figure 3-4: Rolling Annual Average HVAS (PM₁₀) Results during the Reporting Period

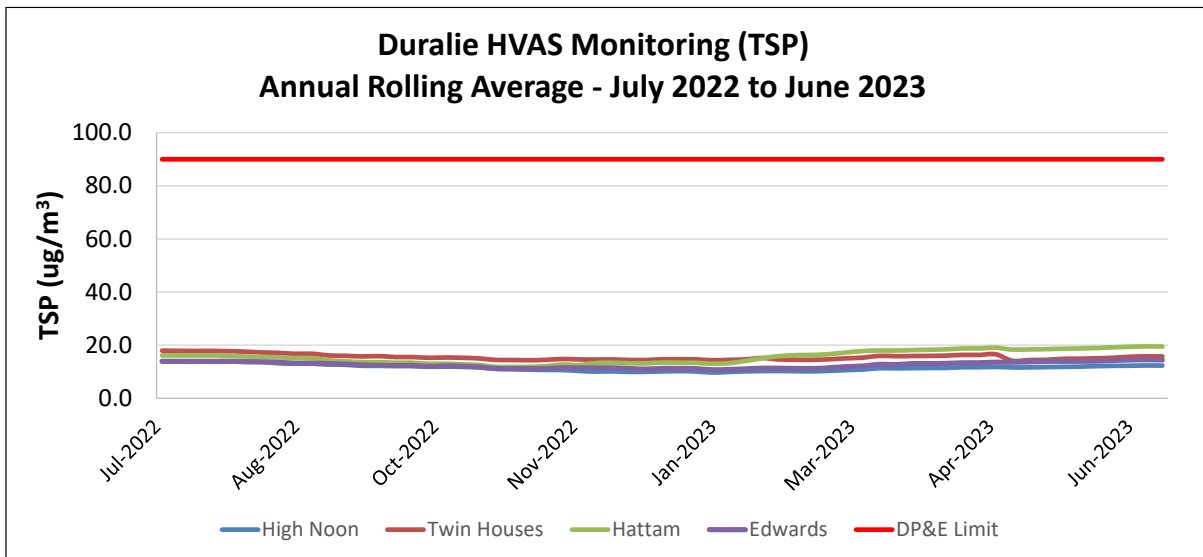


Figure 3-5: Rolling Annual Average HVAS (TSP) Results during the Reporting Period

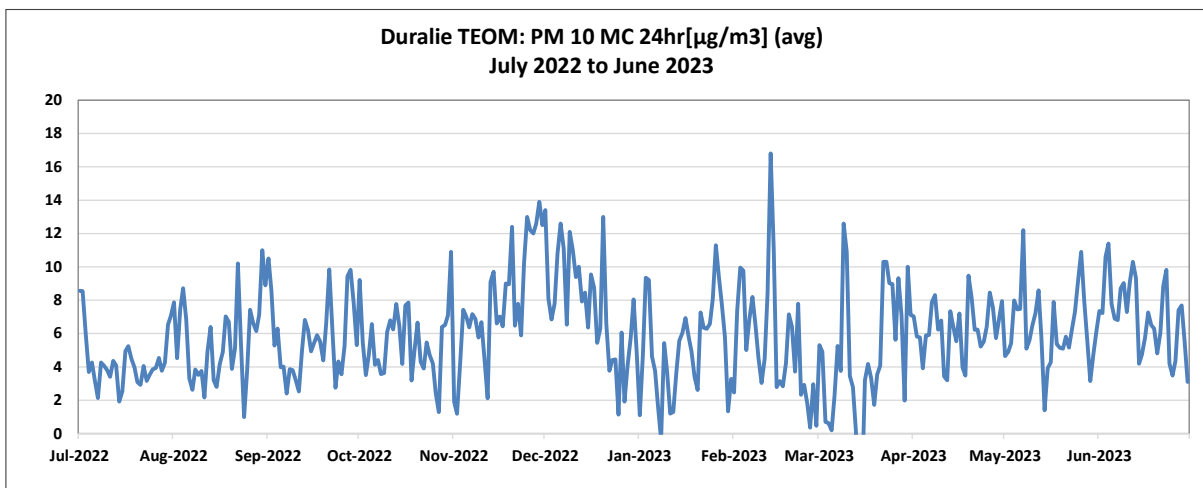


Figure 3-6: Real Time Dust Monitoring (TEOM PM₁₀) Results during the Reporting Period

APPENDIX 4

Surface Water & Groundwater Monitoring Results

Surface Water

SW2 - Coal Shaft Creek

EPL 11701 Point 30

Date	Category	Comment	ph	EC	Turbidity	DO	TSS	Alkalinity (as CaCO ₃)	Acidity (as CaCO ₃)	SO4	Cl	Ca	Mg	Al	Mn	Zn	Fe	Cu
				uS/cm	NTU		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
4-Jul-22	Discharge	brown	7.3	202	55	99	32	28	7	32	20	9	6	1.49	0.070	0.013	1.4	<0.001
5-Aug-22	Discharge	Steady flow, slightly turbid, brown	8.1	186	36	89	14	46	12	27	22	9	7	1.73	0.126	0.014	2.22	0.002
24-Aug-22	Discharge	Slow flow, slightly turbid, brown	7.7	210	22		5											
3-Sep-22	Discharge	brown	7.0	142	68	101	58	30	6	21	12	7	4	2.28	0.120	0.032	2.11	0.002
23-Sep-22	Discharge	Steady flow, clear, clear	7.8	355	80		28											
30-Sep-22	Discharge	Slow flow, slightly turbid, light brown	7.3	214	88	86	26	51	7	21	22	10	7	2.32	0.106	0.016	2.71	0.002
6-Oct-22	Discharge	Slow flow, slightly turbid, light brown	7.7	296	12		<5											
21-Oct-22	Monthly	Flowing, slightly turbid, brown	7.2	261	21	57	18	69	8	24	24	12	9	1.17	0.264	0.014	2.42	<0.001
14-Nov-22	Monthly	Slow flow, clear, brown	7.8	391	11	99	<5	66	5	48	23	17	10	0.33	0.073	0.012	0.76	<0.001
30-Dec-22	Monthly	No flow																
31-Jan-23	Monthly	Trickle flow, slight turbid, light brown	7.2	767	13	42	7	144	4	36	146	31	20	0.1	1.410	<0.005	1.52	<0.001
28-Feb-23	Monthly	No flow																
14-Mar-23	Discharge	brown	6.9	252	34	99	15	17	2	69	19	12	7	0.4	0.035	0.062	0.48	<0.001
24-Mar-23	Discharge	Steady flow, clear, colourless	7.6	289	7		6											
27-Apr-23	Monthly	Trickle flow, clear, colourless	7.4	305	10	42	20	95	9	19	40	16	12	0.08	0.575	<0.005	2.53	<0.001
30-Apr-23	Discharge	Trickle flow, clear, light brown	7.5	281	14	96	12	72	3	59	32	20	11	0.16	0.012	0.018	0.42	<0.001
31-May-23	Monthly	No flow																
29-Jun-23	Monthly	Trickle flow, clear, colourless	7.2	455	8	34	<5	109	12	34	102	20	15	0.04	0.329	<0.005	1.51	<0.001
*Water Quality Trigger			7.1 - 7.9	544	119	85 - 110%	80							3.02		0.064		0.003

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000). "Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

SW2 RC - Coal Shaft Creek at Rail Siding Culvert (Entrance)

Date	Category	Comment	ph	EC uS/cm	Turbidity NTU	DO %	TDS mg/l	TSS mg/l	Hardness mg/l	Alkalinity CaCO ₃ mg/l	Acidity CaCO ₃ mg/l	SO ₄ mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	CO ₃ CaCO ₃ mg/l	Bicarb (as CaCO ₃) mg/l	BOD mg/l	Na mg/l
4-Jul-22	Discharge	ady flow, slightly turbid, light br	7.7	179.8	74.1	99.4	115	14	40	25	2	31	14	8	5	2.48	0.061	0.03	2.48	<1	25	3	16
5-Aug-22	Discharge	Trickle flow, slightly turbid, brow	7.7	188.1	28	99.1	120	9	56	46	4	37	18	11	7	1.43	0.031	0.017	1.71	<1	46	2	21
3-Sep-22	Discharge	ady flow, Slightly turbid, light br	7.4	171.2	29.6	104.2	110	20	45	42	5	21	16	8	6	1.75	0.068	0.038	1.8	<1	42	2	20
30-Sep-22	Discharge	ady flow, Slightly turbid, light br	7.5	257.6	31.9	101.7	165	17	70	51	5	40	21	13	9	1.57	0.082	0.017	1.98	<1	51	<2	24
21-Oct-22	Monthly	Flowing, clear, brown	7.6	209.4	16.16	92	134	11	51	44	8	25	20	9	7	0.84	0.077	0.028	1.36	<1	44	3	20
14-Nov-22	Monthly	Slow flow, clear, brown	7.7	457	13.48	89.8	292	8	98	65	5	74	24	18	13	0.4	0.069	0.018	0.8	<1	65	<2	30
30-Dec-22	Monthly	Trickle flow, slight, light brown	7.1	359	12.83	73.8	230	51	88	89	8	39	17	17	11	0.17	2	0.02	3.47	<1	89	2	26
31-Jan-23	Monthly	kle flow, slightly turbid, light br	6.8	331.7	33.6	75.6	212	22	85	17	5	83	26	16	11	0.97	0.252	0.078	1.11	<1	17	<2	29
28-Feb-23	Monthly	No flow																					
14-Mar-23	Discharge	lightly turbid, light brown, need	7.0	247.1	35.6	100.8	158	19	63	14	4	75	20	12	8	1.05	0.045	0.067	1.02	<1	14	<2	21
27-Apr-23	Monthly	Trickle flow, clear, colourless	8.4	311.2	3.74	112.5	199	<5	96	81	2	36	33	17	13	0.11	0.008	0.013	0.34	<1	81	<2	35
30-Apr-23	Discharge	Trickle flow, clear, light brown	7.7	361.6	54	106.2	231	6	87	82	9	22	35	15	12	0.29	0.322	0.01	2.13	<1	82	3	32
31-May-23	Monthly	No flow																					
29-Jun-23	Monthly	No flow																					
*Water Quality Trigger			7.1 - 7.9	544	119	85 - 110%		80								3.02		0.064					

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000). "Gilberts & Associstes 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

SW2 RC - Coal Shaft Creek at Rail Siding Culvert (Entrance)

Date	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Pb mg/l	Mo mg/l	Ni mg/l	Se mg/l	Ag mg/l	U mg/l	B mg/l	Hg mg/l	F mg/l	NH ₃ (as N) mg/l	NO ₂ (as N) mg/l	NO ₃ (as N) mg/l	N mg/l	P mg/l
4-Jul-22	<0.001	0.014	<0.0001	0.002	0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.08	1.7	0.07
5-Aug-22	<0.001	0.016	<0.0001	<0.001	0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.02	0.7	0.06
3-Sep-22	<0.001	0.014	<0.0001	0.001	0.002	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.1	0.9	0.1
30-Sep-22	<0.001	0.02	<0.0001	<0.001	0.002	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	0.1	<0.01	<0.01	0.02	0.7	0.04
21-Oct-22	<0.001	0.013	<0.0001	<0.001	<0.001	<0.001	<0.001	0.005	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.03	<0.01	0.43	1.2	0.05
14-Nov-22	<0.001	0.016	0.0002	<0.001	<0.001	<0.001	<0.001	0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	0.1	<0.01	<0.01	0.12	0.7	0.04
30-Dec-22	<0.001	0.038	<0.0001	<0.001	<0.001	<0.001	<0.001	0.004	<0.01	<0.001	<0.001	<0.05	<0.0001	0.1	0.02	<0.01	<0.01	0.9	0.07
31-Jan-23	<0.001	0.027	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.03	<0.01	1.86	3.2	0.06
14-Mar-23	<0.001	0.022	<0.0001	<0.001	0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	<0.01	0.01	0.04	0.8	0.05
27-Apr-23	<0.001	0.016	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.1	0.5	0.02
30-Apr-23	<0.001	0.022	<0.0001	<0.001	<0.001	<0.001	<0.001	0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	0.1	0.01	<0.01	0.06	0.5	0.02
*Water Quality Trigger					0.003										0.05			1.2	0.08

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000). "Gilberts & Associstes 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

SW6

Date	Category	Comment	ph	EC uS/cm	Turbidity NTU	DO %	TSS mg/l	Alkalinity (as CaCO ₃) mg/l	Acidity (as CaCO ₃) mg/l	SO4 mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	Cu mg/l
4-Jul-22	Discharge	eady flow, slightly turbid, light brow	8.0	894	60	100	34	101	2	203	92	42	41	1.84	0.035	<0.005	1.81	<0.001
5-Aug-22	Discharge	Trickle flow, slightly turbid, brown	7.6	637	39	93	14	84	13	150	66	34	31	1.32	0.036	0.014	1.61	0.002
3-Sep-02	Discharge	Steady flow, slightly turbid, brown	8.0	656	91	103	98	81	6	141	57	29	26	4	0.086	0.01	3	0.002
30-Sep-22	Discharge	Slow flow, turbid, light brown	7.3	593	124	100	70	84	4	138	45	28	23	2.76	0.077	0.010	2.93	0.002
21-Oct-22	Monthly	Flowing, slightly turbid, brown	7.8	573	67	95	39	86	5	125	47	30	24	1.68	0.054	0.006	1.7	0.001
14-Nov-22	Monthly	Steady flow, clear, light brown	8.2	1068	28	97	20	132	2	247	87	54	42	0.72	0.028	<0.005	0.77	<0.001
30-Dec-22	Monthly	No Flow																
31-Jan-23	Monthly	kle flow, slightly turbid and light bro	7.1	317	73	91	11	50	4	71	19	13	11	1.92	0.025	0.007	1.57	0.002
28-Feb-23	Monthly	No flow																
14-Mar-23	Discharge	ow flow, slightly turbid and light bro	7.7	1570	14	100	76	139	3	438	177	72	70	0.67	0.028	<0.005	0.57	<0.001
27-Apr-23	Monthly	Trickle flow, clear, colourless	7.6	816	6	102	13	114	7	216	84	41	38	0.15	0.055	<0.005	0.74	<0.001
30-Apr-23	Discharge	Trickle flow, clear, light brown	8.0	670	25	87	12	96	3	174	66	35	31	0.87	0.022	<0.005	1.09	<0.001
31-May-23	Monthly	Trickle flow, clear, colourless	7.2	931	8	8	7	80	12	282	97	36	35	0.08	0.071	<0.005	3.34	<0.001
29-Jun-23	Monthly	No flow																
*Water Quality Trigger			7.1 - 7.9	544	119	85 - 110%	80							3.02		0.064		0.003

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).
"Gilberts & Asscociestes 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

SW9 - Un-named Tributary (Fisher-Webster)

Date	Category	Comment	ph	EC uS/cm	Turbidity NTU	DO %	TDS mg/l	TSS mg/l	Hardness mg/l	Alkalinity (as CaCO ₃) mg/l	Acidity (as CaCO ₃) mg/l	SO4 mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	CO3 (as CaCO ₃) mg/l	Bicarb (as CaCO ₃) mg/l	BOD mg/l	Na mg/l
4-Jul-22	Discharge																						
5-Aug-22	Discharge	lo access - Paddock too wet																					
3-Sep-22	Discharge	No flow																					
30-Sep-22	Discharge	No access - too wet																					
21-Oct-22	Monthly	No flow																					
14-Nov-22	Monthly	Trickle flow, clear, brown	6.7	595	19.2	38.3	12.288	23	88	56	8	32	85	17	11	0.3	0.854	<0.005	6.11	<1	56	<2	53
30-Dec-22	Monthly	No flow																					
31-Jan-23	Monthly	Dry																					
28-Feb-23	Monthly	No flow																					
14-Mar-23	Discharge	v flow, slightly turbid and br	6.8	115	67.2	93.4	43.008	62	16	6	5	<1	23	3	2	3.75	0.06	0.01	2.77	<1	6	<2	15
27-Apr-23	Monthly	Dry																					
30-Apr-23	Discharge	No flow																					
31-May-23	Monthly	No flow																					
29-Jun-23	Monthly	Dry																					
*Water Quality Trigger			6.4 - 7.1	461	94	85 - 110%		57							2.96		0.024						

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).
"Gilberts & Asscociestes 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

SW9 - Un-named Tributary (Fisher-Webster)

Date	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Pb mg/l	Mo mg/l	Ni mg/l	Se mg/l	Ag mg/l	U mg/l	B mg/l	Hg mg/l	F mg/l	NH3 (as N) mg/l	NO2 (as N) mg/l	NO3 (as N) mg/l	N mg/l	P mg/l
14-Nov-22	0.004	0.065	<0.0001	<0.001	<0.001	<0.001	<0.001	0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.24	<0.01	<0.01	1.9	0.36
14-Mar-23	<0.001	0.036	<0.0001	0.002	0.002	<0.001	<0.001	0.003	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.02	1.4	0.12
*Water quality trigger				0.002	0.0040										0.13			2.6	0.68

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).

"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

SW10 - Coal Shaft Creek (Holmes Upstream)

Date	Category	Comment	ph	EC uS/cm	Turbidity NTU	DO %	TDS mg/l	TSS mg/l	Hardness mg/l	Alkalinity (as CaCO ₃) mg/l	Acidity (as CaCO ₃) mg/l	SO4 mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	CO3 (as CaCO ₃) mg/l	Bicarb (as CaCO ₃) mg/l	Na mg/l	BOD mg/l
4-Jul-22	Discharge	Steady flow, turbid, brown	7.3	44.5	105	92	67	21	18	16	3	<10	9	4	2	1.21	0.023	<0.005	1.12	<1	16	4	6
5-Aug-22	Discharge	No flow																					
3-Sep-22	Discharge	Steady flow, turbid, brown	7.3	53.7	111	97	71	22	18	12	6	<10	8	4	2	6.24	0.036	0.01	4.77	<1	12	2	6
30-Sep-22	Discharge	Trickle flow, turbid, brown	7.8	92.7	157	99	100	33	21	15	6	<10	9	5	2	5.50	0.036	0.011	4.70	<1	15	<2	7
21-Oct-22	Monthly	ht flow over rocks, turbid, light bro	7.0	65.1	99	76	63	50	18	16	6	<10	7	4	2	3.61	0.05	0.009	3.52	<1	16	3	5
14-Nov-22	Monthly	No flow																					
30-Dec-22	Monthly	No flow																					
31-Jan-23	Monthly	Dry																					
28-Feb-23	Monthly	No flow																					
14-Mar-23	Discharge	No flow																					
27-Apr-23	Monthly	No flow																					
30-Apr-23	Discharge	No flow																					
31-May-23	Monthly	No flow																					
29-Jun-23	Monthly	Dry																					
*Water Quality Trigger			7.1 - 7.9	544	119	85 - 110%		80								3.02		0.064					

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000). "Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension"

SW10 - Coal Shaft Creek (Holmes Upstream)

Date	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Pb mg/l	Mo mg/l	Ni mg/l	Se mg/l	Ag mg/l	U mg/l	B mg/l	Hg mg/l	F mg/l	NH3 (as N) mg/l	NO2 (as N) mg/l	NO3 (as N) mg/l	N mg/l	P mg/l
4-Jul-22	<0.001	0.01	<0.0001	<0.001	0.002	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	<0.01	1.3	0.11
3-Sep-22	<0.001	0.013	<0.0001	0.004	0.004	<0.001	<0.001	0.003	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	<0.01	1.4	0.13
30-Sep-22	<0.001	0.018	<0.0001	0.004	0.004	<0.001	<0.001	0.003	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.03	<0.01	<0.01	1.6	0.14
21-Oct-22	<0.001	0.016	<0.0001	0.002	0.004	<0.001	<0.001	0.004	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.04	<0.01	<0.01	2.7	0.19
*Water Quality Trigger					0.003										0.05			1.2	0.08

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).

"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

GB1 - Mammy Johnsons River

EPL 11701 Point 31

Date	Category	Comment	ph	EC uS/cm	Turbidity NTU	DO %	TDS mg/l	TSS mg/l	Hardness mg/l	Alkalinity (as CaCO ₃) mg/l	Acidity (as CaCO ₃) mg/l	SO4 mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	CO3 (as CaCO ₃) mg/l	Bicarb (as CaCO ₃) mg/l	BOD mg/l	Na mg/l
4-Jul-22	Discharge	Fast flow, slightly turbid, light brown	7.44	234	65	95	149	69	47	37	3	10	42	9	6	2.05	0.109	0.020	2.52	<1	37	3	27
5-Aug-22	Discharge	Steady flow, clear, light brown	7.58	230	32	95	147	9	54	51	6	13	47	10	7	1.40	0.041	<0.005	1.77	<1	51	2	32
24-Aug-22	Discharge	Slow flow, slightly turbid, light brown	7.58	251	22		161	8															
3-Sep-22	Discharge	Fast flow, turbid, brown	7.24	235	165	103	150	208	50	44	7	16	35	10	6	5.28	0.307	0.017	5.01	<1	44	2	26
23-Sep-22	Discharge	Steady flow, clear, brown	7.35	348	78		223	31															
30-Sep-22	Discharge	Steady flow, slightly turbid, light brown	7.31	184	56	98	118	40	34	31	6	8	30	7	4	2.49	0.049	<0.005	2.26	<1	31	2	23
6-Oct-22	Discharge	Slow flow, slightly turbid, light brown	7.47	180	42		115	12															
21-Oct-22	Monthly	Steady, clear, light brown	7.3	227	21	87	145	15	36	43	5	10	37	8	4	1.67	0.046	0.006	1.85	<1	43	<2	24
14-Nov-22	Monthly	Steady flow, clear, clear	7.18	391	13	79	250	11	54	54	4	8	42	10	7	0.77	0.060	0.228	1.63	<1	54	<2	33
30-Dec-22	Monthly	Slow flow, clear, light brown	7.31	338	8	41	216	8	70	72	7	7	62	15	8	0.28	0.179	<0.005	1.38	<1	72	2	38
31-Jan-23	Monthly	Slow flow, clear, colourless	7.34	435	5	65	278	<5	68	64	5	6	66	14	8	0.14	0.170	0.017	1.17	<1	64	<2	38
28-Feb-23	Monthly	Slow flow, clear, colourless	7.15	414	4	61	265	7	90	85	5	5	79	18	11	0.06	0.177	<0.005	0.97	<1	85	<2	48
14-Mar-23	Discharge	Slow flow, slightly turbid and brown. Needs slow flow	7.42	108	78	93	69	63	16	13	4	<10	20	3	2	2.03	0.072	0.009	1.70	<1	13	<2	14
24-Mar-23	Discharge	Steady flow, slightly turbid, light brown	7.05	174	69		111	64															
27-Apr-23	Monthly	Slow flow, clear, colourless	7.64	216	13	93	138	<5	50	39	3	8	46	10	6	0.64	0.038	<0.005	1.34	<1	39	<2	30
30-Apr-23	Discharge	Steady flow, slightly turbid, light brown	7.52	243	16	97	155	10	52	46	4	8	46	11	6	0.65	0.047	<0.005	1.24	<1	46	<2	30
31-May-23	Monthly	Steady flow, clear, light brown	7.79	305	11	11	195	8	52	52	4	9	52	11	6	0.09	0.032	<0.005	1.07	<1	52	<2	30
29-Jun-23	Monthly	Slow flow, clear, colourless	7.58	299	9	78	191	8	74	66	4	9	85	15	9	0.13	0.045	<0.005	0.90	<1	66	<2	40
*Water Quality Trigger			7.1 - 7.6	370	24	85 - 110%		15								1.24		0.011					

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).

"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

GB1 - Mammy Johnsons River

Date	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Pb mg/l	Mo mg/l	Ni mg/l	Se mg/l	Ag mg/l	U mg/l	B mg/l	Hg mg/l	F mg/l	NH3 (as N) mg/l	NO2 (as N) mg/l	NO3 (as N) mg/l	N mg/l	P mg/l
4-Jul-22	<0.001	0.05	<0.0001	0.001	0.001	0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.14	1.2	0.20
5-Aug-22	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.14	0.6	0.05
3-Sep-22	0.002	0.092	<0.0001	0.004	0.005	0.005	<0.001	0.003	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.03	<0.01	0.09	1.2	0.28
30-Sep-22	<0.001	0.039	<0.0001	<0.001	0.001	<0.001	<0.001	0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.04	0.6	0.07
21-Oct-22	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.05	0.6	0.05
14-Nov-22	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.03	0.3	0.04
30-Dec-22	<0.001	0.05	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.05	0.6	0.05
31-Jan-23	<0.001	0.04	0.0003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.05	0.6	0.08
28-Feb-23	<0.001	0.05	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.07	<0.01	0.03	0.4	0.05
14-Mar-23	<0.001	0.04	<0.0001	0.001	0.001	<0.001	<0.001	0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.17	1.2	0.08
27-Apr-23	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.03	<0.01	0.04	0.3	0.04
30-Apr-23	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.04	0.3	0.02
31-May-23	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.06	<0.01	0.03	0.3	0.03
29-Jun-23	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.05	0.2	0.01
*Water Quality Trigger				0.001	0.0020										0.06			0.8	0.15

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).

"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

Highnoon - Mammy Johnsons River

EPL 11701 Point 35

Date	Category	Comment	ph	EC uS/cm	Turbidity NTU	DO %	TDS mg/l	TSS mg/l	Hardness mg/l	Alkalinity (as CaCO ₃) mg/l	Acidity (as CaCO ₃) mg/l	SO4 mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	CO3 (as CaCO ₃) mg/l	Bicarb (as CaCO ₃) mg/l	BOD mg/l	Na mg/l
4-Jul-22	Discharge	Fast flow, slightly turbid, light brown	7.44	240	56	93	153	40	47	40	3	12	41	9	6	1.00	0.061	<0.005	1.60	<1	40	2	28
5-Aug-22	Discharge	Steady flow, clear, light brown	7.66	241	28	93	154	9	56	52	8	13	47	11	7	1.34	0.039	<0.005	1.73	<1	52	2	33
24-Aug-22	Discharge	Slow flow, clear, light brown	7.56	255	17		163	6															
3-Sep-22	Discharge	Fast flow, turbid, brown	7.21	169	155	101	108	170	31	29	6	8	27	6	4	4.40	0.165	0.015	3.83	<1	29	2	19
23-Sep-22	Discharge	Steady flow, clear, brown	7.15	342	75		219	30															
30-Sep-22	Discharge	Slow flow, slightly turbid, light brown	7.3	191	61	95	122	26	38	33	6	10	28	7	5	2.94	0.043	0.015	2.51	<1	33	2	23
6-Oct-22	Discharge	Slow flow, slightly turbid, light brown	7.5	187	44		120	10															
21-Oct-22	Monthly	Steady, clear, brown	7.29	230	23	86	147	10	40	44	6	10	36	8	5	0.41	0.047	<0.005	1.06	<1	44	<2	25
14-Nov-22	Monthly	Slow flow, clear, clear	7.38	396	17	76	253	10	60	58	4	12	44	11	8	0.94	0.069	<0.005	1.65	<1	58	<2	34
30-Dec-22	Monthly	Slow flow, slightly turbid, light brown	7.3	381	4	46	244	<5	77	80	6	6	67	16	9	0.09	0.125	<0.005	1.21	<1	80	2	40
31-Jan-23	Monthly	Slow flow, clear, light brown	7.23	330	5	78	211	<5	68	57	5	6	66	14	8	0.15	0.166	<0.005	1.25	<1	57	<2	40
28-Feb-23	Monthly	w flow, clear, colourless, sheen on wa	7.05	414	6	66	265	8	90	90	5	5	76	18	11	0.08	0.380	<0.005	1.05	<1	90	<2	48
14-Mar-23	Discharge	Fast flow, slightly turbid, brown	7.56	111	87	92	71	63	16	14	3	<10	20	3	2	3.22	0.082	0.009	2.58	<1	14	2	14
24-Mar-23	Discharge	Steady flow, slightly turbid, light brown	6.22	201	58		129	37															
27-Apr-23	Monthly	Slow flow, clear, colourless	7.77	211	16	85	135	<5	47	40	4	8	44	9	6	0.27	0.053	<0.005	1.26	<1	40	2	30
30-Apr-23	Discharge	Slow flow, slightly turbid, brown	7.34	243	13	88	155	6	50	44	5	8	43	10	6	0.12	0.055	<0.005	1.01	<1	44	3	32
31-May-23	Monthly	Slow flow, clear, light brown	7.89	306	13	10	196	8	52	52	5	10	51	11	6	0.19	0.042	<0.005	1.28	<1	52	<2	30
29-Jun-23	Monthly	Steady flow, clear, colourless	7.36	326	8	75	209	<5	72	66	4	10	83	14	9	0.09	0.052	<0.005	0.91	<1	66	<2	40
*Water Quality Trigger			7.1 - 7.6	370	24	85 - 110%		15								1.24		0.011					

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).

Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project.

Highnoon - Mammy Johnsons River

Date	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Pb mg/l	Mo mg/l	Ni mg/l	Se mg/l	Ag mg/l	U mg/l	B mg/l	Hg mg/l	F mg/l	NH3 (as N) mg/l	NO2 (as N) mg/l	NO3 (as N) mg/l	N mg/l	P mg/l
4-Jul-22	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.09	0.9	0.12
5-Aug-22	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.07	0.6	0.05
3-Sep-22	0.001	0.07	<0.0001	0.002	0.002	0.003	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.08	<0.01	0.08	1.2	0.18
30-Sep-22	<0.001	0.04	<0.0001	0.001	0.001	<0.001	<0.001	0.008	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.04	0.6	0.07
21-Oct-22	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.03	<0.01	0.05	0.8	0.05
14-Nov-22	0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.04	0.4	0.06
30-Dec-22	<0.001	0.05	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	<0.01	0.5	0.10
31-Jan-23	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.04	0.5	0.06
28-Feb-23	<0.001	0.05	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.12	<0.01	0.01	0.6	0.05
14-Mar-23	<0.001	0.04	<0.0001	0.002	0.002	0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.18	1.3	0.10
27-Apr-23	<0.001	0.03	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.04	0.3	0.04
30-Apr-23	<0.001	0.03	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.04	0.3	0.02
31-May-23	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.04	<0.01	0.03	0.3	0.03
29-Jun-23	<0.001	0.04	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.05	0.4	0.02
*Water Quality Trigger				0.001	0.0020										0.06			0.8	0.15

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).
"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

Site 9 - Karuah River (Near Stroud Road Village)

Date	Category	Comment	ph	EC uS/cm	Turbidity NTU	DO %	TDS mg/l	TSS mg/l	Hardness mg/l	Alkalinity (as CaCO ₃) mg/l	Acidity (as CaCO ₃) mg/l	SO4 mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	CO3 (as CaCO ₃) mg/l	Bicarb (as CaCO ₃) mg/l	BOD mg/l	Na mg/l
4-Jul-22	Discharge	Fast flow, slightly turbid, light brown	7.7	237	45	95	152	36	56	67	3	3	32	11	7	1.18	0.049	<0.005	1.27	<1	67	2	26
5-Aug-22	Discharge	Fast flow, clear, light brown	7.7	183	23	97	117	11	54	64	8	5	32	10	7	1.19	0.022	<0.005	1.32	<1	64	2	25
3-Sep-22	Discharge	Fast flow, turbid, brown	7.5	205	95	105	131	81	47	58	6	<10	26	9	6	4.28	0.130	0.017	3.50	<1	58	2	23
30-Sep-22	Discharge	Steady flow, slightly turbid, light brown	7.4	165	41	98	105	24	34	39	5	3	21	7	4	2.32	0.037	0.005	2.08	<1	39	<2	17
21-Oct-22	Monthly	Steady flow, clear, clear	7.5	167	12	94	107	12	27	35	4	5	23	6	3	0.23	0.015	0.007	0.42	<1	35	<2	16
14-Nov-22	Monthly	Fast flow, clear, light brown	7.8	302	9	93	193	13	34	42	2	4	25	7	4	0.37	0.018	<0.005	0.56	<1	42	<2	20
30-Dec-22	Monthly	Slow flow, clear, clear	7.6	210	7	90	134	10	46	54	5	3	33	10	5	0.28	0.033	<0.005	0.56	<1	54	<2	20
31-Jan-23	Monthly	Steady flow, clear, colourless	7.4	144	14	99	92.3	10	27	31	2	3	24	6	3	0.44	0.028	<0.005	0.64	<1	31	<2	15
28-Feb-23	Monthly	Slow flow, clear, colourless	7.6	155	11	94	99.5	23	36	45	2	3	23	8	4	0.21	0.027	<0.005	0.55	<1	45	<2	18
14-Mar-23	Discharge	Fast flow, clear and light brown	7.7	95	60	97	60.5	60	16	18	3	<10	17	3	2	1.94	0.054	0.006	1.84	<1	18	2	12
27-Apr-23	Monthly	Steady flow, clear, colourless	7.5	153	8	103	98	5	43	40	2	4	26	9	5	0.21	0.015	<0.005	0.57	<1	40	<2	20
30-Apr-23	Discharge	Steady flow, clear, colourless	7.2	248	8	103	159	6	36	42	2	4	25	8	4	0.25	0.017	<0.005	0.62	<1	42	3	20
31-May-23	Monthly	Fast flow	8.0	209	5	12	134	6	36	52	3	5	28	8	4	0.19	0.010	<0.005	0.49	<1	52	<2	18
29-Jun-23	Monthly	Steady flow, clear, colourless	7.6	182	4	93	117	5	52	57	2	5	50	11	6	0.10	0.009	<0.005	0.39	<1	57	<2	22
*Water Quality Trigger			N/A	N/A	N/A											N/A		N/A					

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).

"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

Site 9 - Karuah River (Near Stroud Road Village)

Date	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Pb mg/l	Mo mg/l	Ni mg/l	Se mg/l	Ag mg/l	U mg/l	B mg/l	Hg mg/l	F mg/l	NH3 (as N) mg/l	NO2 (as N) mg/l	NO3 (as N) mg/l	N mg/l	P mg/l
4-Jul-22	<0.001	0.024	<0.0001	0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.06	<0.01	0.09	0.9	0.16
5-Aug-22	<0.001	0.024	<0.0001	0.006	<0.001	<0.001	<0.001	0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.07	0.4	0.02
3-Sep-22	<0.001	0.034	<0.0001	0.004	0.003	0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.04	<0.01	0.20	1.4	0.15
30-Sep-22	<0.001	0.023	<0.0001	0.002	0.002	<0.001	<0.001	0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.02	0.6	0.07
21-Oct-22	<0.001	0.017	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.04	<0.01	2.07	2.8	0.04
14-Nov-22	<0.001	0.016	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.73	1.0	0.01
30-Dec-22	<0.001	0.021	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.04	0.4	0.03
31-Jan-23	<0.001	0.018	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.06	0.5	0.04
28-Feb-23	<0.001	0.018	<0.0001	0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.05	0.4	0.07
14-Mar-23	<0.001	0.026	<0.0001	0.001	0.003	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.15	1.0	0.06
27-Apr-23	<0.001	0.018	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.05	0.4	0.04
30-Apr-23	<0.001	0.017	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.05	0.2	0.02
31-May-23	<0.001	0.016	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.05	<0.01	0.05	0.2	0.02
29-Jun-23	<0.001	0.019	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.04	<0.01	0.06	0.3	0.01

Site 11 - Mammy Johnsons - Downstream of High Noon

Date	Category	Comment	ph	EC uS/cm	Turbidity NTU	DO %	TDS mg/l	TSS mg/l	Hardness mg/l	Alkalinity CaCO ₃ mg/l	Acidity CaCO ₃ mg/l	SO ₄ mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	CO ₃ CaCO ₃ mg/l	Bicarb (as CaCO ₃) mg/l	BOD mg/l	Na mg/l
04-Jul-22	Discharge	st flow, slightly turbid, light brown	7.83	261	62	93	167	49	50	45	3	13	41	10	6	2.43	0.066	<0.005	1.87	<1	45	2	29
05-Aug-22	Discharge	Fast flow, clear, light brown	7.67	236	25	93	151	9	50	47	7	11	46	10	6	1.68	0.036	0.01	1.63	<1	47	<2	32
03-Sep-22	Discharge	Fast flow, turbid, brown	7.45	165	197	101	105	214	34	31	6	9	28	7	4	5.41	0.195	0.017	4.57	<1	31	2	19
30-Sep-22	Discharge	ady flow, slightly turbid, light brown	7.65	195	61	93	125	33	31	37	6	4	21	6	4	3.06	0.050	0.006	2.62	<1	37	<2	23
21-Oct-22	Monthly	Steady, slightly turbid, brown	7.3	244	31	88	156	16	43	42	6	10	37	9	5	0.73	0.055	<0.005	1.31	<1	42	<2	26
14-Nov-22	Monthly	Fast flow, clear, clear	7.35	381	14	80	244	10	56	58	3	10	44	11	7	0.82	0.060	0.006	1.63	<1	58	<2	35
30-Dec-22	Monthly	pw flow, slightly turbid, light brown	7.36	412	6	53	264	6	81	83	5	6	71	16	10	0.14	0.157	<0.005	1.27	<1	83	<2	42
31-Jan-23	Monthly	pw flow, slightly turbid, light brown	7.14	358	10	72	229	6	68	60	5	8	68	14	8	0.2	0.188	<0.005	1.28	<1	60	<2	39
28-Feb-23	Monthly	pw flow, slightly turbid and brown	6.78	419	15	67	268	<5	90	87	5	5	78	18	11	0.26	0.218	<0.005	0.96	<1	87	<2	49
14-Mar-23	Discharge	Fast flow, slightly turbid, brown	7.78	110	90	91	70	67	18	14	4	<10	20	4	2	3.43	0.081	0.009	2.72	<1	14	<2	13
27-Apr-23	Monthly	Steady flow, clear, colourless	7.66	219	16	92	140	6	47	40	3	8	44	9	6	0.46	0.042	<0.005	1.34	<1	40	<2	30
30-Apr-23	Discharge	ady flow, slightly turbid, light brown	7.22	249	16	93	160	8	56	46	4	8	43	11	7	0.55	0.043	<0.005	1.26	<1	46	3	32
31-May-23	Monthly	Steady flow, clear, light brown	8.22	316	12	11	202	5	52	53	5	10	51	11	6	0.24	0.038	<0.005	1.24	<1	53	<2	31
29-Jun-23	Monthly	Steady flow, clear, colourless	7.45	319	7	82	204	<5	79	67	3	10	84	15	10	0.16	0.056	<0.005	1.02	<1	67	<2	40
*Water Quality Trigger			7.1 - 7.6	370	24	85 - 110%		15								1.24	0.011						

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).
"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

Site 11 - Mammy Johnsons - Downstream of High Noon

Date	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Pb mg/l	Mo mg/l	Ni mg/l	Se mg/l	Ag mg/l	U mg/l	B mg/l	Hg mg/l	F mg/l	NH3 (as N) mg/l	NO2 (as N) mg/l	NO3 (as N) mg/l	N mg/l	P mg/l
4-Jul-22	<0.001	0.038	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.1	0.7	0.09
5-Aug-22	<0.001	0.047	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	0.12	<0.0001	<0.1	<0.01	<0.01	0.08	0.5	0.04
3-Sep-22	0.002	0.081	<0.0001	0.002	0.003	0.004	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.04	0.01	0.08	1.3	0.24
30-Sep-22	<0.001	0.041	<0.0001	0.001	0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.04	0.7	0.08
21-Oct-22	<0.001	0.038	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.06	0.7	0.09
14-Nov-22	<0.001	0.039	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.04	0.3	0.04
30-Dec-22	<0.001	0.046	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.03	<0.01	0.03	0.5	0.04
31-Jan-23	<0.001	0.044	<0.0001	<0.001	<0.001	<0.001	0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.05	0.6	0.08
28-Feb-23	<0.001	0.051	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.14	<0.01	0.02	0.6	0.05
14-Mar-23	<0.001	0.044	<0.0001	0.002	0.002	<0.001	<0.001	0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.2	1.3	0.09
27-Apr-23	<0.001	0.034	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.05	0.4	0.04
30-Apr-23	<0.001	0.033	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.03	<0.01	0.04	0.4	0.03
31-May-23	<0.001	0.034	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.07	<0.01	0.06	0.4	0.03
29-Jun-23	<0.001	0.044	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.05	0.4	0.01
*Water Quality Trigger				0.001	0.0020										0.06			0.8	0.15

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).

"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

Site 12 - Mammy Johnsons - Relton Property

Date	Category	Comment	ph	EC uS/cm	Turbidity NTU	DO %	TDS mg/l	TSS mg/l	Hardness mg/l	Alkalinity (as CaCO ₃) mg/l	Acidity (as CaCO ₃) mg/l	SO ₄ mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	CO ₃ (as CaCO ₃) mg/l	Bicarb (as CaCO ₃) mg/l	BOD mg/l	Na mg/l
4-Jul-22	Discharge	Steady flow, slightly turbid, light brown	7.56	297.4	71.1	97	190	64	63	55	3	12	60	12	8	1.47	0.089	<0.005	1.97	<1	55	2	33
5-Aug-22	Discharge	Steady flow, clear, colourless	7.52	215	19.6	94	138	5	47	45	6	10	46	9	6	1.02	0.03	<0.005	1.43	<1	45	2	31
3-Sep-22	Discharge	Fast flow, turbid, brown	7.29	144	148.0	103	92.2	161	27	27	6	3	26	6	3	4.22	0.16	0.016	3.51	<1	27	2	19
30-Sep-22	Discharge	Steady flow, slightly turbid, light brown	7.31	234.7	53.2	99	150	42	50	48	6	13	34	10	6	1.25	0.061	<0.005	1.56	<1	48	<2	28
21-Oct-22	Monthly	Steady flow, clear, brown	7.29	215.8	19.4	91	138	12	36	36	5	8	36	8	4	0.79	0.03	<0.005	1.11	<1	36	<2	23
14-Nov-22	Monthly	Steady flow, clear, clear	7.48	422	10.8	8	270	8	50	55	3	8	42	10	6	0.57	0.048	0.815	1.65	<1	55	<2	32
30-Dec-22	Monthly	Slow flow, clear, light brown	7.07	396	4.3	40	253	6	88	90	6	8	68	17	11	0.14	0.146	<0.005	0.95	<1	90	<2	43
31-Jan-23	Monthly	Slow flow, clear, colourless	7.2	335.6	4.2	63	215	7	65	53	5	7	64	13	8	0.12	0.183	<0.005	1.14	<1	53	<2	35
28-Feb-23	Monthly	Steady flow, slightly turbid, light brown	7.12	332	12.1	77	212	14	77	66	4	8	60	16	9	0.22	0.169	0.011	1.38	<1	66	2	35
14-Mar-23	Discharge	Fast flow, turbid and brown	7.33	112.8	69.1	96	72.2	41	16	12	3	<10	22	3	2	3.73	0.066	0.012	2.66	<1	12	2	14
27-Apr-23	Monthly	Steady flow, clear, colourless	7.69	233.3	9.9	94	149	<5	50	39	3	8	47	10	6	0.44	0.029	<0.005	1.09	<1	39	2	30
30-Apr-23	Discharge	Steady flow, slightly turbid, light brown	7.13	274.8	13.8	94	176	8	63	50	4	10	48	12	8	0.46	0.06	<0.005	1.31	<1	50	2	36
31-May-23	Monthly	Steady flow, clear, light brown	7.77	307.1	8.5	11	197	<5	52	55	4	9	50	11	6	0.37	0.024	<0.005	1.08	<1	55	<2	30
29-Jun-23	Monthly	Slow flow, clear, colourless	7.6	302.6	5.6	87	194	<5	74	68	3	9	84	15	9	0.10	0.032	<0.005	0.99	<1	68	<2	39
*Water Quality Trigger			7.1 - 7.6	370	24	85 - 110%		15								1.24		0.011					

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).

"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

Site 12 - Mammy Johnsons - Relton Property

Date	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Pb mg/l	Mo mg/l	Ni mg/l	Se mg/l	Ag mg/l	U mg/l	B mg/l	Hg mg/l	F mg/l	NH3 (as N) mg/l	NO2 (as N) mg/l	NO3 (as N) mg/l	N mg/l	P mg/l
4-Jul-22	<0.001	0.047	<0.0001	0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.06	0.8	0.11
5-Aug-22	<0.001	0.040	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.07	0.5	0.04
3-Sep-22	0.001	0.067	<0.0001	0.002	0.002	0.003	<0.001	0.004	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.04	<0.01	0.06	1.1	0.19
30-Sep-22	<0.001	0.047	<0.0001	<0.001	0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.04	<0.01	0.04	0.7	0.11
21-Oct-22	<0.001	0.035	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.12	<0.01	0.06	0.7	0.05
14-Nov-22	<0.001	0.038	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.03	0.4	0.05
30-Dec-22	0.002	0.054	<0.0001	<0.001	0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.03	<0.01	0.01	0.5	0.04
31-Jan-23	<0.001	0.045	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.08	0.6	0.06
28-Feb-23	<0.001	0.049	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.05	0.6	0.05
14-Mar-23	<0.001	0.044	<0.0001	0.002	0.005	0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.16	1.2	0.07
27-Apr-23	<0.001	0.035	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.03	0.3	0.05
30-Apr-23	<0.001	0.038	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.04	0.3	0.02
31-May-23	<0.001	0.033	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.24	0.5	0.02
29-Jun-23	<0.001	0.044	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	5.66	6.4	0.01
*Water Quality Trigger				0.001	0.0020										0.06			0.8	0.15

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).

"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

Site 15 - Mummy Johnsons - Tereel

Date	Category	Comment	ph	EC uS/cm	Turbidity NTU	DO %	TDS mg/l	TSS mg/l	Hardness mg/l	Alkalinity (as CaCO ₃) mg/l	Acidity (as CaCO ₃) mg/l	SO4 mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	CO3 (as CaCO ₃) mg/l	Bicarb (as CaCO ₃) mg/l	BOD mg/l	Na mg/l
4-Jul-22	Discharge	Fast flow, slightly turbid, light brown	7.5	246	26	99	157	21	47	24	2	7	63	9	6	0.77	0.034	<0.005	1.14	<1	24	2	29
5-Aug-22	Discharge	Steady flow, clear, colourless	7.2	161	12	106	103	<5	38	29	4	9	46	7	5	0.8	0.016	<0.005	1.09	<1	29	3	27
3-Sep-22	Discharge	Steady flow, turbid, brown	7.5	212	43	103	136	64	40	24	6	7	42	8	5	1.57	0.043	<0.005	1.67	<1	24	<2	24
30-Sep-22	Discharge	Steady flow, slightly turbid, light brown	7.3	128	50	100	82.1	34	25	22	5	5	24	5	3	2.16	0.032	<0.005	1.57	<1	22	<2	18
21-Oct-22	Monthly	Steady, turbid, brown	7.3	109	81	93	69.6	76	18	28	5	<10	10	4	2	3.51	0.109	0.009	2.98	<1	28	4	10
14-Nov-22	Monthly	Steady flow, clear, clear	7.3	349	11	97	223	8	38	31	2	7	42	7	5	0.46	0.016	0.007	0.94	<1	31	<2	27
30-Dec-22	Monthly	Slow flow, clear, light brown	7.2	284	6	68	182	7	50	35	6	5	62	10	6	0.23	0.053	<0.005	1.02	<1	35	<2	30
31-Jan-23	Monthly	Slow flow, clear, colourless	7.2	270	4	95	173	5	56	29	3	6	62	11	7	0.14	0.052	<0.005	0.87	<1	29	<2	32
28-Feb-23	Monthly	Steady flow, clear, light brown	7.2	271	12	87	173	9	59	40	3	4	58	12	7	0.21	0.036	<0.005	0.99	<1	40	<2	31
14-Mar-23	Discharge	Fast flow, slightly turbid, brown	7.5	106	57	99	67.7	23	16	18	3	<10	22	3	2	3.1	0.036	0.007	2.00	<1	18	<2	14
27-Apr-23	Monthly	Steady flow, clear, colourless	7.9	182	12	105	117	<5	40	26	2	7	44	8	5	0.48	0.016	<0.005	0.94	<1	26	<2	26
30-Apr-23	Discharge	Steady flow, slightly turbid, light brown	7.3	204	11	103	131	<5	36	29	2	7	39	8	4	0.66	0.016	<0.005	1.06	<1	29	2	26
31-May-23	Monthly	Fast flow, clear, light brown	7.8	242	12	6	155	<5	36	31	4	7	47	8	4	0.09	0.009	0.007	0.94	<1	31	<2	23
29-Jun-23	Monthly	Steady flow, clear, colourless	7.6	228	3	97	146	<5	50	33	2	7	75	10	6	0.09	0.011	<0.005	0.89	<1	33	<2	29
*Water Quality Trigger			7.1 - 7.6	370	24	85 - 110%		15								1.24		0.011					

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).
Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project.

Site 15 - Mammy Johnsons - Tereel

Date	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Pb mg/l	Mo mg/l	Ni mg/l	Se mg/l	Ag mg/l	U mg/l	B mg/l	Hg mg/l	F mg/l	NH3 (as N) mg/l	NO2 (as N) mg/l	NO3 (as N) mg/l	N mg/l	P mg/l
4-Jul-22	<0.001	0.043	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	0.08	0.5	0.05
5-Aug-22	<0.001	0.033	<0.0001	0.005	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.05	0.4	0.03
3-Sep-22	<0.001	0.050	<0.0001	<0.001	<0.001	0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.05	0.4	0.07
30-Sep-22	<0.001	0.035	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.05	0.6	0.07
21-Oct-22	<0.001	0.033	<0.0001	0.005	0.003	0.001	<0.001	0.004	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.06	2.1	0.14
14-Nov-22	<0.001	0.034	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.01	0.4	0.03
30-Dec-22	<0.001	0.047	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	<0.01	0.4	0.02
31-Jan-23	<0.001	0.041	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.03	0.4	0.03
28-Feb-23	<0.001	0.042	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.06	<0.01	0.01	0.4	0.02
14-Mar-23	<0.001	0.037	<0.0001	0.001	<0.001	<0.001	<0.001	0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.2	0.9	0.04
27-Apr-23	<0.001	0.032	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	0.0002	<0.1	0.01	<0.01	0.02	0.4	0.06
30-Apr-23	<0.001	0.031	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	<0.01	0.3	0.02
31-May-23	<0.001	0.031	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.05	<0.01	<0.01	0.2	0.02
29-Jun-23	<0.001	0.036	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	<0.01	0.2	0.01
*Water Quality Trigger				0.001	0.0020										0.06			0.8	0.15

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).
Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project.

Site 19 - Karuah River (Washpool Turnoff)

Date	Category	Comment	ph	EC uS/cm	Turbidity NTU	DO %	TDS mg/l	TSS mg/l	Hardness mg/l	Alkalinity (as CaCO ₃) mg/l	Acidity (as CaCO ₃) mg/l	SO4 mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	CO3 (as CaCO ₃) mg/l	Bicarb (as CaCO ₃) mg/l	BOD mg/l	Na mg/l
4-Jul-22	Discharge	Fast flow, turbid, brown	6.89	86	125	98	55	89	16	13	3	21	16	3	2	0.90	0.054	<0.005	0.88	<1	13	2	11
5-Aug-22	Discharge	Fast flow, clear, colourless	7.74	248	18	100	159	6	65	67	8	9	47	13	8	0.92	0.028	<0.005	1.32	<1	67	<2	32
3-Sep-22	Discharge	Fast flow, turbid, brown	7.46	211	179	106	135	190	31	27	7	<1	24	6	4	4.78	0.122	0.014	3.89	<1	27	3	20
30-Sep-22	Discharge	Steady flow, slightly turbid, light brown	7.3	1326	108	98	849	88	25	25	6	<10	21	5	3	4.11	0.076	0.010	3.31	<1	25	<2	19
21-Oct-22	Monthly	High flow, slightly turbid, light brown	7.4	292	28	92	187	23	65	66	6	10	44	13	8	0.39	0.042	<0.005	1.15	<1	66	<2	30
14-Nov-22	Monthly	Fast flow, clear, clear	7.32	339	11	90	217	9	50	52	2	6	36	10	6	0.42	0.041	<0.005	0.93	<1	52	<2	26
30-Dec-22	Monthly	Steady flow, clear, light brown	7.96	270	5	87	173	8	55	66	4	4	44	12	6	0.18	0.042	0.010	0.57	<1	66	2	28
31-Jan-23	Monthly	Steady flow, clear, colourless	7.5	189	11	99	121	9	46	43	3	4	32	10	5	0.32	0.045	<0.005	0.70	<1	43	<2	21
28-Feb-23	Monthly	Steady flow, clear, colourless	7.35	205	10	91	131	17	50	53	3	5	33	10	6	0.40	0.047	<0.005	0.63	<1	53	<2	23
14-Mar-23	Discharge	Fast flow, slightly turbid, light brown	7.43	110	70	95	71	68	18	17	3	<10	21	4	2	3.06	0.074	0.008	2.54	<1	17	<2	14
27-Apr-23	Monthly	Steady flow, clear, colourless	6.94	187	12	101	120	5	50	42	2	6	33	10	6	0.76	0.023	<0.005	0.79	<1	42	4	26
30-Apr-23	Discharge	Steady flow, clear, colourless	7.9	219	10	100	140	6	43	44	2	5	32	9	5	0.37	0.024	<0.005	0.85	<1	44	<2	24
31-May-23	Monthly	Fast flow, clear, colourless	7.87	251	8	12	161	<5	46	59	3	7	39	10	5	0.31	0.019	<0.005	0.92	<1	59	<2	25
29-Jun-23	Monthly	Steady flow, clear, colourless	7.9	223	6	97	143	<5	59	61	2	6	58	12	7	0.17	0.014	<0.005	0.56	<1	61	<2	26
*Water Quality Trigger			7.1 - 7.6	370	24	85 - 110%		15								1.24		0.011					

"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

Site 19 - Karuah River (Washpool Turnoff)

Date	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Pb mg/l	Mo mg/l	Ni mg/l	Se mg/l	Ag mg/l	U mg/l	B mg/l	Hg mg/l	F mg/l	NH3 (as N) mg/l	NO2 (as N) mg/l	NO3 (as N) mg/l	N mg/l	P mg/l
04-Jul-22	<0.001	0.025	<0.0001	<0.001	<0.001	0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.03	<0.01	0.12	1.4	0.19
05-Aug-22	<0.001	0.028	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.08	0.3	0.04
03-Sep-22	0.002	0.052	0.0001	0.004	0.004	0.003	<0.001	0.007	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.39	<0.01	0.05	1.8	0.19
30-Sep-22	0.001	0.036	<0.0001	0.003	0.003	0.002	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.02	<0.01	<0.01	1.4	0.19
21-Oct-22	<0.001	0.031	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.09	0.6	0.06
14-Nov-22	<0.001	0.023	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.05	0.4	0.04
30-Dec-22	<0.001	0.027	<0.0001	0.002	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.03	0.4	0.03
31-Jan-23	0.001	0.021	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	0.1	0.01	<0.01	0.07	0.5	0.05
28-Feb-23	<0.001	0.023	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.03	<0.01	0.07	0.4	0.04
14-Mar-23	<0.001	0.036	<0.0001	0.002	0.002	<0.001	<0.001	0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	0.01	0.17	1.2	0.08
27-Apr-23	<0.001	0.023	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	<0.01	<0.01	0.06	0.4	0.04
30-Apr-23	<0.001	0.022	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.11	<0.01	0.06	0.4	0.02
31-May-23	<0.001	0.025	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.03	<0.01	0.04	0.2	0.03
29-Jun-23	<0.001	0.024	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	<0.1	0.01	<0.01	0.06	0.3	0.02
*Water Quality Trigger				0.001	0.0020										0.06			0.8	0.15

"Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".

SW3 - Main Water Dam (Major) EPL11701 Point 3

Date	Category	Storage RL	pH	EC uS/cm	Turbidity NTU	TDS mg/l	TSS mg/l	Hardness mg/l	Alkalinity (as CaCO ₃)	Acidity (as CaCO ₃)	SO4 mg/l	Cl mg/l	Ca mg/l	Mg mg/l	Al mg/l	Mn mg/l	Zn mg/l	Fe mg/l	CO3 (as CaCO ₃) mg/l	Bicarb (as CaCO ₃) mg/l	BOD mg/l	Na mg/l
4-Jul-22	Discharge	RL70.8	8.2	1993	1.8	1275.5	<5	650	132	2	672	178	112	90	0.02	0.12	<0.005	<0.05	<1	132	2	202
5-Aug-22	Discharge	RL70.875	8.5	1698	4.2	1086.7	9	640	134	8	675	193	118	84	0.08	0.21	<0.005	0.19	<1	134	3	202
3-Sep-22	Discharge		8.2	1743	4.6	1115.5	<5	598	126	5	631	156	116	75	0.14	0.11	<0.005	0.21	<1	126	2	178
30-Sep-22	Discharge		8.4	1984	1.9	1269.8	5	646	116	4	669	171	125	81	0.03	0.088	<0.005	0.06	<1	116	<2	188
21-Oct-22	Monthly		8.1	1839	4.0	1177	21	622	112	2	591	164	117	80	0.41	0.20	<0.005	0.62	<1	112	<2	194
14-Nov-22	Monthly	RL70.860	8.6	1809	1.3	1157.8	<5	627	109	1	615	190	111	85	<0.01	0.05	<0.005	<0.05	<1	109	<2	195
30-Dec-22	Monthly	RL70.974	8.6	1929	1.7	1234.6	<5	612	93	2	728	205	110	82	<0.01	0.07	<0.005	0.06	<1	93	<2	197
31-Jan-23	Monthly	RL70.955	8.5	2160	1.2	1382.4	<5	46	73	<1	720	203	123	90	<0.01	0.04	<0.005	<0.05	<1	73	<2	230
28-Feb-23	Monthly	RL71.117	8.2	2158	1.7	1381.1	<5	706	86	4	700	201	131	92	<0.01	0.06	<0.005	<0.05	<1	86	2	238
14-Mar-23	Discharge	RL71.041	7.9	2086	2.9	1335	<5	599	89	3	739	209	113	77	0.10	0.08	<0.005	0.13	<1	89	<2	198
27-Apr-23	Monthly	RL68.228	8.0	1994	101.0	1276.2	137	720	100	4	650	200	135	93	1.57	2.04	0.09	3.36	<1	100	2	236
30-Apr-23	Discharge		7.8	2068	5.2	1323.5	8	716	100	3	670	196	135	92	0.02	0.32	<0.005	0.09	<1	100	5	239
31-May-23	Monthly	RL69.065	7.8	2232	6.5	1428.5	10	702	137	10	745	202	136	88	0.07	1.32	0.01	0.21	<1	137	2	222
29-Jun-23	Monthly	RL70.124	7.6	2249	2.9	1439.4	<5	754	151	4	722	208	147	94	<0.01	0.54	<0.005	<0.05	<1	151	<2	234
*Water Quality Trigger			N/A	N/A	N/A	N/A	N/A								N/A		N/A					

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).
Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project.

SW3 - Main Water Dam (Major)

Date	As mg/l	Ba mg/l	Cd mg/l	Cr mg/l	Cu mg/l	Pb mg/l	Mo mg/l	Ni mg/l	Se mg/l	Ag mg/l	U mg/l	B mg/l	Hg mg/l	F mg/l	NH3 (as N) mg/l	NO2 (as N) mg/l	NO3 (as N) mg/l	N mg/l	P mg/l
4-Jul-22	<0.001	0.028	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.02	<0.01	0.04	0.4	0.02
5-Aug-22	<0.001	0.028	<0.0001	<0.001	<0.001	<0.001	<0.001	0.003	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.03	<0.01	<0.01	0.4	0.02
3-Sep-22	<0.001	0.026	<0.0001	<0.001	<0.001	<0.001	<0.001	0.003	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.03	<0.01	<0.01	0.4	0.01
30-Sep-22	<0.001	0.025	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.04	<0.01	<0.01	0.4	<0.01
21-Oct-22	<0.001	0.028	<0.0001	<0.001	<0.001	<0.001	<0.001	0.005	<0.01	<0.001	<0.001	<0.05	<0.0001	0.1	0.03	<0.01	0.32	0.9	0.02
14-Nov-22	<0.001	0.021	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.01	<0.01	<0.01	0.3	0.03
30-Dec-22	<0.001	0.026	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.02	<0.01	<0.01	0.3	0.01
31-Jan-23	0.002	0.028	<0.0001	<0.001	<0.001	<0.001	<0.001	0.001	<0.01	<0.001	<0.001	<0.05	<0.0001	0.4	<0.01	<0.01	<0.01	0.5	0.03
28-Feb-23	<0.001	0.028	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.02	<0.01	<0.01	0.4	0.02
14-Mar-23	<0.001	0.029	<0.0001	<0.001	<0.001	<0.001	<0.001	0.002	<0.01	<0.001	<0.001	<0.05	<0.0001	0.3	0.02	<0.01	0.02	0.7	<0.01
27-Apr-23	0.002	0.086	0.0001	<0.001	0.001	0.0010	0.005	0.032	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.18	<0.01	0.01	1.6	0.08
30-Apr-23	<0.001	0.033	<0.0001	<0.001	<0.001	<0.001	0.001	0.004	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.1	<0.01	0.01	0.5	0.02
31-May-23	<0.001	0.049	<0.0001	<0.001	<0.001	<0.001	0.002	0.005	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.44	<0.01	0.03	1.1	0.03
29-Jun-23	<0.001	0.044	<0.0001	<0.001	<0.001	<0.001	0.001	0.006	<0.01	<0.001	<0.001	<0.05	<0.0001	0.2	0.65	0.04	0.04	1.1	0.01

SW3 - Mine Water Dam (Minor)

Date	Category	Comment	ph	EC	Turbidity
				uS/cm	NTU
4-Jul-22	Discharge	85%	8.3	1676	5.44
5-Aug-22	Discharge	Oil sheen on water (oil)	8.4	969.5	5.06
3-Sep-22	Discharge	50%	8.0	1343	9.84
30-Sep-22	Discharge	Oil sheen at surface	8.2	1205	9.03
21-Oct-22	Monthly	NR	8.1	1260	5.39
14-Nov-22	Monthly	70%	8.6	1222	5.47
30-Dec-22	Monthly	70%	8.7	1303	2.88
31-Jan-23	Monthly	70%	8.2	1466	4
28-Feb-23	Monthly	70%	7.9	1675	14.12
14-Mar-23	Discharge	70%	7.8	1517	18.34
27-Apr-23	Monthly	60%	8.2	1240	6.64
30-Apr-23	Discharge	60%	7.7	1280	7.23
31-May-23	Monthly	60%	8.0	1327	1.13
29-Jun-23	Monthly	60%	7.9	1318	4.13
*Water Quality Trigger			N/A	N/A	N/A

***Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000). "Gilberts & Associates 2011 - Development of Water Quality Trigger Levels for the Duralie Extension Project".**

Site - Southern Arm of MWD Diversion Drain

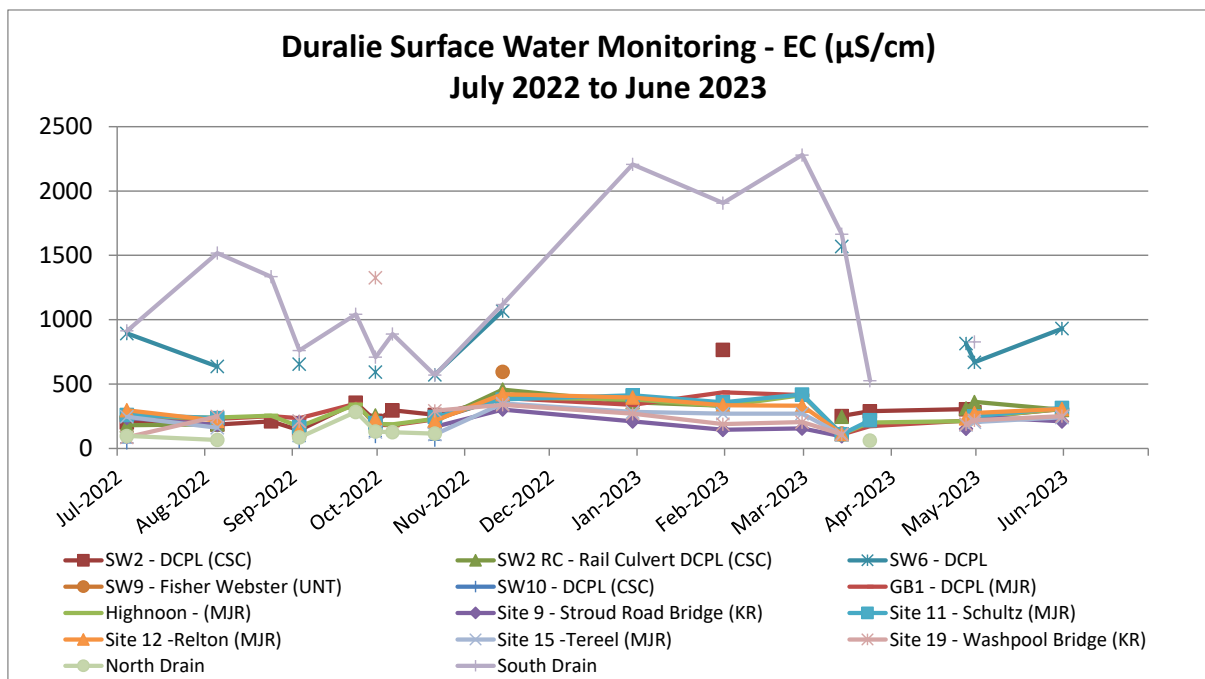
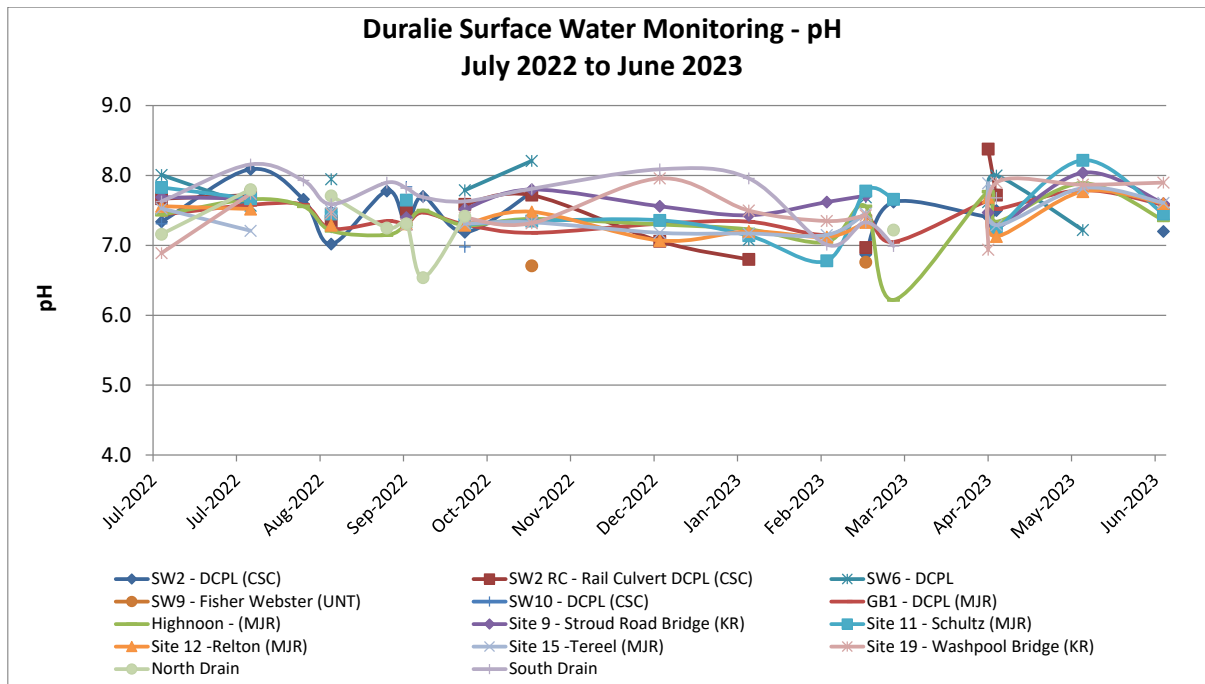
Date	Category	Comment	ph	EC	Turbidity	TSS
				uS/cm	NTU	mg/l
4-Jul-22	Discharge	Fast flow, slightly turbid, light brown - Flow to drain	7.6	913.7	48.7	14
5-Aug-22	Discharge	Fast flow, clear, colourless - Flow to drain	8.2	1518	21.3	15
24-Aug-22	Discharge	Steady flow, slightly turbid, light brown - flow to dam	7.9	1335	35.8	15
3-Sep-22	Discharge	Steady flow, slightly turbid, light brown	7.6	761.2	63.3	13
23-Sep-22	Discharge	Steady flow, clear, brown	7.9	1042	55.8	15
30-Sep-22	Discharge	Steady flow, slightly turbid, light brown	7.8	709.2	90.6	34
6-Oct-22	Discharge	Dam. Slow flow, slightly turbid, light brown	7.7	889.3	45.8	14
21-Oct-22	Monthly	Flowing, slightly turbid, light brown	7.6	570.1	82	25
14-Nov-22	Monthly	Steady flow, clear, colourless	7.8	1119	14.12	10
30-Dec-22	Monthly	Trickle flow, clear, colourless	8.1	2207	8.51	5
31-Jan-23	Monthly	Trickle flow, slightly turbid, light brown	8.0	1906	11.87	12
28-Feb-23	Monthly	Slow flow, clear, colourless	7.0	2280	5.93	<5
14-Mar-23	Discharge	Steady flow, clear, colourless	7.3	1665	5.87	<5
24-Mar-23	Discharge	Steady flow, slightly turbid, light brown	7.0	526.6	28.3	20
27-Apr-23	Monthly	No flow				
30-Apr-23	Discharge	Trickle flow, clear, colourless	7.7	828	15.27	<5
31-May-23	Monthly	No flow				
29-Jun-23	Monthly	No flow				
*Water Quality Trigger			7.1 - 7.9	544	119	80

*Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).

Site - Northern Arm of MWD Diversion Drain

Date	Category	Comment	ph	EC	Turbidity	TSS
				uS/cm	NTU	mg/l
4-Jul-22	Discharge	Steady flow, turbid, brown	7.2	96.8	92.8	14
5-Aug-22	Discharge	Steady flow, slightly turbid, brown	7.8	66.3	160	27
24-Aug-22	Discharge	No flow				
3-Sep-22	Discharge	Steady flow, turbid, light brown	7.7	85.5	87.2	9
23-Sep-22	Discharge	Slow flow, slightly turbid, brown	7.3	284	90	8
30-Sep-22	Discharge	Steady flow, slightly turbid, light brown	7.3	131.5	65.7	13
6-Oct-22	Discharge	Slow flow, slightly turbid, light brown	6.5	126.4	72.2	12
21-Oct-22	Monthly	Trickle flow, slightly turbid, brown	7.4	115.6	29.33	8
14-Nov-22	Monthly	No flow				
30-Dec-22	Monthly	No flow				
31-Jan-23	Monthly	No flow				
28-Feb-23	Monthly	No flow				
14-Mar-23	Discharge	No flow				
24-Mar-23	Discharge	Steady flow, slightly turbid, light brown	7.2	60.6	46.7	17
27-Apr-23	Monthly	No flow				
30-Apr-23	Discharge	No flow				
31-May-23	Monthly	No flow				
29-Jun-23	Monthly	Dry				
*Water Quality Trigger			7.1 - 7.9	544	119	80

***Water quality triggers for the Duralie Coal Mine developed in accordance with the methodology in ANZECC/ARMCANZ (2000).**



Groundwater

DB1W

Parameter	Units	11-Aug-22	9-Nov-22	7-Feb-23	4-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)		15.30	15.70	15.62	15.3	15.54	15.70	0.04	0.21
pH			5.42	5.76	5.77	5.42	5.65	5.77	0.04	0.20
Conductivity @ 25°C	(µS/cm)		3140	4210	3320	3140	3557	4210	328233	573
ORP	(mV)		120	41	59	41	73	120	1714	41
Dissolved Oxygen	(%)	N	32.5	22.2	25.0	22.20	26.57	32.50	28.36	5.33
TDS	(mg/L)	o	2000	2970	2340	2000	2437	2970	242233	492
Alkalinity as CaCO3	(mg/L)		43	57	77	43	59	77	292	17
Acidity as CaCO3	(mg/L)	a	119	108	124	108	117	124	67	8
Sulphate	(mg/L)	c	344	367	335	335	349	367	272	17
Chloride	(mg/L)	c	830	1020	982	830	944	1020	10108	101
Calcium	(mg/L)	e	157	191	182	157	177	191	310	18
Magnesium	(mg/L)	s	48	57	50	48	52	57	22	5
Sodium	(mg/L)		390	463	410	390	421	463	1423	38
Aluminium	(mg/L)		8.6	0.83	1.43	0.83	3.62	8.60	18.69	4.32
Manganese	(mg/L)		0.696	0.882	0.85	0.70	0.81	0.88	0.01	0.10
Zinc	(mg/L)		0.158	0.132	0.149	0.13	0.15	0.16	0.00	0.01
Iron	(mg/L)		29.5	31.6	29.7	29.50	30.27	31.60	1.34	1.16

DB2W

Parameter	Units	11-Aug-22	17-Nov-22	7-Feb-23	4-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)		13.09	13.39	13.41	13.1	13.30	13.41	0.03	0.18
pH			6.16	6.25	6.22	6.16	6.21	6.25	0.00	0.05
Conductivity @ 25°C	(µS/cm)		1415	1508	1446	1415	1456	1508	2242	47
ORP	(mV)		68	-10	28	-10	29	68	1521	39
Dissolved Oxygen	(%)	N	21.7	24.1	17.0	17.00	20.93	24.10	13.04	3.61
TDS	(mg/L)	o	965	908	1040	908	971	1040	4383	66
Alkalinity as CaCO3	(mg/L)		164	148	160	148	157	164	69	8
Acidity as CaCO3	(mg/L)	a	87	70	86	70	81	87	91	10
Sulphate	(mg/L)	c	203	200	213	200	205	213	46	7
Chloride	(mg/L)	c	316	325	320	316	320	325	20	5
Calcium	(mg/L)	e	115	97	108	97	107	115	82	9
Magnesium	(mg/L)	s	27	23	25	23	25	27	4	2
Sodium	(mg/L)		167	162	156	156	162	167	30	6
Aluminium	(mg/L)		<0.01	0.01	<0.01	0.01	0.01	0.01		
Manganese	(mg/L)		0.813	0.881	0.822	0.81	0.84	0.88	0.00	0.04
Zinc	(mg/L)		0.018	0.038	0.016	0.02	0.02	0.04	0.00	0.01
Iron	(mg/L)		12.8	13.8	8.53	8.53	11.71	13.80	7.83	2.80

DB3W

Parameter	Units	11-Aug-22	9-Nov-22	7-Feb-23	4-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)		2.32	2.82	2.94	2.3	2.69	2.94	0.11	0.33
pH			6.04	6.00	6.80	6.00	6.28	6.80	0.20	0.45
Conductivity @ 25°C	(µS/cm)		115	173	101	101	130	173	1470	38
ORP	(mV)		124	89	-3	-3	70	124	4303	66
Dissolved Oxygen	(%)	N	25.6	26.2	27.2	25.60	26.33	27.20	0.65	0.81
TDS	(mg/L)	o	116	144	161	116	140	161	516	23
Alkalinity as CaCO3	(mg/L)		38	34	39	34	37	39	7	3
Acidity as CaCO3	(mg/L)	a	7	19	24	7	17	24	76	9
Sulphate	(mg/L)	c	5	4	4	4	4	5	0	1
Chloride	(mg/L)	c	14	14	14	14	14	14	0	0
Calcium	(mg/L)	e	2	2	2	2	2	2	0	0
Magnesium	(mg/L)	s	2	2	2	2	2	2	0	0
Sodium	(mg/L)		19	20	20	19	20	20	0	1
Aluminium	(mg/L)		0.8	1.78	3.91	0.80	2.16	3.91	2.53	1.59
Manganese	(mg/L)		0.023	0.041	0.036	0.02	0.03	0.04	0.00	0.01
Zinc	(mg/L)		0.021	0.025	0.01	0.01	0.02	0.03	0.00	0.01
Iron	(mg/L)		2.81	15.7	5.36	2.81	7.96	15.70	46.60	6.83

DB4W

Parameter	Units	11-Aug-22	17-Nov-22	15-Feb-23	4-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)		5.67	6.11	6.13	5.7	5.97	6.13	0.07	0.26
pH			6.70	6.98	6.89	6.70	6.86	6.98	0.02	0.14
Conductivity @ 25°C	(µS/cm)		3140	3220	3250	3140	3203	3250	3233	57
ORP	(mV)		-175	-201	-279	-279	-218	-175	2929	54
Dissolved Oxygen	(%)		16.6	6.3	6.9	6.30	9.93	16.60	33.42	5.78
TDS	(mg/L)		2210	2480	1990	1990	2227	2480	60233	245
Alkalinity as CaCO3	(mg/L)		329	336	330	329	332	336	14	4
Acidity as CaCO3	(mg/L)		20	34	27	20	27	34	49	7
Sulphate	(mg/L)		69	50	65	50	61	69	100	10
Chloride	(mg/L)		1040	1010	1000	1000	1017	1040	433	21
Calcium	(mg/L)		153	144	144	144	147	153	27	5
Magnesium	(mg/L)		57	55	54	54	55	57	2	2
Sodium	(mg/L)		486	517	478	478	494	517	424	21
Aluminium	(mg/L)		0.01	0.01	0.02	0.01	0.01	0.02	0.00	0.01
Manganese	(mg/L)		1.14	1.03	1.3	1.03	1.16	1.30	0.02	0.14
Zinc	(mg/L)		<0.005	<0.005	<0.005					
Iron	(mg/L)		0.2	0.12	0.14	0.12	0.15	0.20	0.00	0.04

DB5W

Parameter	Units	11-Aug-22	17-Nov-22	7-Feb-23	4-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)		10.42			10.4	10.42	10.42		
pH			5.74			5.74	5.74	5.74		
Conductivity @ 25°C	(µS/cm)		1792			1792	1792	1792		
ORP	(mV)		25			25	25	25		
Dissolved Oxygen	(%)		23.7	N	N	23.70	23.70	23.70		
TDS	(mg/L)		1090			1090	1090	1090		
Alkalinity as CaCO3	(mg/L)		50			50	50	50		
Acidity as CaCO3	(mg/L)		125	a	a	125	125	125		
Sulphate	(mg/L)		186	c	c	186	186	186		
Chloride	(mg/L)		545	c	c	545	545	545		
Calcium	(mg/L)		26	e	e	26	26	26		
Magnesium	(mg/L)		27	s	s	27	27	27		
Sodium	(mg/L)		258	s	s	258	258	258		
Aluminium	(mg/L)		0.43			0.43	0.43	0.43		
Manganese	(mg/L)		0.983			0.98	0.98	0.98		
Zinc	(mg/L)		0.091			0.09	0.09	0.09		
Iron	(mg/L)		38.2			38.20	38.20	38.20		

DB6W

Parameter	Units	12-Aug-22	16-Nov-22	8-Feb-23	3-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)	20.51	20.30	20.29	20.42	20.3	20.38	20.51	0.01	0.10
pH		6.67	6.65	6.61	6.64	6.61	6.64	6.67	0.00	0.02
Conductivity @ 25°C	(µS/cm)	6330	5700	5290	5580	5290	5725	6330	192300	439
ORP	(mV)	164	137	-29	24	-29	74	164	8393	92
Dissolved Oxygen	(%)	27.6	25.4	22.2	30.5	22.20	26.43	30.50	12.30	3.51
TDS	(mg/L)	3560	3840	4830	3700	3560	3983	4830	332292	576
Alkalinity as CaCO3	(mg/L)	614	631	600	635	600	620	635	261	16
Acidity as CaCO3	(mg/L)	98	81	90	100	81	92	100	75	9
Sulphate	(mg/L)	89	85	86	94	85	89	94	16	4
Chloride	(mg/L)	1640	1670	1590	1650	1590	1638	1670	1158	34
Calcium	(mg/L)	316	302	318	288	288	306	318	195	14
Magnesium	(mg/L)	189	191	188	187	187	189	191	3	2
Sodium	(mg/L)	611	607	611	596	596	606	611	50	7
Aluminium	(mg/L)	0.17	0.15	0.05	0.06	0.05	0.11	0.17	0.00	0.06
Manganese	(mg/L)	0.316	0.312	0.366	0.344	0.31	0.33	0.37	0.00	0.03
Zinc	(mg/L)	0.021	0.015	0.024	0.026	0.02	0.02	0.03	0.00	0.00
Iron	(mg/L)	4.23	3.92	4.93	3.98	3.92	4.27	4.93	0.21	0.46

DB7W

Parameter	Units	11-Aug-22	9-Nov-22	15-Feb-23	4-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)		9.20	10.34	10.16	9.2	9.90	10.34	0.38	0.61
pH			6.89	7.05	7.14	6.89	7.03	7.14	0.02	0.13
Conductivity @ 25°C	(µS/cm)		2620	2360	2384	2360	2455	2620	20645	144
ORP	(mV)		-5	-120	187	-120	21	187	24056	155
Dissolved Oxygen	(%)		32.6	32.3	46.8	32.30	37.23	46.80	68.66	8.29
TDS	(mg/L)		1600	1760	1540	1540	1633	1760	12933	114
Alkalinity as CaCO3	(mg/L)		411	415	416	411	414	416	7	3
Acidity as CaCO3	(mg/L)		28	46	34	28	36	46	84	9
Sulphate	(mg/L)		81	61	78	61	73	81	116	11
Chloride	(mg/L)		654	700	685	654	680	700	550	23
Calcium	(mg/L)		145	132	135	132	137	145	46	7
Magnesium	(mg/L)		52	53	51	51	52	53	1	1
Sodium	(mg/L)		351	363	338	338	351	363	156	13
Aluminium	(mg/L)		0.04	0.19	0.13	0.04	0.12	0.19	0.01	0.08
Manganese	(mg/L)		0.64	0.652	0.729	0.64	0.67	0.73	0.00	0.05
Zinc	(mg/L)		<0.005	<0.005	<0.005	0.00	#DIV/0!	0.00	#DIV/0!	#DIV/0!
Iron	(mg/L)		<0.05	0.19	0.21	0.19	0.20	0.21	0.00	0.01

DB8W

Parameter	Units	11-Aug-22	15-Nov-22	8-Feb-23	3-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)	15.88	13.58	7.18	7.52	7.2	11.04	15.88	19.06	4.37

DB9W

Parameter	Units	11-Aug-22	16-Nov-22	8-Feb-23	3-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)	17.94	16.74	16.83	16.95	16.7	17.12	17.94	0.31	0.56
pH		7.33	6.75	6.66	6.72	6.66	6.87	7.33	0.10	0.31
Conductivity @ 25°C	(µS/cm)	3690	4400	7710	8940	3690	6185	8940	6442300	2538
ORP	(mV)	88	75	-22	27	-22	42	88	2509	50
Dissolved Oxygen	(%)	33.4	25.1	19.5	30.9	19.50	27.23	33.40	38.61	6.21
TDS	(mg/L)	2060	3300	6620	6320	2060	4575	6620	5059300	2249
Alkalinity as CaCO3	(mg/L)	131	115	275	309	115	208	309	9756	99
Acidity as CaCO3	(mg/L)	8	25	52	34	8	30	52	336	18
Sulphate	(mg/L)	275	770	1350	813	275	802	1350	193059	439
Chloride	(mg/L)	948	1220	2000	2740	948	1727	2740	654863	809
Calcium	(mg/L)	170	291	572	487	170	380	572	33445	183
Magnesium	(mg/L)	13	106	183	202	13	126	202	7398	86
Sodium	(mg/L)	505	664	1030	1120	505	830	1120	85760	293
Aluminium	(mg/L)	0.17	0.01	0.02	0.38	0.01	0.15	0.38	0.03	0.17
Manganese	(mg/L)	0.183	1.72	2.97	3.12	0.18	2.00	3.12	1.86	1.36
Zinc	(mg/L)	0.022	0.054	0.027	0.041	0.02	0.04	0.05	0.00	0.01
Iron	(mg/L)	0.38	11.6	13	13	0.38	9.50	13.00	37.36	6.11

DB10W

Parameter	Units	11-Aug-22	16-Nov-22	8-Feb-23	3-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)	10.87	9.90	10.82	11.12	9.9	10.68	11.12	0.29	0.53
pH		5.32	5.80	5.51	6.09	5.32	5.68	6.09	0.11	0.34
Conductivity @ 25°C	(µS/cm)	4900	4190	4200	4220	4190	4378	4900	121492	349
ORP	(mV)	2	77	136	87	2	75	136	3081	56
Dissolved Oxygen	(%)	55.5	17.4	24.2	26.8	17.40	30.98	55.50	283.03	16.82
TDS	(mg/L)	2790	3030	3120	2800	2790	2935	3120	27500	166
Alkalinity as CaCO3	(mg/L)	21	63	38	85	21	52	85	789	28
Acidity as CaCO3	(mg/L)	84	95	86	80	80	86	95	40	6
Sulphate	(mg/L)	492	418	464	431	418	451	492	1113	33
Chloride	(mg/L)	1250	1320	1290	1280	1250	1285	1320	833	29
Calcium	(mg/L)	83	128	111	125	83	112	128	422	21
Magnesium	(mg/L)	96	92	96	86	86	93	96	22	5
Sodium	(mg/L)	700	697	716	660	660	693	716	561	24
Aluminium	(mg/L)	0.35	1.19	0.19	0.84	0.19	0.64	1.19	0.21	0.46
Manganese	(mg/L)	0.946	1.05	1.14	1.14	0.95	1.07	1.14	0.01	0.09
Zinc	(mg/L)	2.43	0.139	0.236	0.235	0.14	0.76	2.43	1.24	1.11
Iron	(mg/L)	13.4	12.6	13.9	14.4	12.60	13.58	14.40	0.59	0.77

DB11W

Parameter	Units	11-Aug-22	16-Nov-22	7-Feb-23	5-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)		9.98	9.78	9.66	9.7	9.81	9.98	0.03	0.16
pH			7.03	7.00	7.01	7.00	7.01	7.03	0.00	0.02
Conductivity @ 25°C	(µS/cm)		2580	2760	2870	2580	2737	2870	21433	146
ORP	(mV)		76	-98	-3	-98	-8	76	7590	87
Dissolved Oxygen	(%)		30.1	20.4	26.0	20.40	25.50	30.10	23.71	4.87
TDS	(mg/L)		1850	2100	1920	1850	1957	2100	16633	129
Alkalinity as CaCO3	(mg/L)		289	269	282	269	280	289	103	10
Acidity as CaCO3	(mg/L)		20	22	15	15	19	22	13	4
Sulphate	(mg/L)		174	176	187	174	179	187	49	7
Chloride	(mg/L)		761	754	790	754	768	790	364	19
Calcium	(mg/L)		180	173	196	173	183	196	139	12
Magnesium	(mg/L)		27	31	34	27	31	34	12	4
Sodium	(mg/L)		332	357	362	332	350	362	258	16
Aluminium	(mg/L)		0.05	0.02	0.22	0.02	0.10	0.22	0.01	0.11
Manganese	(mg/L)		0.733	0.831	0.961	0.73	0.84	0.96	0.01	0.11
Zinc	(mg/L)		0.008	0.012	0.013	0.01	0.01	0.01	0.00	0.00
Iron	(mg/L)		2.94	3.46	4.29	2.94	3.56	4.29	0.46	0.68

BH4BW

Parameter	Units	11-Aug-22	9-Nov-22	7-Feb-23	4-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)		3.90	4.60	4.29	3.9	4.26	4.60	0.12	0.35
pH			6.00	5.90	6.08	5.90	5.99	6.08	0.01	0.09
Conductivity @ 25°C	(µS/cm)		573	569	445	445	529	573	5326	73
ORP	(mV)		39	48	9	9	32	48	417	20
Dissolved Oxygen	(%)		37.1	34.6	37.0	34.60	36.23	37.10	2.00	1.42
TDS	(mg/L)		246	282	306	246	278	306	912	30
Alkalinity as CaCO3	(mg/L)		83	70	88	70	80	88	86	9
Acidity as CaCO3	(mg/L)		26	78	82	26	62	82	976	31
Sulphate	(mg/L)		14	11	7	7	11	14	12	4
Chloride	(mg/L)		59	93	97	59	83	97	436	21
Calcium	(mg/L)		18	20	20	18	19	20	1	1
Magnesium	(mg/L)		9	11	11	9	10	11	1	1
Sodium	(mg/L)		38	44	40	38	41	44	9	3
Aluminium	(mg/L)		1.59	1.48	2.67	1.48	1.91	2.67	0.43	0.66
Manganese	(mg/L)		0.592	1.63	2.18	0.59	1.47	2.18	0.65	0.81
Zinc	(mg/L)		0.045	0.028	0.03	0.03	0.03	0.05	0.00	0.01
Iron	(mg/L)		24.5	17.7	21.8	17.70	21.33	24.50	11.72	3.42

S11W

Parameter	Units	12-Aug-22	17-Nov-22	15-Feb-23	3-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)	9.71	9.80	10.11	10.18	9.7	9.95	10.18	0.05	0.23
pH		7.07	6.88	7.02	7.08	6.88	7.01	7.08	0.01	0.09
Conductivity @ 25°C	(µS/cm)	3087	2620	2510	2441	2441	2665	3087	84770	291
ORP	(mV)	162	74	123	221	74	145	221	3863	62
Dissolved Oxygen	(%)	24.9	34.6	38.3	33.7	24.90	32.88	38.30	32.23	5.68
TDS	(mg/L)	2020	2150	2280	1800	1800	2063	2280	41892	205
Alkalinity as CaCO3	(mg/L)	480	500	509	518	480	502	518	264	16
Acidity as CaCO3	(mg/L)	32	29	46	29	29	34	46	66	8
Sulphate	(mg/L)	788	619	671	616	616	674	788	6464	80
Chloride	(mg/L)	353	332	318	314	314	329	353	310	18
Calcium	(mg/L)	184	176	161	154	154	169	184	188	14
Magnesium	(mg/L)	147	150	144	129	129	143	150	87	9
Sodium	(mg/L)	263	283	267	243	243	264	283	271	16
Aluminium	(mg/L)	0.06	0.04	0.02	0.06	0.02	0.05	0.06	0.00	0.02
Manganese	(mg/L)	<0.001	0.005	0.001	0.003	0.00	0.00	0.01	0.00	0.00
Zinc	(mg/L)	0.006	0.012	<0.005	0.006	0.01	0.01	0.01	0.00	0.00
Iron	(mg/L)	<0.05	0.09	<0.05	0.07	0.07	0.08	0.09	0.00	0.01

SI2W

Parameter	Units	12-Aug-22	17-Nov-22	15-Feb-23	3-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)	20.53	21.53	22.74	23.97	20.5	22.19	23.97	2.22	1.49
pH		7.34	7.08	7.35	7.51	7.08	7.32	7.51	0.03	0.18
Conductivity @ 25°C	(µS/cm)	2905	2470	2460	2640	2460	2619	2905	43240	208
ORP	(mV)	161	87	135	231	87	154	231	3609	60
Dissolved Oxygen	(%)	24.4	26.3	47.1	36.4	24.40	33.55	47.10	109.34	10.46
TDS	(mg/L)	1890	1980	2280	1960	1890	2028	2280	29825	173
Alkalinity as CaCO3	(mg/L)	279	298	301	310	279	297	310	170	13
Acidity as CaCO3	(mg/L)	10	11	17	9	9	12	17	13	4
Sulphate	(mg/L)	884	718	922	899	718	856	922	8678	93
Chloride	(mg/L)	256	253	263	248	248	255	263	39	6
Calcium	(mg/L)	127	130	122	119	119	125	130	24	5
Magnesium	(mg/L)	126	134	133	119	119	128	134	49	7
Sodium	(mg/L)	303	325	330	293	293	313	330	311	18
Aluminium	(mg/L)	0.08	0.21	0.05	<0.01	0.05	0.11	0.21	0.01	0.09
Manganese	(mg/L)	0.026	0.038	0.028	0.044	0.03	0.03	0.04	0.00	0.01
Zinc	(mg/L)	0.009	0.006	0.009	0.023	0.01	0.01	0.02	0.00	0.01
Iron	(mg/L)	0.12	0.4	0.15	0.19	0.12	0.22	0.40	0.02	0.13

SI3W

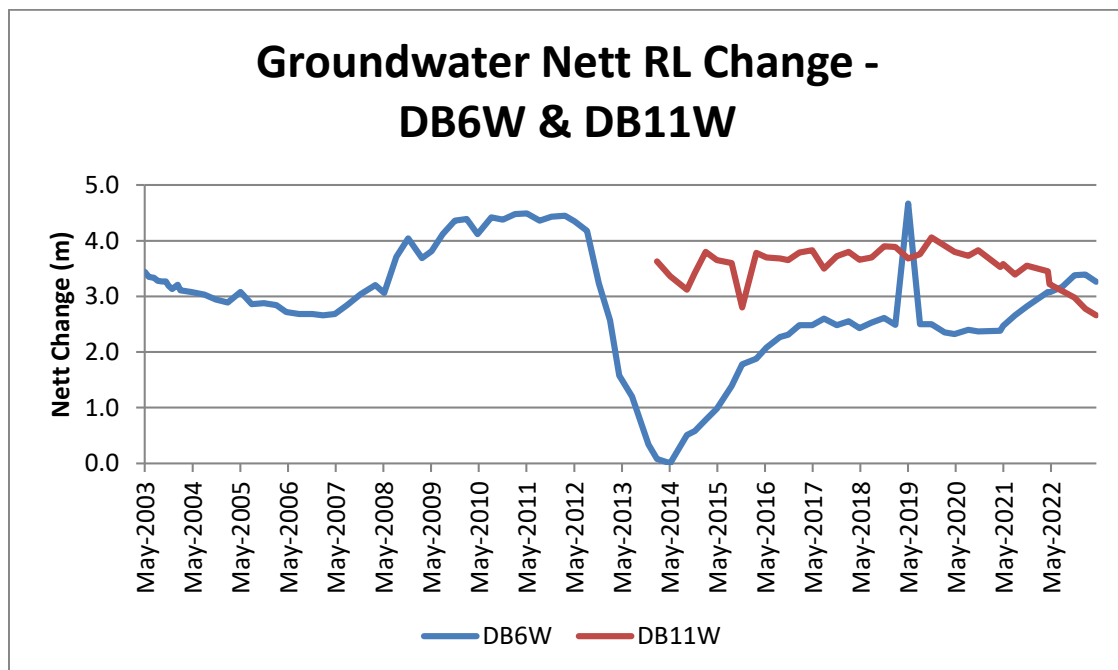
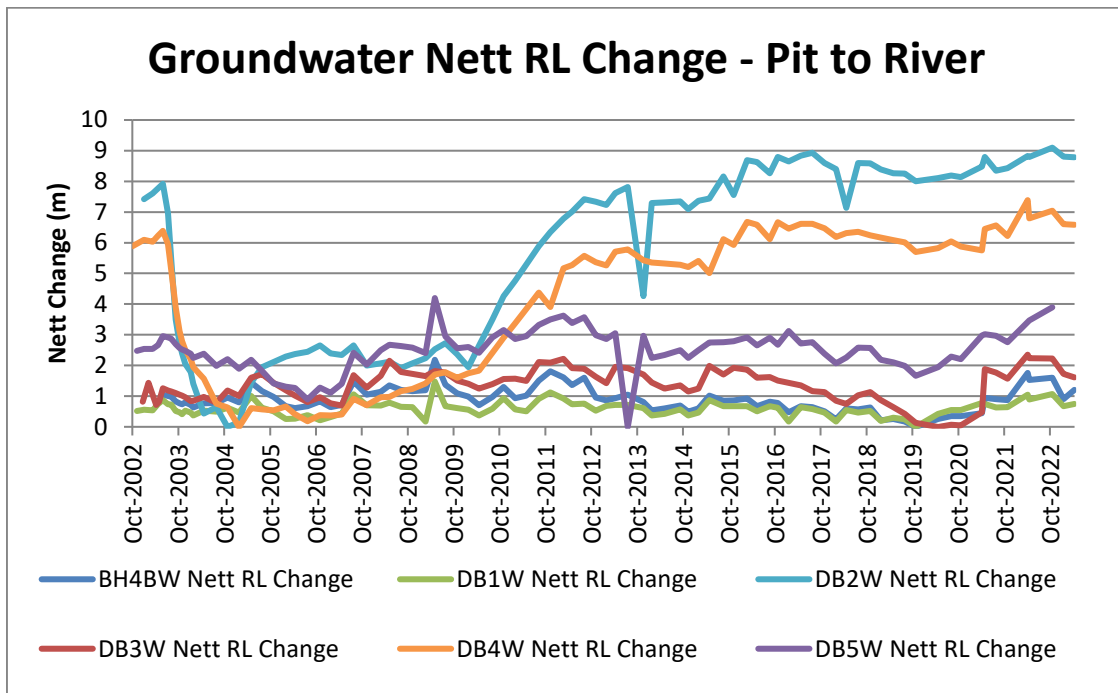
Parameter	Units	12-Aug-22	17-Nov-22	15-Feb-23	3-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)	27.94	28.00	28.20	28.16	27.9	28.08	28.20	0.02	0.12
pH		6.97	6.84	6.99	6.96	6.84	6.94	6.99	0.00	0.07
Conductivity @ 25°C	(µS/cm)	6100	5710	6030	7410	5710	6313	7410	564158	751
ORP	(mV)	175	147	132	289	132	186	289	5056	71
Dissolved Oxygen	(%)	43.5	59.2	79.0	76.8	43.50	64.63	79.00	276.86	16.64
TDS	(mg/L)	3820	4520	6620	5860	3820	5205	6620	1606233	1267
Alkalinity as CaCO3	(mg/L)	276	282	293	305	276	289	305	163	13
Acidity as CaCO3	(mg/L)	22	26	36	26	22	28	36	36	6
Sulphate	(mg/L)	645	612	890	892	612	760	892	23151	152
Chloride	(mg/L)	1480	1770	2150	2230	1480	1908	2230	121492	349
Calcium	(mg/L)	414	507	555	598	414	519	598	6235	79
Magnesium	(mg/L)	118	147	168	175	118	152	175	655	26
Sodium	(mg/L)	634	745	793	785	634	739	793	5364	73
Aluminium	(mg/L)	0.47	2.46	0.26	1.34	0.26	1.13	2.46	1.00	1.00
Manganese	(mg/L)	0.101	0.414	0.059	0.672	0.06	0.31	0.67	0.08	0.29
Zinc	(mg/L)	0.024	0.076	0.02	0.118	0.02	0.06	0.12	0.00	0.05
Iron	(mg/L)	0.74	3.39	0.35	2.25	0.35	1.68	3.39	1.97	1.40

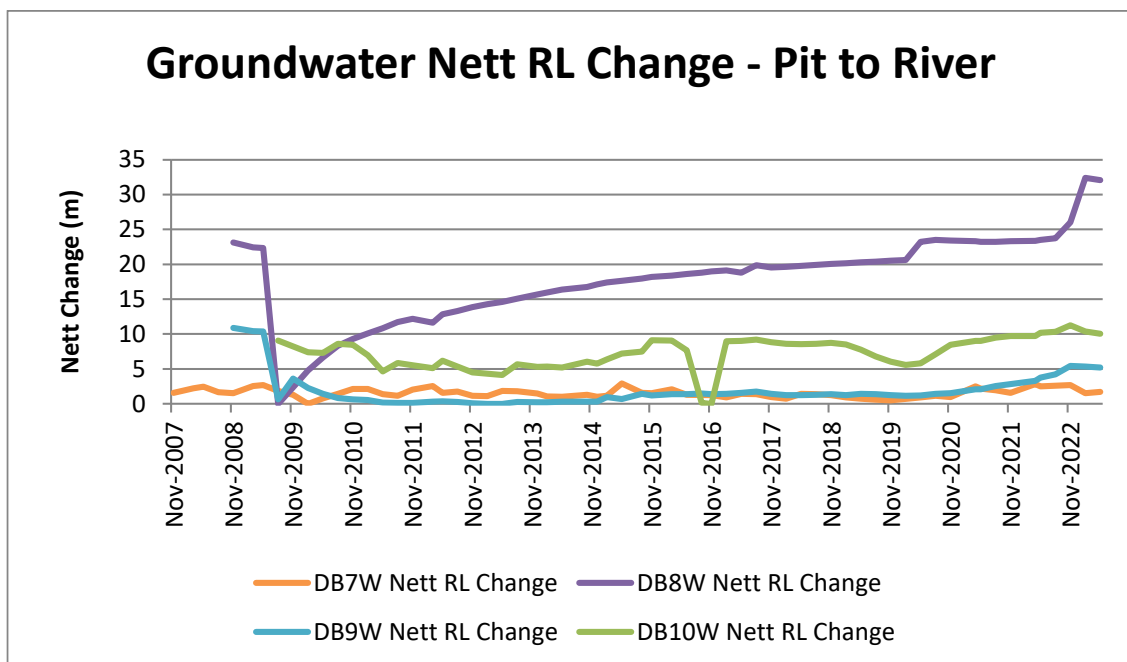
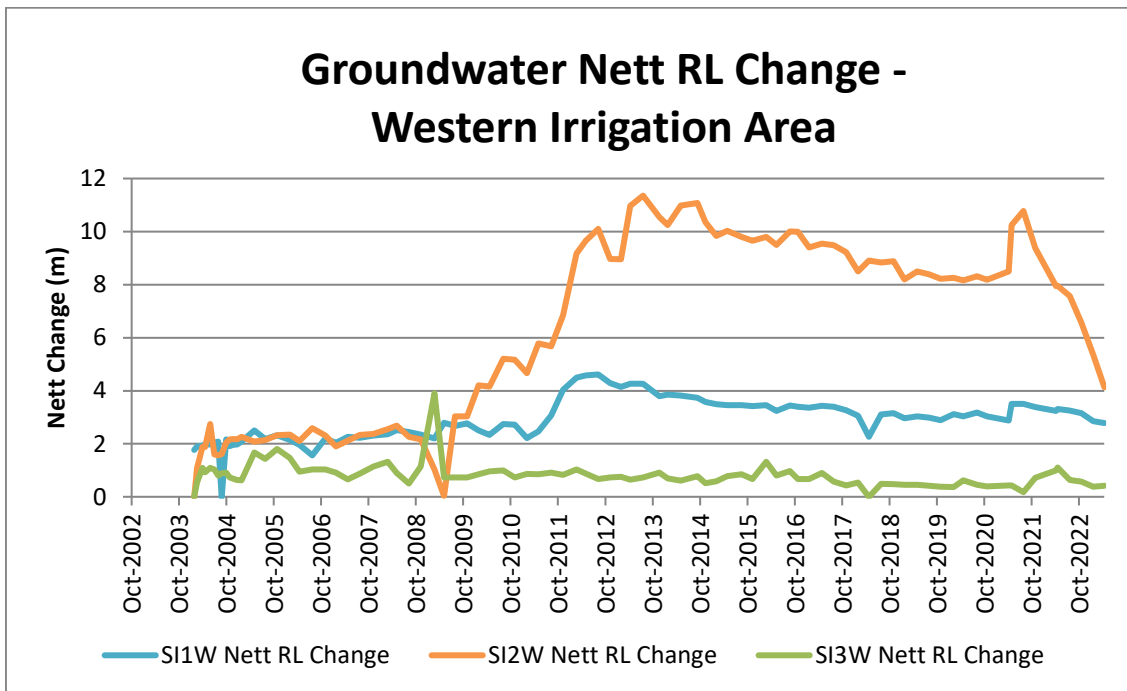
WR1

Parameter	Units	12-Aug-22	16-Nov-22	8-Feb-23	4-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)	12.45	14.03	13.18	13.05	12.5	13.18	14.03	0.42	0.65
pH		6.38	6.42	6.30	6.63	6.30	6.43	6.63	0.02	0.14
Conductivity @ 25°C	(µS/cm)	2772	2098	3080	2572	2098	2631	3080	169684	412
ORP	(mV)	175	137	158	110	110	145	175	786	28
Dissolved Oxygen	(%)	78.4	3.6	34.6	50.4	3.61	41.75	78.40	974.61	31.22
TDS	(mg/L)	1700	1560	1550	1770	1550	1645	1770	11633	108
Alkalinity as CaCO3	(mg/L)	272	261	240	264	240	259	272	186	14
Acidity as CaCO3	(mg/L)	57	56	78	74	56	66	78	130	11
Sulphate	(mg/L)	631	491	465	468	465	514	631	6245	79
Chloride	(mg/L)	386	308	340	514	308	387	514	8193	91
Calcium	(mg/L)	201	172	163	199	163	184	201	366	19
Magnesium	(mg/L)	40	37	35	44	35	39	44	15	4
Sodium	(mg/L)	308	285	270	299	270	291	308	276	17
Aluminium	(mg/L)	1.71	10.1	0.59	0.08	0.08	3.12	10.10	22.12	4.70
Manganese	(mg/L)	0.888	0.746	0.751	3.71	0.75	1.52	3.71	2.13	1.46
Zinc	(mg/L)	0.014	0.07	0.023	0.028	0.01	0.03	0.07	0.00	0.02
Iron	(mg/L)	3.05	6.04	1.83	6.35	1.83	4.32	6.35	4.96	2.23

WR2

Parameter	Units	12-Aug-22	10-Nov-22	8-Feb-23	3-May-23	Min	Avg	Max	Variance	Std Dev
Depth to standing WL	(m)	20.31	19.94	19.49	20.94	19.5	20.17	20.94	0.38	0.61
pH		7.09	7.04	6.92	6.96	6.92	7.00	7.09	0.01	0.08
Conductivity @ 25°C	(µS/cm)	7700	6970	7110	7410	6970	7298	7700	105692	325
ORP	(mV)	169	194	-39	26	-39	88	194	12590	112
Dissolved Oxygen	(%)	33.8	56.7	28.2	26.3	26.30	36.25	56.70	196.00	14.00
TDS	(mg/L)	4990	6220	7040	5980	4990	6058	7040	712425	844
Alkalinity as CaCO ₃	(mg/L)	207	257	255	288	207	252	288	1118	33
Acidity as CaCO ₃	(mg/L)	24	31	34	32	24	30	34	19	4
Sulphate	(mg/L)	635	506	513	497	497	538	635	4246	65
Chloride	(mg/L)	2250	1990	2420	2440	1990	2275	2440	43367	208
Calcium	(mg/L)	834	986	941	895	834	914	986	4225	65
Magnesium	(mg/L)	96	117	131	145	96	122	145	437	21
Sodium	(mg/L)	407	413	418	407	407	411	418	28	5
Aluminium	(mg/L)	0.02	0.02	0.05	1.19	0.02	0.32	1.19	0.34	0.58
Manganese	(mg/L)	2.69	2.67	3.31	1.1	1.10	2.44	3.31	0.89	0.94
Zinc	(mg/L)	0.055	0.071	0.024	0.05	0.02	0.05	0.07	0.00	0.02
Iron	(mg/L)	3.26	3.31	4.63	2.41	2.41	3.40	4.63	0.84	0.92





APPENDIX 5

Noise Monitoring Results

Table 1: Noise Performance Assessment – Operations – 13, 14 & 22 December 2022 Survey

Location	Estimated DCM LAeq(15minute) Noise Level dBA			Noise Criteria LAeq(15minute) dBA			Compliance		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
NM1	I/A ¹	I/A ¹	I/A ¹	35	35	35	Yes	Yes	Yes
NM4	I/A ¹	32	33	35	35	37	Yes	Yes	Yes
NM5	I/A ¹	I/A ¹	I/A ¹	35	35	35	Yes	Yes	Yes
NM6	I/A ¹	29	32	35	35	39	Yes	Yes	Yes

1. I/A = Inaudible

Table 2: Noise Performance Assessment – Operations – 1 February 2023 Survey

Location	Estimated DCM LAeq(15minute) Noise Level dBA			Noise Criteria LAeq(15minute) dBA			Compliance		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
NM1	I/A ¹	I/A ¹	I/A ¹	35	35	35	Yes	Yes	Yes
NM4	<30	33	I/A ¹	35	35	37	Yes	Yes	Yes
NM5	I/A ¹	31	31	35	35	35	Yes	Yes	Yes
NM6	I/A ¹	<25	I/A ¹	35	35	39	Yes	Yes	Yes

1. I/A = Inaudible

Table 3: Noise Performance Assessment – Operations – 7 June 2023 Survey

Location	Estimated DCM LAeq(15minute) Noise Level dBA			Noise Criteria LAeq(15minute) dBA			Compliance		
	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night
NM1	I/A ¹	<25	21	35	35	35	Yes	Yes	Yes
NM4	I/A ¹	<25	I/A ¹	35	35	37	Yes	Yes	Yes
NM5	I/A ¹	<25	I/A ¹	35	35	35	Yes	Yes	Yes
NM6	I/A ¹	I/A ¹	I/A ¹	35	35	39	Yes	Yes	Yes

1. I/A = Inaudible

APPENDIX 6

Complaints and CCC Annual Report



Duralie Complaint Summary

Period: 12 Months to June 2023

Total No. of Complaints: 0 (0 noise, 0 blasting, 0 air quality (inc. odour), 0 other)

Total No. of Complainants: 0

Date/Time of	Complainant	Method of	Nature of	

Duralie Coal Community Consultative Committee Annual Report for Year 2022

Community Consultative Committee Details

CCC / Project Name:	Duralie Coal Mine	Reporting Period:	January - December 2022
Independent Chairperson:	Margaret MacDonald-Hill	Proponent Contact:	Thomas Kirkwood

1. Executive Summary

The Duralie Community Consultative Committee was established in 2003 as part of the Duralie Coal Mine Development Consent approval and operates in accordance with the Department of Planning and Environment's 2019 Community Consultative Committee Guidelines for State Significant Projects. The Committee is currently comprised of:

- six local community representatives;
- two Mid Coast Council representatives (elected and staff);
- two Duralie Coal representatives, with attendance from other personnel as required;
- one independent Chairperson.

During 2022, the Committee met biannually as mining operations have ceased at the Duralie Mine. Resumption of normal face-to-face meetings took place in May and November for the reporting year and following the Local Government elections in December 2021, the committee was introduced to a new elected representative, in addition to the staff representative. An approach by a local progress association prompted discussions on recruitment of new members as the mine transitions to closure. Consequently, three new community members representing a variety of interests and stakeholder groups were appointed by the Department and attended the November meeting. The committee enjoys a good rapport amongst all of the members and this has not changed with the new additions. Yancoal personnel maintain their long held practice of producing high quality and informative presentations in advance of each meeting to the committee.

Council's Community Development Coordinator presented the MidCoast Council's annual financial reports on the Duralie Coal Community Enhancement and Environmental contributions at the November meeting. This comprehensive report outlining the three funds; community, roads and bridges and environmental, administered by council, provides transparent accounting of the purpose and allocation of each fund, key activities and expenditure and proposed works for 2023. As in the previous year, the committee acknowledged the quality and efforts of Council's Community Development Coordinator in preparing this report. It has taken a few years to achieve this exemplary reporting and the efforts of the council staff involved cannot be over stated.

Mine closure, rehabilitation and future land use continue to dominate meetings with committee members commenting on how to better inform and involve the broader community in such plans through media, additional social media outlets, meetings and workshops to ensure the area's viability once all mining has ceased.

Other topics of discussion for the reporting period also included:

- general environmental management and monitoring, including air quality, noise, surface water and groundwater
- postponement of tube stock planting because of ongoing inclement weather
- community complaints
- Draft Rehabilitation Management Plan
- broader community engagement and the CCC's print media articles
- Yancoal land management
- Stratford Community Support Program
- Proposed draft changes to CCC Guidelines and input from the members

2. CCC activities over the last 12 months

- Committee meetings were held during May and November 2022. The committee reviews its meeting schedule for the ensuing year in November each year.
- A reduced site visit of rehabilitation work was undertaken following the May meeting because of members' availability and time constraints.
- No joint Committee meetings were held, although the Duralie Committee maintains an interest in Yancoal's sister operation at Stratford. Stratford updates are included on the agenda for each meeting.

3. Key issues

Issue	Actions Taken	Next Steps
Stratford Coal Education Program	Actively support ongoing success of Stratford Coal Education Program through CCC networks and media.	Ongoing.
Yancoal Community Support Programs	Disseminate information through CCC networks and media.	Ongoing.
Mine closure, post mining requirements/opportunities	<p>Consultant interviews undertaken with committee on Socio-Economic Impact Assessment.</p> <p>Stratford Renewable Energy Hub fact sheet distributed to committee.</p>	<p>Ongoing interaction through CCC and workshops as required.</p> <p>Consultant to present to February 2023 meeting.</p> <p>Agenda item for February 2023 meeting.</p>


4. Focus for next 12 months

The planned activities for 2023 will remain consistent with those of previous years and will be guided by the contributions of the CCC members. These activities are likely to include:

- Engage with Yancoal and the broader community on post mining options, including landscape and potential uses whilst meeting regulatory rehabilitation requirements.

To the best of my knowledge, there are no outstanding or emerging issues that have not been addressed or are in the process of being so, to the committee's satisfaction.

Committee Meeting minutes and presentations are available on the website within two weeks of each meeting, in addition to those of prior years.

Signature of Chair:	
Date:	February 16 2022

APPENDIX 7

Annual Biodiversity Report



Duralie Coal Mine Annual Biodiversity Report 2023

FOR THE 12 MONTHS ENDING 30 JUNE 2023

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Appendix B: DCM Annual Review 2022 – Figure 4 Mining & Rehabilitation Areas

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Appendix D: AMBS Ecology & Heritage - Feral Animal Study, Duralie Coal Mining Lease and Offset Areas 2022

Appendix E: Wedgetail Project Consulting - Duralie Coal Mine Offsets Ecosystem Functional Analysis Monitoring 2023

Appendix F: AMBS Ecology & Heritage - DCM Fauna Surveys of the Offset and Mine Rehabilitation Areas 2022

Appendix G: Alluvium - Mammy Johnson’s River – Bank Stabilisation Detailed Design 2013

Appendix H: Duralie Coal Extension Project Annual Compliance Report 2023

1 INTRODUCTION

The Duralie Coal Mine (**DCM**), located in the Southern part of the Gloucester Basin NSW, is approximately 30 kilometres (km) south of Gloucester and is owned and operated by Duralie Coal Pty Ltd (**DCPL**), a fully owned subsidiary of Yancoal Australia Limited (**YAL**). This Annual Biodiversity Report has been prepared in accordance with the DCM Biodiversity Management Plan (BMP).

1.1 Scope

In accordance with the Duralie Extension Project, Project Approval 08_0203 (as modified December 2014), the proponent (DCPL) is required in accordance with Schedule 3, condition 43 to prepare and implement a BMP. This Plan must include:

“a program to monitor and report on the effectiveness of the measures in the Biodiversity Management Plan and conditions 33-43 of this approval, and the performance of the Offset Strategy, with summary reporting to be carried out annually and comprehensive reporting every three years following the independent environmental audit”.

This DCM Annual Biodiversity Report provides a review of the effectiveness of measures in the BMP for the annual year ending 30 June 2023 in accordance with Section 7.2 of the BMP. The scope of the review includes the Mining Lease area ML1427 and ML1646 and Biodiversity Offset areas as indicated on Plan A.

This report (and associated Appendices) is included as an Appendix of the DCM Annual Review which is available on the Duralie Coal website www.duraliecoal.com.au.

A revised BMP was submitted to the NSW Department of Planning and Environment (DP&E) and approved on 22 February 2023 (**Appendix A**). Following correspondence from DP&E on 28 March 2022 a revision of the BMP was prepared to reflect the current status of DCM and current mine closure planning. The key changes to the BMP include relevant updates to the performance and completion criteria tables with consideration to the works which have been completed to date.

2 STATUS OF BMP PERFORMANCE CRITERIA

Performance criteria as prescribed in the BMP is presented in Tables 1 to 10. The performance criteria have been developed to meet the specific objectives for the areas described in Section 2 of the BMP. All performance criteria are linked to the management specifications listed in the BMP Section 5 and Section 6, and monitoring/reporting specifications in the BMP Section 7. The status of BMP performance criteria is provided in the subsequent sections of this report.

Insert Plan A

3 VEGETATION CLEARANCE PROTOCOL

3.1 Vegetation Clearance Report

Vegetation clearance is undertaken in accordance with the BMP Section 5.4 Vegetation Clearance Plan. Prior to any clearance operations a Clearing Plan is prepared, and vegetation pre-clearance surveys are undertaken.

Vegetation clearance for the Duralie Extension Project was finalised in 2017. During the 2022/2023 reporting period, no vegetation clearance was undertaken.

The area of disturbance at the end of June 2022 is shown in the DCM Annual Review 2022 Figure 4 (**Appendix B**).

Information obtained during vegetation clearance activities (i.e. habitat features, hollows cleared and fauna observed) has been used to determine the requirements for nest box replacement in the biodiversity offset areas (refer Section 4).

3.2 Salvaged and Reused Material for Habitat Enhancement

Section 5.8 of the BMP requires salvaged material from vegetation clearance activities to be used for habitat enhancement within the revegetation or rehabilitation areas. Habitat features such as trunks, logs, large rocks, branches, stumps and roots are salvaged and relocated where practicable.

As there was no vegetation clearance undertaken during the reporting period, no further habitat materials were salvaged.

During previous reporting periods cleared vegetation was managed as follows:

- Suitable trees and stumps salvaged and stockpiled for reuse; and
- Mulched vegetation stored in stockpiles and used on the rehabilitation and incorporated into topsoil.

4 NEST BOX PROGRAM

Nest box management is undertaken in accordance with the BMP Section 6.4. Nest boxes will be installed to provide habitat opportunities in the short to medium-term for a number of arboreal fauna species including the Squirrel Glider (*Petaurus norfolcensis*).

Table 1: Nest Box Program Performance Criteria (PC) and Completion Criteria (CC)

Management Action	Completed Activities to June 2018	Annually from June 2018 onwards PC Maintenance Phase	Completion Criteria
Nest box strategy including target species, habitat trees/feature, nest box designs maintenance and monitoring	Nest box plan developed following habitat assessment and pre-clearance surveys (Section 5.4).		
Nest box installation Includes installation of 18 Squirrel Glider boxes, however may be expanded as required.	Hollow bearing habitat features (nest boxes) installed (Section 6.4).		Nest boxes installed.
Maintenance and monitoring of installed nest boxes. Including monitoring for European bee invasion and repair/replacement	Monitoring in autumn and spring completed. Maintenance undertaken where required (Sections 6.4 and 7.1).	Annual nest box monitoring and maintenance (Sections 6.4 and 7.1).	Nest boxes monitored and maintained, being replaced where required.

Legend	Not commenced	In progress	Completed
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AMBS Ecology & Heritage (AMBS) was commissioned to implement the Nest Box Program. The installation of nest boxes has occurred over six periods with the most recent installation in March 2021. No further nest box installations were required resulting from vegetation clearance activities and the recent installations in the rehabilitation areas is to provide additional habitat enhancement. The next round of monitoring is scheduled for Spring 2022.

The current program involves:

- 18 nest boxes targeting the Squirrel Glider (*Petaurus norfolcensis*), installed during February 2013;
- 106 nest boxes targeting a variety of hollow-dependent species, installed during August 2013;
- 45 nest boxes targeting a variety of hollow-dependent species, installed during September 2014;
- 42 nest boxes targeting a variety of hollow-dependent species, installed during September 2016;
- 26 nest boxes targeting a variety of hollow-dependent species that were installed in the Rehabilitation Area between 16 October 2019 and 18 October 2019;
- 9 nest boxes targeting the Feathertail Glider (*Acrobates pygmaeus*) that were installed during September and October 2019; and
- 25 nest boxes targeting a variety of hollow-dependent species that were installed in the Rehabilitation Area between 22 March 2021 and 26 March 2021.

A Nest Box Programme for the Duralie Offset Area, Annual Report 2022 was completed by AMBS with works commencing in **September 2022** and completed in **March 2023** due to weather impacts (**Appendix C**). A summary of the results from the report is provided below.

- A total of 13 species were recorded within nest boxes or showed signs of previous occupation with one of the species recorded listed as vulnerable under the *Biodiversity Conservation Act 2016* (BC Act), the Brush-tailed Phascogale (*Phascogale tapoatafa*)
- Eight nest boxes contained hives of the European Honey Bee (*Apis mellifera*) and two nest boxes contained native honeybees
- A total of 247 out of 269 nest boxes, or approximately 92% have been occupied or shown signs of occupancy since their installation
- Occupancy of nest boxes has generally increased over time; however, the previous few years have experienced some noticeable fluctuations, possibly due to the climatic swings that have occurred over the previous several years, first with drought condition and more recently the ongoing La Niña conditions bringing high levels of rainfall
- A total of 27 vertebrate species have now been recorded within nest boxes during the Nest Box Programme. This includes 16 species of mammal, 7 species of bird, 1 species of frog, and 3 species of reptile.



Plate 1 – Common Brushtail Possum (*Trichosurus vulpecula*)



Plate 2 – Brush-tailed Phascogales (*Phascogale tapoatafa*)

5 WEED CONTROL AND MONITORING

Weed control is undertaken in accordance with the BMP Section 5.9 and Section 6.5. The weed control program aims to manage weeds to minimise their impact on native flora and fauna.

Table 2: Weed Control Performance Criteria (PC) and Completion Criteria (CC)

Management Action	Completed Activities to June 2018	Annually from June 2018 onwards PC Maintenance Phase	Completion Criteria
Weed Control/treatment program in remnant enhancement and regrowth management VMUs (vegetation management units)	Primary woody weed control (Sections 5.9 and 6.5). Primary control of priority target weeds described in Sections 5.9 and 6.5 commenced. Follow-up woody and priority weed control undertaken as per Sections 5.9 and 6.5.	Follow-up woody and priority weed control undertaken as per Sections 5.9 and 6.5.	Target/priority weed coverage within offset VMUs reduced by 90%.
Weed control/ management in Installation (revegetation) VMUs	Pre-cultivation spraying in all installation VMUs undertaken including control of exotic Sporobolus and fireweed (Figure 7 and Section 6.11). Second cultivation spray in all installation VMUs undertaken including control of exotic Sporobolus and fireweed where necessary (Section 6.11). Additional pre-planting weed treatment in all installation VMUs undertaken if required (Section 6.11). Control of competitive plants within revegetation areas as detailed in Section 6.11.	Additional pre-planting weed treatment in all installation VMUs undertaken if required (Section 6.11). Control of competitive plants within revegetation areas as detailed in Section 6.11.	Control of competitive plants within revegetation areas until maintenance phase (detailed in Section 6.11) is complete i.e. 90% of canopy and shrub species have survived 12 months after planting including replanting of lost species.
Monitoring and reporting	Monitoring and documentation of weed species, occurrence and densities a per Section 7.1.	Monitoring and documentation of weed species, occurrence and densities as per Section 7.1.	Monitoring and reporting undertaken.

The general procedure for controlling weed involves:

- Monitoring to identify locations and densities of priority weed;
- Identification of suitable control measures;
- Implementation of the selected control measure by a suitable qualified person; and
- Follow-up inspections to evaluate effective of weed control.

Weed spraying activities are generally undertaken between the months of September and April each year. Physical management measures such as mechanical removal, slashing and/or back-burning can be undertaken at other times of the year as required.

Greening Australia were contracted to undertake an initial weed assessment of the offset area in August 2013. The aim of the weed assessment was to assist in setting priorities and developing on-ground actions for weed control and is presented in the form of a mapping survey. The mapping survey provides reference to individual weed infestations within each Vegetation Management Unit (VMU) for the biodiversity offset area. Each weed occurrence was allocated a priority ranking based on the species status i.e. priority (noxious) or agricultural, and the size and density of the infestation. The survey information contributed to the development of a strategic approach to the control of priority weeds and allow contractors to locate infestations using the mapping files. Additionally, it will continue to assist in tracking weeds to gauge the effectiveness of control measures and the potential spread and future distribution.

A contractor is engaged at the DCM to undertake weed management activities on an ongoing basis. Follow-up weed treatment of all remnant enhancement and regrowth management VMUs recommenced in **October 2021**, continued through to **April 2022** and will recommence in Spring 2023 due to ongoing wet weather events. The key species targeted included blackberry, lantana, privet, wild tobacco and giant parramatta grass.

Weeds monitoring to evaluate the effectiveness of control measures is undertaken in conjunction with the annual vegetation monitoring and is documented in the *Duralie Coal Mine Offsets Ecosystem Functional Analysis Monitoring 2023* (**Appendix E**).

The 2023 monitoring report indicates that above average rainfall over 2020 – 2023 has benefited weed species. The walkover survey of the report recorded key weed species including blackberry, lantana, small-leaved privet, wild tobacco and to a lesser extent moth vine. The largest thickets of blackberry were observed across VMU L and VMU M. Lantana was very dense in VMU K, VMU P and VMU V in remnant vegetation, but was also very common under most paddock trees or in the isolated strands common in the VMUs on the east side of Johnsons Creek Road. A recommendation to expand weed control efforts was made, recognising that weed control will always be a requirement until the Offsets are surrendered.

6 FERAL ANIMAL CONTROL AND MONITORING

Feral animal control is undertaken in accordance with the BMP Section 5.10 and Section 6.5. The objective of feral animal control program is to manage feral animals to minimise their impact on native flora and fauna in the Biodiversity Offset Areas or the impact on agricultural production in other surrounding areas.

Table 3: Feral Animal Management Performance Criteria (PC) and Completion Criteria (CC)

Management Action	Completed Activities to June 2018	Annually from June 2018 onwards PC Maintenance Phase	Completion Criteria
Feral animal control program	Initial study undertaken.	Feral animal control as required.	Feral animal numbers within offset areas minimised as evidenced through monitoring data.

Monitoring and reporting	Monitoring and documentation of feral animal species undertaken.	Monitoring undertaken.	-
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AMBS was commissioned to undertake the initial invasive animal survey, in accordance with Section 5.10 of the BMP in 2013. The objective of the study was to determine the range of invasive animals that occur or are likely to occur within the DCM and offset areas and provide recommendations for invasive animal control.

MDP Vertebrate Pest Management has been engaged by DCPL since 2016 to implement feral animal control programs across property owned by DCPL including both the Stratford and Duralie Mining Leases and the Stratford and Duralie Biodiversity Offset Areas. During the reporting period no feral animal control programs were implemented at Duralie. Wild dog and fox control was last undertaken between **October 2021** to **November 2021**. The program involved a combination of trapping and shooting. The programs were productive with a total of 6 wild dogs, 1 feral cat and 3 foxes trapped and shot over the control programs.

During the control programs no non-target species were trapped. Soft jaw wild dog traps were used to trap targeted pest animals. MDP Trap dog and trail camera monitoring was used to find and locate wild dog and fox signs in the program area for trap placement. The wild dog and fox numbers were moderate in the previous controlled areas of the Stratford/Duralie Mining Lease and Biodiversity Areas which demonstrates the control programs are being successful in having an impact and lowering the numbers and presence of wild dogs and foxes within that area. The program is showing positive results of reducing the impacts of wild dogs and foxes within the area to the native animals and reducing the impact of livestock attacks to the surrounding agricultural properties.



Plate 3 – Wild Dog



Plate 4 – Wild Dog

In accordance with the BMP the abundance of feral animal species should be monitored every three years to determine if future controls are necessary. A feral animal monitoring survey was undertaken by AMBS Ecology & Heritage in **March 2022** to monitor the success of control programs and determine priorities for ongoing control measures. The feral animal survey covered the Duralie Mining Lease and Duralie Biodiversity Offset Area.

An extracted summary of the survey results from the *Feral Animal Study of the Duralie Coal Mining Lease and Offset Areas, Gloucester Valley (May 2022)* is provided below. The full report is provided in **Appendix D**.

A total of 16 feral species have been recorded in the study area in the past or during recent surveys or are considered to have the potential to occur. Twelve of these species were either not recorded or were recorded in very low numbers during the current surveys and are of little concern at the current time.

In summary:

- Foxes and Feral Cats may represent a threat to biodiversity within the study area, and both the Fox and Feral Cat are considered Priority Pest Animals under the Hunter Regional Strategic Pest Animal Management Plan 2018- 2022 (HRSPAMP);
- Wild Dogs are present in the study area, and while they may or may not be a threat to biodiversity, are currently considered a Priority Pest animal in the HRSPAMP. Wild dog control in the study area should only focus on reducing negative impacts to stock and landholders, to ensure a balance is struck between the control of Wild Dogs and conservation of Dingoes;
- The European Rabbit is present at low densities, but its abundance can increase rapidly, particularly if Dog, Fox and Cat numbers decrease, and it is also considered a Priority Pest Animal in the HRSPAMP; and
- The abundances of Foxes, Feral Cats, Wild Dog and the European Rabbit within the study area are likely to be inter-related.

A feral animal survey of the Duralie Mining Lease and Duralie Biodiversity Offset Area is scheduled to be undertaken in September 2025. Feral animal monitoring will guide the ongoing management efforts for controlling feral animals.

7 CONTROLLING ACCESS AND MANAGING GRAZING

Controlling access and managing grazing is undertaken in accordance with the BMP Section 5.11, 6.6 and 6.7.

Table 4: Managing Grazing and Agriculture Performance Criteria (PC) and Completion Criteria (CC)

Management Action	Completed Activities to June 2018	Annually from June 2018 onwards PC Maintenance Phase	Completion Criteria
Managing grazing and agriculture	Livestock excluded from the Offset through installation of gates and fencing illustrated in Figure 9 (Section 6.7).		Livestock excluded from the offset.
Monitoring and maintenance of fencing and gate infrastructure	Monitoring of gates and fencing to exclude livestock. Where required, maintenance undertaken and documented (Section 7.1).	Monitoring of gates and fencing to exclude livestock. Where required, maintenance undertaken and documented (Section 7.1).	Gates and fencing monitored and maintained.

Table 5: Controlling Access Performance Criteria (PC) and Completion Criteria (CC)

Management Action	Completed Activities to June 2018	Annually from June 2018 onwards PC Maintenance Phase	CC
Operational Review to facilitate site access for offset management activities including installation, inspection and bushfire management	Operational Review developed. Review includes road, fire trail and culvert construction and requirements for fencing and revegetation cultivation/site preparation ² . Maintenance activities, particularly track maintenance and slashing have been considered (Section 6.7, plus related Sections 6.9 and 6.5).		Operational Review undertaken and outcomes implemented.

Management Action	Completed Activities to June 2018	Annually from June 2018 onwards PC Maintenance Phase	CC
Community and stakeholder engagement	Assessment of surrounding landholders and the local community to evaluate opportunities for participation in implementation of this Biodiversity Management Plan undertaken. Local council consultation has commenced regarding placement of signage on the Johnson's Creek Road bisect area of the Offset (see Figure 9 for location) (Section 6.7). Signage has been installed on the Johnson's Creek Road bisect area of the Offset to alert drivers of potential fauna on the roads.		Opportunities for landholder and community participation in the BMP identified. Local council consulting regarding signage. Signage installed on Johnsons Creek Road.
Infrastructure including access tracks, fencing, fire trails and culverts	Access tracks, fire trails, firebreaks, fencing and culverts have been completed as per Figure 9 and the Operational Review ² (Section 6.7).		Access related infrastructure identified in the Operational Review and completed.
Monitoring and maintenance of infrastructure including tracks, fire trails, signs, culverts and fences.	Monitoring and maintenance of all access tracks and fire trails has been undertaken ² (Sections 6.7, 6.9 and 7.1).	Monitoring and maintenance of all access tracks, fire trails and warning signs has been undertaken ² (Sections 6.7, 6.9 and 7.1).	Regular monitoring and maintenance program for roads, tracks, fire trails, signs, fences and culverts.

The implementation of the BMP management measures commenced in 2013. The BMP requires works to be undertaken to exclude livestock and control access to the Biodiversity Offset Areas.

Installation works to control access and manage grazing in the offset areas was completed in 2014. During the reporting period contractors were engaged to undertake maintenance activities on access tracks, culverts, gates and fences. The works included slashing of tracks, firebreaks and repairs to damaged gates and culverts. Additional signage was also installed on the key access points to the Biodiversity Offset Areas. Fencing repairs were completed following March 2022 flood events.

The *Duralie Coal Mine Offsets Ecosystem Functional Analysis Monitoring 2023 (Appendix E)* found fencing on external boundaries was in good condition with the exception of a single observation of a branch across the fence line and a damaged internal gate at VMU F. There were no signs of livestock at the time of the survey.

Livestock continue to be excluded from the Biodiversity Offset areas with the exception of 'crash grazing' programs in preparation for revegetation activities following a field assessment by a qualified consultant.

Roadside Flora and Fauna signage has been installed in accordance with advice from Mid Coast Council (MCC) (previously Great Lakes Council (GLC)) and with regard to Australian Standard AS1742.2. Further correspondence was held with GLC Ecologist in 2015 regarding future requirements for traffic controls within the offset areas.



Plate 5 – Biodiversity Offset fencing and signage

8 BUSHFIRE MANAGEMENT

Bushfire management is undertaken in accordance with the BMP Section 5.12 and Section 6.9. The objective of bushfire management in the Biodiversity Areas is to prevent impacts from unplanned bushfire and to use fire to promote biodiversity.

Table 6: Bushfire Management Performance Criteria (PC) and Completion Criteria (CC)

Management Action	Completed Activities to June 2018	Annually from June 2018 onwards PC Maintenance Phase	Completion Criteria
Operational Review to facilitate site access for offset management activities including installation, inspection and bushfire management.	Operational Review completed ² . Areas addressed within the review include road, fire trail and culvert construction along with maintenance activities, particularly track slashing (Sections 5.12 and 6.7).		
Fire excluded from the offset for initial 3 years.	Fire excluded from offset prior to 2015 (Section 6.9).		Fire excluded from offset prior to 2015.
Bushfire management activities through hazard reduction actions installation and maintenance of relevant access infrastructure.	Access tracks, fire trails, firebreaks, fencing and culverts have been completed as per Figure 9 and the Operational Review 2 (Sections 6.7 and 6.9). Fire management activities have been undertaken as required, including yearly access trail inspection, maintenance and repair of inaccessible tracks within one month of identification ² , hazard reduction burning (Sections 5.12, 6.7 and 6.9).	Fire management activities have been undertaken as required, including yearly access trail inspection, maintenance and repair of inaccessible tracks within one month of identification ² , hazard reduction burning (Sections 5.12, 6.7 and 6.9).	Regular bushfire management measures in place.
Monitoring and maintenance	Fuel loads monitored and documented (Sections 6.9 and 7.1). Identified issues incorporated into future management planning	Fuel loads monitored and documented (Sections 6.9 and 7.1). Identified issues incorporated into future management planning.	Fuel loads monitored and maintained. Risks identified and managed as part of part of hazard reduction actions.

Where possible, fire was excluded from the Biodiversity Offset area during the first three years (up to 2015) to assist with native regeneration. To assist with bushfire management, access tracks and firebreaks have been constructed and maintained as shown in the BMP Figure 9.

Hazard reduction burning has been undertaken in consultation with the NSW Rural Fire Service (RFS). Continued discussions have been held with the RFS to conduct fire management activities and any such activities will be assessed and implemented to ensure the most appropriate period for ecological burn activities whilst also giving due consideration to personnel and asset safety. Following the revegetation works, the aim is to exclude fire from the offset areas for at least five years to allow for tubestock and seedlings to establish.

Monitoring of fuel loads to evaluate bushfire risk and guide bushfire hazard reduction activities is undertaken in conjunction with the annual vegetation monitoring. Further detail is included in Section 10 and Appendix E. Bushfire risk will continue to be mitigated through the maintenance of access tracks and fire breaks.

The 2023 monitoring survey noted that VMUs that have been subject to multiple disturbances such as ground preparation associated with revegetation and/or bushfire (i.e. 2019) have generally recorded lower landscape functional analysis (LFA) indices and are still in the process of recovery and should be provided sufficient time to establish.

9 REVEGETATION MANAGEMENT

9.1 Seed Collection and Propagation

Seed collection and propagation is undertaken in accordance with the BMP Section 5.7 and 6.10.

Table 7: Seed Collection and Tubestock Supply Performance Criteria (PC) and Completion Criteria (CC)

Management Action	Completed Activities to June 2018	Annually from June 2018 onwards PC Maintenance Phase	CC
Collecting and propagating seed	Seed collection (of required species as specified in Section 6.10 and Appendix D) has commenced during vegetation clearance or an alternate seed source has been obtained. (Sections 5.7 and 6.10). Seed collection from cleared vegetation finalised (Section 5.7). Seed collection to obtain required quantities and species for future revegetation continued (Section 6.10, Appendix D).		Seed collection necessary to obtain required quantities and species for future revegetation completed.
Plant propagation/tubestock supply	Propagation of species required for revegetation work in Offsets commenced. Species and quantity as per guidelines in Section 5.7, 6.10 and Appendix D or adjusted based on additional literature/field trial results.	Propagation of species required for revegetation/supplementary infill planting work in Offsets undertaken as per guidelines in Sections 5.7 and 6.10 and Appendix D.	Plant propagation necessary to obtain quantities and species required for revegetation completed.

Revegetation in the BMP Revegetation Areas has occurred via seed and tubestock. Local endemic species are preferentially used where a seed supply is available, however consideration will be given to the use of a high quality seed sourced further from the site as required.

Where possible, seed required for revegetation activities has been collected from within the Biodiversity Offset Area and surrounds. Specific tree and shrub species which have not been available for collection have been sourced through external third-party suppliers. Further seed collection may be undertaken if found necessary to meet the completion criteria of the BMP offset revegetation and mine site rehabilitation.

Kleinfelder along with several nurseries have been engaged to assist in the propagation of native plant species with tubestock grown under controlled nursery conditions and delivered to site as required for revegetation works.

9.2 Revegetation and Regeneration

Revegetation management is undertaken in accordance with the BMP Section 6.11 and 6.12. The aim of revegetation is to establish a range of habitat niches including native canopy, and understorey, with the goal of achieving self-sustaining vegetation communities as well as increasing the resilience to identified risks such as fire, herbivory and future weed invasion. The Revegetation VMUs in the Biodiversity Areas will be revegetated to substantially increase the area of native vegetation and maximise habitat diversity and a range of successional stages.

Table 8: Revegetation Performance Criteria (PC) and Completion Criteria (CC)

Management Action	Completed Activities to June 2018	Annually from June 2018 onwards PC Maintenance Phase	Completion Criteria
Operational Review	Operational review including access, tracks and cultivation requirements for implementing revegetation completed (Section 6.7).		Operational Review completed and implemented.
Implementing Revegetation - Weed management and maintenance	Pre-cultivation spraying in all installation VMUs including control of exotic Sporobolus and fireweed undertaken (Sections 6.5 and 6.11). Pre-plant weed treatment in all installation VMUs as per Figure 7 undertaken as required (Sections 6.5 and 6.11). Control of competitive plants within revegetation areas as detailed in Section 6.11. Maintenance including watering and herbivory controls, undertaken as required (Section 6.11).	Pre-plant weed treatment in all installation VMUs as per Figure 7 undertaken as required (Sections 6.5 and 6.11). Control of competitive plants within revegetation areas as detailed in Section 6.11. Maintenance including watering and herbivory controls, undertaken as required (Section 6.11).	Pre-planting weed control undertaken, including control of threatening weeds Sporobolus and Fireweed. Competitive plants controlled during revegetation establishment.
Implementing revegetation	Initial cultivation of all proposed trial installation VMUs commenced (Vegetation Management Units I, S, U and AB.) according to guidelines in Section 6.11. Trial revegetation for VMUs I, S, U and AB completed. Plant palettes adjusted where field trials or research demonstrate alternative species/density (Section 6.10). Propagation of species required for revegetation work in Offsets commenced. Species and quantity as per guidelines in Sections 5.7 and 6.10 and Appendix D.	Revegetation planting finalised. All plants prescribed in Appendix D have been installed. (Section 6.11). Based on learnings from the revegetation trials, planting of tubestock/direct seeding in installation VMUs according to species palette and quantity guidelines in Appendix D and Section 6.1 has been completed	Species type and quantities planted according to threshold guidelines in the species palette or as guided by on site trials. 90% survival of canopy and shrub-layer plants 12 months after installation, including replacement of lost plants to above threshold levels. Revegetation areas have met Assessment Criteria and Completion criteria described in Table 24, Section 8 (e.g. 90% of all initial canopy species rates are present within VMUs).
Monitoring and reporting	Monitoring and reporting of trial revegetation results, changes to plant palette, plant health, establishment success and maintenance activities. (Section 7.1).	Monitoring and reporting of trial revegetation results, changes to plant palette, plant health, establishment success and maintenance activities. (Section 7.1).	Annual Monitoring and reporting completed.

Revegetation Planning, Trials and Schedule

Pre-cultivation weed spraying was undertaken in Summer to Autumn 2016 in preparation for the trial revegetation works. Initial revegetation works for VMUs I, S and U commenced in Autumn of 2016. Preparation works were completed including seed collection, inoculation, growing of tube-stock and ground preparations including weed spraying. The trial revegetation program included methods involving both tube-stocking, and direct seeding. Ground preparation was site specific and included weed spraying, crash grazing and back burning as required.

Revegetation works in VMUs AF, AE, AA and Z were undertaken during **December 2016** and included ground preparation and direct seeding of approximately 80 hectares. Due to the inability to undertake controlled burning, slashing was undertaken as an alternative option prior to direct and broadcast seeding.



Plate 6 - Loading seed for revegetation works.



Plate 7 - Spreading native tree and shrub seed.

Revegetation Implementation

Tubestock was propagated during Summer 2016/2017 in preparation for Autumn planting in 2017. VMUs Y, AD and S, (approximately 40 hectares), located on alluvial flats near Mammy Johnsons River were prepared for planting by slashing, spraying for weeds and ripping. This was followed by the planting of approximately 7,200 tube-stock in April 2017. The results of the 2017 re-vegetation activities are reported in the DCM Biodiversity Offsets Revegetation Program Report Spring 2016 - Autumn 2017.

Following the hazard reduction burning in August 2017, revegetation works in VMUs Z, AB and AC were undertaken. In September 2017, direct seeding of approximately 52 hectares was completed, followed by harrowing.

Tube-stock planting of VMUs F, V, W and X was proposed for Autumn 2018 including approximately 16,000 plants over 61 hectares. The native tree seed was propagated over the Summer of 2017/2018 by Cumberland Plain Seeds. However, due to the slower than expected establishment of the tubestock, planting was postponed during winter and completed in **September 2018**. The results of the 2018 re-vegetation activities are reported in the *DCM Biodiversity Offsets Results of Spring 2018 Planting Report*.



Plate 8: Tube-stock being prepared for the biodiversity offset



Plate 9: Planted tube-stock



Plate 10: Tubestock planted in September 2018



Plate 11: Tubestock planted in September 2018

During Spring 2019 tubestock was propagated in preparation for further revegetation works in Autumn 2020 to reach the required woodland density and species diversity in VMUs F, V, W, X, AA and AH. The results of the 2020 re-vegetation activities are reported in the *DCM Biodiversity Offsets Planting Program Report Autumn 2020*.

During Spring 2020 tubestock was propagated in preparation for further revegetation works in Autumn 2021 to reach the required woodland density and species diversity in VMUs AB, AC, AE, AF, Z, U and S.

The 2021 Duralie Offsets Planting Program revegetated, or in-fill planted into seven VMUs. The 2021 planting campaign successfully installed 24, 718 plants over 112 ha of the Offsets areas. This included the large sections of Grey Box – Forest Red Gum – Grey Ironbark Open Forest in VMUs AB, AE, AF and Z, 89 ha of the total. These areas had been unsuccessfully seeded previously, potentially due to drought conditions. The installation of the tubestock and hikos ensures that revegetation of the three strata has begun.

The 2022 Duralie offset refill planting areas proposed in VMU Y and AD did not go ahead due to high rainfall totals throughout the year.

A revegetation infill planting program for 2024 has been prepared to continue to progress towards the biodiversity offset completion criteria. The program will involve planting a minimum of 10,300 plants over Spring 2024 in 11 offset areas over Duralie with the purpose of infilling previously revegetated areas identified in annual monitoring that have suffered low survival rates.

Monitoring

Following the initial re-vegetation works in 2015, annual vegetation monitoring (including LFA and vegetation dynamics) was undertaken in **January 2017** and continues to be undertaken annually. Vegetation monitoring was undertaken again in **May 2023**. The results from the biodiversity offset monitoring are shown in Section 10. Results from the annual monitoring will be used to measure revegetation against the performance criteria and completion criteria and to determine future works requirements and maintenance activities.

10 BIODIVERSITY OFFSET MONITORING AND REPORTING

The Biodiversity Offset monitoring and reporting program is prescribed in the BMP Section 7. The program aims to monitor and report on the effectiveness of the BMP management measures and progress against the detailed performance and completion criteria.

Table 9: Monitoring and Reporting Performance Criteria (PC) and Completion Criteria (CC)

Management Action	Completed Activities to June 2018	Annually from June 2018 onwards PC Maintenance Phase	CC
Monitoring and reporting	Monitoring and reporting has been undertaken ³ as per requirements in Sections 7.1 and 7.2. Independent Environmental Audit has been supplied to the NSW Secretary of the DP&E for review.	Monitoring and reporting has been undertaken ³ as per requirements in Sections 7.1 and 7.2.	Monitoring requirements completed when all completion criteria are achieved in accordance with Section 8 (e.g. 357.5 ha of revegetated woodland/open woodland habitat areas and 36 ha of revegetated forest habitat areas are a self-sustaining ecosystem).

As described in the Section 7 of the BMP an annual report reviewing DCPL's environmental performance and progress against the requirements of the BMP including monitoring and reporting is prepared annually and appended to the *Duralie Coal Mine Annual Review*. The Annual Biodiversity Report, reports on monitoring for:

- Effectiveness of revegetation in the offset area;
- Usage of the offset areas by fauna;
- Effectiveness of weed control;
- Effectiveness of feral animal control; and
- Nest box monitoring program.

10.1 Habitat and Vegetation Condition Monitoring

Habitat and vegetation condition monitoring is undertaken to quantitatively measure the change in habitat and vegetation condition over time. The visual monitoring and photo monitoring programs are undertaken concurrently with the vegetation monitoring to provide additional information on the change of the Biodiversity Offset Areas over time and inform maintenance requirements.

To monitor the effectiveness of revegetation in the Biodiversity Offset Areas, Greening Australia was commissioned to undertake the baseline monitoring of LFA and vegetation structure within the Biodiversity Offset areas in **February 2013**. The baseline monitoring provides information to track the progression towards meeting the completion criteria of the BMP.

The annual vegetation and landscape function monitoring continues to be undertaken and was repeated in **May 2023**. The results are provided in the *Duralie Coal Mine Offsets Ecosystem Functional Analysis Monitoring Report 2023* prepared by Wedgetail Project Consulting (**Appendix E**). An extracted summary is reproduced below. The next round of monitoring is scheduled for 2024.

In accordance with Section 7 of the Duralie Coal Mine – Biodiversity Management Plan (2013), monitoring and assessment of the effectiveness of the Offset Area revegetation is required. This assessment was conducted using the stipulated methodologies which both components of Ecosystem Functional Analysis (EFA) which includes Landscape Functional Analysis (LFA) and Vegetation Dynamics to measure the progression of the rehabilitation towards a self-sustaining ecosystem, floristic surveys and walkover surveys to assess the effectiveness of the revegetation efforts and weed control.

The LFA used data from the 2013 baseline monitoring event conducted by Greening Australia for comparison and tracking changes over time. The 2023 monitoring was undertaken over five days (1st to 5th of May 2023) and represents the second Offset Areas survey undertaken by Wedgetail Project Consulting, but the fifth undertaken by Dr Nigel Fisher (formerly employed by Kleinfelder Australia).

Overall, the revegetation of the Duralie Coal Mine offsets areas is progressing well with pleasing results in both the LFA and revegetation components of the program.

- *Previous years' monitoring of the biophysical processes measured by the LFA indices showed that the multiple disturbances that have occurred during the revegetation works (ground preparation and the Buckleys Range Fire) had led to decreases in Infiltration and Nutrient Cycling indices. This survey showed recovery in these indices to 2013 levels. This demonstrates a degree of resilience that bodes well for revegetation of the offset areas.*
- *The older areas of revegetation have begun to show signs of self-sustaining development with second generation canopy species seedlings and flowers and fruit on multiple species in different strata.*
- *Target densities have been achieved in six of the installation VMUs, with another less than 5% under.*

10.2 Fauna Monitoring

Monitoring of fauna usage within the Biodiversity Areas is conducted every three years to document the fauna species response to improvement in vegetation and habitat in the Biodiversity Areas and assess the performance in providing habitat for a range of vertebrate fauna. The surveys include an assessment of habitat complexity, species richness and abundance.

AMBS was engaged to undertake fauna monitoring within the Biodiversity Offset Areas and native mine rehabilitation areas during Summer 2022. The results are provided in the *DCM Fauna Surveys of the Offset and Mine Rehabilitation Areas, January 2022* (**Appendix F**). The previous fauna monitoring within the Biodiversity Offset Areas and native mine rehabilitation areas was undertaken in February 2018. An extracted summary of the 2022 report is provided below.

“Targeted fauna surveys were undertaken at five sites within the Duralie Offset Area and two sites in the Duralie Mine Rehabilitation Area between November 2021 and January 2022. At most sites survey techniques included pitfall traps, funnel traps, Elliott A traps, harp traps, ultrasonic call recording, spotlighting, diurnal bird surveys and reptile searches. Opportunistic observations of signs of fauna were noted throughout the field survey period, including during transit between surveys sites”.

“A total of 151 species of vertebrate were recorded, comprising 11 frogs, 8 reptiles, 95 birds and 37 mammals..., most of which were native. A similar number of frog, reptile, mammal and bird species were recorded at Mine Rehabilitation Area sites compared with Offset Area sites. Four introduced species were recorded during the surveys, including the House Mouse (*Mus musculus*), Brown Hare (*Lepus capensis*), Black Rat (*Rattus rattus*) and Red Fox (*Vulpes vulpes*)”.

“Eighteen of the species detected are listed as threatened or migratory on the schedules of the Biodiversity Conservation Act 2016 (NSW) and/or the Environment Protection Biodiversity Conservation Act 1999 (Cth). Two of the eighteen species have been recorded for the first time during dedicated fauna surveys for the DCM, the Eastern Chestnut Mouse (*Pseudomys gracilicaudatus*) and Red-backed Button-Quail (*Turnix maculosus*).

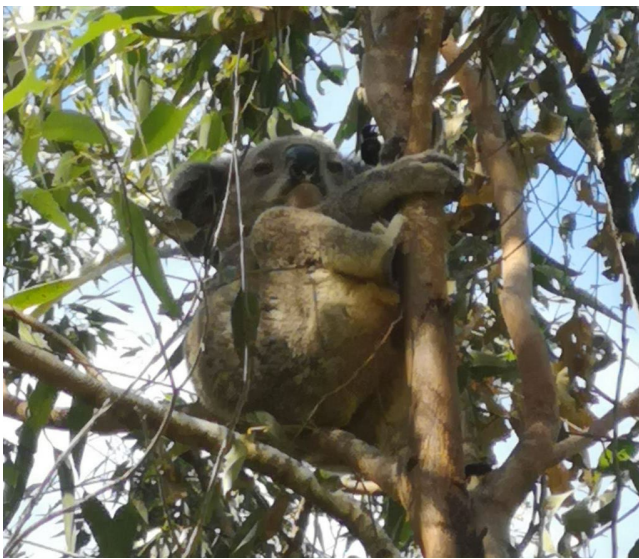


Plate 12: Koala (*Phascolarctos cinereus*)



Plate 13: Eastern Chestnut Mouse (*Pseudomys gracilicaudatus*)

11 MAMMY JOHNSONS RIVER STABILISATION

In accordance with Section 6.8 of the BMP a detailed design for the in-stream rehabilitation of a severely eroded section of Mammy Johnsons River (MJR) has been prepared by Alluvium (2013) (**Appendix G**). During the reporting period Hydrobiology Consultants were engaged to provide a detailed review of the streambank stabilisation advice prepared by Alluvium in 2013 to inform further planning.

No works on the MJR bank stabilisation have commenced during the reporting period.

Table 10: MJR Bank Stabilisation Performance Criteria (PC) and Completion Criteria (CC)

Management Action	Completed Activities to June 2018	Annually from June 2018 onwards PC Maintenance Phase	Completion Criteria
River bank stabilisation design	Design for the in-stream rehabilitation of a severely eroded section of Mammy Johnsons River has been prepared. Office of Water engaged regarding plan approval ¹ (Section 6.8).		Design of stabilisation plan completed and approved by the Office of Water
River bank in-stream rehabilitation		In-stream rehabilitation works undertaken ¹ (Section 6.8).	Rehabilitation of severely eroded section of Mammy Johnsons River completed.

12 LONG TERM SECURITY AND CONSERVATION BOND

12.1 Long Term Security

In accordance with Condition 42, Schedule 3 of Project Approval 08_0203, DCPL is required to make suitable arrangements for the long-term security of the Duralie Extension Project Biodiversity Offset Area. DCPL used the mechanisms available under section 88E(3) of the NSW *Conveyancing Act 1919*, namely:

- Registration of a Positive Covenant under section 88E(3) of the NSW *Conveyancing Act 1919*; and
- Registration of a Restriction on the Use of Land by a Prescribed Authority under section 88E(3) of the NSW *Conveyancing Act 1919*.

Public Positive Covenants and Restrictions on the Use of Land for the Biodiversity Offsets have been registered on title with NSW Land and Property Information (LPI) in **May 2015**.

12.2 Conservation Bond

In accordance with Condition 44, Schedule 3 of Project Approval 08_0203, DCPL is required to lodge a Conservation Bond with the DP&E which covers the cost of implementing the Biodiversity Offset Strategy detailed in the BMP.

The conservation bond for the Biodiversity Offset areas was calculated by Greening Australia and verified by Rider Levett Bucknell in December 2013. The terms of the conservation bond in the form of a Bank Guarantee were approved by NSW Department of Planning & Environment (DP&E) on 12 December 2013. The Bank Guarantee has been subsequently provided to DP&E.

In December 2020, an Independent Environmental Audit of the DCM was undertaken in accordance with PA 08_0203. A revision of the BMP was approved in February 2023 in accordance with PA 08_0203 Schedule 5 Condition 4. Following this, a revision of the conservation bond will be prepared and lodged with DP&E in accordance with Schedule 3 Condition 45.

A revision of the Duralie Offset Conservation bond has commenced within the reporting period. The revised conservation bond will be lodged with DPIE in the next reporting period.

13 COMMONWEALTH EPBC APPROVAL COMPLIANCE REPORTS

In accordance with Condition 20 of the Commonwealth Approval [EPBC 2010/5396], during the reporting period DCPL submitted to the Department of Agriculture, Water and Environment (DAWE) the following compliance report:

- *Duralie Coal Extension Project Annual Compliance Report 2023*, submitted on **14 April 2023** (Condition 20) (**Appendix H**).

Additionally, the following reports were submitted annually for the first five years following the commencement of the operation:

- *DCM Implementation of the Giant Barred Frog Management Plan Annual Reports (Condition 10)*;
- *DCM Implementation of the Biodiversity Management Plan Annual Reports (Condition 14(i))*.

These reports are now required to be submitted every **fifth** (5) year before the anniversary of the commencement of the operations.

APPENDICES

Appendix A: DP&E approval of the BMP

Appendix B: DCM Annual Review 2022 – Figure 4 Mining & Rehabilitation Areas

Appendix C: AMBS Ecology & Heritage - Nest Box Programme for the Duralie Offset Area, Annual Report for 2022

Appendix D: AMBS Ecology & Heritage - Feral Animal Study, Duralie Coal Mining Lease and Offset Areas 2022

Appendix E: Wedgetail Project Consulting - Duralie Coal Mine Offsets Ecosystem Functional Analysis Monitoring 2023

Appendix F: AMBS Ecology & Heritage - DCM Fauna Surveys of the Offset and Mine Rehabilitation Areas 2022

Appendix G: Alluvium - Mammy Johnson's River – Bank Stabilisation Detailed Design 2013

Appendix H: Duralie Coal Extension Project Annual Compliance Report 2023

(Appendices available on request)

APPENDIX 8

IEA - Response to Recommendations

Duralie Coal Mine - Independent Environmental Audit 2020
Response to Recommendations

IEA 2020 Recommendations								
Condition Reference No #	Condition Detail	Management Area	Risk Level of Non-compliance	Auditor Recommendation	Duralie Coal Response	Target Due Date	Completion Status	2023 Status Update
Project Approval 08_0203 Non-compliance Recommendations								
Schedule 2 Condition 8(b)	The proponent shall: (b) only receive shuttle trains on site between 6am and midnight; and	Trains	Low	Prior to recommencement of Shuttle Train Operations, ensure that train operators are made aware of their obligations under this Condition.	Shuttle train records reviewed indicated that one train was received (22 March 2018) at the site after midnight. SCPL accepts the recommendation. Only 1 train was received between midnight and 1am during the entire 3 year audit period. This train was not identified in the report due to an error in the spreadsheet calculation. Hence, no explanation for the late arrival was provided. DCPL has demonstrated all intentions to comply with this condition throughout the audit period. The shuttle train spreadsheet and website have already been corrected.	30-Jun-21	Completed	Licence conditions relating to shuttle train operations have been updated on the Duralie Shuttle Train Load Point Capability Statement with Pacific National. Operators will be familiarised before commencing shuttle train operations.
Schedule 2 Condition 8(c)	The proponent shall: (c) only operate shuttle trains on the North Coast railway between midnight and 1am in exceptional circumstances.	Trains	Low	Prior to recommencement of shuttle Train Operations ensure that train operators are made aware of their obligations under this Condition	SCPL accepts the recommendation. The 2018 Duralie Coal Train Performance spreadsheet indicated that one train (left Duralie at 20:30 on 22 March 2018, arrived back at Duralie at 1am (23 March). No reason for the late arrival of the train was provided on the website. Only 1 train was received between midnight and 1am during the entire 3 year audit period. This train was not identified in the report due to an error in the spreadsheet calculation. Hence, no explanation for the late arrival was provided. DCPL has demonstrated all intentions to comply with this condition throughout the audit period. The shuttle train spreadsheet and website have already been corrected.	30-Jun-21	Completed	Licence conditions relating to shuttle train operations have been updated on the Duralie Shuttle Train Load Point Capability Statement with Pacific National. Operators will be familiarised before commencing shuttle train operations.
Schedule 2 Condition 8A	Within 12 hours of operating shuttle trains on the North Coast railway between midnight and 1am in exceptional circumstances, the Proponent shall provide a detailed explanation of the exceptional circumstances on its website.	Trains	Administrative	Ensure that the reasons for operating trains on the North Coast Railway between midnight and 1am are published on the Duralie Website.	SCPL accepts the recommendation. The 2018 Duralie Coal Train Performance spreadsheet indicated that one train (left Duralie at 20:30 on 22 March 2018, arrived back at Duralie at 1am (23 March). No reason for the late arrival of the train was provided on the website. Only 1 train was received between midnight and 1am during the entire 3 year audit period. This train was not identified in the report due to an error in the spreadsheet calculation. Hence, no explanation for the late arrival was provided. DCPL has demonstrated all intentions to comply with this condition throughout the audit period. The shuttle train spreadsheet and website have already been corrected.	12-May-21	Completed	No further action required.
Schedule 3 Condition 17	The Proponent shall ensure that no offensive odours are emitted from the site, as defined under the POEO Act.	Air Quality	Low	DCPL has responded to the odour incidents and no further actions have been identified during this IEA.	This recommendation relates to four odour complaints received during 2018. There have been no ongoing instances of odour from the Duralie Mine since November 2018. There have been no further complaints relating to odours since November 2018. Duralie have implemented specific response measures since the first odour complaints to ensure potential odours from the Duralie Mine are controlled. During the IEA Inspection no offensive odours were detected. DCPL have provide responses to the EPA as requested. No further action currently required.	12-May-21	Completed	No further action.

Schedule 3 Condition 22	The Proponent shall: (a) implement best practice air quality management on site, including all reasonable and feasible measures to minimize the off-site odour, fume and dust emissions generated by the project, including any emissions from spontaneous combustion;	Air Quality	Low	DCPL has responded to the odour incidents and no further actions have been identified during this IEA	This observation relates to four odour complaints received during 2018. DCPL has demonstrated compliance with this condition through the implementation of reasonable and feasible mitigation measures to minimise the ongoing generation and release of odour. There have been no ongoing instances of odour from the Duralie Mine since November 2018. There have been no further complaints relating to odours since November 2018. Duralie have demonstrated the intent to comply with this condition through the implementation of all reasonable and feasible mitigation measures to control the generation and release of any odours from the Duralie Mine. This is evidenced by ongoing correspondence with the EPA and follow-up inspections. Duralie have identified and implemented the control measures necessary to minimise odours. Odours from Duralie have been appropriately controlled at the time of the audit.	12-May-21	Completed	No further action.
Schedule 3 Condition 23b	The Air Quality & Greenhouse Gas Management Plan for the project shall: (b) describe the measures that would be implemented to ensure compliance with conditions 17-22 of Schedule 3 of this approval, including the proposed real-time	Air Quality	Administrative	Revise the AQGGMP to include odour risks and management	SCPL accepts the recommendation. The AQGGMP will be revised to include details regarding the management of potential odours at the Duralie Coal Mine.	13-Aug-21	Completed	The Duralie AQGGMP has been revised to include sources of odour and odour management measures. The revised AQGGMP has been submitted to DPIE for approval in September 2021.
Schedule 3 Condition 23 (note)	Note: The effectiveness of the Air Quality & Greenhouse Gas Management Plan is to be reviewed and audited in accordance with the requirements in Schedule 5. Following this review and audit the plan is to be revised to ensure it remains up to date (see Condition 4 of Schedule	Air Quality	Administrative	Revise the AQGGMP to include odour risks and management	SCPL accepts the recommendation. The AQGGMP will be revised to include details regarding the management of potential odours at the Duralie Coal Mine.	13-Aug-21	Completed	The Duralie AQGGMP has been revised to include sources of odour and odour management measures. The revised AQGGMP was submitted to DPIE for approval in September 2021 and approved in October 2021.
Schedule 3 Condition 25	The Proponent shall ensure that: (b) all surface water discharges from the site comply with section 120 of the POEO Act or, if an EPL has been issued regulating water discharges from the site, the discharge limits (both volume and quality) set for the project in the EPL.	Water	Low	The exceedances in water quality discharges from the site were a result of environmental factors and not considered to be related to operational impacts of the mine. No actions relating to this noncompliance have been identified.	This observation relates to only two pH results (Point 36 - North Drain) during the entire audit period which were marginal outside the pH criteria. This is negligible in the context of the monitoring undertaken and was not determined to be related to operational impacts. Duralie has constantly demonstrated intentions to comply with these conditions and has operated to a high standard of environmental performance.	12-May-21	Completed	No further action required.
Schedule 3 Condition 45	After each Independent Environment Audit (see Condition 8 of Schedule 5), the Proponent shall review and adjust the sum of the (conservation) bond to the satisfaction of the Secretary.	Conservation Bond	Administrative	Expediate the finalization of the review of the conservation bond.	SCPL accepts the recommendation.	17-Sep-21	Open	Conservation Bond will be reviewed and updated before next IEA.
Schedule 3 Condition 57d	This Rehabilitation Management Plan must: (d) provide for scientific knowledge gained during the rehabilitation, to be made publicly available;	Rehabilitation	Administrative	Update the plan to provide for scientific knowledge gained during the rehabilitation, to be made publicly available. For example, include a process for publication (in appropriate journals) of lessons learned / discoveries related to the rehabilitation works.	SCPL accepts the recommendation. The MOP/RMP will be updated. Information is available on the Duralie website including: * EIS rehabilitation assessment * MOP and rehabilitation management plan * Annual Reviews including rehabilitation progress and reports on rehabilitation methodologies and rehabilitation monitoring results. Information is distributed to the CCC as required. A community information line is operated to provide information when requested.	12-Nov-21	Open	A Rehabilitation Management Plan (RMP) has been prepared by DCPL in accordance with the new standard rehabilitation conditions on mining leases imposed through an amendment to the Regulation under the <i>Mining Act 1992</i> . The RMP is available on Duralie Coal website.
Schedule 5 Condition 4a	Within 3 months of: (a) the submission of an annual review under Condition 3 above; the Proponent shall review, and if necessary, revise, the strategies, plans, and programs required under this approval to the satisfaction of the Secretary.	Management Plans	Administrative	Establish a register that records the reviews of all management plans (as evidence for future audits).	DCPL accepts the recommendation. The intention of this condition is to ensure that the EMPs remain current and relevant. The Duralie EMPs provide the basis for a highly structure and detailed Environmental Management System. The EMPs will be revised as required.	12-May-21	Open	The EMPs will be revised as required.

Schedule 5 Condition 4b	b) the submission of an incident report under Condition 67 below; the Proponent shall review, and if necessary, revise, the strategies, plans, and programs required under this approval to the satisfaction of the Secretary.	Management Plans	Administrative	Ensure that following any reportable incident that the relevant plan is reviewed and if required revised.	DCPL accepts the recommendation. The intention of this condition is to ensure that the EMPs remain current and relevant. The Duralie EMPs provide the basis for a highly structure and detailed Environmental Management System. The EMPs will be revised as required.	12-May-21	Open	The EMPs will be revised as required.
Environment Protection Licence EPL 11701 Recommendations								
L2.2	For each monitoring/discharge point or utilisation area specified in the table(s) below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.	Water	Low	The exceedances in water quality discharges from the site were a result of environmental factors and not considered to be related to operational impacts of the mine. No actions relating to this noncompliance have been identified.	This observation relates to only two pH results (Point 36 - North Drain) during the entire audit period which were marginal outside the pH criteria. This is negligible in the context of the monitoring undertaken and was not determined to be related to operational impacts. Duralie has constantly demonstrated intentions to comply with these conditions and has operate to a high standard of environmental performance. Point 27 (VC1) – This dam doesn't currently discharge offsite. The EPL limits are only applicable to water discharged. Refer to notes in the EPL 11701 monitoring spreadsheet. Monthly monitoring is still undertaken in accordance with EPL11701. Point 36 (North Drain) - Two pH results during the entire 3 year audit period where only marginally below the pH Criteria. I.e. 6.1 and 6.3. This is insignificant in the context of the total monitoring undertaken and not related to operational impacts. Point 37 (South Drain) – On the occasions when the sampled EC has been above 1326uS/cm the flow has been directed to the Main Water Dam and not discharged offsite. Refer to notes in the EPL 11701 monitoring spreadsheet. The EPL limits are only applicable to water discharged. TSS is not applicable to Points 36 and 37.	12-May-21	Completed	No further action required.
L6.1	The licensee must not cause or permit the emission of offensive odour beyond the boundary of the premises. Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising	Air Quality	Low	DCPL has responded to the odour incidents and no further actions have been identified during this IEA.	This recommendation relates to four odour complaints received during 2018. There have been no ongoing instances of odour from the Duralie Mine since November 2018. There have been no further complaints relating to odours since November 2018. Duralie have implemented specific response measures since the first odour complaints to ensure potential odours from the Duralie Mine are controlled. During the IEA Inspection no offensive odours were detected. DCPL have provide responses to the EPA as requested. Duralie have identified and implemented the control measures necessary to minimise odours. Odours from Duralie have been appropriately controlled. No further action currently required.	12-May-21	Completed	No further action.
O7.3b	The licensee shall only: b) receive shuttle trains on site between 6am and midnight; and	Trains	Low	Prior to recommencement of shuttle Train Operations ensure that train operators are made aware of their obligations under this Condition.	Shuttle train records reviewed indicated that one train was received (22 March 2018) at the site after midnight. SCPL accepts the recommendation. Only 1 train was received between midnight and 1am during the entire 3 year audit period. This train was not identified in the report due to an error in the spreadsheet calculation. Hence, no explanation for the late arrival was provided. DCPL has demonstrated all intentions to comply with this condition throughout the audit period. The shuttle train spreadsheet and website have already been corrected.	30-Jun-21	Completed	Licence conditions relating to shuttle train operations have been updated on the Duralie Shuttle Train Load Point Capability Statement with Pacific National. Operators will be familiarised before commencing shuttle train operations.
O7.3c	The licensee shall only: c) operate shuttle trains on the North Coast railway between midnight and 1am in exceptional circumstances.	Trains	Low	Prior to recommencement of shuttle Train Operations ensure that train operators are made aware of their obligations under this Condition.	SCPL accepts the recommendation. The 2018 Duralie Coal Train Performance spreadsheet indicated that one train (left Duralie at 20:30 on 22 March 2018, arrived back at Duralie at 1am (23 March). No reason for the late arrival of the train was provided on the website. Only 1 train was received between midnight and 1am during the entire 3 year audit period. This train was not identified in the report due to an error in the spreadsheet calculation. Hence, no explanation for the late arrival was provided. DCPL has demonstrated all intentions to comply with this condition throughout the audit period. The shuttle train spreadsheet and website have already been corrected.	30-Jun-21	Completed	Licence conditions relating to shuttle train operations have been updated on the Duralie Shuttle Train Load Point Capability Statement with Pacific National. Operators will be familiarised before commencing shuttle train operations.
M2.2	For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1	Air Quality	Low	No recommendation required as this was an isolated incident that was immediately rectified.	This incident related to one dust gauge sample damaged out of several hundred sampling events over the three-year audit period. DCPL have endeavoured to meet all monitoring requirements throughout the audit period. This administrative monitoring non-compliance would not result in any potential environmental impact.	12-May-21	Completed	
M2.3	For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1	Water	Low	No recommendation required as this was an isolated incident that was immediately rectified.	This non-compliance relates to missing a single monitoring point during the entire 3-year period at Point 27 (VC1) which does not discharge offsite. This administrative monitoring non-compliance would not result in any potential environmental impact. DCPL have endeavoured to meet all monitoring requirements throughout the audit period.	12-May-21	Completed	
M7.2	The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.	Complaints Line	Administrative	Update the website to specify that the Community Hotline is also the complaints telephone number.	This matter has never been regarded as non-compliant previously and has never been raised as an issue by a community member. The Community (complaints) Information hotline is shown on the Duralie website on the Community page, Environment page and Contacts page. The Community hotline is also advertised in the local phone directory and periodically in the local newspaper. The Duralie website has been updated to state the Community Information line is also for lodging complaints.	22-Jun-21	Completed	No further action required.
Mining Lease 1646								

5	(a) The lease holder must report any environmental incidents. The report must: (i) be prepared according to any relevant Departmental guidelines. (ii) be submitted within 24 hours of the environmental incident occurring;	Environmental Incident Reporting	Administrative	Ensure that all reportable environmental incidents are included in the reporting of incidents to the Resources Regulator.	SCPL accepts the recommendation. Incident notifications and reports will be provided to the regulators as required.	22-Jun-21	Completed	No further action required. Ongoing reporting of incidents as required
General Recommendations								
Schedule 3 Condition 15	The Proponent shall not carry out blasting within 500 metres of any privately-owned land or land not owned by the Proponent unless: (a) the Proponent has a written agreement with the relevant landowner to allow blasting to be carried out closer to the land, and the Proponent has advised the Department in writing of the terms of this agreement; or (b) the Proponent has: • demonstrated to the satisfaction of the Secretary that the blasting can be carried out without compromising the safety of the people or livestock on the land, or damaging the buildings and/or structures on the land; and • updated the Blast Management Plan to include the specific measures that would be implemented while blasting is being carried out within 500 metres of the land.	Blasting	Recommendation only	Recommendation for Improvement – If blasting is required in 2021, then it is recommended that attempts be made to contact the relevant landowner again to seek agreement for blasting within 500 metres of that private property.	SCPL accepts the recommendation. It is noted that one unoccupied private property is located within the 500 m blast zone. DCPL has previously attempted to contact the landowner in relation to blasting although no response was received from the landowner. DCPL implemented specific measures in the Blast Management Plan to allow blasting to be undertaken safely within 500m of the noted property.	12-May-21	Ongoing	
Schedule 3 Condition 16	The Proponent shall prepare and implement a Blast Management Plan for the project to the satisfaction of the Secretary.	Blasting	Recommendation only	Recommendation for Improvement – If blasting is required in 2021, then it is recommended that the Blast Management Plan be reviewed and revised to ensure that any future blasting is undertaken in accordance with best practice.	SCPL accepts the recommendation.	12-May-21	Ongoing	
Schedule 3 Condition 29	The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Secretary. This plan must be prepared in consultation with EPA and NOW.	Water	Recommendation only	Ensure that as part of any future revision of the Water Management Plan that all relevant stakeholders are consulted.	SCPL accepts the recommendation.	12-May-21	Ongoing	
Schedule 3 Condition 29b	(b) a Surface Water Management Plan that includes: • an irrigation management plan for the irrigation system under the water management system, which includes: - salinity trigger levels for controlling discharges from the irrigation areas.	Water	Recommendation only	The Surface Water Management Plan is attached to Appendix 2 of the Water Management Plan. Table 1 (Section 2) of the Irrigation Management Plan states that details of the salinity trigger values are provided in Section 4.4. Section 4.4 does not detail the salinity trigger values. That information is contained in Section 4.6. Update Table 1 (section 2) of the Irrigation Management Plan to provide the correct reference to the location of the Salinity Trigger Values.	SCPL accepts the recommendation.	15-Aug-21	Open	