YANCOAL
兖煤澳大利亚有限公司
MOOLARBEN COAL

MOOLARBEN COAL COMPLEX ANNUAL REVIEW 2024

Document	Version	Issue	Author	Approved
MCO_RPT_ANNUAL REVIEW 2024	2	March 2025	MCO	BW

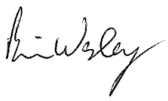
Name of operation	Moolarben Coal Complex
Name of operator	Moolarben Coal Operations Pty Ltd
Development consent / project approval #	05_0117 and 08_0135
Name of holder of development consent / project approval	Moolarben Coal Mines Pty Limited
Mining lease #	ML 1605, 1606, 1628, 1691, 1715
Name of holder of mining leases	Moolarben Coal Mines Pty Ltd, Yancoal Moolarben Pty Ltd and Kores Australia Moolarben Resources Pty Ltd
Water licence #	Refer Table 6
Name of holder of water licence	Moolarben Coal Operations Pty Ltd
Forward Work Program start date	01 January 2024
Forward Work Program end date	31 December 2026
Annual Review start date	1 January 2024
Annual Review end date	31 December 2024

I, Brian Wesley, certify that this audit report is a true and accurate record of the compliance status of Moolarben Coal Complex for the period January 1 2024 to December 31 2024 and that I am authorised to make this statement on behalf of Moolarben Coal Operations.

Note.

a) The Annual Review is an 'environmental audit' for the purposes of section 9.39 of the Environmental Planning and Assessment Act 1979. Section 9.42 provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, $1 million and for an individual, $250,000.

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

Name of authorised reporting officer	Brian Wesley
Title of authorised reporting officer	General Manager
Signature of authorised reporting officer	
Date	28 March 2025

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1.0 STATEMENT OF COMPLIANCE

A summary of compliance with relevant approval conditions from 1 January 2024 to 31 December 2024 (the reporting period) is provided in **Table 1** and **Table 2**. A compliance table key is provided in **Table 3**.

Table 1: Statement of compliance

Approval	Compliance Status (Including Administrative Non-compliances)	Approval	Compliance Status (Including Administrative Non-compliances)
PA 05_0117	No	WAL36340	Yes
PA 08_0135	No	WAL37582	Yes
ML 1605	Yes	WAL37583	Yes
ML 1606	Yes	WAL39799	Yes
ML 1628	Yes	WAL41888	Yes
ML 1691	Yes	20BL173935	Yes
ML 1715	Yes	-	-

Table 2: Non-compliances

Approval	Condition Number	Condition description (summary)	Compliance status	Comment	Where addressed
PA 05_0117	Sch. 3 C. 8	Blasting Criteria	Non-Compliant	Airblast overpressure criteria exceedance	6.3 & 12
PA 08_0135	Sch. 3 C. 7				
PA 05_0117	Sch. 3 C. 8	Blasting Criteria	Non-Compliant	Airblast overpressure criteria exceedance	6.3 & 12
PA 08_0135	Sch. 3 C. 7				
PA 08_0135	Sch. 3 C. 27	Water Release as per S120 POEO Act	Non-Compliant	Sediment water release, occurred as a result of heavy rainfall	7.3 & 12
PA 05_0117	Sch. 3 C. 31				

Table 3: Compliance Table Key

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: • potential for serious environmental consequences, but is unlikely to occur, or • potential for moderate environmental consequences, but is likely to occur
Low	Non-Compliant	Non-compliance with: • potential for moderate environmental consequences, but is unlikely to occur, or • potential for low environmental consequences, but is likely to occur
Administrative	Non-Compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

2.0 INTRODUCTION

The Moolarben Coal Complex (MCC) is located approximately 40 kilometres north of Mudgee in the Western Coalfield of New South Wales **(Figure 1)** within the Mid-Western Regional Local Government Area. Local relevant land ownership within the immediate vicinity of the MCC is provided in **Appendix 1**.

Moolarben Coal Operations Pty Ltd (MCO) is the operator of the MCC on behalf of the Moolarben Joint Venture (Moolarben Coal Mines Pty Ltd [MCM], Yancoal Moolarben Pty Ltd (YM) and a consortium of Korean power companies). MCO, MCM and YM are wholly owned subsidiaries of Yancoal Australia Limited (Yancoal).

Current mining operations undertaken across the MCC have approval until 31 December 2038. All mining operations are conducted in accordance with NSW Project Approval (05_0117) (Moolarben Coal Project Stage 1) as modified, and NSW Project Approval (08_0135) (Moolarben Coal Project Stage 2) as modified.

The current mining operations are undertaken in accordance with Approval Decisions (EPBC 2007/3297), (EPBC 2013/6926), (EPBC 2008/4444) and (EPBC 2017/7974) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Mining operations and exploration activities at the MCC are also conducted in accordance with the requirements of the conditions of Mining Lease (ML) 1605, ML 1606, ML 1628, ML 1691, and ML1715 and Exploration Licences (EL) EL6288, EL7073 and EL7074 granted under the *Mining Act 1992*.

2.1 SCOPE

This Annual Review (AR) has been prepared by MCO (with input from experienced and qualified experts) to satisfy the reporting requirements of NSW Project Approval (05_0117) (as modified), NSW Project Approval (08_0135) (as modified), and water licences. The report presents a summary of the regulatory compliance, environmental performance, and community engagement activities for MCO.

The following key agencies and committees shall be provided with a copy of this report:

- NSW Department of Planning, Housing, and Infrastructure (DPHI) (For Approval)
- NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW)
- NSW Environment Protection Authority (EPA)
- Mid-Western Regional Council (MWRC)
- Members of the MCC Community Consultative Committee (CCC).

In addition, an electronic copy will be made publicly available on the Moolarben Coal website (https://www.yancoal.com.au/our-sites/moolarben/) in accordance with Schedule 5, Condition 11 (a) of PA05_0117 and Schedule 6, Condition 11 (a) of PA08_0135.

2.2 STRUCTURE OF THIS ANNUAL REVIEW

The remainder of the AR is structured as follows and is based on the *Annual Review Guidelines – Post-approval requirements for State significant mining developments* (NSW Department of Planning and Environment, 2015):

Section 3: Outlines the relevant statutory approvals.

Section 4: Outlines the activities undertaken at Moolarben Coal Complex for the period and those proposed for the next period.

Section 5: Actions required from previous Annual Review.

Section 6: Outlines environmental performance including meteorological, noise, blasting, air quality, biodiversity, heritage, bushfire and waste.

Section 7: Outlines the water management performance.

Section 8: Outlines subsidence performance.

Section 9: Outlines the rehabilitation management performance.

Section 10: Outlines the community performance.

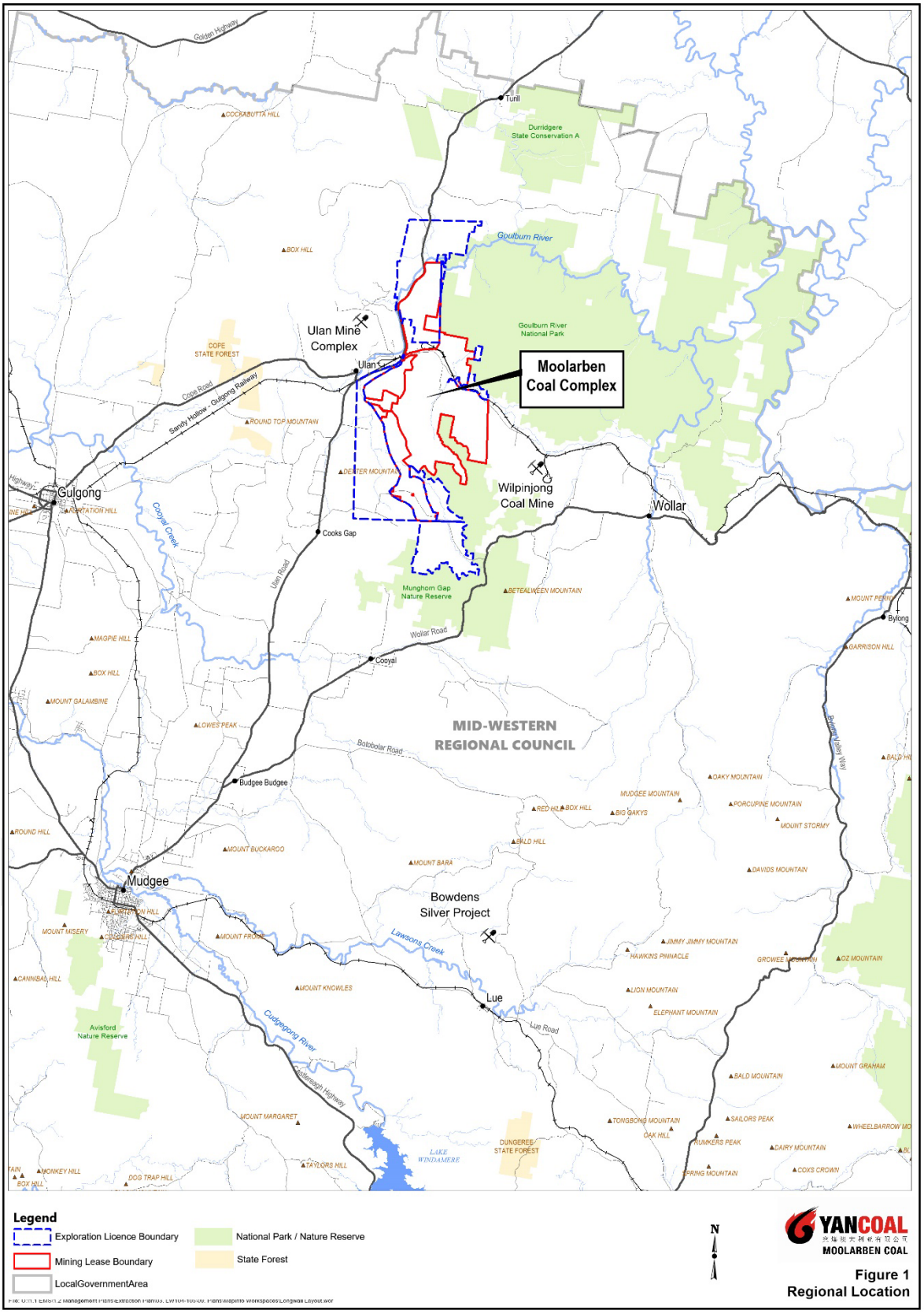
Section 11: Describes independent audit requirements.

Section 12: Provides a summary of incidents and non-compliances.

Section 13: Outlines activities to be completed in the next reporting period.

Appendices: Supporting information and monitoring data.

Figure 1: Moolarben Coal Complex – Site Location



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2.3 PROJECT DESCRIPTION

The MCC comprises the Moolarben Stage 1 and Stage 2 Projects. An overview of the complex is provided in **Figure 2**. The Stage 1 and Stage 2 operations are summarised in **Table 4** below.

Stage 1 at the Moolarben Coal Complex commenced coal mining operations in 2010 and is at full development comprising of three open cut mines (OC1, OC2, and OC3), a longwall underground mine (UG4), and mining related infrastructure (including coal processing and transport facilities).

Stage 2 at the Moolarben Coal Complex commenced coal mining operations in 2015 and is at full development comprising one open cut mine (OC4), two longwall underground mines (UG1 and UG2), and mining related infrastructure.

Table 4: Moolarben Coal Complex production overview

Relevant Approval Component	Moolarben Coal Project	
	Stage 1 **Project Approval (05_0117)**	**Stage 2** **Project Approval (08_0135)**
Operational Mine Life	Mining operations can be carried out until 31 December 2038.	
Hours of Operation	Mining operations can be carried out 24 hours a day, 7 days a week.	
Coal Extraction Limits	Up to 10 Mtpa of ROM coal can be extracted from the open cut mining operations in any calendar year from Stage 1.	Up to 16 Mtpa of ROM coal can be extracted from the open cut mining operations in any calendar year from Stage 2.
	Up to 8 Mtpa (total) of ROM coal can be extracted from the underground mining operations at the Moolarben Coal Complex in any calendar year.	
Coal Processing and Offsite Transport	Up to 16 Mtpa (total) of ROM coal from the Moolarben Coal Complex can be washed in the calendar year. Not more than 8 laden trains on average or 11 laden trains maximum to leave the complex per day.	
	All coal is to be transported from the Moolarben Coal Complex by rail.	All coal extracted from the site is sent to the Moolarben Stage 1 mine surface infrastructure area for processing and/or transport to market.

2.4 KEY MINE CONTACT PERSONNEL

The following table provides contact details for key personnel responsible for environmental management across the Moolarben Coal Complex.

Table 5: Mine Contact Personnel

Position/Area of Responsibility	Name	Contact Number(s)	Email Address
General Manager	Brian Wesley	02 6376 1500	brian.wesley@yancoal.com.au
Environment and Community Manager	Ian Flood	02 6376 1500	ian.flood@yancoal.com.au
Environment and Community Superintendent	Rebecca Shanks	02 6376 1500	rebecca.shanks@yancoal.com.au
Environment and Community Complaints Line	1800 556 484		
Postal Address	Locked Bag 2003, Mudgee, NSW, 2850		

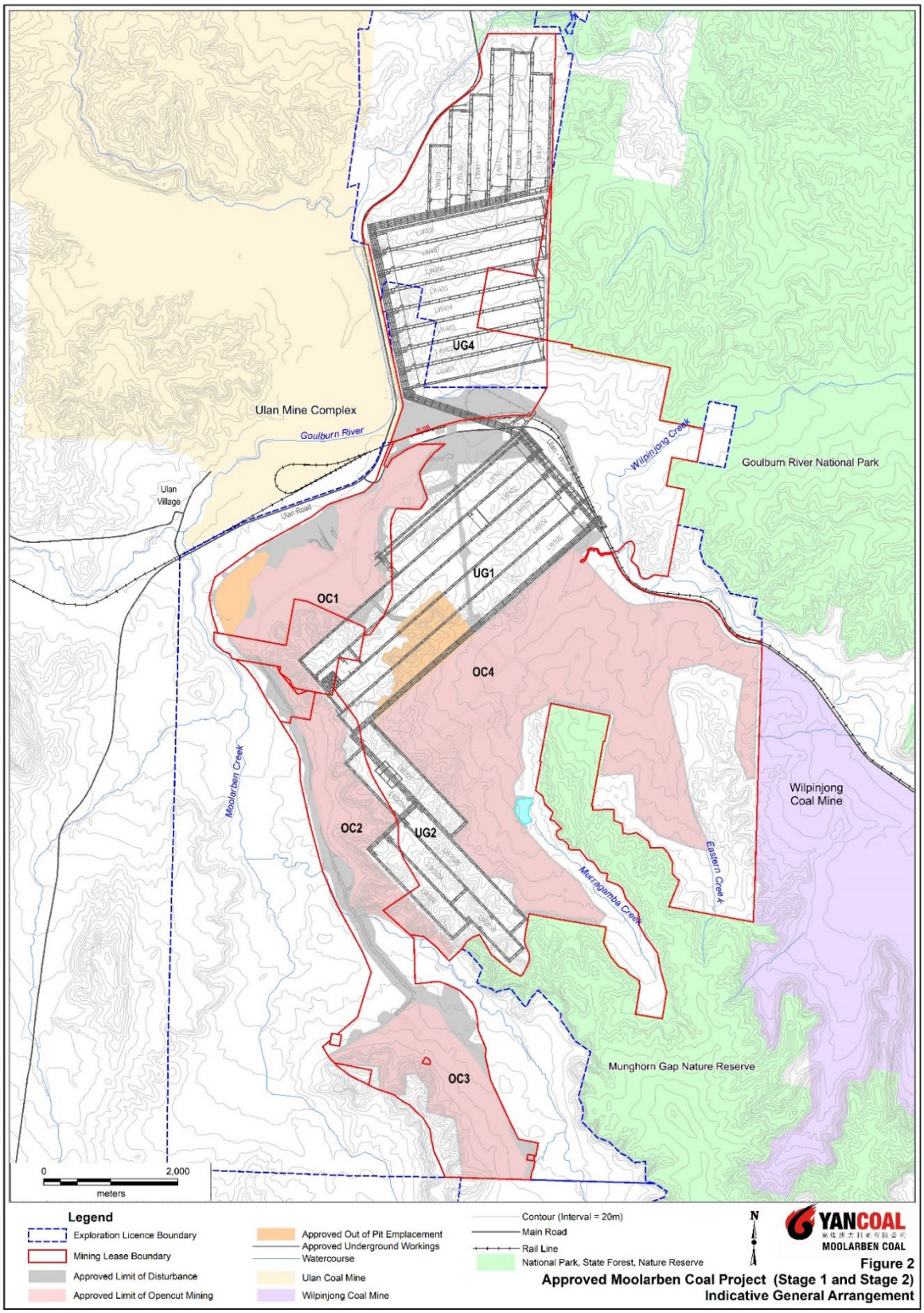

Figure 2: Project General Arrangement

3.0 APPROVALS

3.1 SUMMARY OF APPROVALS

Project Approvals, Mining Leases, and other Licences relevant to MCO are provided in **Table 6**. Current Project Approvals, EPBC Approvals, Exploration Licences, and Mining Leases are available at https://www.yancoal.com.au/our-sites/moolarben/

Table 6: Relevant Approvals, Leases and Licences

Approval	Description	Expiry Date
Project Approval – NSW Department of Planning and Environment		
05_0117	Stage 1 as modified	31 December 2038
08_0135	Stage 2 as modified	31 December 2038
Mining Lease – NSW Department of Regional NSW – Resources Regulator		
ML1605	Underground 4, CHPP and infrastructure areas	20 December 2028
ML1606	OC1, OC2, UG1 and associated infrastructure	20 December 2028
ML1628	OC1, OC2, OC3, UG1 and UG4	24 February 2030
ML1691	OC2, OC3, UG1, UG2 and associated infrastructure	23 September 2034
ML1715	OC2, OC4, UG1, UG2 and associated infrastructure	31 August 2036
Moolarben Coal Forward Program – NSW Department of Regional NSW – Resources Regulator		
FWP0001365	Stage 1 and Stage 2 operations	31 December 2026
Exploration Licences – NSW Department of Regional NSW – Resources Regulator		
EL6288	Coal Exploration Licence	23 August 2029
EL7073	Coal Exploration Licence	12 February 2026
EL7074	Coal Exploration Licence	12 February 2026
Environment Protection Licence – NSW Environment Protection Authority		
EPL12932	Licence authorising the carrying out of scheduled activities	N/A
Environment Protection and Biodiversity Conservation Act – Commonwealth Department of Climate Change, Energy, the Environment and Water		
2007/3297	Stage 1 coal mines and associated infrastructure	31 December 2027
2008/4444	Stage 2 coal mines	31 December 2065
2013/6926	Modify and extend the Stage 1 Moolarben Coal Project.	31 December 2064
2017/7974	Modify and extend the Stage 1 and Stage 2 Moolarben Coal Project	31 December 2050
Water Licences – NSW Department of Planning and Environment – Water		
WAL19424	Wollar Creek Water Source	N/A
WAL36340	Wollar Creek Water Source	N/A
WAL37583	Wollar Creek Water Source	N/A
WAL37582	Upper Goulburn River Water Source	N/A
WAL19052	Upper Goulburn River Water Source	N/A
WAL41888	Upper Goulburn River Water Source	N/A
WAL39799	Sydney Basin - North Coast Groundwater Sources	N/A
20BL173935	Monitoring Bore Licence	N/A

During the reporting period the following amendments to approvals were granted:

- Modification to Project Approval 05_0117 and 08_0135 to facilitate interactions with the approval SSI 48323210 for EnergyCo's CWO REZ ETL
- Variation to 2007/3297 to facilitate interactions with the approval SSI 48323210 for EnergyCo's CWO REZ ETL

3.2 ANNUAL REPORTING

Table 7 provides a checklist of AR requirements and performance conditions along with the relevant sections within this report.

Table 7: Annual Review Requirements

Approval Type & Reference		Annual Review Section
Project Approval 05_0117 Condition 4 Schedule 5	*By the end of March each year, or other timing as may be agreed by the Secretary, the Proponent shall review the environmental performance of the project to the satisfaction of the Secretary. This review must:* *a. describe the development that was carried out in the previous calendar year, and the development that is proposed to be carried out over the next year;* *b. include a comprehensive review of the monitoring results and complaints records of the project over the previous calendar year, which includes a comparison of these results against the* • *the relevant statutory requirements, limits or performance measures/criteria;* • *the monitoring results of previous years; and* • *the relevant predictions in the EA;* *c. identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;* *d. identify any trends in the monitoring data over the life of the project;* *e. identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and* *f. describe what measures will be implemented over the next year to improve the environmental performance of the project.*	4.2 & 4.3 6 to 10 1, 6 to 10 & 12 6 to 10 6 to 10 6 to 10 & 13
Project Approval 08_0135 Condition 4 Schedule 6	*By the end of March each year, or other timing as may be agreed by the Secretary, the Proponent shall review the environmental performance of the project to the satisfaction of the Secretary. This review must:* *a. describe the development that was carried out in the previous calendar year, and the development that is proposed to be carried out over the next year;* *b. include a comprehensive review of the monitoring results and complaints records of the project over the previous calendar year, which includes a comparison of these results against the* • *the relevant statutory requirements, limits or performance measures/criteria;* • *the monitoring results of previous years; and* • *the relevant predictions in the EA;* *c. identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;* *d. identify any trends in the monitoring data over the life of the project;* *e. identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and* *f. describe what measures will be implemented over the next year to improve the environmental performance of the project.*	4.2 & 4.3 6 to 10 1, 6 to 10 & 12 6 to 10 6 to 10 6 to 10 & 13

4.0 OPERATIONS SUMMARY

4.1 MINING OPERATIONS

Details of production and associated waste generated by the site for the reporting period and next reporting period are provided in **Table 8**.

Table 8 : Production Summary

Material	Approved Limit (PA 05_0117 & 08_0135)	Reporting Period		
		Previous Period (actual)	Current Period (actual)	Next Period (forecast)
Waste Rock/ Overburden (BCM)	N/A	59,190,366	71,440,399	73,642,054
Open Cut ROM Coal (t) (OC1, 2 & 3)	10,000,000	3,790,532	3,416,861	3,379,475
Open Cut ROM Coal (t) (OC4)	16,000,000	11,891,040	12,581,026	12,620,525
Open Cut ROM Coal (t)	16,000,000	15,681,572	15,997,886	16,000,000
Underground ROM Coal (t)	8,000,000	4,767,152	5,213,152	5,123,827
Coal Washing (t)	16,000,000	14,381,017	15,999,141	16,000,000
Rejects (Co Disposal)	N/A	3,050,201	2,739,680	2,847,894
Product Coal (t)	N/A	16,737,623	18,993,583	18,182,195

4.2 REPORTING PERIOD ACTIVITIES

This section provides further detail on the activities undertaken in the reporting period. **Figure 3** presents the areas of activity.

4.2.1 EXPLORATION

Exploration activities were undertaken in EL7073, ML1605, and ML1715 during the reporting period. This consisted of a total of 27 exploration holes within EL7073, 9 exploration holes within ML1605 (including 2 holes converted to groundwater monitoring piezometers), and 42 exploration holes within ML1715 (including 3 holes converted to groundwater monitoring piezometers).

4.2.2 LAND DISTURBANCE

During the reporting period 115.6ha was disturbed taking the total mine footprint to 2,302.5ha with the majority of the increased land disturbance associated with the progression of mining. The areas disturbed this reporting period are shown in **Figure 3**.

All land disturbance is undertaken in accordance with the Ground Disturbance Permit (GDP) process. This includes pre-clearance surveys, heritage clearance, erosion and sediment control plans, confirmation of land ownership and disturbance extents reviewed to ensure compliance with relevant management plans (Surface Water, Heritage, Biodiversity and Rehabilitation Management Plans) and approvals.

Topsoil, mulch, habitat trees and ground timber were reclaimed and stockpiled for future use within rehabilitation areas.

4.2.3 CONSTRUCTION

Construction works undertaken during the reporting period included the progression of mining infrastructure for Open Cut 3 (OC3) and Open Cut 4 (OC4). Mine infrastructure works included water management infrastructure and ancillary works. Construction activities commenced or undertaken in the period included:

- Completion of the upgrade to the Water Treatment plant and associated infrastructure
- Construction of water management infrastructure.

4.2.4 MINING OPERATIONS

Mining activities were undertaken in accordance with relevant project approvals and the Forward Program (FWP). During the reporting period general mining activities included:

- Overburden removal from OC1, OC3 and OC4 using excavator and truck fleets
- Overburden removal from OC3 and OC4 using cast and dozer push
- Coal extraction from OC1, OC3 and OC4
- Drilling and blasting of select overburden and coal
- Spoil emplacement in-pit in OC1, OC2, OC3, and OC4
- Co disposal of rejects in-pit
- Bulk spoil reshaping and rehabilitation
- Construction and operation of water management works
- Continued underground development in UG4 and UG1
- Extraction of UG1 LW404 and UG4 LW405.

4.2.5 COAL PROCESSING AND TRANSPORT

Open Cut ROM coal for washing was transported from the ROMs via conveyor to the CHPP for processing. ROM coal was transported from the UG ROM to the product stockpile via conveyor. Washed product coal was transported to the product coal stockpile prior to railing. Coarse rejects were co-mingled with dewatered fine rejects and transported by conveyor to the Rejects Bin and trucked back to the open pit for selective placement with mine spoil.

All product coal was loaded onto trains via the Train Load-out in the Moolarben rail loop and transported via rail to the port of Newcastle. MCO monitors the amount of coal transported from site each year and the date/time of each movement. During the period, the maximum number of train movements per day was 10 with an average of 5.9 per day, compared to maximum approved train movements of 11 per day and 8 daily movements on average.

4.2.6 REHABILITATION

Rehabilitation works during the reporting period were undertaken within OC2, OC3, OC4 and maintenance of existing rehabilitated areas. More detail of rehabilitation activities during the reporting period is provided in **Section 9.0**.

4.3 NEXT REPORTING PERIOD

The proposed mining areas for 2025 are detailed in the 2025 – 2027 FWP dated 20 March 2025. The status of proposed activities at the end of 2024 are provided in **Figure 3**.

MCO will continue to operate 24 hours per day, 7 days per week with blasting limited to the hours and frequency detailed in PA 05_0117 Schedule 3, Condition 9 & 10 and PA 08_0135 Schedule 3, Condition 10 & 11.

4.3.1 EXPLORATION

Proposed exploration activities during 2025 will focus on EL6288 and EL7073. All exploration carried out on MCO Exploration Licence areas will adhere to the relevant regulatory requirements which may include approval through the Resource Regulator's application to undertake Assessable Prospecting Operations.

4.3.2 LAND DISTURBANCE

During the next reporting period, approximately 165ha will be disturbed for open-cut mining across OC3, OC4, and UG4 surface infrastructure and ancillary activities. The areas to be disturbed are shown in **Figure 3.**

4.3.3 CONSTRUCTION

Proposed construction works during the next reporting period includes mine sustaining infrastructure. Construction activities include:

- Construction of dewatering bores and associated infrastructure
- Construction of water management infrastructure
- Construction of the UG2 Remote Services Infrastructure Area.

4.3.4 MINING OPERATIONS

Mining operations for the next period are shown in **Figure 3** and include:

- Drilling and blasting of select overburden and coal
- Overburden removal from OC1, OC3 and OC4 using dozer, excavator and truck fleets
- Spoil emplacement in-pit in OC1, OC2, OC3 and OC4
- Coal extraction from OC1, OC3, and OC4
- Bulk spoil reshaping and rehabilitation
- Construction and operation of water management works
- Continued underground development within UG4 and UG1
- Continued longwall mining operations in UG4 LW401-LW408

4.3.5 COAL PROCESSING AND TRANSPORT

Open Cut ROM coal for washing will be transported from the Open Cut ROM facilities via conveyor to the CHPP for processing. Underground coal and open cut bypass coal will be transferred with the UG coal handling system. Product coal will be stored on the product coal stockpile prior to transport. Coarse rejects will be co-mingled with dewatered fine rejects and transported by conveyor to the Rejects Bin from where it will be trucked back to the open pit for selective placement within mine spoil.

All product coal will be loaded onto trains in the MCC rail loop and transported via rail. All train movements will be conducted in accordance with the conditions of approval.

4.3.6 REHABILITATION

Rehabilitation on mined areas proposed for the next reporting period will be undertaken in OC2, OC3 and OC4. Rehabilitation activities will include landform establishment, growth medium development, ecosystem establishment and rehabilitation maintenance.

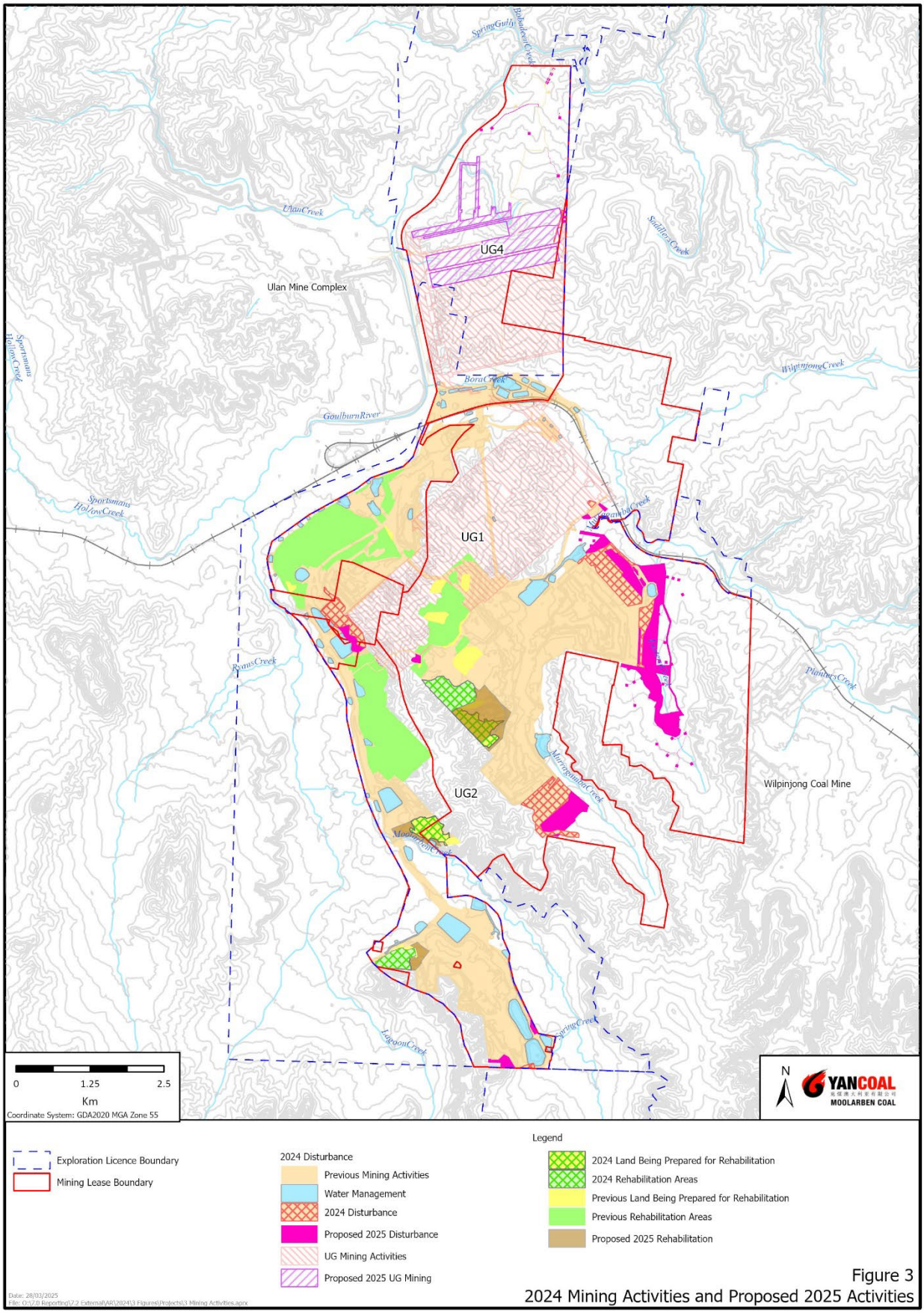

Figure 3: 2024 Mining Activities and Proposed 2025 Activities

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5.0 ACTIONS REQUIRED FROM PREVIOUS REPORTING PERIOD

The 2024 AR was submitted to the Department of Planning and Environment (DPE) on 24 March 2025 in accordance with Schedule 5 Condition 4 of PA05_0117 and Schedule 6 Condition 4 of PA08_0135. The 2022 AR was accepted and approved by the DPE on 29 April 2024.

There were no actions issued to MCO regarding the 2023 AR, and the 2022 AR was placed on the MCO website within one month of approval.

Actions outlined by MCO in the 2024 AR are provided in **Table 9**.

Table 9 : Actions from Previous Annual Review

Action Required from previous Annual Review	Requested by	Action Taken by MCO	Section of AR addressing this action
Review and revise all environmental management plans as necessary	MCO	Complete	Sections 6 to 9
Revision of water level triggers for Tertiary paleochannel piezometers PZ213, PZ214 and PZ188.	MCO	Action Ongoing	Section 7.4
Review, revise, and expand if required the Groundwater monitoring program as part of the next Groundwater Management Plan Review.	MCO	Action Ongoing	Section 7.4
Consider decommissioning of PZ058A as part of the next Groundwater Management Plan Review.	MCO	Action Ongoing	Section 7.4
Monitoring network above UG2 and UG4 to be expanded.	MCO	Action Ongoing	Section 7.4
Continued progressive rehabilitation.	MCO	Action Ongoing	Section 9

6.0 ENVIRONMENTAL PERFORMANCE

In accordance with the MCC Project Approvals, MCO has developed a series of Environmental Management Plans in consultation with the relevant government agencies. Current approved plans are available for review via the MCO website - https://www.yancoal.com.au/our-sites/moolarben/

To measure compliance with the project approvals, various licences, and site management plans, MCO undertakes a comprehensive environmental monitoring program. The locations of environmental monitoring undertaken during the 2024 reporting period are identified in **Appendix 2**. This section provides summary details on:

- **Section 6.1** - Meteorological overview
- **Section 6.2** - Noise
- **Section 6.3** – Blasting
- **Section 6.4** – Air quality
- **Section 6.5** – Biodiversity
- **Section 6.6** – Heritage.

Water, subsidence, rehabilitation and community aspects are reported in **Sections 7.0, 8.0, 9.0** and **10.0** respectively.

6.1 METEOROLOGICAL SUMMARY

Meteorological monitoring is undertaken at Automatic Weather Station (WS) WS03 (Ulan Road) in accordance with NSW Project Approval and EPL requirements. Additional weather stations may be used to supplement weather data as required including WS04 located near OC2, and WS05 located near OC3. The localities of the stations are illustrated in **Appendix 2** Meteorological parameters recorded by WS03 include:

- wind speed at 10 m
- wind direction at 10 m
- sigma theta
- temperature at 2 m and 10 m
- relative humidity at 2 m
- solar radiation at 2 m
- Rainfall.

WS03 rainfall and temperature records for 2024 are summarised in **Table 10**. A total of 894.8mm of rainfall was recorded in 2024, with November the wettest month (128.6mm) and September the driest (43.2mm). The total rainfall at MCO for 2024 was 240.8mm above the annual average rainfall of 654mm at the Gulgong Post Office and was below the MCO rainfall total of 1182.8mm in 2023.

Temperature recorded at WS03 ranged from -3.8°C in July to 37.8°C in January. The lowest minimum temperature of -3.8°C was above the lowest minimum of -6.0°C recorded in 2023. The highest maximum temperature of 37.8°C was below the highest maximum temperature of 39.8°C recorded in 2023.

From January to March and then November and December, northeast and easterly winds were predominant with south westerly and southerly winds predominant from May through to October. Meteorological data and monthly wind roses are presented in **Appendix 3A**.

Table 10: Meteorological Summary (WS03)

Month	Rainfall (mm)	Cumulative Rainfall (mm)	Long-term average Rainfall (mm)	Max Temp (°C) @ 2m	Min Temp (°C) @ 2m
Jan-24	94.6	94.6	70.4	37.8	8.7
Feb-24	71.2	165.8	62.2	37.6	12.9
Mar-24	50.6	216.4	56.9	36.7	7.1
Apr-24	79.2	295.6	44.3	28.5	3.1
May-24	60	355.6	44.3	21.4	-1.6
Jun-24	86	441.6	50.3	19.3	-2.7
Jul-24	68.4	510	49.2	18.8	-3.8
Aug-24	58.8	568.8	45.7	28	-2.2
Sep-24	43.2	612	46.8	27.2	-2.9
Oct-24	76.8	688.8	55.6	28.9	3.5
Nov-24	128.6	817.4	61.1	35.1	7
Dec-24	77.4	894.8	67.2	36.3	-2.6
Total		**894.8**	**654**		

6.2 NOISE

MCO manages noise in accordance with the MCO Noise Management Plan (NMP) (Version 6). The NMP was most recently revised and approved in October 2023. The NMP was developed by MCO with advice from experienced and qualified experts (SLR Consulting Australia Pty Ltd) to satisfy Condition 7, Schedule 3 of PA 05_0117 (as modified) and Condition 8, Schedule 3 of PA 08-0135.

During the reporting period, major noise producing activities included operations within:

- OC1, OC2, OC3, and OC4.
- Surface operations associated with UG4.
- The CHPP and rail load-out facilities.
- Construction activities.

Operational processes for MCO to reduce noise emissions included:

- Use of sound attenuated major equipment.
- Operation of some support fleet during the daytime only.
- Use of shielded areas in adverse weather conditions.
- Use of real-time noise monitoring data and Mine Production Environmental Assistants to assist operational personnel in proactive and reactive management of noise impacts, including modification of mining activities as required.
- Use of predictive noise models to assess predicted noise risks associated with meteorological influences, including modification of mining activities as required.

- Sound power testing equipment.
- Routine maintenance of equipment, including sound attenuation components.

6.2.1 REAL- TIME NOISE MONITORING

The NMP identifies response triggers for real-time noise via four monitoring stations (refer **Appendix 2** for localities). When a trigger has been reached, an SMS alarm is sent to operational personnel and members of the Environment and Community Department. The real-time monitoring network operated throughout the reporting period.

6.2.2 ATTENDED NOISE MONITORING

During the 2024 reporting period, attended environmental noise monitoring was conducted monthly (NA1, NA6 & NA12), with additional sites monitored quarterly (NA11), and Munghorn Gap Nature Reserve (MGNR) and Goulburn River National Park (GRNP) annually. The purpose of attended noise monitoring is to quantify and describe the acoustic environment around MCO's operations and compare noise contribution from the MCC to the project Noise Criteria.

Noise Criteria are specified for day, evening, and night period for the amenity of neighbouring residences. Noise Criteria are expressed as $LAeq_{(15min)}$ and $LA1_{(1min)}$. **Table 11** provides a summary of project noise criteria and noise performance based on attended noise monitoring for 2024, together with management implications and proposed actions.

MCO complied with the project specific noise criteria at all monitoring sites during attended noise monitoring in the reporting period. A summary of results from attended noise monitoring undertaken during the period in accordance with the NMP is provided in **Appendix 3B**.

6.2.3 ATTENDED VALIDATION NOISE MONITORING

In accordance with the NMP, attended monitoring was undertaken during the reporting period at four locations (i.e. NA2, NA3, NA10 & NA12) to verify the results of real-time noise monitoring.

Validation monitoring continues to confirm that the current real-time monitors overestimated the MCO LAeq during the validation periods. The real-time data appeared to be routinely influenced by extraneous low frequency noise sources such as road traffic, aircraft, frogs, insects, and wind. Due to the inability to distinguish between contributing noise sources, the real-time data is not suitable for compliance purposes and cannot be relied upon to provide an accurate estimate of mine generated noise. Real-time monitoring remains suitable for management purposes.

6.2.4 COMPARISON AGAINST PREVIOUS YEARS

Attended noise monitoring results were reviewed against previous years to 2012. This review found a high level of variability in results. Of the results where a noise reading was determined (i.e. not inaudible and criteria applicable) there is some correlation between monitoring results and the distance of the receiver from the operations.

Attended noise monitoring undertaken at NA1 Ulan school between 2012 and 2024 during the daytime period shows the MCC complied with the noise criteria and was inaudible during 85% of monitoring events. Monitoring at NA6 Lower Ridge Road between 2012 and 2024 during the night period shows the MCC complied with the noise criteria and was inaudible during 31% of monitoring events. Attended noise

monitoring completed at NA12 Winchester Crescent between 2012 and 2024 during the night period shows the MCC complied with the noise criteria and was inaudible during 51% of monitoring events.

Annual attended noise monitoring results at the Goulburn River National Park and the Munghorn Gap Nature Reserve show the MCC complied with the noise criteria at the monitoring locations during the reporting period.

Table 11 : Attended Noise Monitoring Summary

Aspect	Approved Criteria					Performance During the Reporting Period	Key Management implications	Implemented/ proposed management Actions
Attended Noise Monitoring	**Land No.**	**Day** [1] L_{A1eq} **(15min).**	**Evening**[2] L_{A1eq} **(15min).**	**Night**[3] L_{A1eq} **(15min).**	**Night**[3] L_{A1eq} **(1min).**	Monthly attended monitoring was undertaken at the three required noise compliance locations (NA1, NA6 & NA12) throughout 2024 as required by the NMP. Quarterly monitoring was completed at NA11 during 2024 as required by the NMP. Annual monitoring was undertaken at the two required noise compliance locations (GRNP & MGNR) during 2024 as required by the NMP. There were no recorded noise exceedances during the 2024 reporting period at the five noise compliance monitoring locations NA1, NA6, NA12, GRNP & MGNR. MCO continued to coordinate noise management with neighbouring mines. ***Note*** *approved noise compliance monitoring locations were selected as representative of residences* and are shown in **Appendix 2**.	Noise management controls effective.	Continue the implementation of the NMP. MCO will review, and if necessary, revise the NMP in accordance with Schedule 5 condition 5 and Schedule 6 condition 5 of PA05_0117 and PA08_0135 respectively.
	70	37	37	37	45			
	75	36	36	36	45			
	All other privately owned residences	35	35	35	45			
	Ulan Primary School	35 (internal) when in use			-			
	Ulan Anglican Church	35 (internal) when in use			-			
	Goulburn River National Park Munghorn Gap Nature Reserve	50 when in use			-			

1 Day is defined as the period between 7am-6pm Monday to Saturday, and 8am-6pm on Sundays and Public Holidays
2 Evening is defined as the period 6pm-10pm
3 Night is defined as the period from 10pm-7am Monday to Saturday, and 10pm-8am on Sundays and Public Holidays.

6.2.5 COMPARISON TO PREDICTED LEVELS

Predicted noise levels from Year 2021 of the Open Cut Optimisation Modification (Stage 1 Modification 14 and Stage 2 MOD 3) were compared against actual noise levels during 2024. The 2024 results indicated that MCO was generally lower than the predicted levels where meteorological conditions were relevant.

Measured operational levels are compared to predicted levels in **Table 12**. In this table, a 'positive' difference is where the measured level is greater than the predicted level. A 'negative' difference is where the measured levels are less than the predicted levels. Where the meteorological conditions (primarily wind direction and temperature gradient) during the attended monitoring do not correspond with those that are modelled, no further analysis is undertaken. Attended noise monitoring results are included in **Appendix 3B.**

Table 12: EA Predictions – Attended Noise Monitoring, Various Weather Conditions

2024	$dB(A)_{Leq\ (15min)}$[1]			$dB(A)_{LA1(1min)}$[1]		
	NA1 Ulan School	NA6 Lower Ridge Rd	NA12 Winchester Cres	NA1 Ulan School	NA6 Lower Ridge Rd	NA12 Winchester Cres
	Day	Night	Night	Day	Night	Night
January	N/A	N/A	N/A	N/A	N/A	N/A
February	N/A	NC	NC	N/A	NC	NC
March	N/A	-9	NC	N/A	-12	-11
April	N/A	N/A	N/A	N/A	N/A	N/A
May	N/A	N/A	N/A	N/A	N/A	N/A
June	N/A	-11	NC	N/A	-14	NC
July	NC	-7	-6	N/A	-4	-7
August	N/A	-12	NC	N/A	-14	NC
September	NC	NC	NC	N/A	NC	NC
October	N/A	-9	NC	N/A	-12	-12
November	N/A	NC	NC	N/A	NC	NC
December	N/A	N/A	N/A	N/A	N/A	N/A

[1.] NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison. NC indicates measured MCO noise levels were inaudible (IA), not measurable (NM), or expressed as a "less than" quantity (e.g. less than 30 dB), therefore measured and predicted noise levels were not comparable.

6.3 BLASTING

MCO manages blasting in accordance with the Blast Management Plan (BMP). The BMP was developed by MCO with advice from experienced and qualified experts (SLR Consulting Australia Pty Ltd) to satisfy Condition 15, Schedule 3 of PA 05_0117 (as modified) and Condition 16, Schedule 3 of PA 08-0135 (as modified). The BMP was most recently revised and approved in November 2023 (Version 7).

Blasting criteria, blasting hours, blasting frequency, property inspection requirements and operating conditions are provided in Conditions 8 to 14, Schedule 3 and Conditions 7 to 15, Schedule 3 of the NSW Project Approvals (05_0117) and (08_0135) respectively.

The blast monitoring locations are identified in **Appendix 2**. During the reporting period blast monitoring included airblast overpressure and ground vibration at locations representative of privately owned residences, schools and aboriginal rock shelters.

6.3.1 SUMMARY OF BLAST MONITORING RESULTS

Blast monitoring compliance for the reporting period is presented in **Table 13** and a summary of blast monitoring results for the period is provided in **Table 14**. Individual blast results are provided in full at **Appendix 3C**. Two exceedances of the blasting criteria occurred during the reporting period.

No blasting was undertaken within 500m of any public road, railway line, 330kV powerline or private land, or within 230m of an Aboriginal rock shelter site.

Table 13 : Blast Monitoring Summary (BM1, BM5, BM8)

Blast Summary	Number	Compliance (% of blasts non-compliant)
Total Blasts	191	Compliant
Days with >2 blasts (PA05 Sch 3 C 10)	0[1]	Compliant
Annual average blasts per week	3.67	Compliant
Blasts outside blasting hours	0	Compliant
Airblast Overpressure >115 dB(Lin Peak) [2]	2[3]	Compliant (1.05%)
Airblast Overpressure >120 dB(Lin Peak)	2[4]	Not Compliant
Ground Vibration >5 mm/s [2]	0	Compliant
Ground Vibration >10 mm/s	0	Compliant
Reportable Fume Events	0	Compliant

[1] *Misfires excluded as per PA05_0117 Sch 3 Con. 10 and PA08_0135, Sch. 3, Con. 11.*
[2] *Allowable exceedances of 5% of total blasts over a period of 12 months.*
[3] *Two blast events recorded in exceedance of 115dBL during the reporting period – at BM8 located on Moolarben Road.*
[4] *Two blast events recorded in exceedance of 120dBL during the reporting period – one at BM8 located on Moolarben Road and one located at BM1 at Ulan Village.*

Table 14 : Blast Monitoring Summary

Aspect	Approved Criteria				Performance During the Reporting Period	Trend/ Key Management Implications	Implemented/ proposed actions
Blast	Receiver	Air Blast Overpressure Level dB (Linear Peak) dBL[1]	Peak Particle Velocity – Ground Vibration mm/s[2]	Allowable Exceedance	Compliance monitoring was undertaken at the following representative locations for the 2024 reporting period • **BM1 – Ulan School** ○ Max. Overpressure = 120.3 dBL ○ Max Ground Vibration = 2.69 mm/s ○ Average Ground Vibration = 0.18 mm/s • **BM5 – Ridge Road** ○ Max. Overpressure = 113.9 dBL ○ Max Ground Vibration = 0.78 mm/s ○ Average Ground Vibration = 0.17 mm/s • **BM8 – Moolarben Road** ○ Max. Overpressure = 125.8 dBL ○ Max Ground Vibration = 0.6 mm/s ○ Average Ground Vibration = 0.14 mm/s A full blast summary is contained at **Appendix 3C**.	In accordance with condition 13 (c), Schedule 3 of project approval 05_0117 and condition 14 (d), schedule 3 of project approval 08_0135 MCO co-ordinates the timing of blasting onsite with the timing of blasting at Ulan and Wilpinjong mines to minimise cumulative impacts. Air blast over pressure and peak particle velocity continue to mostly remain stable over the life of the operation at BM1 Ulan School and BM5 Ridge Road.	MCO will review and if necessary, revise the BMP in accordance with Schedule 5 condition 5 and Schedule 6 condition 5 of PA05_0117 and PA08_0135 respectively. During the reporting period MCO continued to maintain the blast monitoring network.
	Residence Privately Owned	120	10	0%			
		115	5	5% of the total number of blasts over a period of 12-months			
	All Public Infrastructure	-	50[3]	0%			

Notes - [1]- dB (Linear Peak) dBL = decibel linear peak [2]- mm/s = millimetres per second [3] - These criteria do not apply if the Proponent has a written agreement with the relevant owner and has advised the Department in writing of the terms of this agreement. MCO has written agreements with TransGrid and Australian Rail Track Corporation (ARTC) to undertake blasting within 500 metres (m) of the Wollar-Wellington 330 kV transmission line and within 500 m of ARTC infrastructure, respectively.

6.3.2 COMPARISON TO PREVIOUS BLAST MONITORING AND PREDICTED LEVELS

A comparison of the 2024 blast results to the 2023 results and predications in the Environmental Assessment for Stage 1 Modification 14 and Stage 2 Modification 3 (Year 2019), that most effectively represent current mining operations, are outlined in **Table 15** below.

Table 15 : Comparison to Blasting Results - BM1, BM5 & BM8 2023, 2024 and EA

Site	EA Vibration Predictions (mm/s) [2]	2023 vibration range (mm/s)	2024 vibration range (mm/s)	Comment on results
BM1 Ulan School	2.1	0.03 – 0.37	0.03 – 2.69	Generally consistent with previous results and lower than predictions.
BM5[3] Ridge Rd	3.0	0.01 – 0.91	0.02 – 0.78	Slightly lower than previous results and lower than predictions.
BM8 Moolarben Rd	3.7	0.00 – 0.47	0.01 – 0.6	Generally consistent with previous results and lower than predictions.
Site	**EA Overpressure (dBL) [2]**	**2023 Overpressure range (dBL)[1]**	**2024 Overpressure range (dBL)[1]**	**Comment on results**
BM1 Ulan School	112	82.3 – 111.7	78.3 – 120.3	Generally consistent with previous results and predictions.
BM5[3] Ridge Rd	114	72.1 – 115.6	79.7 – 113.9	Generally lower than previous results and consistent with predictions.
BM8 Moolarben Rd	115	78.8 – 114.6	77.8 – 125.8	Generally consistent with previous results and predictions.

[1] Excludes environmental influenced results.
[2]Overburden blast design MIC 4,500 kg, 5% exceedance prediction.
[3]Modelled predictions taken from nearest private receiver ID No.70 adjacent from BM5

Blast Monitoring 80%ile and 50%ile trends since 2012 are depicted below in **Figure 4** and **Figure 5**. The monitoring data indicates a correlation between monitoring results and distance of the receiver from the blast locations. Within the graphs the five percent and maximum limit has been included for the blast overpressure graph and the five percent limit has been included within the ground vibration graph. Results have generally been below these criteria.

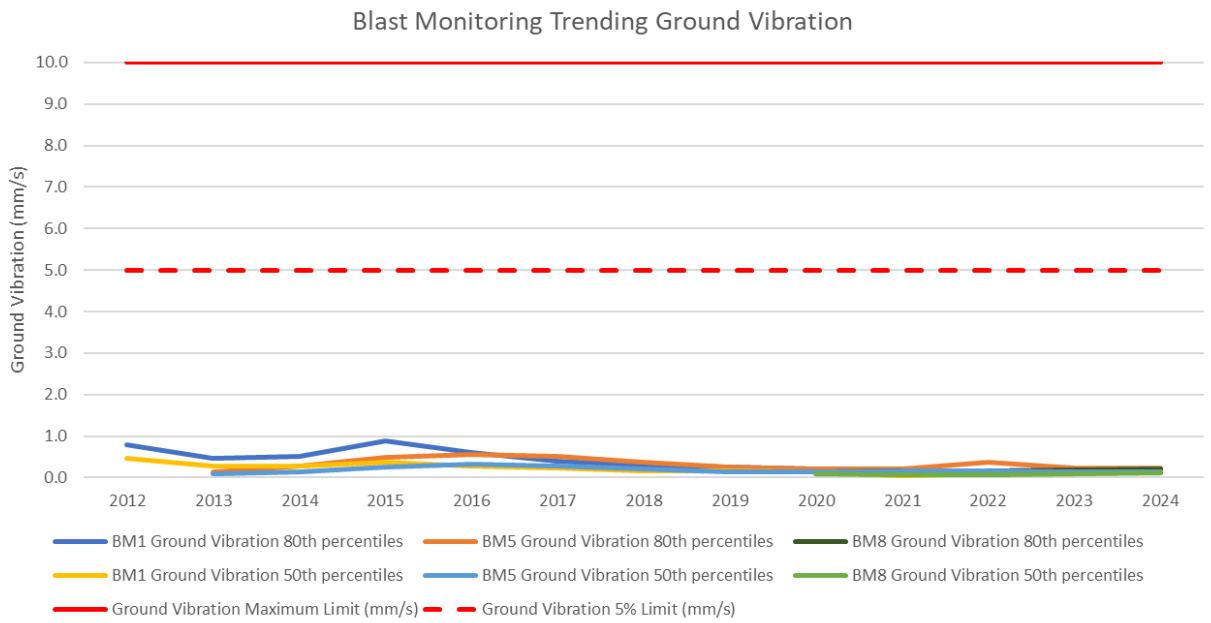


Figure 4: Blast Monitoring Trending Ground Vibration

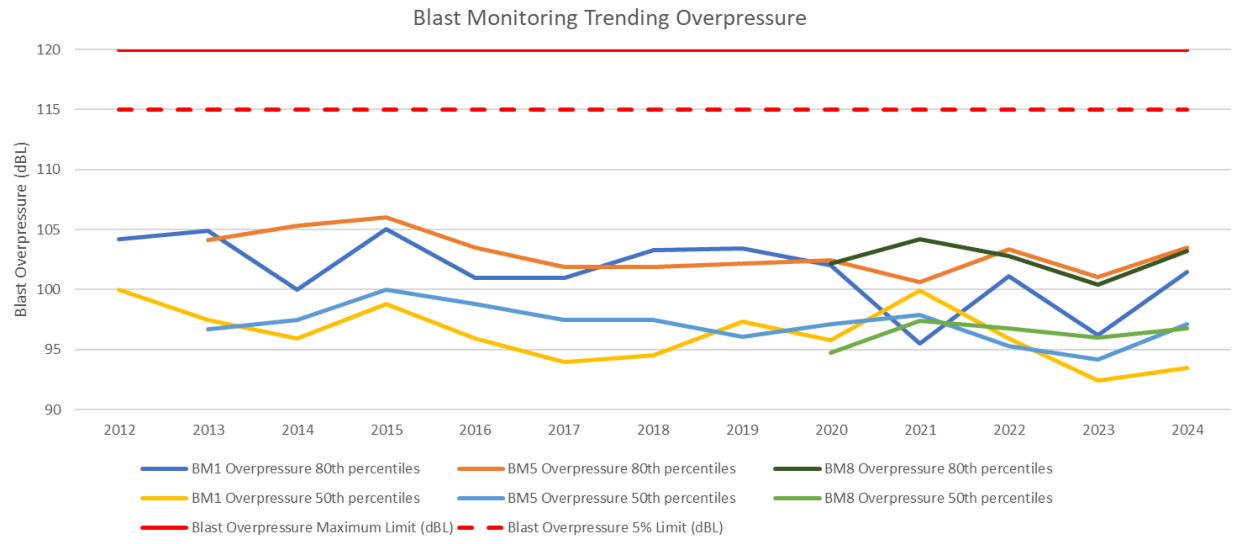


Figure 5: Blast Monitoring Trending Overpressure

6.4 AIR QUALITY

MCO manages air quality in accordance with Air Quality Management Plan (AQMP). The AQMP was most recently revised and approved in November 2023. The AQMP was developed by MCO with advice from experienced and qualified experts (Todoroski Air Sciences) to satisfy Condition 20A, Schedule 3 of PA 05_0117 and Condition 22, Schedule 3 of PA 08_0135.

During the reporting period, MCO undertook air quality monitoring in accordance with the approved AQMP (Version 7). This included:

- Deposited particulate matter monitoring with Dust Depositional (DD) gauges at four locations around the Moolarben Coal Complex.
- PM_{10} – High Volume Sampling (HVAS) monitoring at two sites – Ulan Village (PM01) and south-west of Open Cut 1 and west of Open Cut 2 (PM02).
- PM_{10} – Real Time Monitoring via Tapered Element Oscillating Microbalance's (TEOMs) at three permanent locations around the Moolarben Coal Complex representative of private residences and one upwind of operations when winds towards private residences.
- $PM_{2.5}$ - Real Time Monitoring via a dual function Tapered Element Oscillating Microbalance's (TEOMs) at one location around the Moolarben Coal Complex representative of private residences.
- Total Suspended Particulate (TSP) matter calculated from TEOM PM_{10} monitoring results.
- Meteorological monitoring is undertaken via Automatic Weather Stations (AWSs), with WS03 (located on Ulan Road) the principal station for reporting purposes.

The AQMP monitoring locations are identified in **Appendix 2**. The air quality monitoring program is outlined in **Appendix 3D**. A summary of air quality monitoring results for the reporting period is provided in **Table 16** to **Table 21** and **Appendix 3D**.

Table 16: Air Quality Monitoring Summary

Aspect		Approved Criteria	Performance during the Monitoring Period	Trend/ Key Management Implications	Implemented/proposed Management Action
	Monitoring Form				
Air Quality	**Dust Deposition**	4 g/m^2/month (max total)[1]	Annual averages for each dust depositional gauge are reported in **Table 18**. All dust depositional results for the reporting period were below the 4/g/m^2/month criterion. The 2g/m^2/month criterion was not triggered.	Annual average dust depositional results for the operation indicate a generally consistent trend over the period and remain well below the criteria.	MCO will review and if necessary, revise the AQMP in accordance with Schedule 5 condition 5 and Schedule 6 condition 5 of PA05_0117 and PA08_0135 respectively. During the reporting period MCO continued to maintain the air quality monitoring network.
		2 g/m^2/month above background average (Incremental increase)[2]			
	PM_{10}	50 µg/m^3 (24hr average)[2, 3]	All PM_{10} results were within criteria. Results due to extraordinary events are excluded from the dataset.	24-Hour average PM_{10} results for the operation indicate a steady trend over the period and remain well below the criteria.	
		25 µg/m^3 (Annual average) [1, 3]	The average PM_{10} results for the reporting period are presented in **Table 19**. All sites were below the Annual average criteria.	Annual average PM_{10} results for the 2024 reporting period indicate a mostly decreasing trend over the period remaining below the criteria.	
	$PM_{2.5}$	25 µg/m^3 (24hr average) [2, 3]	All $PM_{2.5}$ results were within criteria. Results due to extraordinary events are excluded from the dataset.	24-Hour average PM2.5 results for the operation indicate an decreasing trend over the period remaining below the criteria.	
		8 µg/m^3 (Annual average) [1, 3]	The annual average $PM_{2.5}$ results for the reporting period are presented in **Table 20**. All results were within criteria.	Annual average $PM_{2.5}$ results for the 2024 reporting period a slightly decreasing trend when compared to 2023.	
	Total Suspended Particulate (TSP)	90 µg/m^3(Annual average) [1]	TSP results are presented in **Table 21.** TSP is calculated using the approved AQMP methodology based on PM_{10} constituting 40% of the total TSP. During the reporting period, all sites were calculated as being below the 90µg/m^3 criterion.	Annual average TSP results for the 2024 reporting period indicate an decrease in results when compared to 2023 with all sites increasing during the period.	

[1] Cumulative (i.e. incremental increase in concentrations due to the Moolarben mine complex plus background concentrations due to all other sources);
[2] Incremental impact (i.e. incremental increase in concentrations due to the Moolarben mine complex on its own) with up to 5 allowable exceedances over the life of the project
[3] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents, illegal activities or any other activity agreed by the Secretary.

6.4.1 DATA CAPTURE RATE

The following table (**Table 17**) provides details on the data capture rates for the reporting period. Data capture was impacted by maintenance, power loss and equipment failures.

Table 17: Data Capture Rate for PM_{10} & $PM_{2.5}$ Annual Averages

Location	2024 Data Capture Rate
TEOM 01 (Ulan School)	98.4%
TEOM 04 (Ulan Road)	94.0%
TEOM 06 (Ulan-Wollar Road)	95.3%
TEOM 08 (Ulan-Wollar Road)	95.4%
TEOM 07 (Ulan Road)[1]	86.6%
PM 01 (Ulan Village)	100%
PM 02 (Ridge Road)	100%

[1] TEOM monitors for both PM_{10} and $PM_{2.5}$

6.4.2 COMPARISON TO PREVIOUS AIR QUALITY MONITORING AND BACKGROUND LEVELS

Dust Deposition

A comparison of the 2024 dust deposition results with previous results from 2012 and predications in the Environmental Assessment for Stage 1 Modification 14 and Stage 2 Modification 3 (Year 2019), that most effectively represent current mining operations, is provided in **Table 18.**

All deposition results for 2024 are within criteria and were generally consistent with predicted results (**Table 18**). Data trends are presented in **Appendix 3D.**

Table 18: Comparison of Depositional Dust results

Dust Gauge	Annual Average (g/m2/month) (Criteria = 4 g/m²/month)														
	Back-ground	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	EA Prediction[1]
DG01[#]	1.2	0.3	0.5	0.8	0.6	0.5	0.6	0.9	1.3	0.9	0.5	0.6	0.4	0.5	0.6
DG04^	2.0	1.3	1.3	1.6	1.0	1.2	1.0	1.4	1.8	1.0	0.5	1.0	0.9	0.7	0.9
DG05^	1.8	0.8	1.0	2.0	0.8	1.3	1.5	1.8	1.5	1.3	0.9	0.7	0.5	0.9	1.1
DG09^	-	0.4	0.7	2.0	0.6	0.6	0.9	1.9	1.5	1.3	0.4	0.4	0.9	0.5	0.7

[1] EA predictions for 2021
[#] Background monitoring
^Representative of nearest non-mine owned residence

PM_{10}

A comparison of the 2024 PM10 results with previous results from 2012 and predications in the Environmental Assessment for Stage 1 Modification 14 and Stage 2 Modification 3 (Year 2019), that most effectively represent current mining operations, is provided in **Table 19.**

Results for 2024 are all within criteria and generally consistent with or slightly below predicted results (**Table 19**) indicating that current air quality management practices are effective. Data trends are presented in **Appendix 3D.**

Table 19: Comparison of annual average PM_{10} Results

Unit		Annual Average (µg/m³)[4] (Criteria = 25 µg/m³)													
	Back-ground	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	EA Prediction[5]
Ulan School (TEOM01)	15.1	10.2	12.4	11.4	13.2	13.0	12.3	15.1	17.3	15.1	12.3	11.3	16.8	16.2	17
Ulan Road (TEOM04)	-[1]	8.9	10.8	12.7	9.0	11.6	15.1	18.7	20.0	14.1	11.4	10.6	14.6	13.8	14.5
Ulan-Wollar Road (TEOM06)	-[1]	-[2]	-[2]	-[2]	9.0	11.5	12.5	15.7	19.7	16.6	12.0	11.1	20.2	18.8	*
Ulan-Wollar Road (TEOM08)	-[1]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	18.3	*
Ulan Road (TEOM07)	-[1]	-[2]	-[2]	-[2]	-[2]	-[2]	11.2[3]	16.5	15.6	11.4	8.0	6.8	10.8	8.0	10.4
Ulan Village HVAS (PM01)	17.9	11.9	12.2	13.8	13.2	11.5	13.0	16.9[6]	18.9	11.8	7.9	7.1	12.5	12.3	16.7
Ridge Road HVAS (PM02)	-[1]	9.7	10.0	11.7	10.8	9.9	13.5	18.1[6]	18.7	12.4	8.5	7.4	11.5	12.6	11.7

[1] No background values as site established after 2009.
[2] No previous data as site not established.
[3] Calculated on 5 months of data.
[4] Annual Averages exclude extraordinary events such as bushfires and prescribed burns.
[5] EA predictions based on the Open Cut Optimisation Modification 2021 Scenario
[6] 2018 values previous reported including extraordinary events
*No EA prediction was made for TEOM06 or TEOM08 as it is representative of conditions 'upwind' of MCO (ie not a private residence)

$PM_{2.5}$

A comparison of the 2024 PM2.5 results with previous results and predications in the Environmental Assessment for Stage 1 Modification 14 and Stage 2 Modification 3 (Year 2021) is provided in **Table 20.**

Results are within criteria and generally consistent with predicted results, with 2024 results being consistent with or slightly below previous years (**Table 20**). Data trends are presented in **Appendix 3D.**

Table 20: Comparison of annual average $PM_{2.5}$ Results

Unit	Annual Average (µg/m³)[4] (Criteria = 8 µg/m³)														
	Back-ground	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	EA Prediction[5]
Ulan Road (TEOM07)	-[1]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	5.8[3]	5.6	4.4	3.5	5.1	4.3	5.3

[1] No background values as site established after 2009.
[2] No previous data as site not established.
[3] Calculated on 6 months of data.
[4] Annual Averages exclude extraordinary events such as bushfires and prescribed burns.
[5] EA predictions based on the Open Cut Optimisation Modification 2021 Scenario.

Total Suspended Particulates

TSP results (**Table 21**) are all within criteria and generally lower than 2023 results.

Table 21: Comparison of annual average TSP results

Unit	Annual Average Calculated TSP (µg/m3) (Criteria = 90 µg/m3)														
	Back-ground	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	EA Predictions[4]
TEOM01 (Ulan School)	37.75	25.5	31	28.5	33	32.6	30.7	37.7	43.2	37.8	30.8	28.3	41.8	40.5	33.2
TEOM04 (Ulan Road)	0	22.25	27	31.75	22.5	29.0	37.9	46.8	50.1	35.3	28.5	26.5	36.6	34.5	29.0
TEOM06 (Ulan-Wollar Rd)	-[1]	-[2]	-[2]	-[2]	22.5	28.8	31.4	39.3	49.3	41.5	30.0	27.8	49.3	47.0	*
TEOM08 (Ulan-Wollar Rd)	-[1]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	-[2]	45.8	*
TEOM07 (Ulan Road)	-[1]	-[2]	-[2]	-[2]	-[2]	-[2]	27.9[3]	41.3	39.0	28.5	20.0	17.0	27.0	20.0	21.5
PM01 (Ulan Village HVAS)	44.75	29.75	30.5	34.5	33	28.8	32.4	49.0[5]	47.3	29.5	19.8	17.8	23.0	30.8	32.7
PM02 (Ridge Road HVAS)	-[1]	24.25	26.25	29.25	27	24.8	33.7	45.3[5]	46.7	31.0	21.3	18.5	21.3	31.5	23.9

[1] No background values as site established after 2009.
[2] No previous data as site not established.
[3] Calculated on 5 months of data.
[4] EA predictions based on the Open Cut Optimisation Modification 2021 Scenario
[5] 2018 values previous reported including extraordinary events
*No EA prediction was made for TEOM06 as it is representative of conditions 'upwind' of MCO (ie not a private residence).

6.4.3 SPONTANEOUS COMBUSTION

During the reporting period MCO continued to manage spontaneous combustion within Open Cut emplacement areas in accordance with the Air Quality Management Plan. Operational actions to manage instances of spontaneous combustion included:

- Watering to cool known heating
- Exposure, spreading, and excavation of the heating material
- Applying further water
- Cover with inert material, track roll and reshape
- Monitoring of area to identify any further areas of heating

6.4.4 REVIEW OF PARTICULATE CONTROL EMISSIONS

MCC currently apply a number of air quality management measures designed to minimise the impact on the surrounding environment due to on-site activities. A review of particle control emissions at the MCC against industry best practice was completed by Todoroski Air Sciences on behalf of MCO in 2023. The review investigated the range of potential best practice dust controls applicable to the MCC and concluded, the air quality controls applied continue to be considered equivalent with industry best practice.

6.4.5 GREENHOUSE GAS

Yancoal reports MCO emissions as a Safeguard facility under the National Greenhouse and Energy Reporting (NGER) Scheme. MCC Scope 1 and Scope 2 emissions calculated for the 2023-24 financial year were 348,198t CO_2-e. MCC Scope 1 and Scope 2 emissions calculated for the 2022-23 financial year were 317,366t CO_2-e. The approximate 10% increase in emissions can be attributable to an increase in production fleet and diesel use. Scope 1 and Scope 2 emissions attributable to the MCC are generally consistent with Environmental Assessment predictions.

The Stage 2 Preferred Project Report Environmental Assessment for the facility prepared in 2008 is the most relevant EA to review the forecast 2024 MCC Scope 1 and Scope 2 emissions profile. At the time of that assessment, it was estimated the MCC would emit 274,102 t CO2e Scope 1 and Scope 2 emissions in 2024. However, the assessment did not include the increased open cut and underground production associated with Stage 1 Modification 14, and Stage 2 Modification 2. The global warming potential of methane has since been updated (from a factor of 21 to 28). The national greenhouse accounts factors are also reviewed and updated annually (where required) by the Commonwealth Department of Climate Change, Energy, the Environment and Water.

The NGER data reported by the MCC is subject to review by the (Commonwealth) Clean Energy Regulator under the NGER Act and includes third party assurance.

MCO continues to investigate measures to improve energy efficiency and reduce the greenhouse gas emissions associated with the development including (since commencement of operations);

- Trucks have been repowered from Cummins to Penske showing an average of 19% fuel burn saving.
- Installed an engine and hydraulic management system - Liebherr Power Efficiency (LPE) in select excavators which has resulted in up to 12% in fuel savings.

- Upgrade product stockpile lighting to LED, which has resulted in more energy efficiency and reduced energy consumption.
- Upgrades to the CHPP which included:
    - Additional HV Power Factor Correction with target power factor 0.99 for efficient transfer of power,
    - The conversion of equipment from Direct-On-Line (DOL) to Variable Speed Drive (VSD) control resulting in improved energy efficiency,
    - Using a diesel alternative product with lower emissions generating potential in the coal handling and preparation plant.

6.5 BIODIVERSITY

MCO manages biodiversity in accordance with the Biodiversity Management Plan (BioMP). The BioMP was developed by MCO with input from experienced and qualified experts (EcoLogical Australia) to satisfy Condition 36, Schedule 3 of PA 05_0117 (as modified) and Condition 39, Schedule 3 of PA 08-0135 (as modified). In accordance with Condition 13(a), Schedule 2 of the Project Approvals (05_0117 and 08_0135), the BioMP is being staged and revisions of the plan will be submitted on a progressive basis. Offset management is also undertaken in accordance with relevant components of the Landscape Management Plan and Biodiversity Offset Management Plan (EPBC 2008/4444) and Biodiversity Offset Management Plan (EPBC 2013/6926).

The objectives of the management plans are to provide procedures and strategies to be implemented during the life of the Project to minimise biodiversity impacts on site (albeit in consideration of the approved impacts) and enhance biodiversity values on the offset areas. In addition to monitoring, the management plans describe procedures for:

- Vegetation Clearance Protocol – including Ground Disturbance Permits (GDPs), Pre-clearance surveys, habitat features, identification of suitable release locations.
- Collection and use of locally sourced native seed and supplementary tubestock.
- Strategies to manage vegetation onsite and improve vegetation connectivity.
- Additional biodiversity measures – e.g., progressive rehabilitation where available, weed and pest management, surface water management and erosion control, access restrictions, and bushfire management.

The objective of biodiversity monitoring is to evaluate the vegetation and fauna habitat condition at the MCC (including recovery and/or enhancement of native vegetation) and to identify appropriate management actions to be applied, where required. Biodiversity monitoring relating to the vegetation management zone also includes weed and vertebrate pest monitoring. Monitoring is used to measure success against the short, medium and long-term targets described in the management plans and identify the need for corrective actions.

Monitoring of mine rehabilitation areas is described in the Rehabilitation Management Plan (RMP).

6.5.1 BIODIVERSITY OFFSET SECURITY

Each biodiversity offset area (BOAs) is secured and managed for long-term biodiversity conservation. Security of BOAs include:

- Positive and Restrictive Covenants

- Transfer to the National Parks Estate
- Conservation Agreements
- Biodiversity Stewardship Agreement

The management and security mechanisms for each BOA, including approval requirements and status are provided in **Table 22**.

Table 22: Security Mechanism and Management Instrument

Environmental Approval	Offset Area	Security Mechanism	Status
NSW Stage 1 and EPBC 2007	Area 1 (Sydney Basin)***	Covenant	Secured
NSW Stage 1 and EPBC 2007	Portion of Area 1 (Sydney Basin)	National Park Estate*	Transferred to NPE
NSW Stage 1 and EPBC 2007 and 2017	Area 2 (Moolarben)	Covenant	Secured
NSW Stage 1 and EPBC 2007	Portion of Area 2 (Moolarben)	National Park Estate* & State Conservation Area	Transferred to NPE
NSW Stage 1 and EPBC 2007	Area 3 (Property 6)	Covenant	Secured
NSW Stage 1 and EPBC 2013	Clarke	Covenant	Secured
NSW Stage 1 and EPBC 2013	Clifford	Covenant	Secured
NSW Stage 1 and EPBC 2013	Elward	Covenant	Secured
NSW Stage 1 and EPBC 2013	Property 5	Covenant	Secured
NSW Stage 1 and EPBC 2013	Bobadeen (West and East)	Covenant	Secured
NSW Stage 1 Only	Moolarmoo	Covenant	Secured
NSW Stage 1 Only	Properties 24 and 25	Covenant	Secured
NSW Stage 2 and EPBC 2008	Onsite Offsets	Covenant	Secured
NSW Stage 2 and EPBC 2008	Old Bobadeen	Covenant	Secured
NSW Stage 2 and EPBC 2008	Libertus	Covenant	Secured
NSW Stage 2 and EPBC 2008	Ulan 18	Covenant	Secured
NSW Stage 2 and EPBC 2008	Dun Dun East	Covenant	Secured
NSW Stage 2 and EPBC 2008	Dun Dun West	Covenant	Secured
NSW Stage 2 and EPBC 2008	Avisford 1	National Park Estate**	Transferred to NPE

Environmental Approval	Offset Area	Security Mechanism	Status
NSW Stage 2 and EPBC 2008	Avisford 2	Conservation Agreement	Secured
NSW Stage 1 and EPBC 2017	OC2/3 Rehabilitation	Rehabilitation Management Plan	Ongoing
NSW Stage 1 and EPBC 2017	Gilgal	Biodiversity Stewardship Agreement	Secured

* To be managed by NPWS in accordance with the Goulburn River National Park and Munghorn Gap Nature Reserve Plan of Management (NSW National Parks and Wildlife Service).
** To be managed by NPWS in accordance with the Avisford Nature Reserve (ANR) Plan of Management (NSW National Parks and Wildlife Service).
*** Area 1 was modified in 2024 to excise areas of interaction associated with the Central-West Orana Renewable Energy Zone Transmission Project.

6.5.2 BIODIVERSITY OFFSET WORKS UNDERTAKEN

During the reporting period weed and feral animal monitoring and control works were undertaken throughout the offsets. Wild dog baiting programs were undertaken within biodiversity offset properties, in conjunction with the NSW Local Land Service (LLS) and neighbouring landholders. Pest control of wild goat and pig baiting programs were also undertaken within the biodiversity offset properties. Weed control works were undertaken throughout the offset areas focusing on Serrated Tussock, Blackberry, Blue Heliotrope, Tree of Heaven, St Johns Wort, African Lovegrass, Spiny Burr Grass and Prickly Pear. Native seed collection was continued within MCO owned lands and some offset areas

Revegetation works continued with approximately 30,240 stems planted to supplement natural regeneration in the Ulan 18, Bobadeen, Redhills and Dun Dun Biodiversity Offsets.

6.5.3 BIODIVERSITY OFFSET MONITORING

Following a comprehensive review during 2024 of the monitoring program and commitments contained within the approved management plans, the monitoring program was rationalised in order to reduce unnecessary repetition, consolidate requirements and provide more relevant data to MCO. Subsequent changes will be implemented to the monitoring program in 2025. Further details are presented in 6.5.5 Actions for next reporting period.

Flora and fauna monitoring during the reporting period included the Stage 1 Biodiversity Offset Areas (BOAs), Stage 1 Mod 9 offset areas, and the Stage 2 BOAs. Both fauna and flora monitoring included monitoring of analogue sites located in National Parks or State Conservation Areas. Monitoring locations are provided in **Appendix 2**.

Offset monitoring included:

- Full floristic surveys.
- Rapid assessment.
  Fauna surveys targeting diurnal and nocturnal birds, reptiles, amphibians, mammals, microbats and habitat assessment.

Monitoring is undertaken across two management zones that have been mapped within the BOAs. Each of these zones have defined strategic ecological management objectives, with an overall aim to achieve a sustainable landscape with improved overall ecological quality in the long term. The management zones are:

- Management Zone 1 (MZ1/OMZ1) – Enhancement of remnant vegetation.
- Management Zone 2 (MZ2/OMZ2) – Regeneration/revegetation of grassland to forest/woodland.

6.5.3.1 Offset Monitoring Results

6.5.3.2 Stage 1 Offset Monitoring Outcomes

All MZ1 areas met all the performance criteria outlined in the Land Management Plan (LMP). With all areas recording at least one overstorey species common to analogue sites, at least one overstorey species consistent with the range associated with each vegetation association and recorded more than four native groundcover species common to analogue sites and therefore met the related completion criterion.

For the MZ2 areas, all vegetation associations met the four of five performance criteria outlined in the LMP that apply at the current stage of development and are on a trajectory to meet all criteria in the long-term. With the exception of the Box Woodland MZ2 area within Area 1 BOA, which met all the performance targets in the LMP.

6.5.3.2.1 Trends in overall biodiversity values

The BioBanking Assessment Methodology (BBAM) site values scores (SVSs) (OEH 2014) provide an integrated metric of the general biodiversity values of a zone compared to the benchmark values of the associated vegetation type. They can be used to identify whether biodiversity values are being maintained or improved. For Stage 1 MZ1 areas, an assessment of SVSs demonstrated:

- There has been a continued improvement in biodiversity values within MZ1 areas of Area 1 in 2024, with average SVS increasing for the seventh year in a row, and SVS close to analogue values.
- Biodiversity values have been maintained within MZ1 areas of Area 2 and Area 3, with a slight decrease in average SVS. However, at Area 2, the SVS remains close to analogue values.

For Stage 1 MZ2 areas, an assessment of SVSs demonstrated:

- SVSs within MZ2 areas in Area 1 and Area 3 showed a slight decrease in average SVS compared to previous years.
- Average SVS decreased in 2024 within the MZ2 area within Area 2, which continues a downward trend. There are, however, established overstorey trees (two to three metres in height) and shrub species present within this monitoring site that are not yet contributing to cover along the transect at this time. Furthermore, natural and successful assisted regeneration of overstorey and midstorey species is occurring across the broader MZ2 area.

6.5.3.3 MOD 9 Offset Monitoring Outcomes

6.5.3.3.1 Assessment against BOMP Completion Criteria for MZ2 areas

Completion criteria will have been achieved when the vegetation has either achieved the relevant Biometric Vegetation Type (BVT) benchmark condition (for at least one upper structural layer and one ground cover class) or it can be demonstrated that it is on a self-sustaining trend towards the relevant benchmark condition.

All MZ2 areas within Clarke BOA continued to achieve all completion criteria.

At Bobadeen BOA, the MZ2 sites within the Blakely's Red Gum – Yellow Box Grassy Open Forest vegetation community area achieved all completion criteria. Three White Box – Yellow Box Grassy Woodland monitoring sites continue to achieve the groundcover criterion, with two site also achieving native overstorey/midstorey completion criterion. All other MZ2 sites achieved native groundcover benchmark condition.

At Moolarmoo BOA, all MZ2 monitoring sites achieved the groundcover criterion. Almost all sites have achieved the native overstorey/midstorey completion criterion, with only one site in White Box – Yellow Box Grassy Woodland yet to achieve this.

At Property 5 BOA and Property 24 & 25 BOA, all MZ2 areas within the Blakely's Red Gum – Yellow Box Grassy open Forest vegetation community achieved all completion criteria.

The Rough-barked Apple – Silvertop Stringybark – Red Stringybark Grassy Open Forest vegetation community within MZ2 areas achieved native groundcover benchmark condition. Native overstorey/mid-storey benchmark condition has not yet been achieved, however monitoring continues to show evidence of progression towards achieving the criteria.

6.5.3.4 Trends in overall biodiversity values

BBAM SVSs were used to determine whether biodiversity values are being maintained or improved.

All MZ2 areas of MOD 9 BOAs displayed an increase in SVS during autumn 2024 monitoring. MZ2 areas within Bobadeen, Property 5 and Moolarmoo recorded the highest average SVS recorded in 2024 reflecting an increase in biodiversity values. This increase is attributed to higher native species diversity and native groundcover observed at monitoring sites in autumn 2024.

6.5.4 STAGE 2 OFFSET MONITORING OUTCOMES

6.5.4.1.1 Assessment against Stage 2 BOMP Performance Indicators and Completion Criteria

The vegetation monitoring across the OMZ1 and OMZ2 sites at Stage 2 BOAs in autumn 2024 was conducted in accordance with the monitoring schedule and methodology in the Stage 2 BOMP and Cluster Management Plans (CMPs). Fauna monitoring was not conducted in 2024 in Stage 2 BOAs in accordance with the required three-yearly monitoring frequency, with the next round of monitoring due to be conducted in 2025. The key findings from the 2024 monitoring against the Performance Indicators and Completion Criteria are summarised below.

- For Offset Outcome 1(a) (woodland/forest) areas at all relevant BOAs are:
  - Expected to meet the Performance Indicator within the six yearly assessment

timeframe.

- Currently achieving all Completion Criteria or are expected to achieve all criteria by the target date (2065).

- For Offset Outcome 1(a) (DNG) areas within:
  - Dun Dun West, Libertus, Onsite Offset and Ulan 18 had sufficient natural and/or assisted regeneration and are therefore achieving this criteria.
  - Dun Dun East did not achieve this criterion, with no overstorey species recorded at monitoring sites. Assisted revegetation that has occurred in this BOA has been impacted by the bushfire. Additional active revegetation has been planned for this BOA that will assist in achieving Completion Criteria by the target date (2065).

- For Offset Outcome 1(b) (woodland) areas at all relevant BOAs are:
  - Currently achieving or are expected to achieve all Completion Criteria by 2065.

- All Offset Outcome 1(b) (DNG) areas:
  - All relevant BOAs had sufficient natural and/or assisted regeneration recorded to meet the associated performance indicator in 2024.
  - Dun Dun East BOA and Old Bobadeen BOA is currently achieving or is on a trajectory to achieve all Completion Criteria by 2065.

- For Offset Outcome 2(c) (woodland) areas:
  - The revegetation associated performance indicators have not yet been applicable in the Onsite BOA as revegetation work is only planned to occur in 2025. However, is on track to achieving the vegetated grasslands associated performance indicators.
  - Old Bobadeen is not currently achieving the Completion Criteria, however with more revegetation work planned in 2025 this should aid in being on track to achieving the associated Completion Criteria by 2065.

6.5.5 ACTIONS FOR NEXT REPORTING PERIOD

During the next period activities to be undertaken include review of management plans and revision where necessary, continued monitoring, assisted regeneration planning and implementation, fencing, track and fire trail works, continued weed and feral animal control works.

There are three existing flora and fauna monitoring sites that are expected to be impacted by Energy Co works that are planned to be commence mid-2025. Due to this, flora site's 14a (Area 1), 2c (Area 1), Fl31 (Property 24/25) and fauna site's Fa14a (Area 1), Fa2b (Area 1) and Mod9_Fa31 (Property 24/25) will need to be re-established during the 2025 monitoring campaign. These sites are expected to be scoped out and established with a monitoring stake installed, however it will not be monitored until 2026 as per the monitoring schedule.

Additionally, in 2025 all Stage 1 BOA's (Area 1 Redhills, Area 2 UG4/Westwoods and Area 3 Dexter Mountain) monitoring requirements will be undertaken in accordance with the methods prescribed in the Stage 2 Biodiversity and Offset Management Plan V6 2021 (EPBC 2008/4444 & EPBC 2017/7974) (BOMP).

All sites which don't have permanent survey markers at either the start and finish of the transects, will need to be established during monitoring. Plots Fl135 (Stage2_Fl157), Fl138 (Stage2_Fl158) and Fl69 will need stakes installed whenever the next round of monitoring occurs.

Review of the fauna monitoring program to be conducted after the collection of three years of annual monitoring data.

6.6 HERITAGE

MCO manages heritage in accordance with the Heritage Management Plan (HMP). The current HMP (Version 9) was approved in November 2023.

During the reporting period MCO continued the salvage and management of Aboriginal heritage sites associated with the project. The results of all survey and salvage activities during the period have been included in the MCO heritage database.

Annual inspections of historic heritage conservation areas were completed during 2024, the areas continue to be managed in accordance with the HMP.

6.6.1 ACTIONS FOR NEXT REPORTING PERIOD

Further salvage and management of Aboriginal and European heritage sites associated with the project may be completed during the next reporting period. Registered Aboriginal Party (RAP) groups will continue to be consulted and involved in due diligence and salvage works in accordance with the Heritage Management Plan.

6.7 BUSHFIRE

There were no major occurrences of bushfire across the MCC during the reporting period. MCO continued to implement the Bushfire Management Plan and conducted bushfire trail inspections and maintenance across MCO owned land. Inspection and maintenance work on fire trails will continue in the next reporting period.

6.8 WASTE MANAGEMENT

During the reporting period MCO continued to maintain a Total Integrated Waste Management Service to manage all waste streams generated on site and to maximise recycling. This includes general waste, cardboard and paper recycling, batteries, waste oil and steel. The volumes of total waste and recycled material removed from site are shown in **Table 23**. During the reporting period 73% of all waste removed from site was recycled. Waste volumes have been variable since 2013, with volumes increasing in association with the expansion of the operations, commencement of underground operations and construction works.

Table 23: Offsite waste removal volumes over the past five years

	2020	2021	2022	2023	2024
Total Waste (t)	3578.4	3485.2	3682.2	4157.8	4713.1
Recycled Waste (t)	2408.9	2578.4	2669.0	3059.9	3433.9
Percentage Recycled (%)	67%	74%	72%	74%	73%

7.0 WATER MANAGEMENT

MCO manages water in accordance with the Water Management Plan (WMP). The WMP (Version 7) and its component plans including Site Water Balance (SWB) (Version 5), Surface Water Management Plan (SWMP) (Version 7) and Groundwater Management Plan (GWMP) (Version 4). The WMP was revised and approved in November 2023.

During the reporting period, MCO undertook water monitoring and data review in accordance with the WMP. Surface water and groundwater monitoring sites are provided in **Appendix 2.** Surface water monitoring includes:

- Surface water quality and flow (monthly/6 monthly/event based);
- Stream health (annually);
- Channel stability (annually);
- Mine site water management structures quality (monthly); and
- Licensed discharge points.

Groundwater related monitoring includes:

- Groundwater levels/pressure (monthly);
- Groundwater quality (6 monthly);
- Groundwater take; and
- Potential seepage from mine water storages.

The groundwater monitoring includes the following lithological units:

- Quaternary alluvium;
- Tertiary aged unconsolidated sediments;
- Triassic sandstones;
- Permian coal measures;
- Ulan seam coal;
- Marrangaroo formation; and
- Basement units (consisting mostly of granites and metavolcanics).

During the period MCO continued to maintain and construct water storages (mine, brine, and sediment storages), extended the dewatering and transfer network and installed operational and construction related erosion and sediment controls.

Details of water licensing and associated take are provided in **Section 7.1**. A summary of the site water balance is provided in **Section 7.2**. A summary of surface water monitoring and groundwater monitoring results for the reporting period are provided in **Section 7.3** and **Section 7.4** respectively. Detailed surface water and groundwater monitoring results for the reporting period are provided at **Appendix 3F** and **Appendix 3G** respectively.

7.1 WATER LICENCES

A summary of water take and available water under water access licences for the reporting period (1 January to 31 December 2024), as well as a prediction for the next reporting period (1 January to 31 December 2025) is provided in **Table 24**. Water take is provided in six monthly periods to coincide with the water year (i.e. 1 July 2023 to 30 June 2024 and 1 July 2024 to 30 June 2025).

Table 24: Water Licences and Take

Water Access Licence	Description	Available Water (Units) [1]	2024 Estimated Water take (ML)[2]			2025 Forecast Water Take (ML)
			Jan – Jun	Jul - Dec	Total	
36340, 37583	Wollar Creek Water Source	436	54	68	122	190
37582, 19052, 41888	Upper Goulburn River Water Source	416	42	53	95	168
39799	Sydney Basin - North Coast Groundwater Sources	5,365	1,113	1,413	2,526	3,910

[1] One unit equivalent to 1.0 ML as per the *Available Water Determination Order for Various NSW Unregulated and Alluvial Water Sources (No. 1) 2018* and *Available Water Determination Order for the North Coast Coastal Sands and the North Coast Fractured and Porous Rock Groundwater Sources 2018 for the 2020/21 water year. Available water is reported in IWAS including carry-over and temporary transfers.*

[2] Groundwater Model and water balance used to estimate water take by water source.

[3] No water was directly extracted from WAL 39799 tagged groundwater extraction bores.

Water take is estimated as part of the Annual Review after the end of the calendar year. MCO determines water take in accordance with the approved Water Management Plan (WAMP). Water take is either groundwater inflow removed from the operation, water extracted from licenced bores or modelled take from surface and alluvial aquifers. The review estimate incorporates site water balance reconciliations, recirculation to underground and water take for the period. Indirect or passive take is based on modelling predictions for the relevant period.

Water take by water source has been determined in consideration of the most recent Groundwater Model associated with the UG4 Extraction plan. The estimated water take during the 2024 calendar year has been summarised in **Table 24**.

The available water for 2023/24 water year for all water sources was greater than the water take. MCO will continue to take necessary action to ensure that it holds sufficient water entitlements.

7.2 WATER BALANCE

MCO monitors the water balance for the operation to assist forecasting and management of site water. The site water balance (**Table 25**) for the reporting period was prepared with input from suitably qualified and experienced consultants Hydro balance and AGE. Site water storage reduced by 1,341ML during the reporting period due to a slight reduction in annual rainfall. The main demands were coal processing and dust suppression. The overall site water balance was reduced by 1,286ML (35.4%) throughout 2024.

During the Period, no water was extracted from licenced Production Bores.

Table 25: Site Water Balance

Water Sources (Inflows)	Volume (ML)
UCML Water	0
Groundwater Extraction (bores)	0
Rainfall / runoff	893
Groundwater inflows*	2,743
Total	3,636
Water Loss (Outflows)	
Evaporation	1,440
Seepage	0
Construction & dust suppression	1,506
Licensed Discharge	2,097
CHPP Demand	980
Underground demand	241
Total	6,263
Water Balance	
Inflows minus outflows	-2,627
Change in inventory	-1,341
Balance	-1,286 (35.4%)

*includes all Water Access Licence's referenced in table 24.

7.3 SURFACE WATER

7.3.1 SURFACE WATER QUALITY AND FLOWS

7.3.1.1 Surface Water Flows

The MCC is within the Upper Goulburn River and Wollar Creek catchments. Moolarben Creek and Sportsmans Hollow Creek are the primary tributaries of the upper Goulburn River catchment with Bora Creek a minor tributary. Wilpinjong Creek and its minor tributaries ("Eastern"[4] and Murragamba Creeks) drain to the Wollar Creek. Most of the adjacent watercourses are ephemeral in nature.

In accordance with the SWMP, stream flow gauges have been installed in the ephemeral Wilpinjong, Murragamba, and "Eastern" creeks. Stream flow gauges have also been installed in the Goulburn River in accordance with the UG4 Extraction Management Plan and recommendations from the Independent Advisory Panel for Mining. Surface water flow is heavily influenced by rain events. Data has been supplemented with data from Ulan Coal Mines as required. The recorded stream gauging is provided in **Appendix 3F**.

7.3.1.2 Surface Water Quality

Surface water monitoring was undertaken in the Goulburn River, Moolarben Creek, Wilpinjong Creek, Murragamba Creek, and "Eastern Creek" in accordance with the SWMP. Results varied both spatially and temporally consistent with fluctuations associated with rainfall events in ephemeral watercourses.

Monitoring results during the reporting period were influenced by above average rainfall. The findings are described in **Table 26** below. Water quality data for the period is presented in **Figure 6, Figure 7, Figure 8 and Figure 9**. Monitoring data is provided in **Appendix 3F**.

[4] "Eastern" Creek is a small intermittent watercourse that drains through the eastern section of the area Open Cut No. 4 as identified in the Moolarben Coal Stage 2 Surface Water Management Strategy (Appendix 6A).

Figure 6: Goulburn River Water Quality

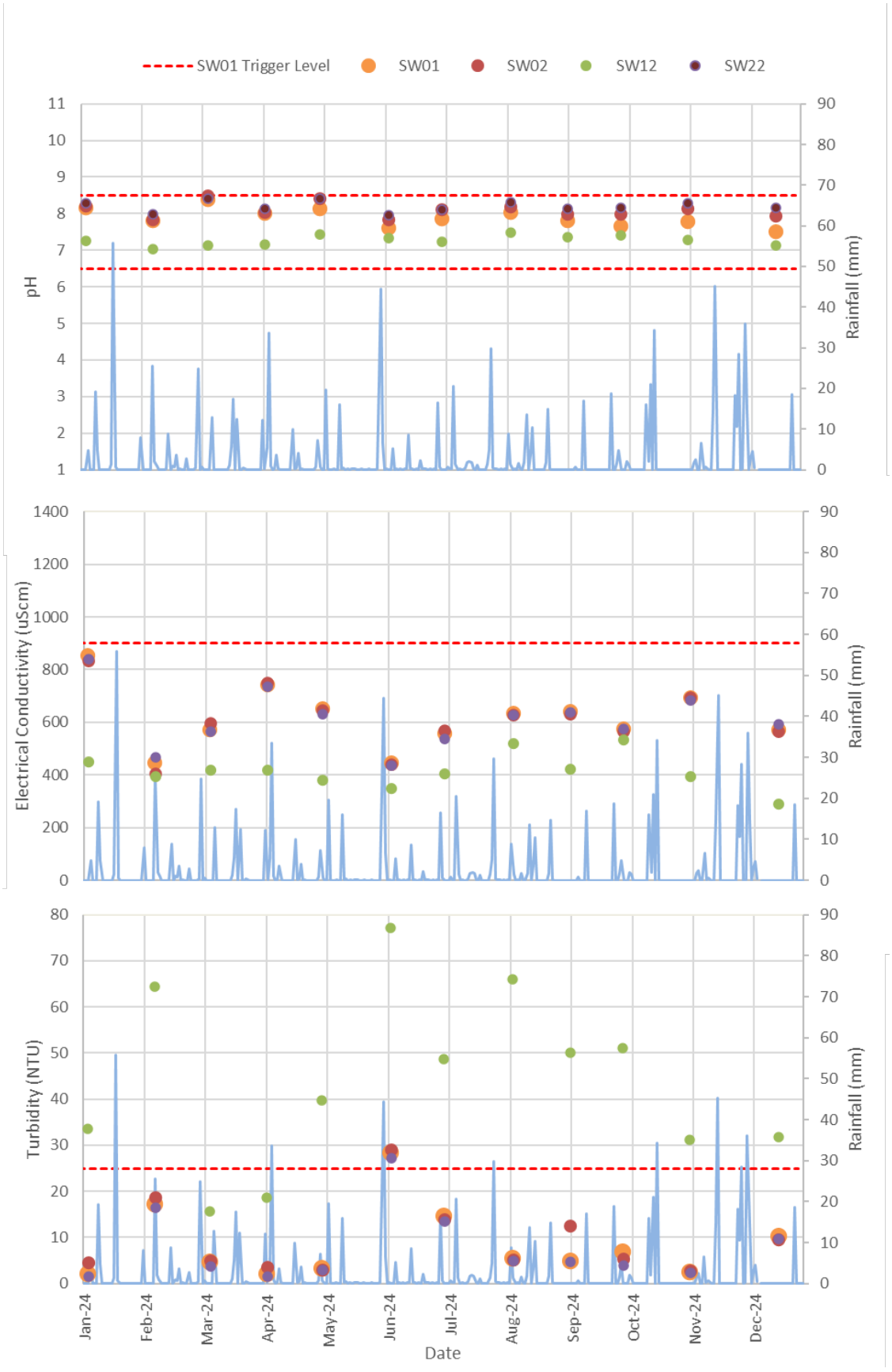


Figure 7: Moolarben and Lagoon Creek Water Quality

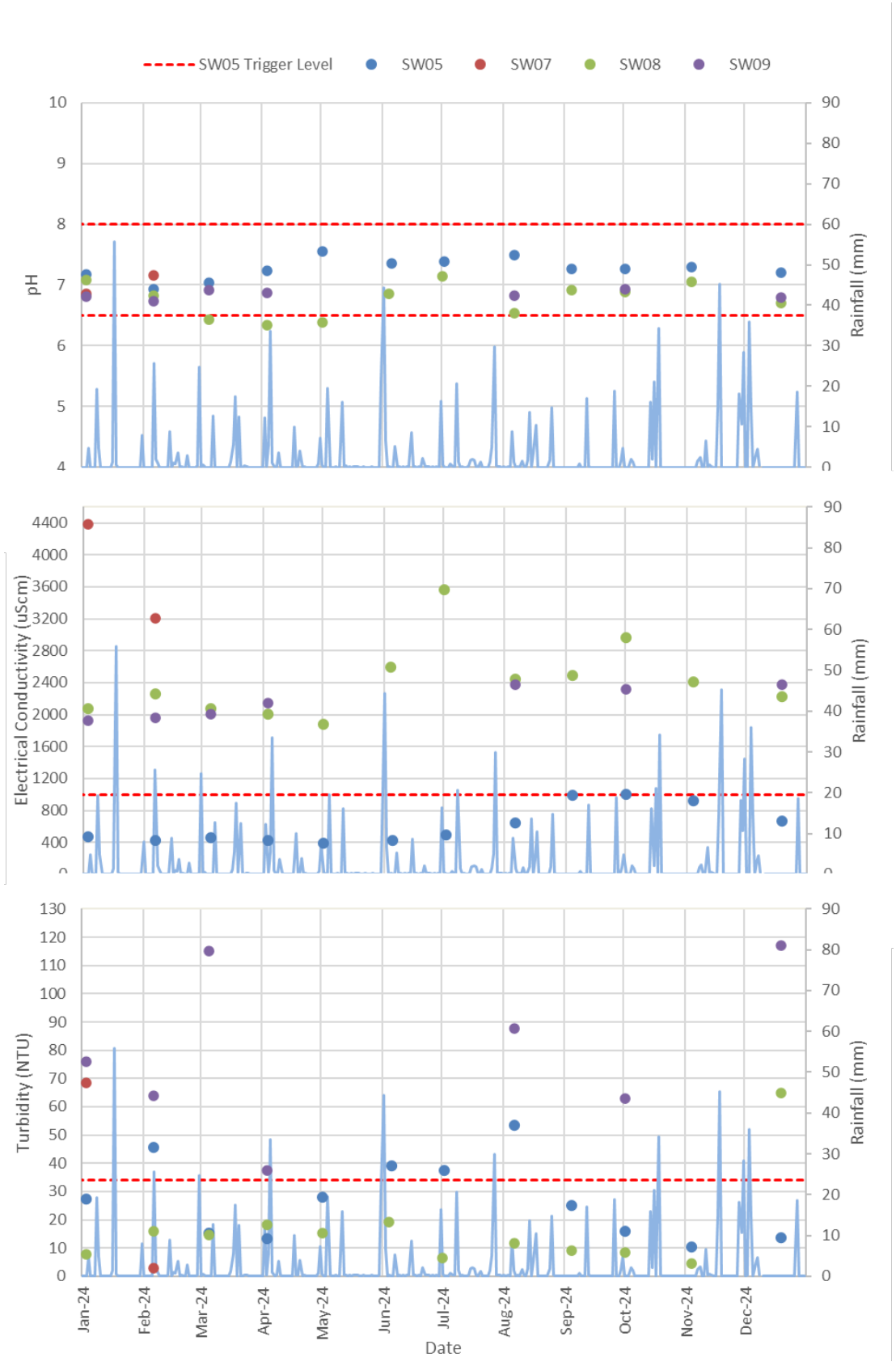


Figure 8: Murragamba, "Eastern" and Wilpinjong Creek Water Quality

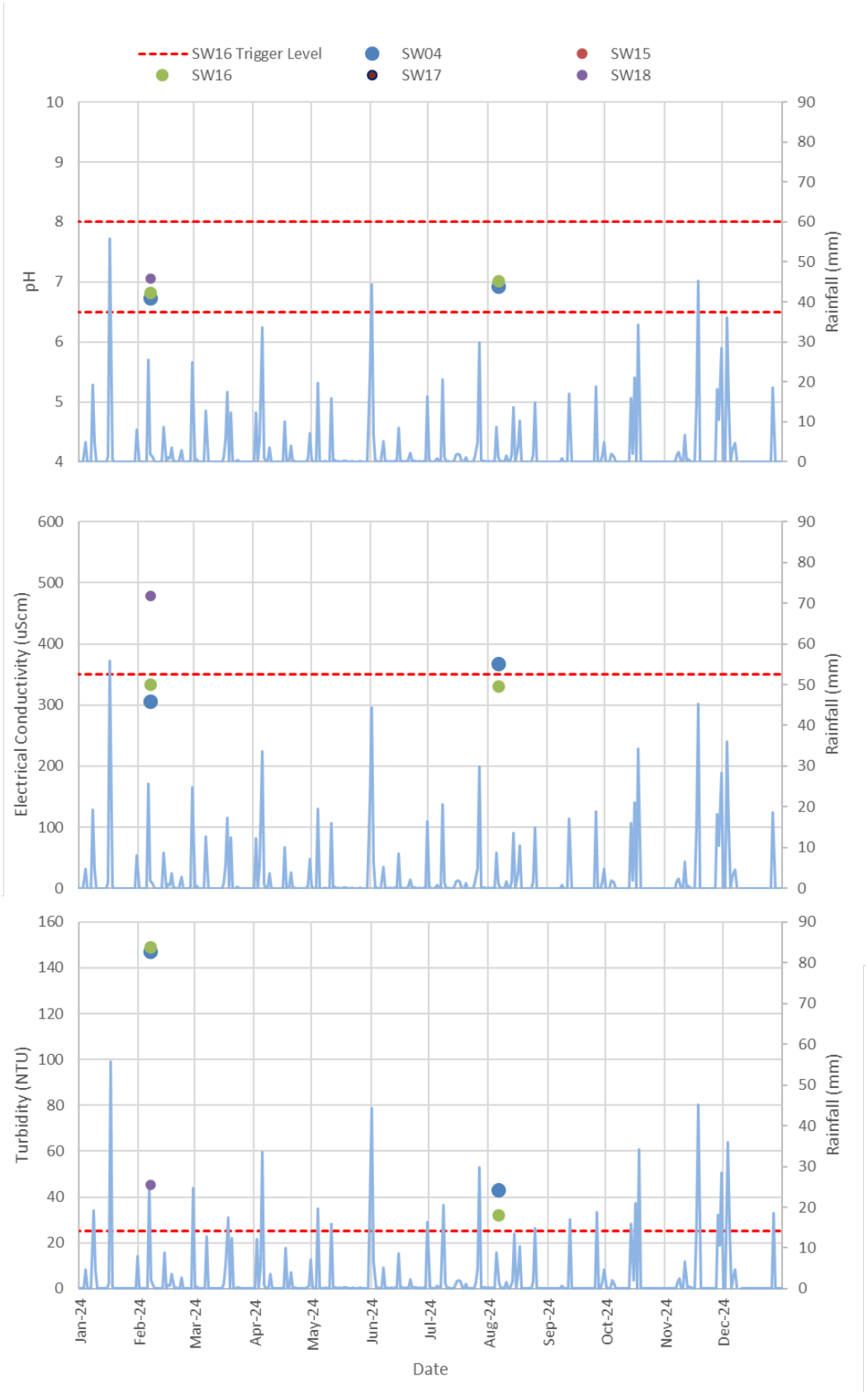
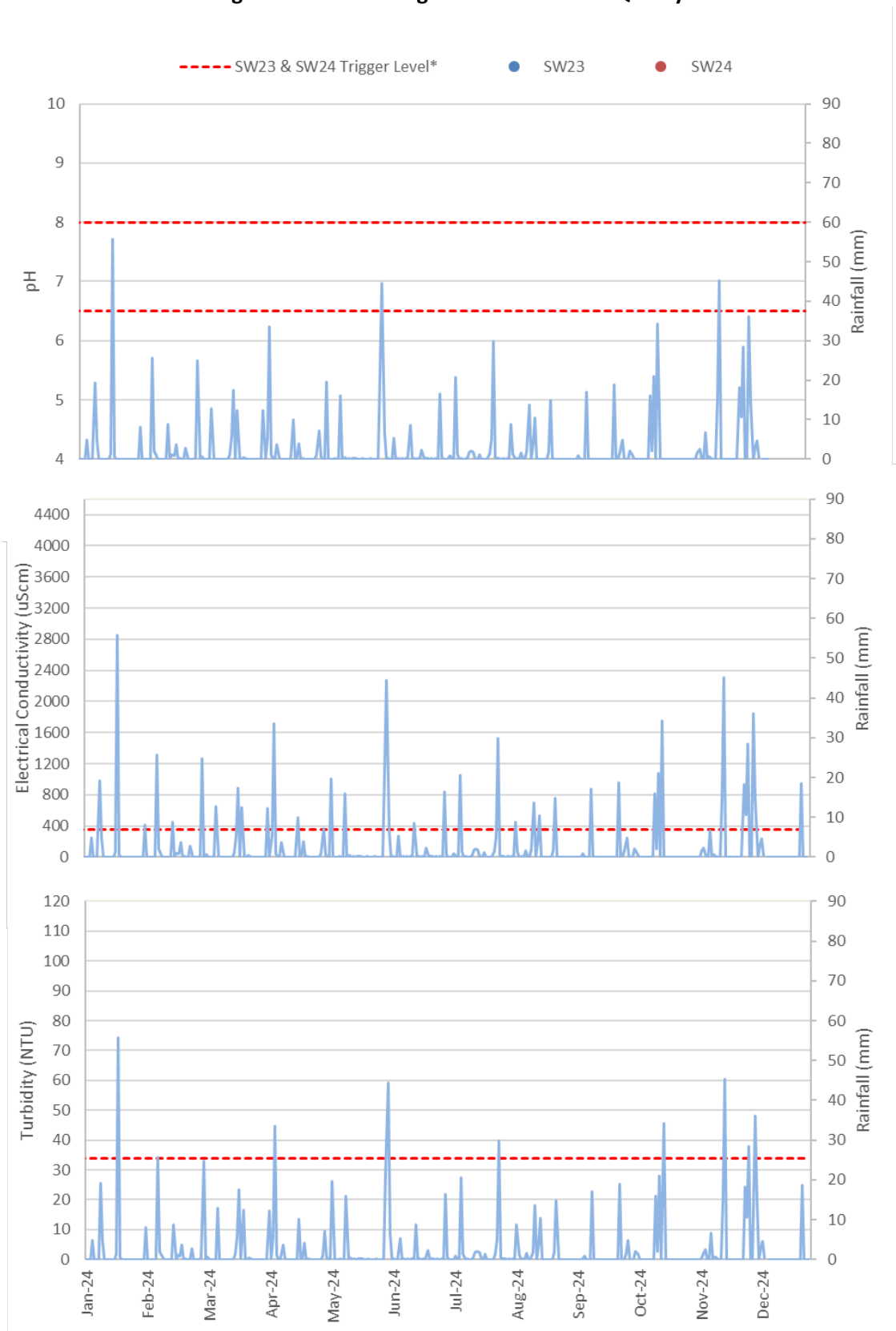


Figure 9: UG4 Drainage Line 1 & 2 Water Quality



** Triggers not applicable as mining has not commenced in LW406.*

Table 26: Comparison to baseline and trends

Location	Trigger Investigation Values (20th / 80th %ile or ANZECC Guideline)		Performance during the Monitoring Period (01/01/2024 – 31/12/2024)	Trend/ Key Management Implications (Monitoring Period 01/01/2020 – 31/12/2024)	Implemented / proposed Management Action
Surface Water Quality					
Goulburn River Sites; SW01* SW02 SW12 SW22	PH	*6.5 – 8.5*	Surface water pH in the Goulburn River at SW01 ranged from 7.7 to 8.1 (20th and 80th percentiles) during 2024, which is within the SW01 trigger levels (6.5 – 8.5). Surface water pH in the Goulburn River at SW02, SW12 and SW22 ranged from 7.1 to 8.3 (20th and 80th percentiles) during 2024. These values are consistent with historical data from previous years.	pH readings range between 7.7 and 8.4 (20th and 80th percentiles) for SW01, SW02 and SW22, between 7.0 and 7.6 (20th and 80th percentiles) for SW12. There has been a slight upward trend in pH at SW01, SW02 and SW22 over the last year.	Continue the implementation of the SWMP. MCO will review, and if necessary, revise the SWMP in accordance with Schedule 5 condition 5 and Schedule 6 condition 5 of PA05_0117 and PA08_0135 respectively.
	EC	*900*	The EC readings in the Goulburn River at SW01 were generally consistent with the samples over the last five years. EC readings at SW01 ranged from 558 to 684 µS/cm (20th and 80th percentiles) and all samples were less than the SW01 trigger level (900 µS/cm). EC readings in the Goulburn River at SW02, SW12 and SW22 ranged from 384 µS/cm to 684 µS/cm (20th and 80th percentiles) during 2024.	EC readings range between 532 and 720 µS/cm (20th and 80th percentiles) for SW01, between 3108 and 745 µS/cm (20th and 80th percentiles) for SW02, SW12 and SW22.	
	Turbidity	*25*	The turbidity readings in the Goulburn River at SW01 were generally consistent with the historical data. Turbidity readings at SW01 ranged from 2.6 to 13.6 NTU (20th and 80th percentiles) and all samples were below than the SW01 trigger level (25 NTU).	Turbidity readings range between 2.0 and 11.8 NTU (20th and 80th percentile) for SW01, and between 2.4 and 43.2 NTU (20th and 80th percentile) for SW02, SW12 and SW22.	

Location	Trigger Investigation Values (20th / 80th %ile or ANZECC Guideline)		Performance during the Monitoring Period (01/01/2024 – 31/12/2024)	Trend/ Key Management Implications (Monitoring Period 01/01/2020 – 31/12/2024)	Implemented / proposed Management Action
			Similarly, the turbidity samples over 2024 in SW02, SW12 and SW22 in the Goulburn River were generally consistent with historical data.		
Moolarben and Lagoons Creek Sites; SW05* SW07 SW08 SW09	PH	*6.5 – 7.7*	Surface water pH in Moolarben Creek at SW05 ranged from 7.2 to 7.4 (20th and 80th percentiles) during 2024, which is within the SW05 trigger levels (6.5 – 8.0). pH at the other Moolarben and Lagoon Creek locations was consistent with the historical data.	pH at SW05 was neutral to slightly alkaline ranging from 7.1 to 7.7 (20th and 80th percentiles) and generally remained within the trigger levels of 6.5 to 8.0 defined for this location. Most readings are within the trigger levels, however there are several low readings in 2020 and two high readings in September 2022 (8.33) and January 2023 (8.11). There were several low pH readings in SW08 in 2020 and in 2024. These readings occurred during very low to no-flow conditions. There was a slight increase in pH levels across all monitoring locations in Moolarben Creek during 2022 in comparison to the previous year, but this trend has somewhat reversed over 2023 and 2024.	
	EC	*1,000*	Surface water EC in Moolarben Creek at SW05 ranged from 425 to 869 µS/cm (20th and 80th percentiles) during 2024. Upstream (non-mine impacted) EC readings continued to be elevated, although less than historical records.	EC readings at SW05 range between 462 and 968 µS/cm (20th and 80th percentiles) and are generally lower than the SW05 trigger level. All of the samples in SW05 between June and November 2021 exceeded the SW05 trigger level. An investigation into the exceedances was undertaken by HEC (2021),	

Location	Trigger Investigation Values (20th / 80th %ile or ANZECC Guideline)		Performance during the Monitoring Period (01/01/2024 – 31/12/2024)	Trend/ Key Management Implications (Monitoring Period 01/01/2020 – 31/12/2024)	Implemented / proposed Management Action
				which concluded that they were caused by spillway overflows, releases and seepage from Moolarben Dam. Moolarben Dam contained higher EC water from the upstream catchment which contributes higher EC water as evidence by the historical EC readings at SW07, SW08 and SW09. In 2022 and 2023, the EC readings had exceeded the trigger level four times in April/June/December 2022 and January 2023. The higher EC levels in April and June correspond with increased EC levels in the upstream sampling location. EC is naturally elevated in these watercourses, with EC often higher at the upstream locations than the downstream locations.	
	Turbidity	*34*	The turbidity readings in Moolarben Creek at SW05 ranged from 14.0 to 38.8 NTU (20th and 80th percentiles). Three consecutive exceedances of the SW05 trigger level (34 NTU) were June, July and August 2024, triggering a water quality investigation. The internal investigation concluded that the elevated turbidity levels occurred due to natural influences, which is supported by the elevated levels observed at SW09 during this period, which is upstream of MCO.	The 20th percentile turbidity readings for all four monitoring locations ranges between 0.6 and 8.0 NTU, while the 80th percentile ranges between 7.9 and 63.9 NTU. There are several recordings that exceed the trigger level between 2020 and 2024, however they are generally consistent with historical recordings. The elevated turbidity readings are associated with rainfall events or during low flow conditions. Turbidity readings at SW05 range from 7.2 to 24.5 NTU (20th and 80th percentile) and are	

Location	Trigger Investigation Values (20th / 80th %ile or ANZECC Guideline)		Performance during the Monitoring Period (01/01/2024 – 31/12/2024)	Trend/ Key Management Implications (Monitoring Period 01/01/2020 – 31/12/2024)	Implemented / proposed Management Action
			Turbidity readings at the other Moolarben Creek and Lagoon Creek locations were all consistent with the historical data with elevated readings associated with flow from recent rainfall events.	below the trigger level of 34 NTU defined for this location (with the exception of five exceedances in February 2020, February 2024 and June, July and August 2024). Turbidity readings following significant rainfall events (>30 mm in 24 hours) at SW05 are often above the trigger level with rainfall events also being more frequent in 2024. There is no discernible trend in turbidity at these locations over the last five years.	
Murragamba, "Eastern" and Wilpinjong creeks Sites; SW04 SW15 SW16* SW17 SW18	PH	*6.5-8.0*	The surface water pH readings in Wilpinjong Creek at SW16 were 6.8 and 7.0, which is within the SW16 trigger levels (6.5 – 8.0). The pH readings at SW04 and SW18 were consistent with the historical data.	The pH readings range between 6.7 and 7.2 (20th and 80th percentiles) for downstream Murragamba Creek (SW04). "Eastern Creek" has pH ranging between 5.7 and 7.2 (20th and 80th percentiles) for SW17. Wilpinjong Creek has pH ranging between 6.4 to 7.0 (20th and 80th percentiles) for SW15 and 6.4 to 7.1 for SW18. The pH values at SW16 range from 6.7 to 7.1 and are within the trigger levels for Wilpinjong Creek defined at this location (6.5 – 8.0). The pH readings at each of the gauges show a slight increase from 2020 to 2022, before appearing to reduce again in 2024.	
	EC	*714*	The surface water EC readings in Wilpinjong Creek at SW16 were 334 and 330 µS/cm, which are below the SW16 trigger level (714 µS/cm).	The EC in Murragamba Creek ranges between 225 and 445 µS/cm (20th and 80th percentiles) for SW04. "Eastern Creek" has EC ranging between 206 and 513 µS/cm	

Location	Trigger Investigation Values (20th / 80th %ile or ANZECC Guideline)		Performance during the Monitoring Period (01/01/2024 – 31/12/2024)	Trend/ Key Management Implications (Monitoring Period 01/01/2020 – 31/12/2024)	Implemented / proposed Management Action
			The EC readings at SW4 and SW18 were generally consistent with the historical data.	(20th and 80th percentiles) for SW17. Wilpinjong Creek has EC ranging between 125 to 188 µS/cm (20th and 80th percentiles) for SW15 and 180 to 465 µS/cm at SW18. The EC reading at SW16 range from 137 to 274 µS/cm and are within the trigger levels of 714 µS/cm defined at this location. EC results at Murragamba Creek and "Eastern Creek" show a slight reduction across the 2020 to 2022 period. EC at SW16 is generally within the EC trigger level, with exception of two readings in December 2022 and January 2023. During this period, releases associated with the TER have influenced monitoring results.	
	Turbidity	*25*	The turbidity readings in Wilpinjong Creek at SW16 were 149 NTU (February) and 32 NTU (August), which were above the SW16 trigger level (25 NTU). All other turbidity readings were consistent with historical data.	Murragamba Creek has turbidity readings between 10.2 and 49.3 NTU (20th and 80th percentiles) for SW04. "Eastern Creek" has turbidity readings between 24.7 and 69.3 NTU (20th and 80th percentiles) for SW17. Wilpinjong Creek has a turbidity ranging between 12.5 to 48.4 NTU (20th and 80th percentiles) for SW15 and 9.2 to 48.9 NTU at SW18. The turbidity readings at SW16 range from 9.7 to 29.7 NTU. Several readings at SW16 exceed the trigger level set for this location. High readings in turbidity are tied to	

Location	Trigger Investigation Values (20th / 80th %ile or ANZECC Guideline)		Performance during the Monitoring Period (01/01/2024 – 31/12/2024)	Trend/ Key Management Implications (Monitoring Period 01/01/2020 – 31/12/2024)	Implemented / proposed Management Action
				the extended dry periods followed by the intermittent flows. There is a slight reduction in turbidity at these locations over the last five years.	
Drainage Line 1 & 2 SW23* SW24*	pH	*6.5 – 8.0***	Due to being dry during the reporting period no sample was taken.	ND	
	EC	*350***	Due to being dry during the reporting period no sample was taken.	ND	
	Turbidity	*25***	Due to being dry during the reporting period no sample was taken.	ND	

* Monitoring site associated with trigger investigation levels
** Triggers will be applicable from the commencement of LW406
ND No data (i.e. less than 24 monitoring points)

7.3.1.3 Rainfall Event Sampling

As per MCO's approved SWMP, rainfall sampling is undertaken where rainfall exceeds 30mm in 24 hours. During the reporting period, there were seven occasions where rainfall events triggered the requirement to collect additional water samples. All samples were collected within the prescribed timeframes.

7.3.2 WATER DISCHARGES

MCO is licensed to discharge water in accordance with its Environment Protection Licence (EPL 12932) subject to various water quality and rainfall criteria.

During the reporting period MCO released water from EPA Licenced Discharge Points 1. A total of 2,097 megalitres of water were released from MCO during 2024. All compliance limits were met during releases. Discharge results are presented in **Figure 10** to **Figure 14**. A summary of discharge results is provided in **Appendix 3F**.

During the reporting period one incident occurred that resulted in the release of sediment laden water at the MCC.

- On 18 November 2024 sediment laden stormwater runoff from the OC403 pit progression area breached erosion and sediment controls following an intense rainfall event. The sediment laden stormwater runoff flowed into the Murragamba Creek Catchment and was captured in the Murragamba Clean Water Diversion Dam (CWD01). MCO self-reported the incident to the EPA on the 18th of November 2024.

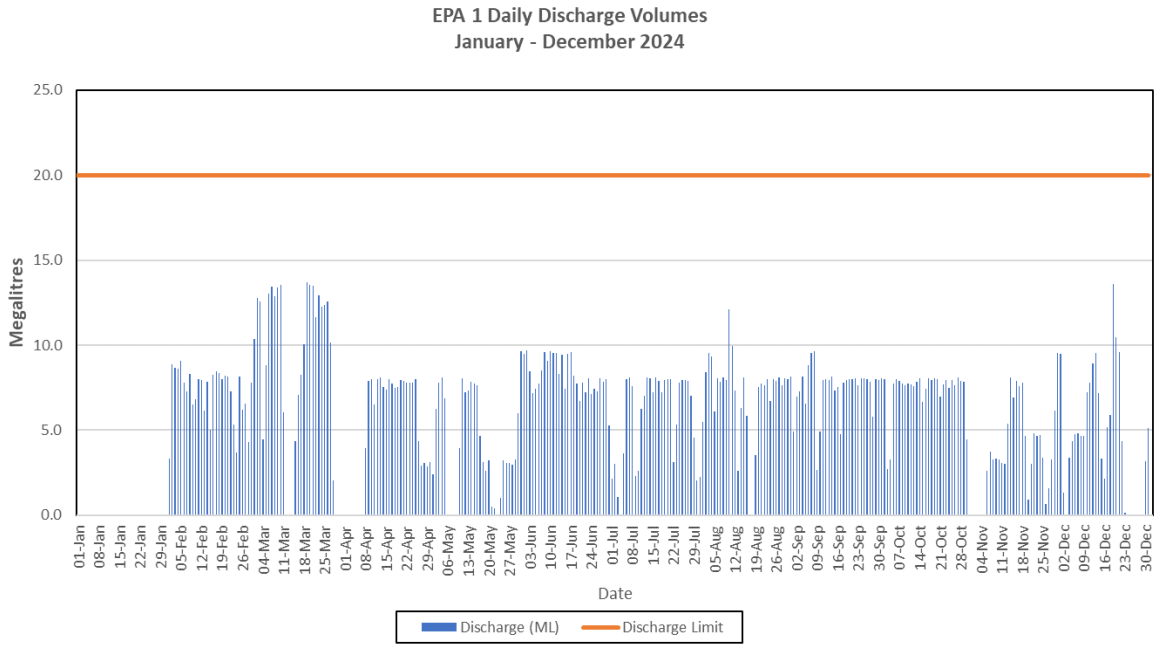


Figure 10 Daily Discharge Volumes[1] EPL LDP 1

1 As per the EPL 12932 variation approved 27 April 2023 the daily discharge volume limit increased to 20 ML/d.

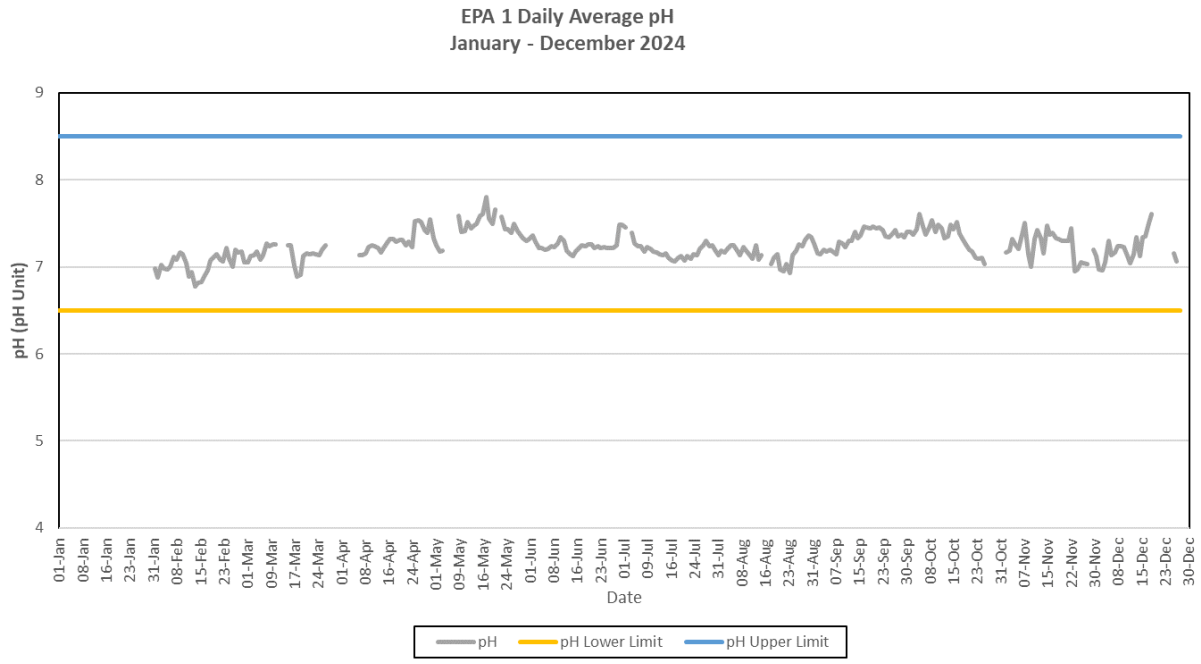


Figure 11: EPL LDP 1 Daily Average pH

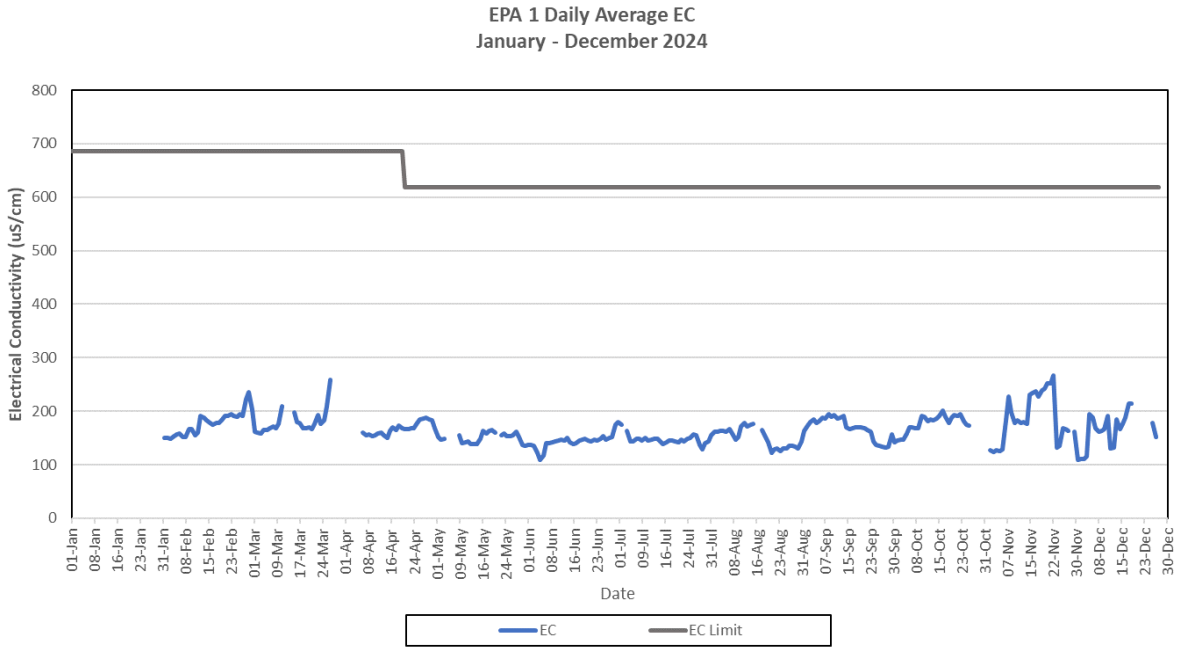


Figure 12: EPL LDP 1 Daily Average EC[2] (µs/cm)

[2] As per the EPL 12932 variation approved 27 April 2023 the Electrical Conductivity limit reduced in accordance with the Independent Water Quality Assessment.

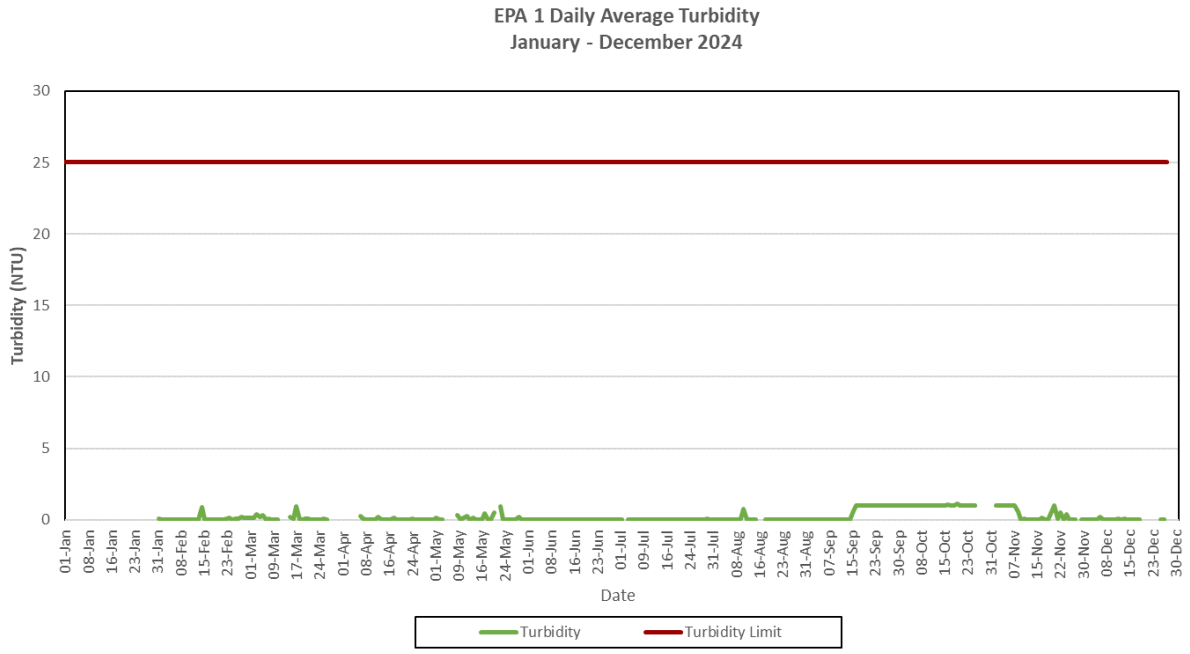


Figure 13: EPL LDP 1 Daily Average Turbidity (NTU)

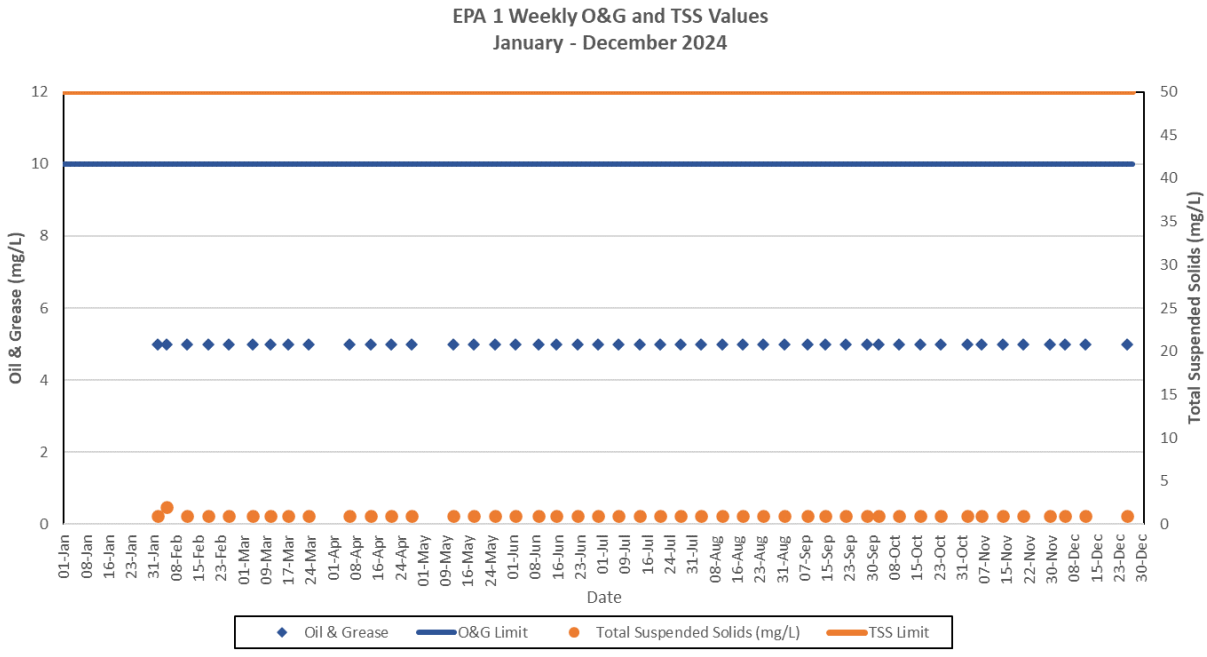


Figure 14: EPL LDP 1 Weekly Oil & Grease and Total Suspended Solids (mg/L)

7.3.3 STREAM HEALTH MONITORING

Stream health monitoring was undertaken in autumn and spring 2024 including Aquatic Habitat Condition (RCE Index), Aquatic Macroinvertebrate Diversity, Pollution Tolerance SIGNAL2 Scores. Trigger investigation values have been incorporated into the SWMP with investigations triggered when values fall below the trigger value. Scores from the autumn and spring monitoring programs all identified above these values.

The MCO Stream Health autumn 2024 field survey was undertaken between the 8th and 11th April and the spring 2024 survey between the 28th and 31st October. The 2024 sample year was characterised by a shift in the prevailing dry weather patterns experienced for the spring (October) 2023 stream health survey, to more consistent wet weather and occasional intense storm activity in 2024. The combined monthly total for November 2023 to March 2024 (381mm) was higher than the combined mean total (317mm), owing to higher than average rainfall recorded in November 2023 (93mm) and January 2024 (95mm). March 2024 recorded close to average rainfall (51mm) and the week leading into the autumn 2024 survey was wet with 52mm recorded over five rainfall days (including 33mm three days prior to sampling), with light showers over the course of the autumn 2024 survey period totalling 4mm.

“Eastern Creek” site SH16 in the Wilpinjong Creek catchment and upper Moolarben Creek site SH21 were completely dry for both surveys in 2024, and Murdering Creek site SH22 was dry for the autumn 2024 only .

Surface water was limited to isolated refuge pools in Bora Creek site SH04 (a tributary to the Goulburn River) in spring only, and in Murdering Creek site SH22 plus Wilpinjong Creek catchment sites SH15 and SH14 for both surveys.

Summaries of stream health index results for all monitoring are provided below.

7.3.3.1 Autumn 2024

Aquatic Habitat Condition (RCE Index) – The autumn 2024 RCE values ranged between 48% (at SH08) and 85% (SH24) over all monitoring sites (**Figure 3-e**). In comparison to the previous spring 2023 survey, there were small changes to RCE scores at nine of the 14 sites, which were attributable to changes in the composition of detritus among site pools or the quantities of filamentous green algae and macrophytes. Most of the changes in detritus composition were increased category scores related to increases in the levels of coarse particulate material accumulated in the edge areas of site pools. Moolarben Creek site SH10 was the only site to record a reduction in stream detritus category score in autumn 2024 due to decreased quantities of coarse detritus, likely resulting from recent scouring effects from flows. Overall, the changes to RCE scores were low in autumn 2024 (<2%).

Aquatic Macroinvertebrate Diversity – The autumn 2024 site macroinvertebrate diversity values ranged between 12 taxa (SH15) and 33 taxa (SH05) (**Figure 3-e**), and were above the established trigger values at SH02, SH06 and SH17. Among the nine sites for which pre-mining mean values exist, Bobadeen Creek site SH01 and downstream Goulburn River site SH02 were the only sites to record diversity values lower than their per-mining mean values in autumn 2024. Both SH02 and SH01 contain the highest pre-mining mean value over all sites (at 31.4 and 27.6 taxa respectively), and both sites recorded their highest survey taxa diversity within the pre-mining period (39 taxa at SH02 and 32 taxa at SH01). Site SH05 (33 taxa) and Murragamba Creek site SH14 (29 taxa) both recorded their highest diversity values to date in autumn 2024 and Wilpinjong Creek recorded its lowest (12 taxa), and the overall mean (± standard deviation SD) site taxa diversity for the long-term (with greater than three

years of data) monitoring sites in autumn 2024 (25.2 ± 6.0 taxa per site) was within the range of post drought means.

Pollution Tolerance SIGNAL-2 Scores – The autumn 2024 SIGNAL-2 values ranged between 3.00 at SH10 and 4.15 at Goulburn River site SH13 (**Figure 3-e**). The SIGNAL-2 values at SH02, SH06 and SH17 were well above established trigger levels. The autumn 2024 SIGNAL-2 values recorded at SH10 and Ryans Creek site SH12 were the only values below their respective pre-mining mean values, with SH14 recording its highest SIGNAL-2 value to date. The overall long-term mean site SIGNAL-2 value for autumn 2024 (3.64 ± 0.35) was the lowest since the drought and early post-drought period in 2018 to 2020.

7.3.3.2 Spring 2024

Aquatic Habitat Condition (RCE Index) – The spring 2024 site RCE scores ranged from 49% (SH08 and SH20) and 84% (SH24) (**Figure 3-e**). The site riparian and channel conditions were more stable across the autumn to spring period, with minor changes recorded at six of the 15 monitoring sites. Whereas an improvement in the composition of detrital reservoirs was noted among refuge pools at SH22, higher proportions of finer detrital material at upstream Moolarben Creek site SH24 resulted in a minor reduction in RCE score. There were also subtle variations in the relative levels of filamentous green algae and macrophytes recorded at five sites (SH01, SH05, SH08, SH10 and SH14), with most changes in category values owing to increased macrophyte growth between surveys or decreased algal coverage. As noted for the autumn 2024 survey, the overall changes to the spring 2024 RCE scores were minor (<1%).

Aquatic Macroinvertebrate Diversity – The spring 2024 site macroinvertebrate diversity ranged from 19 taxa at SH08 to 36 taxa at SH13 (**Figure 3-e**) and were above the established trigger values at sites SH02, SH06 and SH17. For the long-term monitoring sites at which pre-mining values exist, all recorded macroinvertebrate taxa diversities were within or above their pre-mining mean value ranges. The spring 2024 survey mean site taxa diversity for the long-term monitoring sites (28.3 ± 4.8 taxa per site) was the second highest mean diversity recorded over the past 12 years, surpassed only by the spring 2022 survey.

Pollution Tolerance SIGNAL-2 Scores – The spring 2024 SIGNAL-2 values ranged between 3.13 at SH08 and 4.58 at SH20 which was its highest SIGNAL-2 value to date, (**Figure 3-e**), and were above the established trigger values at sites SH02, SH06 and SH17. Site SH10 was the only site to record a spring 2024 SIGNAL-2 value (3.14) below its pre-mining mean value (3.16), and the overall long-term mean site SIGNAL-2 value for spring 2024 (3.74 ± 0.48) showed a minor improvement compared to the autumn survey, owing mostly to improved SIGNAL-2 values recorded across the Goulburn River catchment sites.

7.3.3.3 Trends

Following on from the consistent precipitation which produced record rainfall totals in 2022, weather patterns in 2023 were characterised by increasing frequency of dry spells and declining rainfall totals on a month-to-month basis. Whilst the 2024 surveys recorded more regular, above average rainfalls, Moolarben Creek tributary site SH22 was dry in autumn 2024 and SH16 and SH21 were dry for both surveys.

The site RCE results vary between sub-catchments due mostly to the surrounding land-use with the more forested sites in the lower catchment area (Goulburn River) scoring higher than sites situated in historically agricultural zones (upper Moolarben Creek and Wilpinjong Creek). Most of the inter-

seasonal variations in RCE scores over recent times have been attributed to fluctuations in the levels of aquatic vegetation between surveys or flow event impacts to channel sediments or detritus. Most of the study site RCE scores have remained fairly consistent over the five-year period.

The macroinvertebrate taxa diversity results have fluctuated over the past five years with varied responses to prevailing environmental conditions across different sub-catchment areas. Most sites have displayed signs of post 2019 drought recovery across 2020 to 2022, with the larger sites located in stream with permanent flows (e.g. inline Goulburn River sites and Moolarben Creek site SH06) generally showing a trend of increasing diversity over the period.

The site SIGNAL-2 results since the 2019 peak drought period have shown a steadily increasing SIGNAL-2 trend with record high values in spring 2022 and subsequent declines in 2023. Inter-seasonal trends in Moolarben Creek site SIGNAL-2 results followed a similar pattern to that noted for macroinvertebrate diversity with the Goulburn River sites continuing to recorded the highest SIGNAL-2 values as a group.

There were no indications of MCO mine-related impacts to stream health or aquatic habitat conditions in 2024, with differences between sites generally relating to changes to the prevailing climatic conditions and its impact on the study area aquatic and riparian habitat attributes.

7.3.4 CHANNEL STABILITY MONITORING

The channel stability monitoring program occurred between 7th November and 10th December 2024 at locations in **Appendix 2**. Monitoring involved visual and written observational surveys of erosive and depositional features, cross sections at strategic locations and photographic records.

7.3.4.1 Monitoring results

Bora Creek channel stability monitoring results are comparable with previous monitoring. Continuing vegetation coverage and longitudinal morphology along Bora creek, combined with no significant flow events, have contributed to a similar average activity rating. One site has been downgraded from ‘Stable’ to ‘Potentially Stabilising’.

Moolarben Creek channel stability monitoring trend is considered comparable to the results previously recorded. Continuing vegetation coverage was noted at several assessment locations along Moolarben creek. In particular, one site has improved to ‘Very Stable’, three sites have improved to ‘Stable’, and four sites have improved to ‘Potentially Stabilising’.

Murragamba Creek channel stability monitoring trend is considered comparable to the results previously recorded. Minor improvements to activity scores for one site and one downgraded site along Murragamba Creek have resulted in a similar average activity rating when compared to 2023.

Wilpinjong Creek channel stability monitoring results trend is considered comparable to the results previously recorded. A decrease in vegetation coverage was noted at many assessment locations along Wilpinjong creek, including both the creek walls and floor. Two sites have improved to ‘Stable’, One site improved to ‘Active’, whilst One site decreased to ‘Active’, and another downgraded to ‘Potentially stabilising’. The decrease in vegetation was the only contributing factor to the lower scores.

"Eastern Creek" channel stability monitoring results identified continuation of morphological processes identified in previous monitoring. Whilst some improvement in longitudinal morphology along "Eastern Creek" was noted, neither of the two sites had a change in their overall status.

7.3.4.2 Trends

Channel stability within each creek continued to vary during the period. Locations vulnerable to erosion were characterised by steep banks, little vegetative cover and exposed dispersive subsoil, situated in historically agricultural zones (upper Moolarben Creek and Wilpinjong Creek). More stable locations were characterised by vegetated banks with low gradient slopes in more forested areas. Fluctuations in trends can be attributed to changing climatic conditions with consecutive above annual average rainfall throughout 2020 until 2023, with 2024 characterised by increased rainfall totals on a month-to-month basis. Moolarben creek has been the only reporting program that has had a category change in the average activity rating in the previous 4 years.

7.3.5 EFFLUENT

During the period MCO continued to operate four sewerage treatment plants. Discharge quantity was within design limits during the period. Discharge quality is presented in **Appendix 3F**.

7.4 GROUNDWATER

MCO monitors a network of piezometers comprising standpipe bores and vibrating wire piezometers (VWPs) in accordance with the Groundwater Management Plan (GWMP). The monitoring program includes monthly monitoring of standing water level in standpipes, and daily pressure readings for vibrating wire piezometers (VWPs) which are downloaded each month. Groundwater level and quality trigger values have been established that when exceeded determine the need for investigation and possible response actions. Groundwater level triggers are assigned in the Alluvial and Triassic sandstone aquifers. The Permian coal measures does not include water level triggers as it is already extensively affected by past mining and is predicted to undergo further impact from ongoing mining and contains groundwater of generally poor quality. Water quality triggers are assigned in standpipes in the major stratigraphic units (excluding the Permian coal measures).

The Environmental Assessments of the MCC predict impacts to groundwater due to mine operations. Response triggers for groundwater levels within Quaternary alluvium and Triassic Sandstone aquifers take account of the minimal impact considerations in the Aquifer Interference Policy (DPI, 2012). Monitoring frequency and response triggers have been implemented to identify trends that could potentially lead to a private bore being impacted above the Aquifer Interference Policy considerations (i.e. greater than 2 m drawdown).

Details of bores added to the GWMP network during 2024 are provided below.

Name	Type	Screen interval / VWP sensor level (m)	Lithology	Comment
PZ236C	Standpipe	55-58	Base of Triassic sediments	Replaced PZ236A due to cement grout infiltration into bore screen intervals. PZ236C installed - 4/07/2024
PZ240	VWP	59	Ulan Seam	New VWP – installed 16/07/2024
PZ241	Standpipe	19-22	Paleochannel	New Standpipe – installed 24/07/2024
PZ242	Standpipe	137-140	Permian overburden	New Standpipe – installed 7/08/2024

7.4.1 GROUNDWATER LEVELS

During the reporting period MCO continued to observe mining impacts to groundwater levels for approved MCC open cut and underground operations and regional depressurisation due to neighbouring operations. There was above average rainfall for most of 2024 except for brief periods of below average rainfall in the first and third quarter of the year. This contrasts with 2023 where there was below average rainfall for the majority of the year. This is represented by the rising Cumulative Rainfall Departure (CRD) trend for most of 2024 compared to a declining trend for 2023 as shown on **Figure 23**. The three years prior to 2023 experienced above average rainfall which is reflected by a rising CRD trend from 2020 to 2022**.** The rainfall data presented in **Figure 15** is SILO drill data (interpolated rainfall quantities) at the Moolarben mine site (Latitude -32.30; Longitude 149.80) for the timeframe of 2010 to the end of 2024.

Mining operations during the period included mining in open-cuts OC2, OC3 and OC4, underground development in UG1 and UG4, and secondary extraction of panels LW404 and LW405 in UG4 (**Figure 3**). There is a long history of mining at the neighbouring Ulan Coal Open-cut and Underground Operations, and at the Wilpinjong Coal Open-cut Operations. Mining continued at both operations during the period.

Standing water level/pressure elevations for all piezometers within hydrogeological units for the period are presented as time-series plots in **Appendix 3G**. Water levels of trigger piezometers with exceedance limits are also provided in **Appendix 3G**. Investigation triggers, along with monitored groundwater levels are presented in **Table 27**.

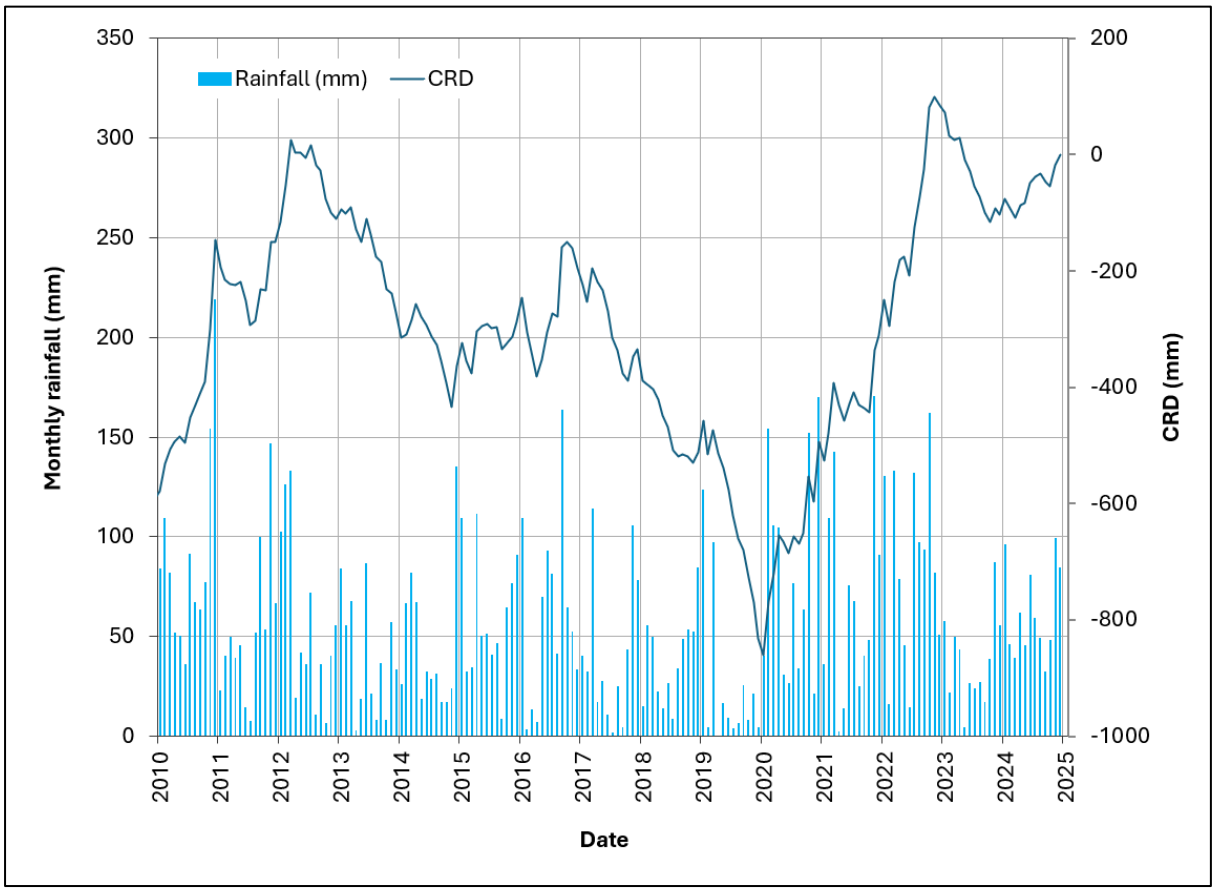


Figure 15: Rainfall and CRD (SILO interpolated data – Moolarben Coal Complex)

Groundwater levels in the Ulan coal seam and Permian coal measures are extensively affected by past mining and are predicted to undergo further impact from mining at Moolarben and neighbouring operations. During the period, the Ulan Seam levels were influenced by open cut and underground mining, neighbouring operations and in some cases rainfall recharge. The influence of UG1 and UG4 secondary extraction, progressive UG4 development and open cut operations continued over the period. All nested piezometer sites in the Permian sediments show greater drawdowns in deeper stratigraphic units (mainly monitoring from the Ulan seam) becoming progressively less up through the Permian overburden.

The largest groundwater drawdowns in the Ulan seam during the period are observed at close proximity to the underground operations as they progress down dip (northeast), including development of the UG4 mains on the eastern side. This is evident in Ulan Seam piezometers PZ105A, PZ192 and PZ193 located north of the current UG4 mining. PZ193, the closest piezometer to UG4 mining is located between panel LW406 and LW407 and provided an observed drawdown of 22.8 m over the period, while PZ105A (located approximately 2.3 km further to the north of PZ193) provided an observed drawdown of 13.6 m over the period, in the Ulan seam. Groundwater drawdown is expected to continue to propagate in an east to north easterly direction over time, in line with model predictions.

Climatic influences on water levels have historically been observed in shallow Ulan Seam piezometers (in vicinity of subcrop) such as PZ003 and PZ217 located to the east of OC3. Although, during the 2024 period, there was limited water level change in PZ003 and PZ217 and this may be due to the magnitude and duration of rainfall events which are comparatively less than the above average rainfall period from 2020 to 2022. Ulan Seam piezometer PZ111 which is located between MCO and Wilpinjong Open-cut Operations continued to decline in water level with a drawdown of 6 m over the period, likely influenced by both mining operations. The Wilpinjong Open-cut is advancing to the north and is less than 1 km south of PZ111.

The Permian overburden over the period exhibited a range of responses in groundwater level depending on proximity to mining, strata interval monitored and location. Drawdown of the Permian overburden generally continued during the period in the vicinity of UG4 due to the extraction of LW404 and LW405 as observed in deeper overburden piezometers PZ101, PZ105, PZ128 and PZ193. Following the cessation of UG1 mining in 2022 the response in groundwater head has been relatively steady in Permian piezometers PZ127, PZ186 and PZ189 located in the vicinity of UG1, although nested piezometer PZ186 (piezo at 65 m depth) has slightly recovered during the 2024 period.

Drawdown generally decreases with distance from the operations, although there are exceptions of some areas, particularly, the shallow Permian overburden cover which is influenced by rainfall recharge. Climatic influences on Permian overburden groundwater levels have been observed in several piezometers. At UG1, the coal measures are depressurised locally due to mining activities, although previously rising groundwater pressures were recorded in the shallow Permian sediments above UG1 in piezometers PZ130 VWP 38.5m and PZ170 from mid-2022 to the end to early 2023. This rise in groundwater pressures is likely in response to the above average rainfall conditions recorded at the MCC leading up to the beginning of 2023. The groundwater levels in these piezometers have been relatively stable or slightly declining during the 2024 period. Similar trends have been observed southeast of OC4 in PZ106A, PZ112B and PZ137.

In some locations the piezometers in the upper Permian overburden exhibited stable pressures while deeper piezometers were observed to decline. This was observed in nested piezometers PZ103D (piezo at 31 and 55m depth) and PZ105A (piezo at 28 and 80 m depth) which are located 0.5 km and

2.5 km respectively north of UW4 longwall mining. In some locations the decline in piezometric level has continued up to relatively shallow depths as the case of nested piezometer PZ186 with decline observed at 40, 65 and 86 m depth. Nested piezometer PZ186 is located east of UG1 and beneath Tertiary paleochannel sediments.

A stepped drawdown behaviour has occurred in piezometers PZ186 and PZ189 and possibly PZ40B within the Permian overburden near UG1 since 2018. The stepped progression is likely due to the removal of each UG1 longwall panel, with the last step occurring in mid 2022 close to the time UG1 ceased operations. A stepped drawdown behaviour up to the current period is also evident in PZ193 VWP 80m near UG4 which likely coincides also with the removal of each longwall panel.

The nested piezometer PZ238 (installed in February 2022) in the Permian overburden along Wilpinjong Creek and north of OC4, shows a gradual decline in the shallow piezometer at 25 m depth, although the deeper piezometer at 50m depth shows an increase in piezometric level from the beginning of 2024. The cause for the shallow piezometric declining trend in PZ238 piezometer may be climate related, but requires further monitoring to determine the cause.

Groundwater levels in GWMP Triassic sandstone piezometers remained relatively stable over the period with the exception of PZ192 VWP 68m and PZ105C. No Triassic water level triggers were exceeded during the period.

Piezometer PZ192 VWP 68m is located at the northeastern corner of UG4 longwall panel LW408 and has historically shown a decline in groundwater level since it first became operational in July 2011. There has been a decline of about 5.7 m up to January 2024 which is likely from mining. From 4 March to April 2024 the groundwater head sharply declined twice and then recovered twice with a maximum 15 m change in level from about 400 mAHD to 385.0 mAHD. The timing for this water level behaviour correlates with the nearby drilling of two dewatering bores into the Ulan Seam at M9, which would have depressurised the strata. The recovery of groundwater head of PZ192 VWP 68m presumably followed the cement sealing of each of the dewatering bore annulus above the Ulan Seam. The groundwater head of PZ192 VWP 68m recovered to 399.5 mAHD by early July 2024 and has declined by about 0.6 m to 398.9 m by the end of 2024.

Standpipe piezometer PZ105C is located 3 km north of mined UG4 panel 405 and historically has shown a subdued response to climatic conditions correlating to CRD trends. The piezometer is screened at a relatively shallow depth of 20 to 28 m. During the 2024 period the water level declined by 0.8 m. The response in the piezometers will continue to be monitored.

Triassic Sandstone PZ127 VWP 43m has historically shown a gradual decline of about 2 m since 2008, although the piezometric level was relatively steady over the 2024 period. There is no perceivable correlation of decline in piezometric levels to climatic conditions. PZ127 VWP 43m is located above UG1 and may have been influenced by mining of UG1, OC3 and OC4.

In the Tertiary paleochannel sediments located northeast of UG1 the groundwater levels continued to decline. At PZ213, PZ214 and PZ188 there was a maximum decline of 0.6 m to 1.2 m during the 2024 period.. The groundwater level in PZ213 and PZ214 have triggered the investigation level by 1.2 m and 0.5 m respectively by December 2024. An investigation by an experienced qualified hydrogeologist was undertaken for PZ213 in accordance with the GWMP Trigger Action Response Plan (TARP). The PZ214 investigation level was triggered in April 2024 and would have similar outcomes as PZ213 in accordance with the TARP.

Tertiary paleochannel piezometer PZ186A historically has shown a decline up to mid 2022 with a stepped decline progression, which is likely attributed to mining of longwall panels in UG1. Since mid 2022 the water levels in PZ186A have been relatively steady.

Tertiary paleochannel piezometer PZ203 long-term groundwater trend shows a subdued correlation with climatic conditions, although during the 2024 period there was observed a decline of 0.5 m which departs from a generally rising CRD trend during 2024. This piezometer is located 1.8km east of OC4 and 1.7 km north of Wilpinjong Open-cut which is advancing closer to PZ203. The mining of OC4 and Wilpinjong Open-cut may have contributed to decline in water levels during the 2024 period, although further monitoring will provide greater certainty.

The water level of Tertiary sediments piezometer PZ058A was relatively steady during the period after rising during 2022, most likely due to above average rainfall in 2022.

The Marrangaroo Conglomerate piezometer PZ055 located west of OC1 has stable groundwater levels over the long-term. Piezometer PZ102A showed a steady decline since 2021, departing from the CRD trend coinciding with the initial mining of UG4.

Groundwater levels in the Ulan Granite at PZ044 exhibited a declining trend during early stages of 2024 which may be a delayed response to below average rainfall in 2023. Since May 2024 the water level has been relatively stable. Historically this piezometer has shown subdued delayed responses to rainfall events.

The responses in the piezometers will continue to be monitored. Permian overburden standpipe piezometer PZ103B (screened at 81 to 87 m) was replaced by a nested VWP Standpipe piezometer (VWP PZ103D) in the Permian Overburden with sensors at 31m, 55 m and 85 m depth. Triassic Sandstone standpipe piezometer P236A screened at 54 to 60 m depth has been replaced with PZ236C screened at 55 to 58m depth. Tertiary sediments standpipe piezometer PZ058A located north of OC3 within woodland is becoming progressively blocked by tree roots in the screened zone which is hindering water sampling. The piezometer is planned to be replaced in 2025.

7.4.2 GROUNDWATER QUALITY

Groundwater quality monitoring is undertaken at standpipe piezometers in accordance with the GWMP. The monitoring network covers the major hydrogeological units and are broadly distributed across the project area. Parameters include physical parameters, major cations and anions, dissolved metals and nutrients. Site specific triggers for acidity (pH) and electrical conductivity (EC) have been developed for Alluvial and Triassic aquifers across the Moolarben Coal Complex. Also, site specific pH and EC triggers have been developed for piezometers within lower permeability hydrogeological units such as the Permian Overburden typified by poorer quality water with lower beneficial rating and the deeper Marrangaroo Conglomerate and Ulan Granite which have limited water source potential in the area. A review of the groundwater quality performance is provided in **Table 27**.

The water quality of hydrogeological units for the period is generally consistent with previous monitoring results.

The pH and EC of standpipe trigger piezometers in alluvium (PZ188) and Triassic sedimentary (PZ101C, PZ103C and PZ105C) aquifers for the 2024 period was consistent with historical results with no trigger exceedances. No water quality results were obtained from the alluvium trigger piezometer PZ058A during the 2024 period, and this was due to tree roots obstructing sampling equipment. Intentions are for the piezometer PZ058A to be replaced in 2025 to allow sampling to progress.

The EC and pH of Permian Overburden trigger piezometers PZ101B and PZ109 are within the range of historic measurements and below trigger levels. Water quality of the Marrangaroo Conglomerate and Ulan Granite in trigger piezometers PZ044 and PZ055 respectively were consistent within the range of historic levels with no trigger exceedances.

7.4.3 PRIVATE GROUNDWATER USERS

MCO had negligible impact on private groundwater users during the reporting period. No compensatory water supply was required or supplied during the period.

7.4.4 POTENTIAL IMPACTS TO THE DRIP

The Drip is located over 3.5 km from current MCC mining operations. There is no evidence indicating that The Drip is being impacted by the MCC.

7.4.5 ACTIONS FOR NEXT REPORTING PERIOD

During the next reporting period the following actions are proposed:

- Revision of water level triggers for Tertiary paleochannel piezometers PZ213, PZ214 and PZ188.
- Re-drill PZ058A
- WAMP to be reviewed and revised as necessary.
- Monitoring network in OC3, and above UG4 to continue be expanded.

Table 27: Water Levels – Triassic, Alluvium and Paleochannel Bore Performance

Location	Investigation Trigger Level (mAHD)	Minimum 2024 Groundwater Level/Pressure (mAHD)	Trend/ Key Management Implications	Implemented/proposed Management Action
Alluvium, Paleochannel and Marrangaroo Bores				
PZ55	418.1	423.5	Above average rainfall for most of 2024 which resulted in a net increasing CRD except for brief periods of below average rainfall in first and third quarter of 2024. Most of 2023 experienced below average rainfall and the previous three years (2020 – 2022) experienced generally above average rainfall. Piezometers in the vicinity of mining operations exhibited stable or declining groundwater levels during the period. Groundwater level reductions continued at Tertiary paleochannel piezometers PZ213, PZ214, and PZ188 with a maximum reduction of 0.6 to 1.2 m observed since last year attributed to MCO mining activities. PZ203 level declined by 0.5 m which may be due to mining depressurisation. In previous years PZ203 has shown a subdued response to rainfall trends, however this appears to not be the case in 2024 where a decline in water level occurred in a period of generally above average rainfall for most of the year. Going forward PZ203 water level will be closely observed to determine if declining trends persist with above average rainfall which is a departure from historic trends. Overall groundwater level trend are generally consistent with groundwater model predictions, with actual drawdown occurring earlier than modelled and observed drawdown in Tertiary paleochannel above model predictions in close proximity to mining operations. Groundwater level/pressure monitoring indicate MCO had negligible impact on private groundwater users. Groundwater monitoring results and level trends are in Appendix 3G.	Continue monitoring program. An experienced and qualified hydrogeologist third-party investigation was undertaken in response to investigative levels being triggered in PZ213 in accordance with TARP in the GWMP. Piezometer PZ214 also triggered an investigation during 2024 and likely the declining trend in PZ188 will lead to an investigation groundwater level changes in that monitoring bore in the future. The cause of groundwater level declines in PZ214 and PZ188 is considered similar as for PZ213. MCO will revise the trigger levels of PZ213, PZ214 and PZ188 based on latest groundwater modelling and consideration of saturated depth of paleochannel sediments. MCO will review and if necessary, revise, the GWMP in accordance with Schedule 5 condition 5 and Schedule 6 condition 5 of PA05_0117 and PA08_0135 respectively. Monitoring results to be included in the next periodic model validation and recalibration where required. During the reporting period MCO continued to maintain the groundwater monitoring network.
PZ058A	466.4	467.4		
PZ188	409.4	409.9		
PZ203	394.4	401.2		
PZ213	409.7	408.0		
PZ214	409.8	408.8		

Location	Investigation Trigger Level (mAHD)	Minimum 2024 Groundwater Level/Pressure (mAHD)	Trend/ Key Management Implications	Implemented/proposed Management Action
Triassic Bores				
PZ101C	376.8	379.5	Above average rainfall for most of 2024 which resulted in a net increasing CRD except for brief periods of below average rainfall in first and third quarter of 2024. Most of 2023 experienced below average rainfall and the previous three years (2020 – 2022) experienced generally above average rainfall. Groundwater levels in Triassic bores PZ101C and PZ129 VWP 35m remained stable with overall trends consistent with model predictions and climatic data. Piezometer PZ105C has historically shown a subdued response to climatic conditions correlating to CRD trends. During the 2024 period the water level declined by 0.8 m. Groundwater level/pressure monitoring indicate that MCO had negligible impact on private groundwater users. Groundwater monitoring results and level trends are in **Appendix 3G**.	Continue monitoring program. MCO will review, and if necessary, revise, the GWMP in accordance with Schedule 5 condition 5 and Schedule 6 condition 5 of PA05_0117 and PA08_0135 respectively. Monitoring results to be included in the next periodic model validation and recalibration where required. During the reporting period MCO continued to maintain the groundwater monitoring network.
PZ105C	367.4	374.2		
PZ129 (VWP-35m)	385.7 (dry)	389.92		

Table 28: Water Quality Performance

Location	Lithology	Investigation Trigger Level(s)		2024 Performance	Trend/ Key Management Implications	Implemented/proposed Management Action
		pH	EC (µs/cm)			
PZ044	Ulan Granite	5.7 – 7.2	3000	PZ044 and PZ055 water quality was consistent with recent monitoring results. No investigations were triggered.	Water quality for the period was generally consistent with previous monitoring results with some influence from changes in rainfall recharge rate, i.e. dilution or concentration effects. Groundwater quality trends will continue to be monitored. PZ058A is not fit for purpose for water quality monitoring. Water quality results from all piezometers (except PZ058) are provided in **Appendix 3G**.	Continue monitoring program. MCO will review, and if necessary, revise, the GWMP in accordance with Schedule 5 condition 5 and Schedule 6 condition 5 of PA05_0117 and PA08_0135 respectively. Decommissioning of PZ058A and installing a replacement bore. During the reporting period MCO continued to maintain the groundwater monitoring network.
PZ055	Indurated Conglomerate	5.1 – 6.3	2756			
PZ058a	Tertiary Aged Sediment	2.8 – 4.7	14765	PZ058A has tree roots entering the piezometer screen section and obstructing water sampling equipment. No water quality measurements were taken in PZ058A during 2024. PZ188 water quality was consistent with historic monitoring results. No investigation was triggered.		
PZ188	Tertiary Paleochannel	4.7 – 6.9	394			
PZ101C	Lower Triassic	6.1 – 7.7	810	Triassic water quality was consistent with historic monitoring results. No investigation was triggered.		
PZ103C	Lower Triassic	5.2 – 6.8	448			
PZ105C	Lower Triassic	5.3 – 7.4	319			
PZ101B	Permian OB	6.2 – 7.7	928	Permian Coal measures water quality for the period is consistent with previous monitoring results. No investigation was triggered.		
PZ109	Permian OB	6.3 – 8.4	1145			

8.0 MINE SUBSIDENCE

MCO undertakes secondary extraction in accordance with the UG1 Longwalls (LW) 101 to 105 Extraction Plan (2020) (the UG1 Extraction Plan) and UG4 Longwalls 401 to 408 Extraction Plan (2022) (the UG4 Extraction Plan). The UG1 Extraction Plan and associated sub-plans were prepared with input from experienced and qualified experts to satisfy Condition 5, Schedule 4 of PA 08_0135. The UG4 Extraction Plan and associated sub-plans were prepared with input from experienced and qualified experts to satisfy Condition 77(a), Schedule 3 of PA 05_0117.

Underground coal extraction during the annual 2024 reporting period from 1 January to 31 December 2024 included extraction of the full length of Longwall 404 (2066 m void length) and the full length of Longwall 405 (1999 m void length). The combined total extracted length during the 2024 reporting period was 4,065 m.

During the reporting period MCO continued to conduct monitoring of subsidence lines, flora and fauna habitats, cliffs, landscape features, and built features for LW404 to LW405. Monitoring of subsidence lines, surface water, groundwater, inflows and outflows continued for all panels. Built feature monitoring triggers were not exceeded in the period. Post mining inspections were carried out for flora and fauna above LW404 and LW405.

Subsidence monitoring included the 3D ground monitoring N, S & R lines.

The N Line is a 3D ground monitoring line located along the centreline of LW406 at the longwall finishing end. The base survey was carried out on the 07 July 2022 prior to LW401. During 2024, the monitoring line was surveyed once on 19 December 2024. The survey monitoring results represent the extraction of LW401 and LW405.

The S Line is a 3D ground monitoring line that is orientated transverse to the longwalls. LW404 and 405 mined directly beneath the monitoring line during 2024. The base survey was carried out on the 10 July 2022 prior to the commencement of LW401. During 2024 the monitoring line was surveyed three times, on 28 February 2024 following the commencement of LW404, 16 August 2024 following the completion of LW404 and 22 December 2024 following the completion of LW405.

The R Line is a 3D ground monitoring line that follows the Ulan Road to the west of the UG4 longwalls. The base survey was carried out on the 29 June 2022 prior to the commencement of LW401. The monitoring line was subsequently surveyed three times during 2024, on 29 February 2024 following the completion of LW403, 13 August 2024 following the completion of LW404 and 19 December 2024 following the completion of LW405.

Subsidence impacts during the period were below predictions as shown in **Table 29.**

Table 29: Comparison of maximum observed and predicted vertical subsidence, tilt & strain for the N, S & R Line.

Survey Line	Type	Maximum vertical subsidence (mm)	Maximum tilt (mm/m)	Maximum tensile strain (mm/m)	Maximum compressive strain (mm/m)
N	Measured	7	0.4	0.6	0.8
	Predicted	<20	<0.5	<0.5*	<0.5*
S	Measured	1401	29	9.3	10
	Predicted	1850	30	10*	8*
R	Measured	6	0.8	7.7	10
	Predicted	<20	<0.5	<0.5*	<0.5*

* denotes that the values represent the conventional strains based on the predicted curvatures multiplied by a factor of 10.

The maximum measured vertical subsidence and tilt during 2024 is overall similar or less than the maximum predicted values. It is considered that the ground movements measured during 2024 are consistent with the predictions provided in the UG4 LW401 to LW408 Subsidence Technical Report (Report No. MSEC1165), which supported the Extraction Plans for LW401 to LW408. A summary of performance against the relevant subsidence performance indicators and subsidence performance measures (i.e. the subsidence performance assessment), detailed in the UG4 Extraction Plan, and Condition 73, Schedule 4 of Project Approval (05_0117) is provided in **Table 30**.

Table 30: Assessment of Subsidence Performance Indicators Measures for UG4 – Natural, Heritage and Built Features

Subsidence Impact Performance Measure		Subsidence Impact Performance Indicator	Indicators Exceeded?	Assessment of Subsidence Impact Performance Measures	Performance Measures Exceeded?
Natural and Heritage Features:					
The Drip and Goulburn River Gorge	*Nil impact or environmental consequences*	• Unpredicted loss of water supply to the Drip during LW401 to 408.	**No**	The drip and Goulburn River Gorge are located outside the extents of LW404 and 405 at the end of 2023, at distances greater than 3.2km. It is unlikely that this site experienced measurable ground movements due to the mining. No impacts greater than predicted recorded.	**No**
Goulburn River and the bed of the Goulburn River	*Negligible impact or environmental consequences. Remain outside the zone of recorded subsidence damage for longwall mining*	• Unpredicted impacts on Goulburn River (cracking and or noticeable changes in erosion or pools) during LW401 to 408. • Performance indicators for relevant groundwater monitoring sites north of LW408 will be established prior to mining LW405.	**No**	Goulburn River is located outside the extents of LW404 and 405 at the end of 2024, at distances greater than 400m. It is unlikely that the Goulburn River experienced measurable ground movements due to the mining.	**No**
Cliff Line 3	*Minimise subsidence damage*	• Cliff Line 3 impacts due to LW401-408 are less than 1.9m vertical conventional subsidence and 60mm/m conventional tilt.	**No**	Cliff C3 is located outside the mined extents of LW404 and 405 at the end of 2024, at distances greater than 1.0km. It is unlikely that this cliff experienced measurable ground movements due to the mining.	**No**
Goulburn River National Park minor cliffs	*N/A*	• Negligible impact due to longwall mining for Minor Cliffs in Goulburn River National Park.	**No**	Nearest known minor cliff CL7 is located outside the mined extents of LW404 and 405 at the end of 2024, at distances greater than 185m. No observed impacts due to the extraction of LW404 and 405.	**No**
Aboriginal heritage sites	*Reduce the likelihood of subsidence damage to low.*	• Aboriginal heritage sites S1MC264, 282, 283, 286 and 287 are located to the north of the Study Area and the likelihood of impacts to these features is	**No**	No observed impacts due to the extraction of LW404 and 405.	**No**

Subsidence Impact Performance Measure		Subsidence Impact Performance Indicator	Indicators Exceeded?	Assessment of Subsidence Impact Performance Measures	Performance Measures Exceeded?
264, 282, 283, 286 and 287		considered to be very low. Therefore, no performance indicators for S1MC264, 282, 283, 286 and 287 have been developed for LW401-408.			
Aboriginal Heritage Site 280	*Reduce the likelihood of subsidence damage to moderate.*	• Revised subsidence likelihood reduced to moderate.	**No**	No observed impacts due to the extraction of LW404 and 405. Management plan successfully implemented for Aboriginal Heritage Site 280 for the extraction of LW402 and 403.	**No**
Historic heritage sites	*No greater subsidence impact or environmental consequences than predicted in the EA*	• There are no historic heritage sites within the Study Area or within the vicinity of the Study Area. Therefore, no performance indicators have been developed for LW401- 408.	-	Not applicable. There are no historic heritage sites within the Study Area or within the vicinity of the Study Area	-
First workings under an approved Extraction Plan beneath any feature where performance measures in this table require negligible impact, negligible consequence or negligible loss	*To remain long-term stable and non-subsiding.*	• First workings remain long-term stable and non-subsiding.	**No**	First workings have been designed to meet the requirements of Condition 79, Schedule 3 of Project Approval (05_0117). First workings approvals were granted on the 24 March 2016, 4 May 2016, 31 August 2018 and 8 July 2019 by the Division of Resources and Geosciences, in accordance with the requirements under Condition 7, Schedule 4 of PA08_0135 and Condition 79 Schedule 3 of PA05_0117.	**No**
Second workings	*To be carried out only in accordance with an approved Extraction Plan*	• Not applicable (NA) subsidence impact performance indicators have been developed for this performance measure.	**NA**	Second workings have been carried out in LW404 and 405 in accordance with the approved *Longwalls 401-408 Extraction Plan* during the assessment period.	**No**
Key Public Infrastructure:					

Subsidence Impact Performance Measure		Subsidence Impact Performance Indicator	Indicators Exceeded?	Assessment of Subsidence Impact Performance Measures	Performance Measures Exceeded?
Gulgong-Sandy Hollow Railway Line	*Always safe and serviceable. Damage that does not affect safety or serviceability must be fully repairable, and must be fully repaired*	• The performance indicators proposed to ensure that the performance measures for the Sandy Hollow Gulgong Railway in relation to subsidence induced far field movements. • No defects or deformation of the rail track and associated infrastructure due to UG4 mining; and • No visual displacement at joints or cracks in culverts due to UG4 mining.	**No**	No observed or reported defects, deformation or displacement of joints in culverts due to mining LW404 and 405.	**No**
Wollar-Wellington 330kV Transmission Line		• The Wollar-Wellington 330kV transmission line is located 725m from LW401 and the likelihood of impacts to the towers is considered to be very low. • Therefore, no performance indicators have been developed for the Wollar-Wellington 330kV transmission line.	**No**	No observed or reported impacts due to the extraction of LW404 and 405. No management measures have been developed. In consultation with TransGrid no BFMP was required due to no predicted impacts of the Wollar-Wellington 330kV transmission line.	**No**
Other Infrastructure:					
Roads: *Ulan Road* *Ulan Road Bridge over the Sandy-Hollow Rail Line* *Ulan Road Bridge over the Goulburn River*	*Safe, serviceable and repairable unless the owner agrees otherwise in writing.*	• No joint displacement or cracking or other defects of the drainage structure (e.g. pipes/culverts) in excess of 5 mm (when compared against baseline condition) due to UG4 mining. • The Ulan Road Bridge over the Sandy-Hollow Rail Line and the Ulan Road Bridge over the Goulburn River are unlikely to experience subsidence related movements. Therefore, no performance indicators have been developed for the Ulan Road Bridge over the Sandy-Hollow Rail Line and the Ulan Road Bridge over the Goulburn River.	**No**	Ulan Road and bridges are located outside the Longwalls 401-408 Study Area, but may be subject to far-field horizontal movements and non-conventional ground movements. No observed or reported impacts due to the extraction of LW404 and 405.	**No**
Other built features and	*Serviceability should be maintained wherever*	The performance indicators proposed to ensure that the performance measures for the optical fibre, copper	**No**	The telecommunication cable, optical fibre cable and tower are located outside the	**No**

Subsidence Impact Performance Measure		Subsidence Impact Performance Indicator	Indicators Exceeded?	Assessment of Subsidence Impact Performance Measures	Performance Measures Exceeded?
improvements, including fences: Telstra optical fibre telecommunication cable Telstra copper telecommunication cable Telstra telecommunication tower	*practicable. Loss of serviceability must be fully compensated. Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.*	cables and tower are achieved in relation to subsidence induced far field movements, include: • Negligible transmission loss from mine subsidence impacts; • Negligible impacts on structural integrity of the cable lines from mine subsidence; and • Negligible impacts on structural integrity of the communications tower from mine subsidence.		Longwalls 401-408 Study Area, but may be subject to far-field horizontal movements and non-conventional ground movements. No observed or reported impacts due to the extraction of LW404 and 405.	
Other built features and improvements, including fences: Essential Energy 22kV line and power poles to telecommunication tower	*Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.*	The performance indicators proposed to ensure that the performance measures are achieved in relation to subsidence induced far field movements, include: • The structural integrity of the 22kV powerline (power poles and transmission lines) is maintained.	**No**	The Essential Energy 22kV line and power poles are located outside the Longwalls 401-408 Study Area, but may be subject to far-field horizontal movements and non-conventional ground movements. No observed or reported impacts due to the extraction of LW404 and 405.	**No**
Other built features and improvements, including fences UCMPL Millers Dam Compound and associated infrastructure, Bridge, Bore and	*Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.*	The performance indicators proposed to ensure that the performance measures for UCMPL infrastructure within 400m of Longwalls 401-408 in relation to subsidence induced far field movements, include: • Subsidence monitoring indicates subsidence is consistent with approved impacts.	**No**	The UCMPL Millers Dam Compound and associated infrastructure are located outside the Longwalls 401-408 Study Area, but may be subject to far-field horizontal movements and non-conventional ground movements. No observed or reported impacts due to the extraction of LW404 and 405.	**No**

Subsidence Impact Performance Measure		**Subsidence Impact Performance Indicator**	**Indicators Exceeded?**	**Assessment of Subsidence Impact Performance Measures**	**Performance Measures Exceeded?**
Monitoring Piezometers					
Other built features and improvements, including fences Dronvisa Quarry	*Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.*	The performance indicators proposed to ensure that the performance measures for Dronvisa Quarry achieved in relation to subsidence, include: • Subsidence monitoring indicates subsidence is consistent with approved impacts. • Compensation Agreement between MCO and Dronvisa in place for predicted impacts to Dronvisa infrastructure serviceability and damage to the Quarry.	**No**	Draonvisa Quarry is located above the finishing end of LW404 and 405. No observed or reported impacts due to the extraction of LW404 and 405.	**No**
Public Safety:					
Public safety	*Negligible additional risk*	MCO will assess Longwalls 401- 408 against the following public safety performance indicator in the event that any hazard to the general public arising from subsidence impacts becomes evident: • No more than negligible additional risk to public safety.	**No**	Public safety is considered in the LW401 to 408 PSMP. No more than negligible additional risk to public safety has occurred during the assessment period, as a result of LW404 and 405. There were no incidents regarding public safety as a result of LW404 and 405 during the assessment period.	**No**

8.1.1 ACTIONS FOR NEXT REPORTING PERIOD

Activities in the 2024 reporting period include monitoring in accordance with approved subsidence management plans and remediation works, (e.g. tracks) as required.

8.1.2 SUBSIDENCE REMEDIATION

Minor subsidence management actions were required to be undertaken as a result of LW404 and LW405 extraction during the reporting period. These included maintenance of MCO managed access tracks following subsidence.

9.0 REHABILITATION

MCO manages rehabilitation in accordance with the RMP and Forward Program (FWP). The RMP and FWP were developed to meet the requirements of Mining Lease conditions at the MCC.

The MCC RMP describes the management of rehabilitation at the MCC for Stage 1 and Stage 2. The FWP describes the proposed Stage 1 and Stage 2 mining and rehabilitation activities for the period 1 January 2024 to 31 December 2026 (the FWP term). A description of the proposed rehabilitation activities during the term is also provided in the FWP. Planned mining and rehabilitation progression are shown on FWP Plans 2A, 2B and 2C. The FWP and RMP are available on the MCO website (www.yancoal.com.au/our-sites/moolarben).

9.1 MINING AND REHABILITATION STATUS

At the end of December 2024 MCO had a Total Mine Footprint of 2,302.5ha, being 77.81ha less than forecast in the FWP. The reduction in disturbance resulted from changes to mine planning. The area under rehabilitation preparation and active rehabilitation activities increased to 505.6ha.

The mining and rehabilitation status is presented in **Table 31**. The land preparation activities undertaken during the period and proposed areas for rehabilitation in the next reporting period are discussed in **Section 9.5** and **Section 9.6** and presented in **Figure 3**.

During the reporting period MCO continued to undertake monitoring and maintenance activities within the existing rehabilitated areas. This included the management of spontaneous combustion areas, erosion control, supplementary seeding of areas with limited cover, infill planting with tubestock, weed management and feral animal control activities.

Table 31: Mining and Rehabilitation Status

Mine Area Type	Previous Reporting Period (2023)	This Reporting Period (2024)	Next Reporting Period (2025)
Total Mine Footprint	2187	2302.35	2467.06
Total Active Disturbance	1724	1796.74	1893.26
Land being Prepared for Rehabilitation[1]	90	84.45	111.45
Land under active Rehabilitation[1]	373	421.11	462.35
Completed Rehabilitation*	0	0	0

[1]The rehabilitation and disturbance figures shown are survey accurate as calculated by MCO using planar area calculations. The NSW Resources Regulator portal uses Geodesic area calculations, which results in a difference in area of approximately 0.09% compared with the figures reported in the Regulator portal.
*The NSW Resources Regulator has determined in writing that the mining area has achieved the approved rehabilitation objectives and approved rehabilitation completion criteria and final landform and rehabilitation plan following the submission of Form: ESF2 Rehabilitation completion and/or review of rehabilitation cost estimate and/or notification of mine or petroleum site closure.

9.2 VEGETATION CLEARANCE AND TOPSOIL STRIPPING

Vegetation clearance within the OC3, OC4 and infrastructure areas during the reporting period (**Figure 3**) was undertaken in accordance with the Vegetation Clearance Protocol and GDPs. Stripped topsoil was placed in temporary stockpiles for future use. Vegetation salvaged was either mulched or retained for use as habitat features within future rehabilitation areas.

9.3 SEED COLLECTION

Native seed collection continued throughout the period with seed harvested from MCO owned lands. All activities were undertaken in accordance with the requirements of the Florabank Guidelines (2000). As of December 2024, the MCO seed bank contained over 345 kgs of native seed for use in rehabilitation activities across the MCC.

9.4 REHABILITATION MONITORING

MCO undertakes a comprehensive monitoring program of rehabilitation areas in accordance with the RMP. The program includes monitoring for initial establishment, long term floristic composition, structure and ecological functioning, habitat and koala feed tree presence, fauna, and a comprehensive rehabilitation walkover. Monitoring is conducted in spring, and results assessed against preliminary rehabilitation completion criteria.

The rehabilitation monitoring program was reviewed and updated during 2024 to incorporate recommendations made by Eco Logical Australia. Changes included the removal of Ecosystem Functional Analysis and visual transect monitoring to remove repetition of data that is already being collected through detailed floristic monitoring. Monitoring has also been consolidated to be conducted during the spring season to improve data integrity.

9.4.1 INITIAL ESTABLISHMENT AND LONG-TERM MONITORING

Initial Establishment Monitoring (IEM) is a rapid style assessment of young (≤3 years old) rehabilitated areas, principally to determine germination success, landform stability and early threats to the rehabilitation. The more detailed Long Term Monitoring (LTM) is applied in older rehabilitation areas (≥4 years old) to evaluate progress of the rehabilitation towards fulfilling agreed or proposed completion criteria, and ultimately the targeted post-mining land use.

Rehabilitation Monitoring Sites

Progressive rehabilitation of disturbed areas is undertaken as land becomes available on a campaign basis. The rehabilitated landform therefore consists of a mosaic of areas that have been rehabilitated at different times. Monitoring sites have been selected to incorporate as many rehabilitation campaign areas as possible to provide a representative sample of conditions across each rehabilitated landform. Data is collected at individual sites and interpreted to assess the condition of each rehabilitation campaign, final land use domain or open cut area. The rehabilitation objectives and completion criteria in the RMP apply to the whole of landform scale.

There are currently 32 rehabilitation sites monitored across OC1, OC2 and OC4. Sites R31, R32, and R33 were established during spring 2023 with R34 being established in spring 2024. For the spring 2024 campaign, only sites R33 and R34 were monitored using IEM methodology. All other sites meet the required age for LTM. Rehabilitation monitoring sites are shown in **Figure 16**.

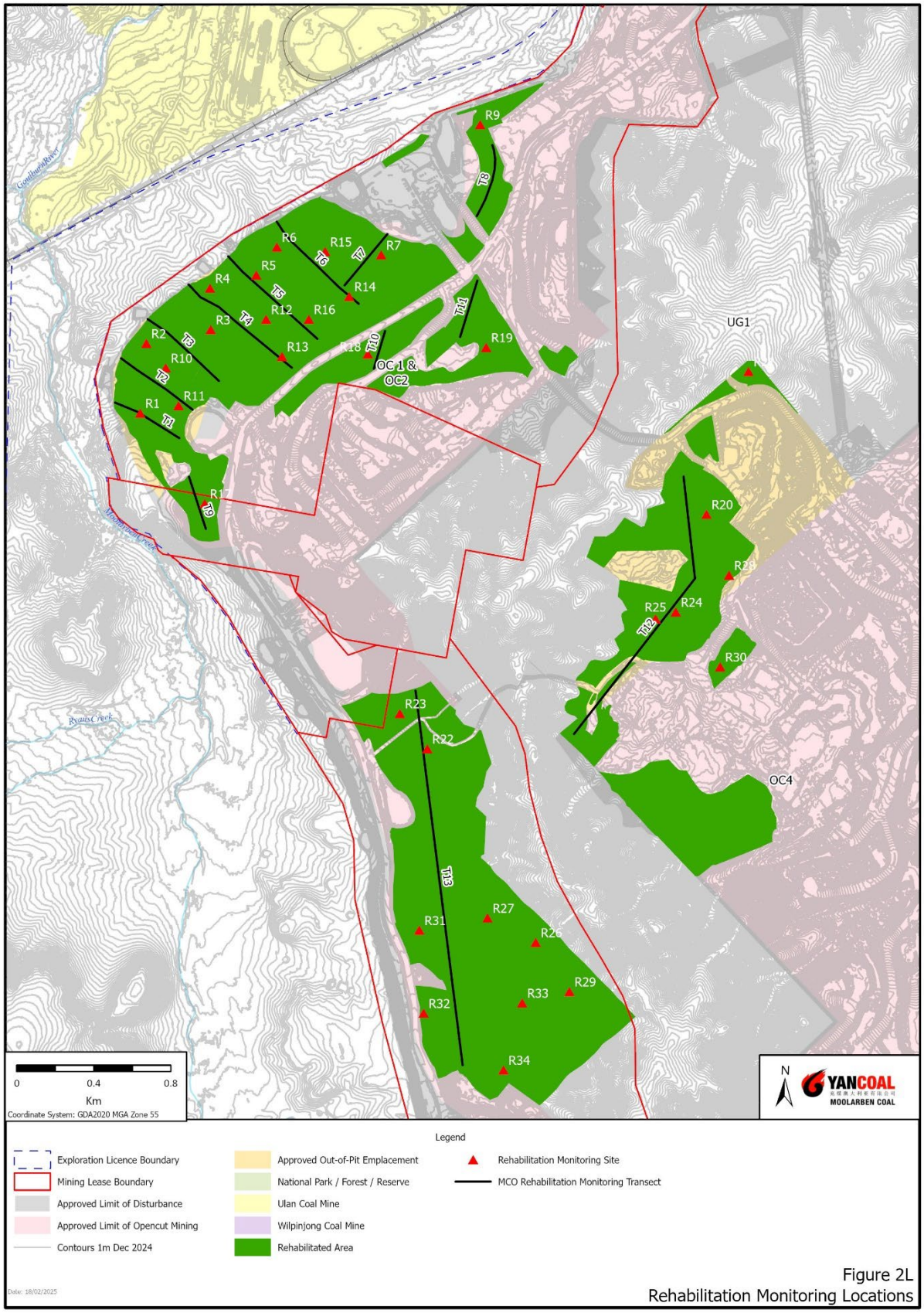


Figure 16: Location of rehabilitation monitoring plots.

Analogue sites

Analogue sites representative of the target Domain A vegetation communities have been established in the nearby Durridgere State Conservation Area and Goulburn River National Park for the OC1 and OC4 rehabilitated landforms. The representative target vegetation communities for these analogue sites are described in the current RMP.

The rehabilitation outcomes for Domain D (OC2) rehabilitation do not require reference to analogues as they rely on published benchmark conditions for the target BVTs/PCTs (OEH 2017).

Results of Floristic Monitoring – Domain A

During the 2024 monitoring of Box Gum Shrubby Woodland rehabilitation sites, native species richness ranged from 22 (R10) to 45 (R4). These results were generally comparable to analogue site results where native species richness ranged from 29 to 47. Only three (R7, R24 and R25) of the 11 sites surveyed were below the range of species richness across analogue sites.

Within the Sedimentary Ironbark Forest rehabilitation sites, native species richness ranged from 17 (R12) to 42 (R11). Three sites R16, R19 and R28 were just below the analogue range whilst R12 was below the analogue range of 30-54 species.

Within the Box Gum Grassy Woodland rehabilitation site (R30), native species richness was 32, being below the Box Gum Shrubby Woodland analogue sites of 39 – 58 species.

Figure 17 presents the percentage of species within rehabilitation areas that are typical of the target vegetation community. Plant Community Types (PCTs) that matched the general associations of Box Gum Shrubby Woodland, Sedimentary Ironbark Forest and Box Gum Grassy Woodlands were compiled during the development of the RMP completion criteria, and a typical species list was collated from these using the PCT profiles in BioNet Vegetation Classification. The target proportion of species being typical of the relevant vegetation community outlined in the criteria is 25%. The outcomes of the 2024 monitoring are:

All 11 Box Gum Shrubby Woodland sites have achieved this criterion.

10 out of 11 Sedimentary Ironbark Forest sites have achieved this criterion. One site (R12) recorded 21% typical species in the plot.

The Box Gum Grassy Woodland site (R30) has achieved this criterion with 27% typical species.

Sites that have achieved the criteria are therefore considered to be representative of or trending towards the target vegetation community.

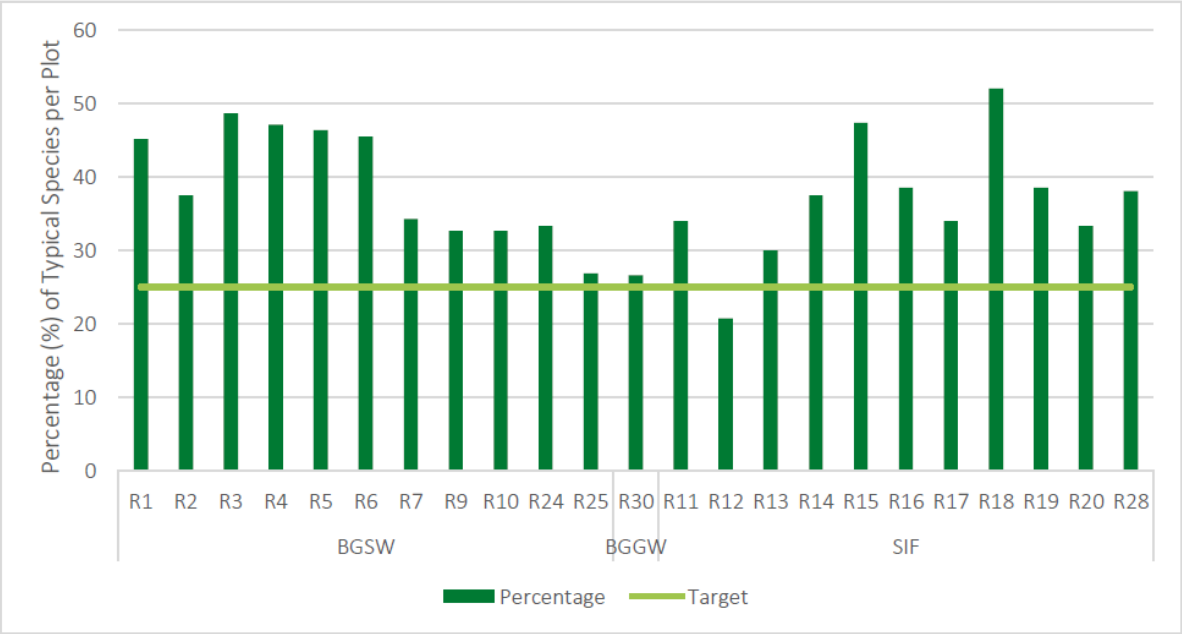


Figure 17: Percentage of typical species in the monitoring plots that are representative of the Plant Community Types during the 2024 monitoring.

Results of Floristic Monitoring – Domain D

The native species richness recorded within OC2 sites during 2024 is provided in **Figure 18.** The species richness ranged from 14 at R29 to 33 at R23. Two of the sites, R22 and R39, have not reached the benchmark native species richness of 20.5. Site R29 experienced a decrease compared to previous monitoring, with exotic cover increasing substantially at this monitoring point. When assessed over the overall OC2 landform, the total richness in the spring surveys remained consistent with the previous year, averaging 24.9 across OC2.

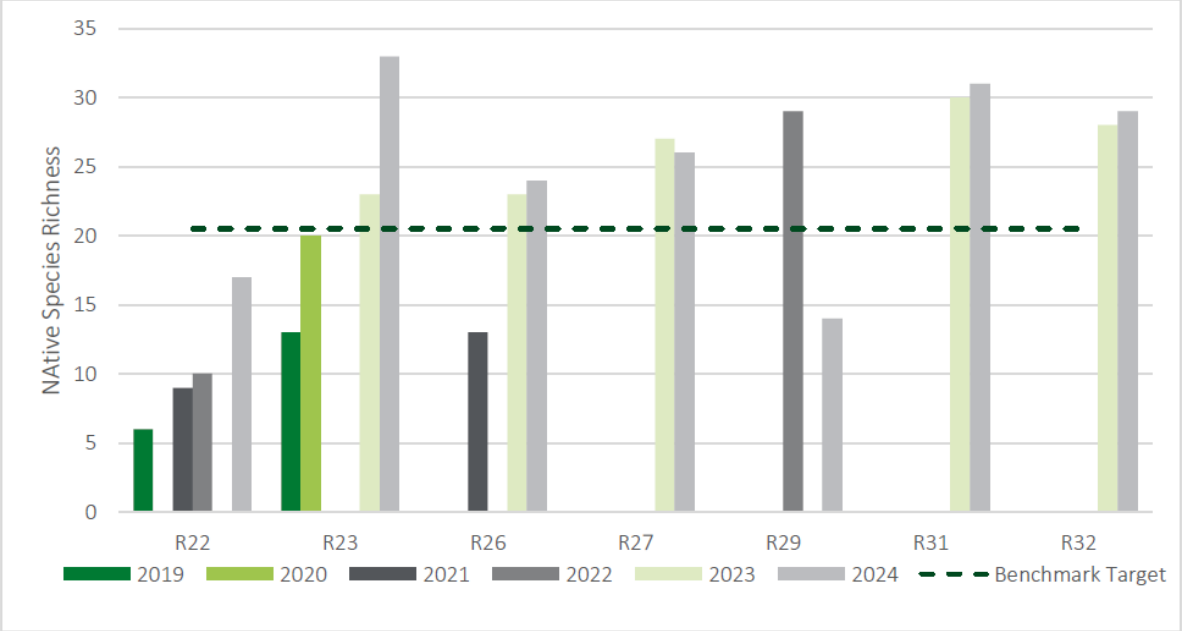


Figure 18: Native species richness for rehabilitation sites in the Domain D target vegetation communities from 2019 to 2024.

Domain D – Site Value Scores

Site Value Scores (SVSs) based on HU730 / HU910 BVT Benchmarks were calculated from the 2024 monitoring data at OC2 sites. The benchmark SVS required under the proposed completion criteria (13.8) has been achieved at an individual plot level at seven out of eight sites. The average SVS across OC2 rehabilitation was 20.9, which is well above this completion criterion. R22 was the only site which didn't meet the benchmark SVS largely due to the high exotic cover recorded.

Domain D – Koala Habitat Assessment

Sites R22, R23, R26, R27, R31, and R32 contained koala feed tree species within the 20 x 20 m floristic plot; however, all trees remain <10 cm DBH. The species included *Eucalyptus melliodora, Eucalyptus albens, Eucalyptus crebra*, *Eucalyptus fibrosa*, and *Eucalyptus punctata*. Therefore, '*highly suitable koala habitat*' (where ≥15% of tree species are species listed within Schedule 2 of the *SEPP (Koala Habitat Protection) 2019*) should develop as rehabilitation progresses and trees mature above 10 cm DBH at these sites.

Results of Fauna Habitat monitoring

A range of fauna habitats were recorded within rehabilitation areas including:

- Deep litter, mistletoe, surface rock, rock piles, stags containing hollows, and dense midstorey within Box Gum Shrubby Woodland and Sedimentary Ironbark Forest communities in OC1 rehabilitation
- Surface rock, rock piles and stags within Sedimentary Ironbark Forest communities in OC4 rehabilitation
- Surface rock and rock piles within Box Gum Shrubby Woodland and Box Gum Grassy Woodland in OC4 rehabilitation.

Results of Fauna Monitoring

Fauna monitoring is undertaken to demonstrate the presence of suitable fauna habitat and utilisation of rehabilitation areas by fauna species as rehabilitation progresses. Surveys included microbat detection, bird surveys and herpetological searches, dam inspections and deployment of four remote cameras within OC1, as well as opportunistic observations of fauna throughout the OC1, OC2 and OC4 rehabilitation areas. Fauna monitoring was undertaken at a range of sites to ensure a survey effort appropriate to the age and complexity of the rehabilitation across all target vegetation communities.

A total of 55 fauna species were recorded or potentially recorded across all rehabilitation sites monitored in spring 2024. This included one amphibian species, 28 bird species, and 26 mammals including 17 microbat species and four introduced species. Six of the species recorded are listed as vulnerable under the NSW *Biodiversity Conservation Act 2016* (BC Act), being the Speckled Warbler (*Chthonicola sagittata*), White-bellied Sea Eagle (*Haliaeetus leucogaster*), Large-eared Pied Bat (*Chalinolobus dwyeri*) and Eastern Bent-winged Bat (*Miniopterus orianae oceanensis*).

A wide range of bird guilds were recorded including insectivores, nectivores and herbivores which forage at different stratum levels within vegetation, which indicates that multiple types of habitats are available within the rehabilitation areas. The most frequently recorded bird species across Domain A was Yellow-faced Honeyeater (*Caligavis chrysops*), which was recorded at all sites. White-eared Honeyeater (*Lichenostomus leucotis*), Spotted Pardalote (*Pardalotus punctatus*) and Superb Fairy-wren (*Malurus cyaneus*) were also frequently recorded in 2024.

Nine mammal species were either recorded on remote cameras camera or opportunistically observed, including five native species (Common Brushtail Possum (*Trichosurus vulpecula*), Eastern Grey Kangaroo (*Macropus giganteus*), Red-necked Wallaby (*Macropus rufogriseus*), Swamp Wallaby (*Wallabia bicolor*) , Wombat (*Vombatus ursinus*) and four introduced species (Hare (*Lepus europaeus*), Pig (*Sus scrofa*), Rabbit (*Oryctolagus cuniculus*), and Red Fox (*Vulpes vulpes*)).

A total of 17 different bat species were 'definitely' or 'probably' recorded, which is an increase from 15 species in 2023. The number of microbat species recorded was similar among sites in the same rehabilitation areas. Notably, the threatened cave-dependent microbat species Large-eared Pied Bat, was 'definitely' recorded at both OC1 sites for the third year. Gould's Wattled Bat and Southern Free-tailed Bat were also 'definitely' recorded across all sites. The microbat activity levels were much higher within OC1 sites compared to OC4 sites across both target vegetation communities. This likely reflects the age of rehabilitation areas within OC1 containing more developed foraging habitat.

Assessment of Rehabilitation Performance Indicators

Analysis of the Box Gum Shrubby Woodland, Sedimentary Ironbark Forest, Box Gum Grassy Woodland rehabilitation, and OC2/OC3 Ecosystem and species credit sites against the proposed completion criteria is presented in **Table 31**, **Table 32, Table 33** and **Table 34.**

In summary, the outcomes of monitoring were:

OC1:

- Domain A Box Gum Shrubby Woodland areas have achieved 10 and partially achieved three of the 13 completion criteria.
- Domain A Sedimentary Ironbark Forest areas have achieved 10 and partially achieved three of the 13 completion criteria.

OC4:

- Domain A Box Gum Shrubby Woodland areas have achieved eight and partially achieved four of the 12 completion criteria.
- Domain A Box Gum Grassy Woodland areas have achieved seven and partially achieved five of the 12 completion criteria.
- Domain A Sedimentary Ironbark Forest areas have achieved eight and partially achieved four of the 12 completion criteria.

OC2: Domain D areas have achieved 10 out of 15 completion criteria.

Table 32: Box Gum Shrubby Woodland Rehabilitation Assessment

Proposed Completion Criteria	OC1 - 2024 Monitoring Outcome	OC4 - 2024 Monitoring Outcome
Reconstructed landforms are stable with no evidence of slumping.	Slumping of the landform observed. **Outcome:** Proposed completion criteria not yet achieved in 2024.	There were no signs of slumping landforms observed. **Outcome:** Proposed completion criteria achieved in 2024.
Gullies and rills occurring in monitoring transects are assessed to be limited and stabilising.	Signs of gullies or rills were recorded, but at a density consistent with surrounding remnant vegetation. **Outcome:** Proposed completion criteria was achieved in 2024.	Signs of active gully and rill erosion observed. **Outcome:** Proposed completion criteria not yet achieved in 2024.
'High Threat Exotic' (HTE*) weed presence and cover is monitored regularly. Priority and HTE weeds identified through monitoring have been controlled.	There were HTE present at all monitoring sites. The level of HTE is not significant and is managed through ongoing maintenance. **Outcome:** Proposed completion criteria achieved in 2024.	There were HTE present at all monitoring sites. The level of HTE is not significant and is managed through ongoing maintenance. **Outcome:** Proposed completion criteria achieved in 2024.
Vertebrate pest species presence and impacts are recorded and controlled.	Feral pests were recorded during monitoring, and some signs of damage in OC1 but the level of damage was not considered to be unacceptable. **Outcome:** Proposed completion criteria achieved in 2024.	Feral pests were recorded during monitoring, and some signs of damage in OC4 but the level of damage was not considered to be unacceptable. **Outcome:** Proposed completion criteria achieved in 2024.
Rehabilitation area at some point since seeding or final surface preparation has experienced a fire or declared drought or at least one year with annual rainfall in the first decile range and all other vegetation completion criteria have been met.	All rehabilitation campaigns have experienced an intense drought. **Outcome:** Proposed completion criteria partially achieved in 2024.	All rehabilitation campaigns have experienced an intense drought. **Outcome:** Proposed completion criteria partially achieved in 2024.

Priority weeds are controlled and HTE cover is maintained at < 15%.	At all sites, the HTE cover was below 15%. **Outcome:** Proposed completion criteria achieved in 2024.	At all sites, the HTE cover was below 15%. **Outcome:** Proposed completion criteria achieved in 2024.
Multiple fauna habitats are available within all rehabilitation areas.	During 2024 monitoring a range of fauna habitat was recorded. **Outcome:** Proposed completion criteria achieved in 2024.	During 2024 monitoring a range of fauna habitat was recorded. **Outcome:** Proposed completion criteria achieved in 2024.
Monitoring confirms multiple native fauna species are recorded utilising rehabilitation areas.	2024 monitoring confirmed that there were multiple species utilising the rehabilitation areas. **Outcome:** Proposed completion criteria achieved in 2024.	2024 monitoring confirmed that there were multiple species utilising the rehabilitation areas. **Outcome:** Proposed completion criteria achieved in 2024.
Stands[2] of *Allocasuarina* spp have been maintained within Box Gum Shrubby Woodland / Sedimentary Ironbark Forest rehabilitation areas on OC1.	There were stands of *Allocauarina spp* present during 2024 monitoring in OC1. **Outcome:** Proposed completion criteria achieved in 2024.	N/A
Revegetation areas contain flora species assemblages characteristic of or trending towards that of: Box Gum Shrubby Woodland communities[1] / Secondary Ironbark Forest communities[3] / Box Gum Grassy Woodland[1].	All sites in OC1 achieved the greater than 25% of typical species composition. **Outcome:** Proposed completion criteria achieved in 2024.	All sites in OC4 achieved the greater than 25% of typical species composition. **Outcome:** Proposed completion criteria achieved in 2024.
Median foliage cover of the ecologically dominant layers (trees/shrubs/ground cover) and developing litter cover are within the 10th-90th percentile variation range of the Box Gum Shrubby Woodland Community / Secondary Ironbark Forest community / Box Gum Grassy Woodland Community Analogue sites.	Only tree cover did not achieve the percentage variation range. All other values achieved this criterion. **Outcome:** Proposed completion criteria partially achieved in 2024.	Tree, shrub and litter cover did not achieve the percentile variation range. Groundcover exceeded the 90th percentile criterion. **Outcome:** Proposed completion criteria not yet achieved in 2024.
Rehabilitation monitoring verifies that second generation seedlings of species characteristic of Box Gum Shrubby Woodland Communities / Secondary Ironbark Forest communities / Box Gum Grassy Woodland communities are present or likely to be, based on comparable older rehabilitation sites.	Second generation seedlings of characteristic species were recorded within OC1. **Outcome:** Proposed completion criteria achieved in 2024.	Only first-generation seedlings of characteristic species have been observed, however evidence of reproductive potential was observed at the time of survey. **Outcome:** Proposed completion criteria not yet achieved in 2024.

Table 33: Sedimentary Ironbark Forest Rehabilitation Assessment

Proposed Completion Criteria	OC1 – 2024 Monitoring Outcome	OC4 - 2024 Monitoring Outcome
Reconstructed landforms are stable with no evidence of slumping.	Slumping of the landform observed. **Outcome:** Proposed completion criteria not yet achieved in 2024.	There were no signs of slumping landforms observed. **Outcome:** Proposed completion criteria achieved in 2024.
Gullies and rills occurring in monitoring transects are assessed to be limited and stabilising.	Signs of gullies or rills were recorded, but at a density consistent with surrounding remnant vegetation.	Signs of active gully and rill erosion observed.

	Outcome: Proposed completion criteria was achieved in 2024.	**Outcome:** Proposed completion criteria not yet achieved in 2024.
'High Threat Exotic' (HTE*) weed presence and cover is monitored regularly. Priority and HTE weeds identified through monitoring have been controlled.	There were HTE present at all monitoring sites. The level of HTE is not significant and is managed through ongoing maintenance. **Outcome:** Proposed completion criteria achieved in 2024.	There were HTE present at all monitoring sites. The level of HTE is not significant and is managed through ongoing maintenance. **Outcome:** Proposed completion criteria achieved in 2024.
Vertebrate pest species presence and impacts are recorded and controlled.	Feral pests were recorded during monitoring, and some signs of damage in OC1 , but the level of damage was not considered to be unacceptable. **Outcome:** Proposed completion criteria achieved in 2024.	Feral pests were recorded during monitoring, and some signs of damage in OC4 , but the level of damage was not considered to be unacceptable. **Outcome:** Proposed completion criteria achieved in 2024.
Rehabilitation area at some point since seeding or final surface preparation has experienced a fire or declared drought or at least one year with annual rainfall in the first decile range and all other vegetation completion criteria have been met.	All rehabilitation campaigns have experienced an intense drought. **Outcome:** Proposed completion criteria partially achieved in 2024.	All rehabilitation campaigns have experienced an intense drought. **Outcome:** Proposed completion criteria partially achieved in 2024.
Priority weeds are controlled and HTE cover is maintained at < 15%.	At all sites, the HTE cover was below 15%. **Outcome:** Proposed completion criteria achieved in 2024.	At all sites, the HTE cover was below 15%. **Outcome:** Proposed completion criteria achieved in 2024.
Multiple fauna habitats are available within all rehabilitation areas.	During 2024 monitoring a range of fauna habitat was recorded. **Outcome:** Proposed completion criteria achieved in 2024.	During 2024 monitoring a range of fauna habitat was recorded. **Outcome:** Proposed completion criteria achieved in 2024.
Monitoring confirms multiple native fauna species are recorded utilising rehabilitation areas.	2024 monitoring confirmed that there were multiple species utilising the rehabilitation areas. **Outcome:** Proposed completion criteria achieved in 2024.	2024 monitoring confirmed that there were multiple species utilising the rehabilitation areas. **Outcome:** Proposed completion criteria achieved in 2024.
Stands[2] of *Allocasuarina* spp have been maintained within Box Gum Shrubby Woodland / Sedimentary Ironbark Forest rehabilitation areas on OC1.	There were stands of *Allocasuarina spp* present during 2024 monitoring in OC1. **Outcome:** Proposed completion criteria achieved in 2024.	N/A
Revegetation areas contain flora species assemblages characteristic of or trending towards that of: Box Gum Shrubby Woodland communities[1] / Secondary Ironbark Forest communities[3] / Box Gum Grassy Woodland[1].	All but one site in OC1 achieved greater than 25% of typical species composition. **Outcome:** Proposed completion criteria partially achieved in 2024.	All sites have achieved greater than 25% of typical species composition. **Outcome:** Proposed completion criteria achieved in 2024.
Median foliage cover of the ecologically dominant layers (trees/shrubs/ground cover) and developing litter cover are within the 10th-90th percentile variation range of the Box Gum Shrubby Woodland Community / Secondary Ironbark Forest community / Box Gum Grassy Woodland Community Analogue sites.	Shrub, ground and litter cover achieved the percentile variation range. Tree cover values were very close to achieving this criterion. **Outcome:** Proposed completion criteria partially achieved in 2024.	All values were within the target percentile variation ranges. **Outcome:** Proposed completion criteria achieved in 2024.
Rehabilitation monitoring verifies that second generation seedlings of species characteristic of Box Gum Shrubby Woodland Communities / Secondary	Second generation seedlings of characteristic species were recorded within OC1.	Only first-generation seedlings of characteristic species have been observed, however evidence of

Ironbark Forest communities / Box Gum Grassy Woodland communities are present or likely to be, based on comparable older rehabilitation sites.	**Outcome:** Proposed completion criteria achieved in 2024.	reproductive potential was observed at the time of survey. **Outcome:** Proposed completion criteria not yet achieved in 2024.

Table 34: Box Gum Grassy Woodland Rehabilitation Assessment

Proposed Completion Criteria	OC4 - 2024 Monitoring Outcome
Reconstructed landforms are stable with no evidence of slumping.	There were no signs of slumping landforms observed. **Outcome:** Proposed completion criteria achieved in 2024.
Gullies and rills occurring in monitoring transects are assessed to be limited and stabilising.	Signs of active gully and rill erosion observed. **Outcome:** Proposed completion criteria not yet achieved in 2024.
'High Threat Exotic' (HTE*) weed presence and cover is monitored regularly. Priority and HTE weeds identified through monitoring have been controlled.	There were HTE present at all monitoring sites. The level of HTE is not significant and is managed through ongoing maintenance. **Outcome:** Proposed completion criteria achieved in 2024.
Vertebrate pest species presence and impacts are recorded and controlled.	Feral pests were recorded during monitoring, and some signs of damage in OC4 , but the level of damage was not considered to be unacceptable. **Outcome:** Proposed completion criteria achieved in 2024.
Rehabilitation area at some point since seeding or final surface preparation has experienced a fire or declared drought or at least one year with annual rainfall in the first decile range and all other vegetation completion criteria have been met.	All rehabilitation campaigns (except site R30) have experienced an intense drought. **Outcome:** Proposed completion criteria partially achieved in 2024.
Priority weeds are controlled and HTE cover is maintained at < 15%.	At all sites, the HTE cover was below 15%. **Outcome:** Proposed completion criteria achieved in 2024.
Multiple fauna habitats are available within all rehabilitation areas.	During 2024 monitoring a ranged of fauna habitat was recorded. **Outcome:** Proposed completion criteria achieved in 2024.
Monitoring confirms multiple native fauna species are recorded utilising rehabilitation areas.	2024 monitoring confirmed that there were multiple species utilising the rehabilitation areas. **Outcome:** Proposed completion criteria achieved in 2024.
Revegetation areas contain flora species assemblages characteristic of or trending towards that of: Box Gum Shrubby Woodland communities[1] / Secondary Ironbark Forest communities[3] / Box Gum Grassy Woodland[1].	Rehabilitation in OC4 achieved the greater than 25% of typical species composition. **Outcome:** Proposed completion criteria achieved in 2024.
Median foliage cover of the ecologically dominant layers (trees/shrubs/ground cover) and developing litter cover are within the 10th-90th percentile variation range of the Box Gum Shrubby Woodland Community / Secondary Ironbark Forest community / Box Gum Grassy Woodland Community Analogue sites.	Litter cover achieved the completion criteria, ground cover was close to achieving the percentile variation, whereas tree and shrub cover were below the completion criteria in OC4 rehabilitation. **Outcome:** Proposed completion criteria partially achieved in 2024.
Rehabilitation monitoring verifies that second generation seedlings of species characteristic of Box Gum Shrubby Woodland Communities / Secondary Ironbark Forest communities / Box Gum Grassy Woodland communities are present or likely to be, based on comparable older rehabilitation sites.	Only first-generation seedlings of characteristic species have been observed, however evidence of reproductive potential was observed at the time of survey. **Outcome:** Proposed completion criteria not yet achieved in 2024.

Table 35: OC2 Ecosystem and Species Credit Rehabilitation Assessment

Proposed Completion Criteria	2024 Monitoring Outcome
Reconstructed landforms are stable with no evidence of slumping.	There was no slumping of the landform observed during monitoring. **Outcome:** Proposed completion criteria achieved in 2024.
Gullies and rills occurring in monitoring transects are assessed to be limited and stabilising.	There were signs of gullies and rill erosion in in the OC2 rehabilitation. **Outcome:** Proposed completion criteria not achieved in 2024.
Active erosion (soil loss due to gullying and rilling) is assessed to be minimal.	There were signs of gullies and rill erosion in in the OC2 rehabilitation. **Outcome:** Proposed completion criteria not achieved in 2024.
'High Threat Exotic' (HTE*) weed presence and cover is monitored regularly. Priority and HTE weeds identified through monitoring have been controlled.	Ongoing. There were HTE present at all monitoring sites. The level of HTE is not significant and is managed through ongoing maintenance. **Outcome:** Proposed completion criteria achieved in 2024.
Vertebrate pest species presence and impacts are recorded and controlled.	Feral pests were recorded during monitoring, and some signs of damage in OC2, but the level of damage was not considered to be unacceptable. **Outcome:** Proposed completion criteria achieved in 2024.
Native Plant Species Richness is ≥ 20.5 at year 10 post mining.	Average native plant species richness was greater than 20.5. **Outcome:** Proposed completion criteria not yet assessable in 2024.
≥ 15% of the total number of trees are the regionally relevant species** within koala FBA species credit areas.	There were no trees suitable for koala use of greater than 10cm DBH in the monitoring plots, however this is expected at this stage of the rehabilitation area. **Outcome:** Proposed completion criteria not assessable in 2024.
Native Over Storey Cover between 3.75 and 80% at year 10 post mining operations.	Average native overstorey cover is 0.2%. **Outcome:** Proposed completion criteria not yet assessable in 2024.
Native Mid-Storey Cover between 1.25 and 40% at year 10 post mining operations.	Average mid-storey cover was 2.5% across OC2 and OC3. **Outcome:** Proposed completion criteria not yet assessable in 2024.
Native Ground Cover, Grass between 3 and 100% at year 10 post mining operations.	Native grass ground cover is 10% across OC2. **Outcome:** Proposed completion criteria not yet assessable in 2024.
Native Ground Cover, Shrubs between 0.5 and 20% at year 10 post mining operations.	Average native shrub groundcover is 0.3%. **Outcome:** Proposed completion criteria not yet assessable in 2024.
Native Ground Cover, Other between 2 and 80% at year 10 post mining operations.	The average native ground cover, other was 4.9% across OC2 rehabilitation. **Outcome:** Proposed completion criteria not yet assessable in 2024.
Total Length Fallen Logs (m) is 1.25 at year 10 post mining operations.	The average length of fallen logs was greater than 1.25m. **Outcome:** Proposed completion criteria not yet assessable in 2024.
Exotic Plant Cover is <45% at year 10 post mining operations.	The average exotic plant cover achieved the criteria of less than 45% exotic plant cover. One site did not achieve this criterion (R22) **Outcome:** Proposed completion criteria not yet assessable in 2024.
Overall Site Value Score (OEH, 2015) (average of plots in vegetation zone) is ≥ 13.8 at 10 years post mining operations.	The overall Site Value Score for OC2 in 2022 was 20.9 and achieved the completion criteria. **Outcome:** Proposed completion criteria not yet assessable in 2024.

* HTEs as per the BAM 2020
** Under the *State Environmental Planning Policy (SEPP) (Koala Habitat Protection) 2021.*
[1.] A range of characteristic means that at least 25% of the species present in rehabilitated areas are recognised as being typical of the vegetation communities that match the Box Gum Shrubby Woodland Association (inclusive of any additional species listed in Table 16 of the RMP)
[2.] Patches of three or more individual stems
[3.] A range of characteristic means that at least 25% of the species present in rehabilitated areas are recognised as being typical of the vegetation communities that match the Sedimentary Ironbark Forest Association (inclusive of any additional species listed in Table 17 of the RMP)
[4.] A range of characteristic means that at least 25% of the species present in rehabilitated areas are recognised as being typical of the vegetation communities that match the Box Gum Grassy Woodland Association (inclusive of any additional species listed in Table 18 of the RMP)
[5.] At least 50% of the vegetative cover.

9.5 REHABILITATION WORKS

Rehabilitation of disturbed lands are undertaken sequentially (or in phases) to achieve the final land use. A description of these phases of rehabilitation relevant to the MCC are provided in the FWP. A summary of rehabilitation phases completed during the reporting period included:

Decommissioning
There were no decommissioning activities undertaken at MCO.

Landform Establishment
43.8ha of landform establishment in OC2, OC3 and OC4 was completed during 2024. Final landforms were established to the relevant completion criteria including:

- Constructed landforms consistent with surrounding topography.
- Slopes were generally between 10° and 18°
- Constructed landforms were free draining.
- No hostile overburden material in the final surface layers.

Growth Medium Development
47.1ha of opencut areas within OC3 and OC4 underwent growth medium development followed by ecosystem and land use establishment during 2024.

Ecosystem and Land use Establishment
420.1ha of rehabilitation located within OC1, OC2, OC3 and OC4is in the ecosystem and landuse establishment phase. These areas were maintained and further enhanced during 2024.

9.6 ACTIONS FOR NEXT REPORTING PERIOD

Rehabilitation actions to be progressed in the next period include:

- Continued progressive rehabilitation.
- Continued weed and feral animal control.
- Continued monitoring of rehabilitation areas and undertake management actions informed by monitoring results, including erosion and track maintenance, infill planting or reseeding where required.

10.0 COMMUNITY

10.1 COMMUNITY ENGAGEMENT

During 2024, MCO continued to foster positive relationships with the local community through engagement and ongoing support provided to a range of community groups and events – including, but not limited to – Mudgee, Rylstone and Gulgong Show Societies, , Mudgee Rotary, Mudgee Lions Club, Mudgee Rescue Squad, Survivor Life Skills Program, and Gulgong Hospital Auxiliary. In total, MCO provided over $230,000 during 2023 to 40 community groups and events through its Community Support Program and other programs (**Appendix 5**).

Community/stakeholder related activities undertaken during the reporting period include:

- Max Potential Program.
- Mudgee Running Festival.

- Mid-Western Regional Senior Festival.
- Direct engagement with nearby landholders.

Moolarben continued to provide the community with information on its website (https://www.yancoal.com.au/our-sites/moolarben/). Information available included project approvals, CCC meeting minutes, community complaint records, environmental monitoring information, environmental audits, environmental management plans and annual reviews.

10.2 COMMUNITY COMPLAINTS

MCO maintains a 24-hour Environment and Community Complaints Hotline (1800 556 484). This Hotline is available to receive any complaints from neighbouring residents or interested stakeholders. Details for the Hotline are available on the MCO website and in community newsletters.

MCO has developed a Community Complaints Procedure which details how to receive, respond to, record, and action any community complaint received to site. This procedure also outlines the reporting requirements relating to community complaints, including:

- Monthly reporting of community complaints on the MCO website.
- Discussion of community complaints as part of the operational performance provided during CCC meetings.
- A summary of complaints is provided in the Annual Review and Annual Return (as part of EPL reporting).

During 2024, a total of 7 complaints were received in relation to MCC operations by five complainants. All complaints are investigated and included in the complaints register on the Moolarben Coal website (https://www.yancoal.com.au/our-sites/moolarben/). 43% of complaints were received by one complainant. “Noise” was the primary issue of concern (43% of complaints) followed by "Other” (29% of complaints), "Blasting” (14% of complaints) and “Air(Dust)” (14% of complaints - **Figure 19**).

A comparison of complaints to previous years is presented in **Table 36**. There has been a general decrease in complaints during the period and continues the trend since 2015. A register of complaints is provided in **Appendix 4**.

The ongoing use of Mining and Production Environmental Assistants continues to provide real-time feedback to the mining operation and to inform proactive and reactive responses. Ongoing community and stakeholder liaison and consultation has continued.

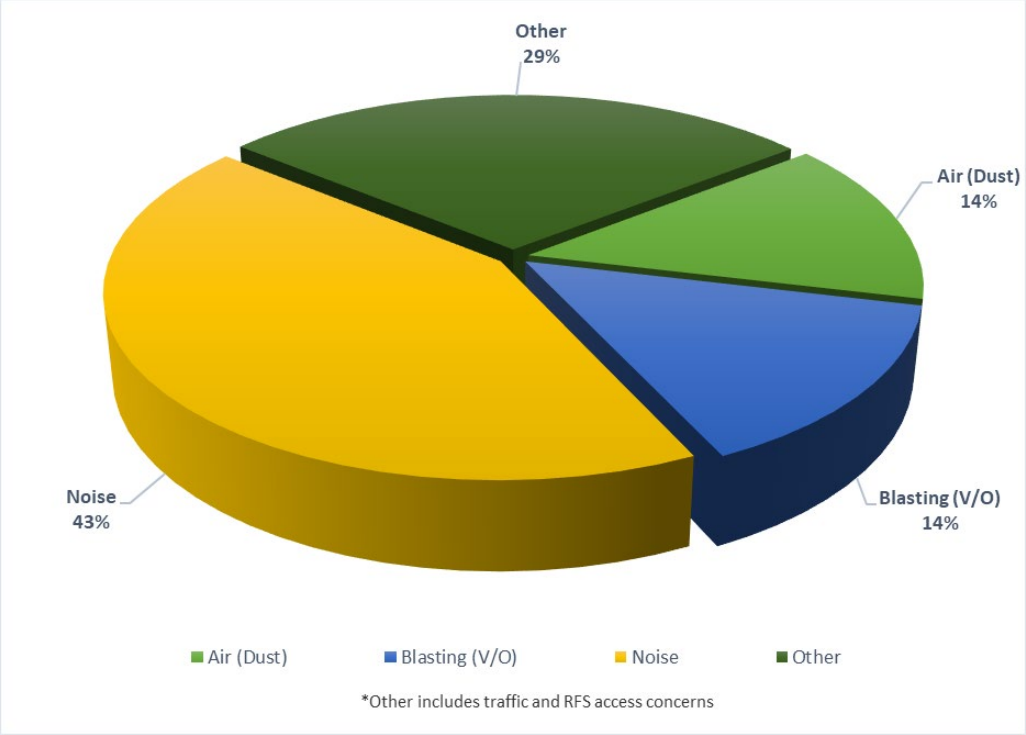


Figure 19: Community Complaints 2024 – Breakdown by Type

Table 36: Comparison of Community Complaints

Reporting Period	Noise	Blast	Air	Water	Other	Total
2015	274	6	2	0	4	**286**
2016	157	7	2	0	1	**167**
2017	108	3	1	2	1	**115**
2018	54	10	0	0	1	**65**
2019	33	1	4	0	0	**38**
2020	12	3	1	0	0	**16**
2021	22	1	3	0	13	**39**
2022	8	5	5	3	5	**26**
2023	4	4	2	1	7	**18**
2024	3	1	1	0	2	**7**

10.3 COMMUNITY CONSULTATIVE COMMITTEE (CCC)

In accordance with Condition 6, Schedule 5 of project approval (05_0117) and Condition 6, Schedule 6 of project approval (08_0135) the Community Consultative Committee (CCC) continued to meet during the 2024 reporting period. The purpose of a CCC is to provide a forum for open discussion between MCO, the community, the local council and other key stakeholders on issues directly relating to the project, including performance against any conditions, and to keep the community informed on these matters.

Members of the MCO CCC for 2024 are presented in **Table 37**. MCO conducted four CCC meetings during the reporting period with summaries provided in **Table 38.** Meetings were chaired by an independent chairperson with the minutes being available on the MCO website.

Table 37: CCC Members 2024

Name	Representing	Name	Representing
Aleshia Lonsdale	Mudgee Local Aboriginal Land Council	Helen Ungaro	Ulan Public School and Local Landholder
Dr Julia Imrie	Local Landholder and Business Owner	David Stokes	Local resident
Bev Smiles	Mudgee District Environment Group	Ms Lisa Andrews (replaced by Deborah Palmer in September 2024)	DPIE endorsed Independent Chair
Cr Des Kennedy	Councillor, Mid-Western Regional Council	Cr Katie Dicker	Councillor, Mid-Western Regional Council
David Lowe	Mudgee Chamber of Commerce	Brian Wesley	Moolarben Coal Operations
Trent Cini (replaced by Ian Flood in December 2024)	Moolarben Coal Operations	Rebecca Shanks	Moolarben Coal Operations

Table 38: CCC Meeting Summary

Date	Meeting Summary
5th March 2024	General update on community interaction, operations and exploration, environmental monitoring, community complaints, rehabilitation, biodiversity offset management and employment. Update on the UG2 modification. Update on OC3 extension project.
4th June 2024	General update on community interaction, operations and exploration, environmental monitoring, community complaints, rehabilitation, biodiversity offset management and employment. Update on OC3 extension project. Update on NSW EnergyCo Project. Annual 2023 Review Summary.
3rd September 2024	General update on community interaction, operations and exploration, environmental monitoring, community complaints, rehabilitation, biodiversity offset management and employment. Update on OC3 extension project. Update on NSW EnergyCo Project.
3rd December 2024	General update on community interaction, operations and exploration, environmental monitoring, community complaints, rehabilitation, biodiversity offset management and employment. Update on OC3 extension project. Update on NSW EnergyCo Project.

10.4 ULAN ROAD STRATEGY

The Mid-Western Regional Council has continued maintenance works on Ulan Road. Moolarben continues to make financial contributions to the maintenance costs of the Ulan Road works detailed in the agreement.

11.0 INDEPENDENT AUDIT

During the reporting period an Independent Environmental Audit (IEA) was undertaken in accordance with Condition 9, Schedule 5 of PA 05_0117 (as modified) and Condition 9, Schedule 6 of PA 08_0135. The IEA was undertaken by RPS. In general, operational environmental management activities observed during the site inspection were being carried out in a competent manner, with the non-compliances identified by the Auditors being the exception.

A copy of the IEA including the Audit findings can be found on MCO's Website (www.yancoal.com.au/our-sites/moolarben/)

The next Independent Audit will be required by December 2027.

The note associated with Condition 9 of Schedule 5 of NSW Project Approval (05_0117) requires interim IEA's during the mining of Underground 4 Panels, the next interim IEA will be completed in 2025.

12.0 INCIDENTS & NON-COMPLIANCES

There were three non-compliances during the reporting period:

- On 8 February 2024 following an Open Cut 4 overburden blast, Blast Monitor 8 on Moolarben Road measured an overpressure result of 125.8 dBL above the limit of 120 dBL. MCO self-reported the incident on 8 February 2024.
- On 29 May 2024 following an Open Cut 1 overburden blast, Blast Monitor 1 at Ulan Village measured an overpressure result of 120.3dBL above the limit of 120 dBL. MCO self-reported the incident on 29 May 2024.
- On 18 November 2024 sediment laden stormwater runoff from the OC403 pit progression area breached erosion and sediment controls following an intense rainfall event. The sediment laden stormwater runoff flowed into the Murragamba Creek Catchment and was captured in the Murragamba Clean Water Diversion Dam (CWD01). MCO self-reported the incident on 18 November 2024.

13.0 ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

The following is a summary of measures to be implemented in the next reporting period.

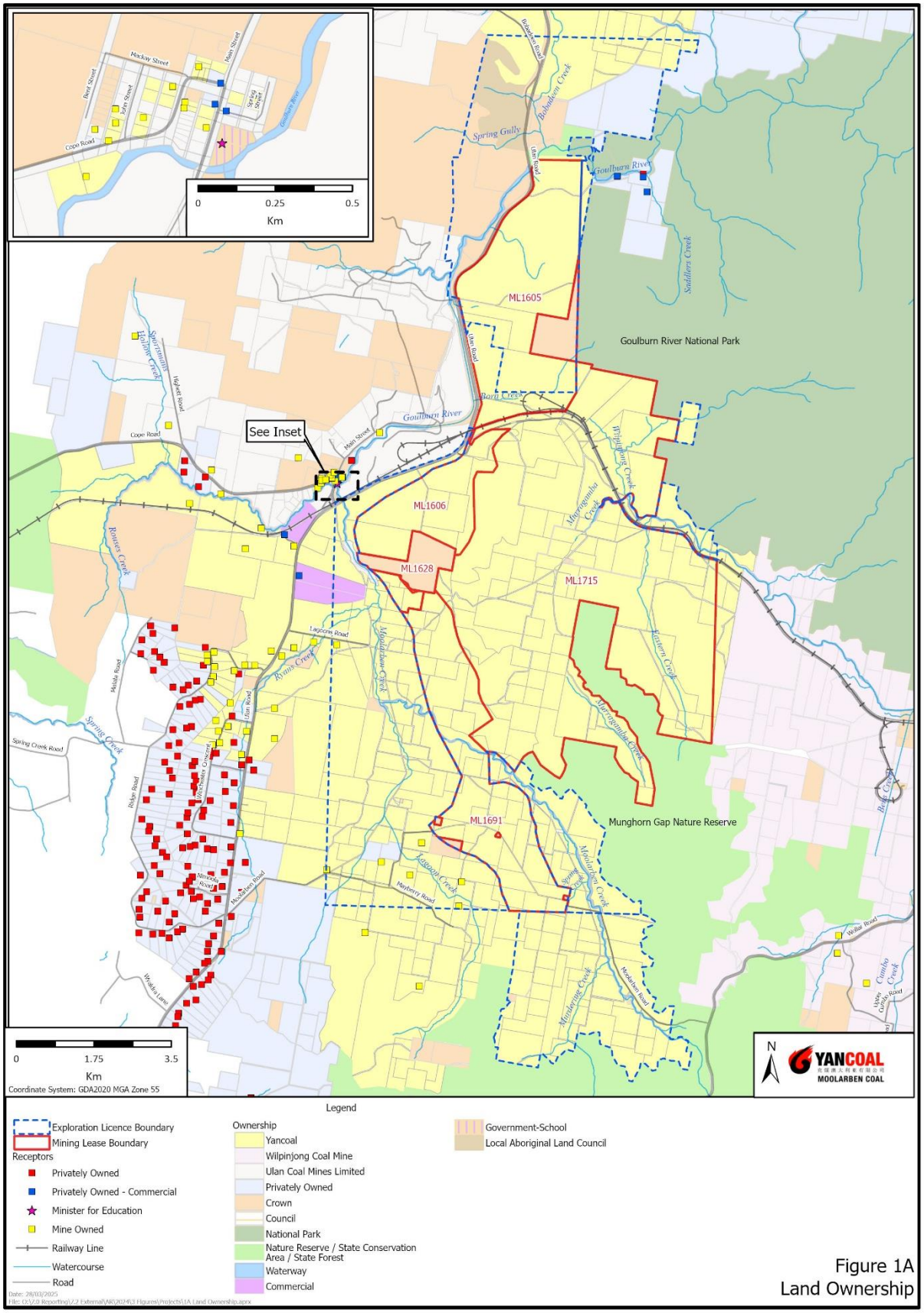
- Review and revise environmental management plans as necessary.
- Revision of water level triggers for Tertiary paleochannel piezometers PZ213, PZ214 and PZ188.
- Re-drill PZ058A.
- Monitoring network above UG2 and UG4 to be expanded.
- Continued progressive rehabilitation.

LIST OF APPENDICES

LIST OF FIGURES

APPENDIX 1. LAND OWNERSHIP

Figure 1-a Land Ownership



APPENDIX 2. MONITORING LOCATIONS

Figure 2-a Noise Monitoring Locations

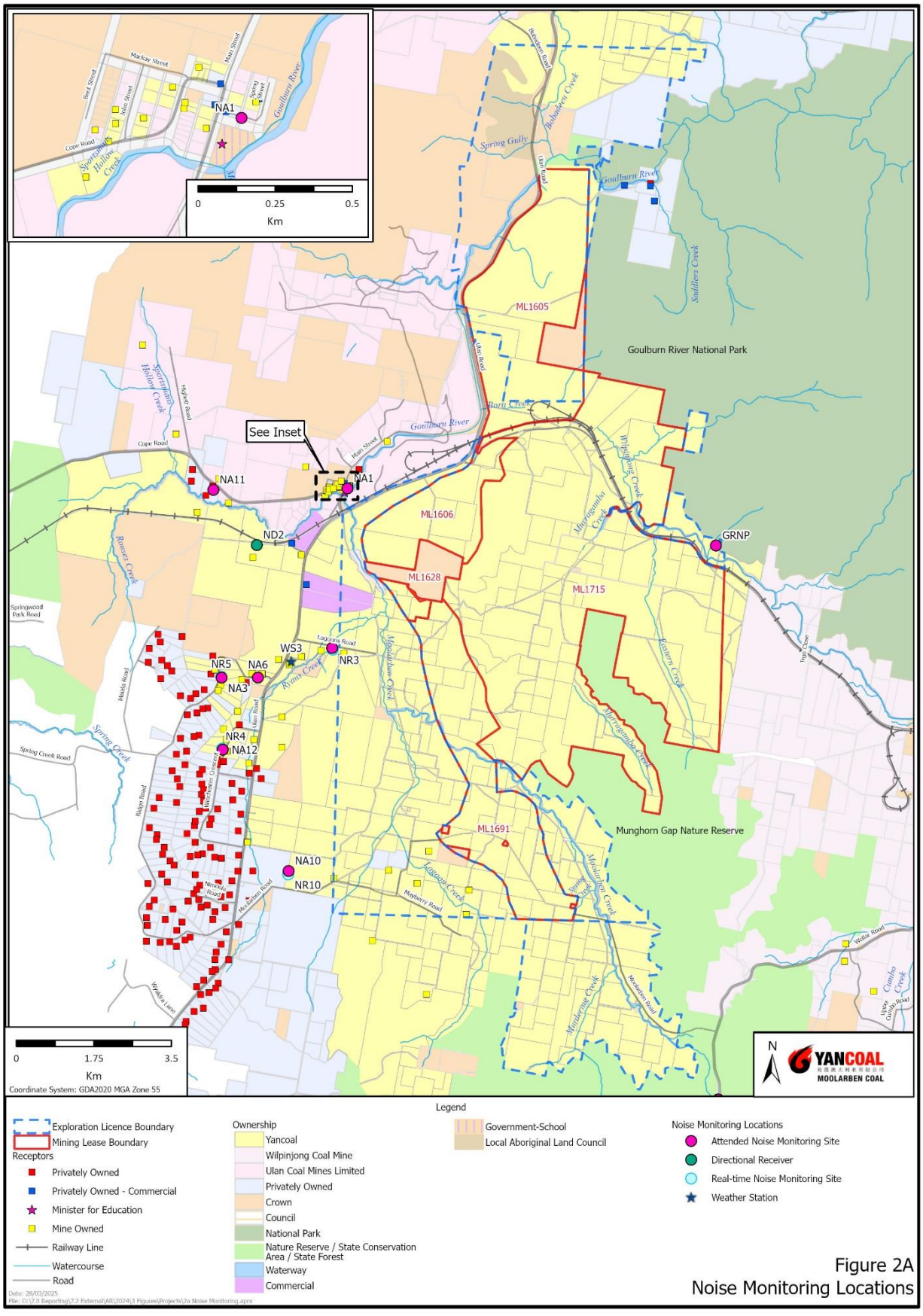


Figure 2-b Blast Monitoring Locations

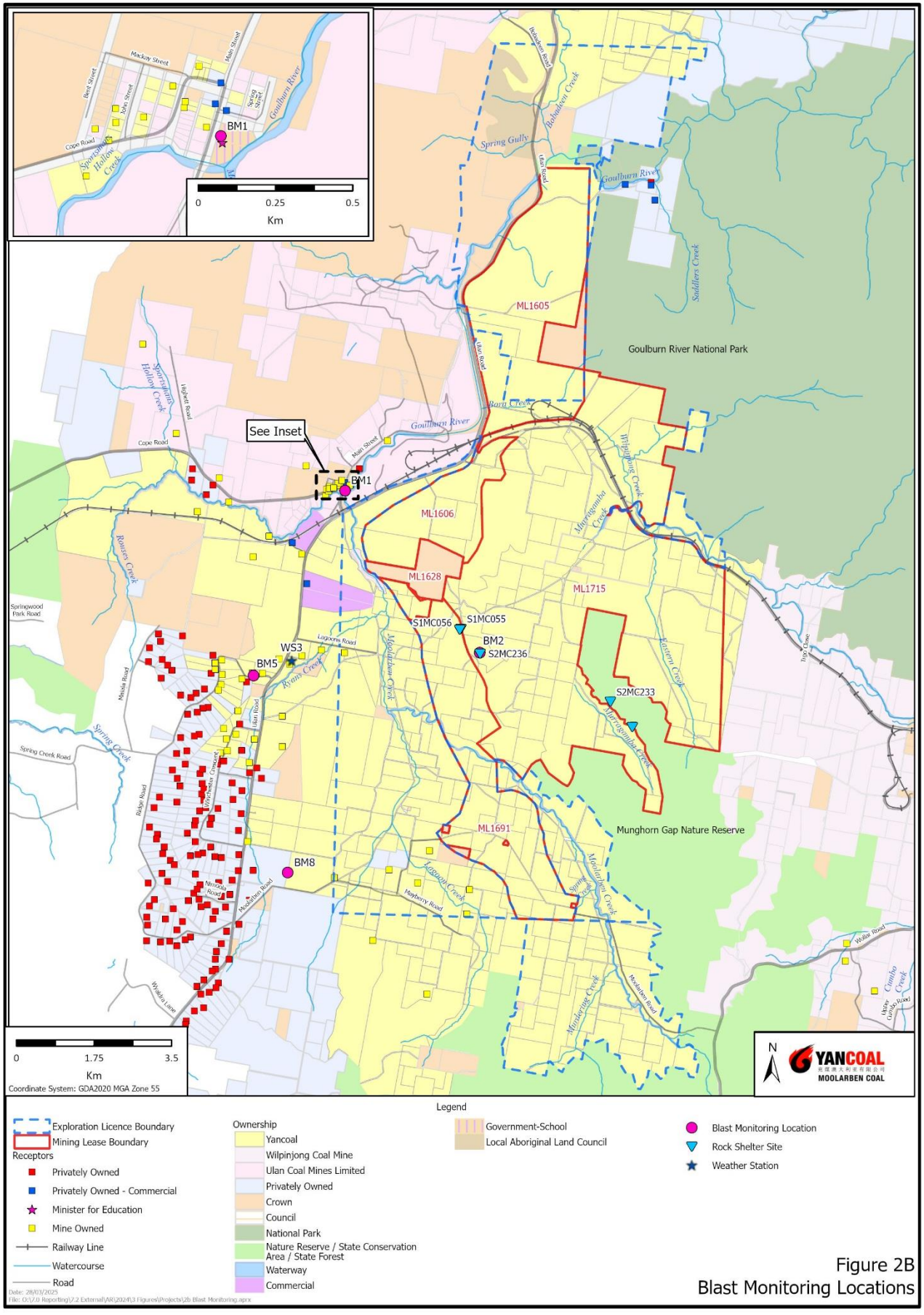


Figure 2-c Air quality Monitoring Locations

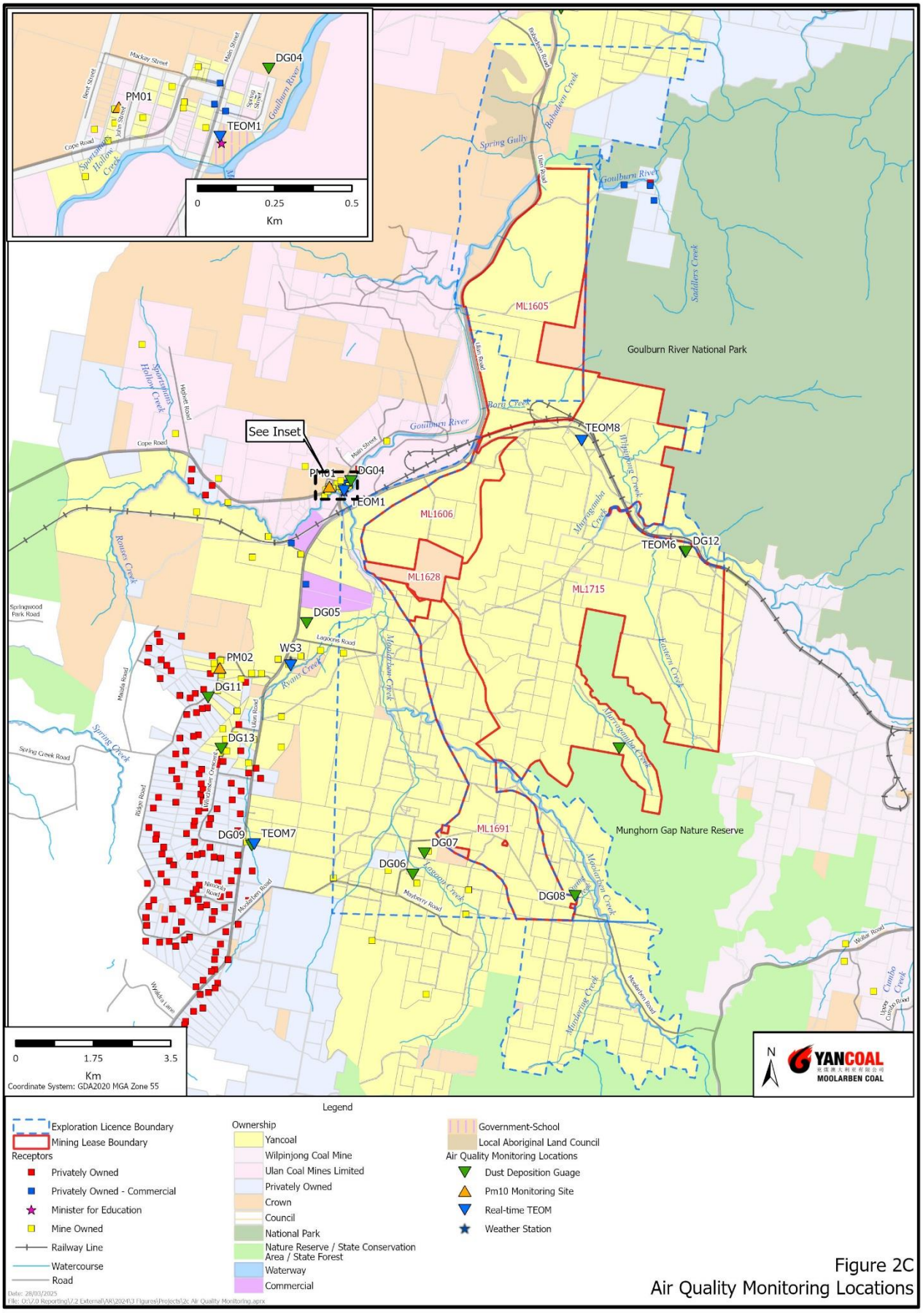


Figure 2-d MCO Northern Biodiversity Offset Area monitoring site locations

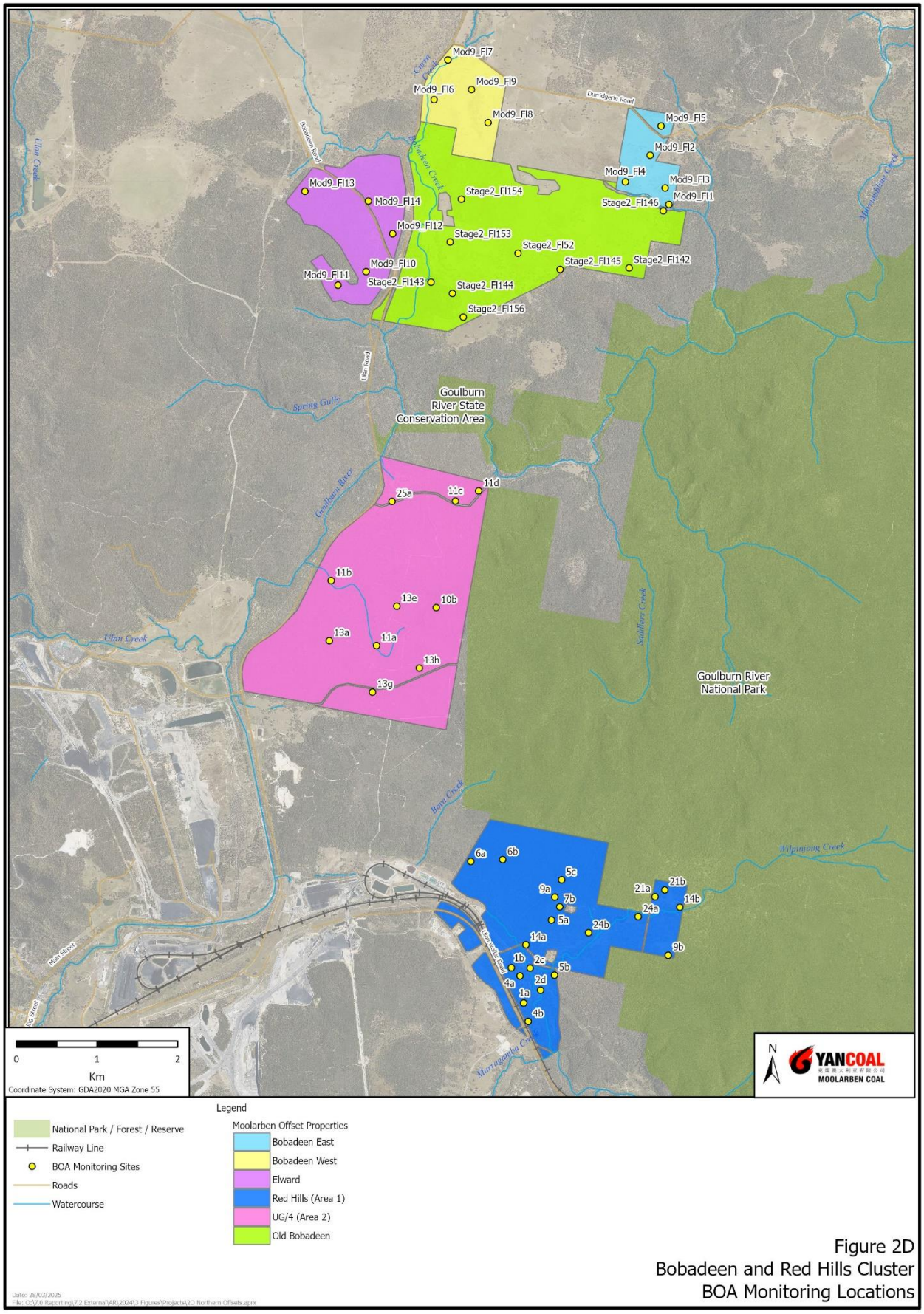


Figure 2-e MCO Western Biodiversity Offset Area monitoring site locations

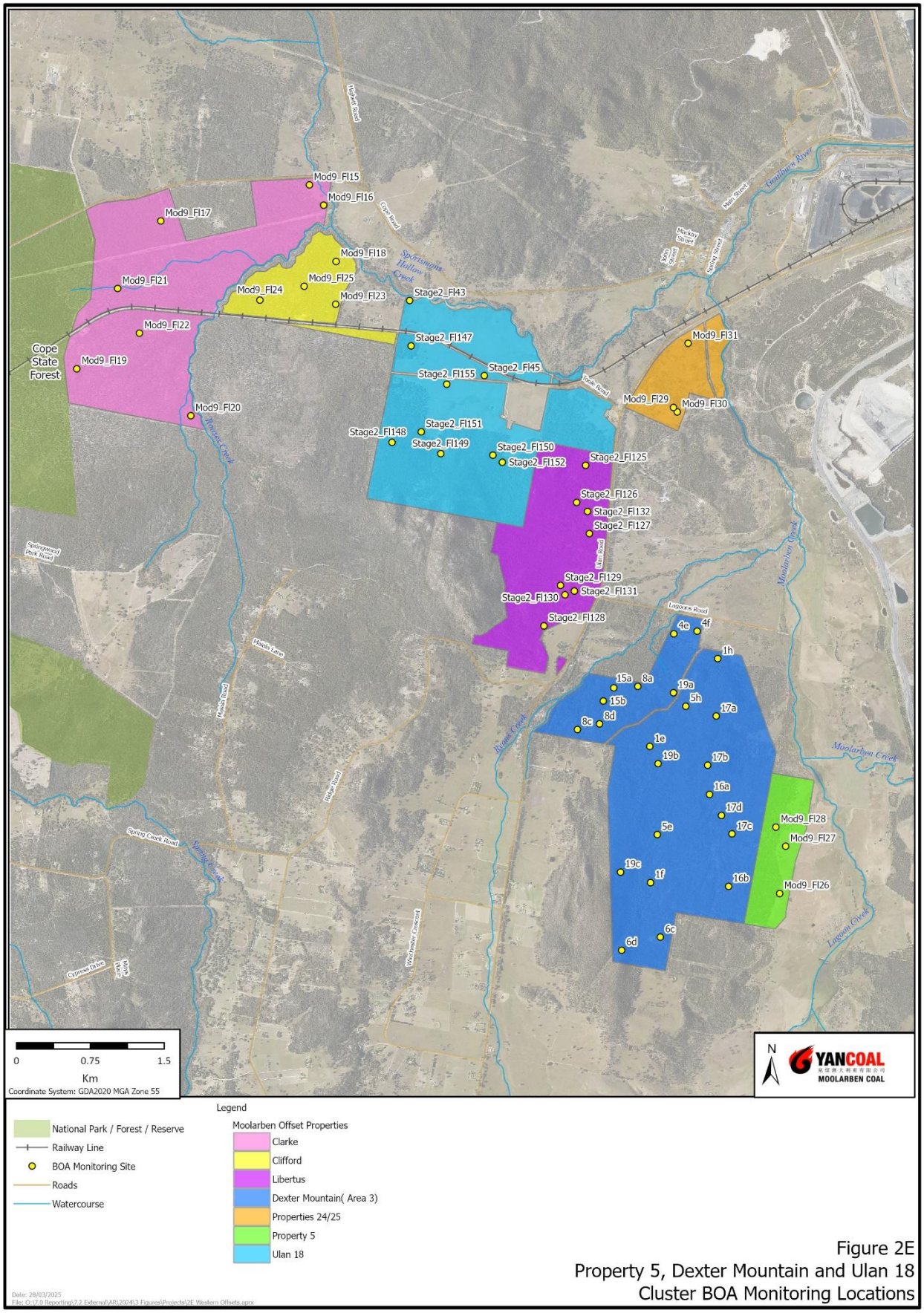


Figure 2-f MCO Southern Biodiversity Offset Area monitoring site locations

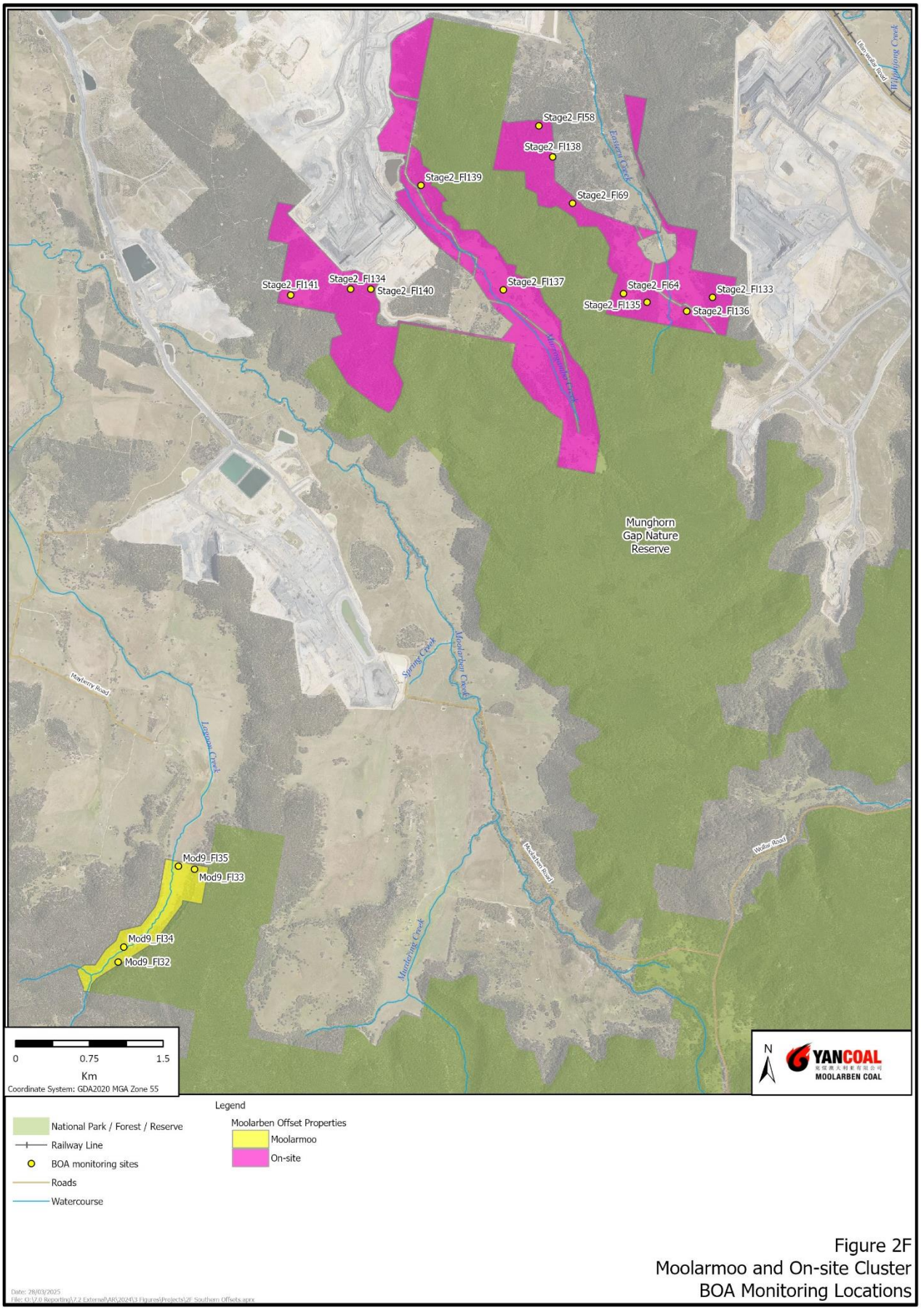


Figure 2-g MCO Remote Biodiversity Offset monitoring site locations

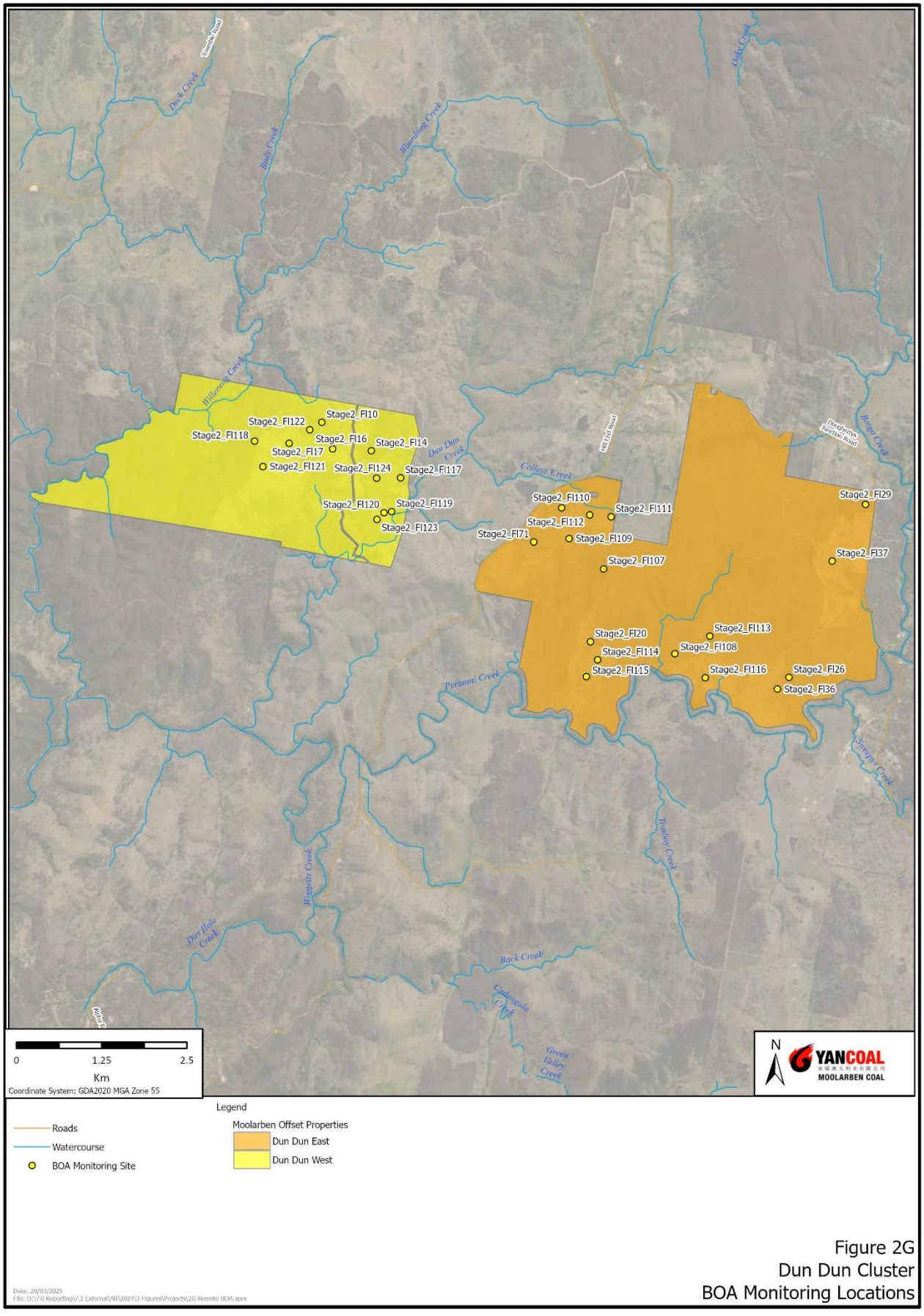


Figure 2-h MCO analogue monitoring site locations

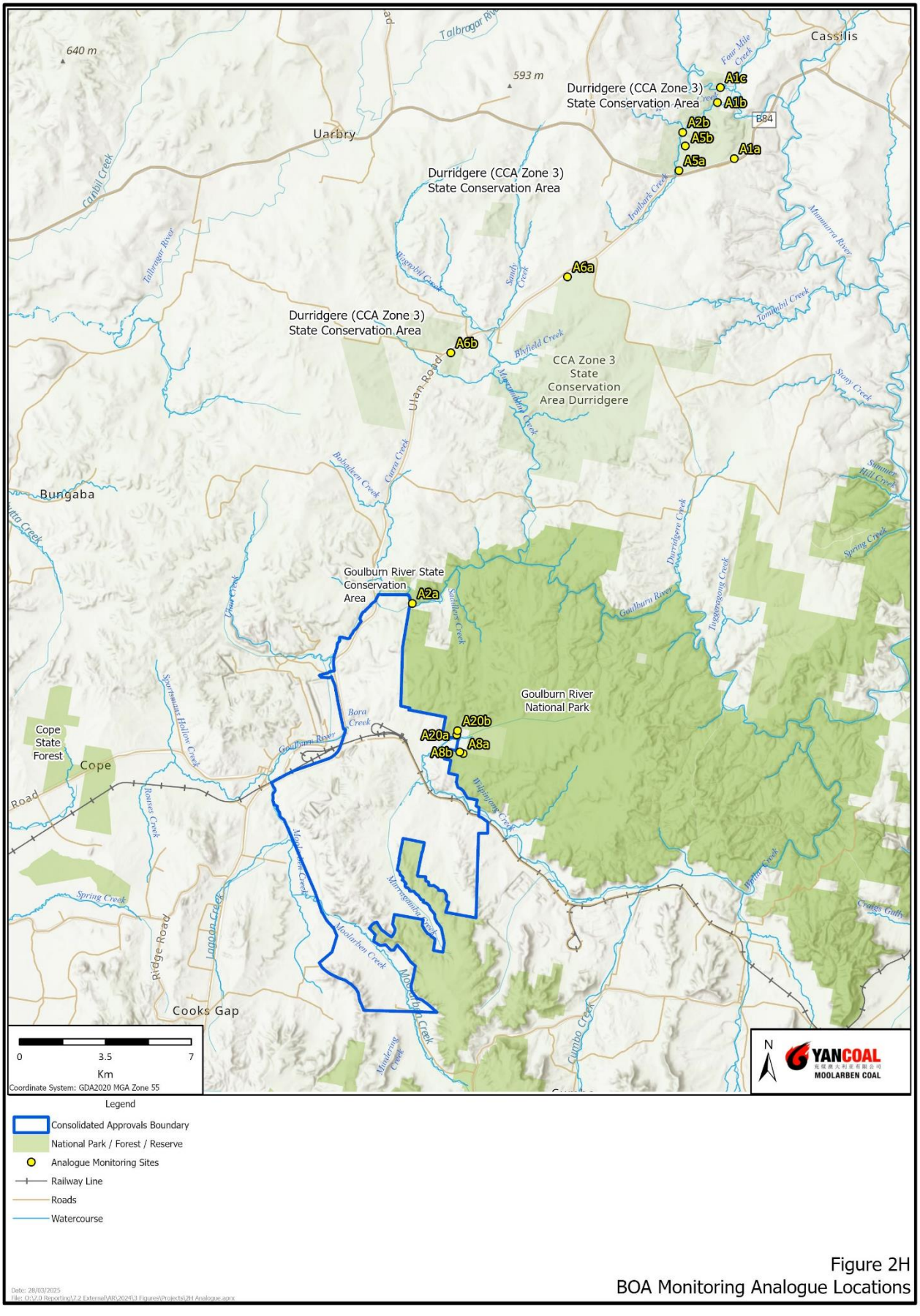


Figure 2-i Surface Water Monitoring Locations

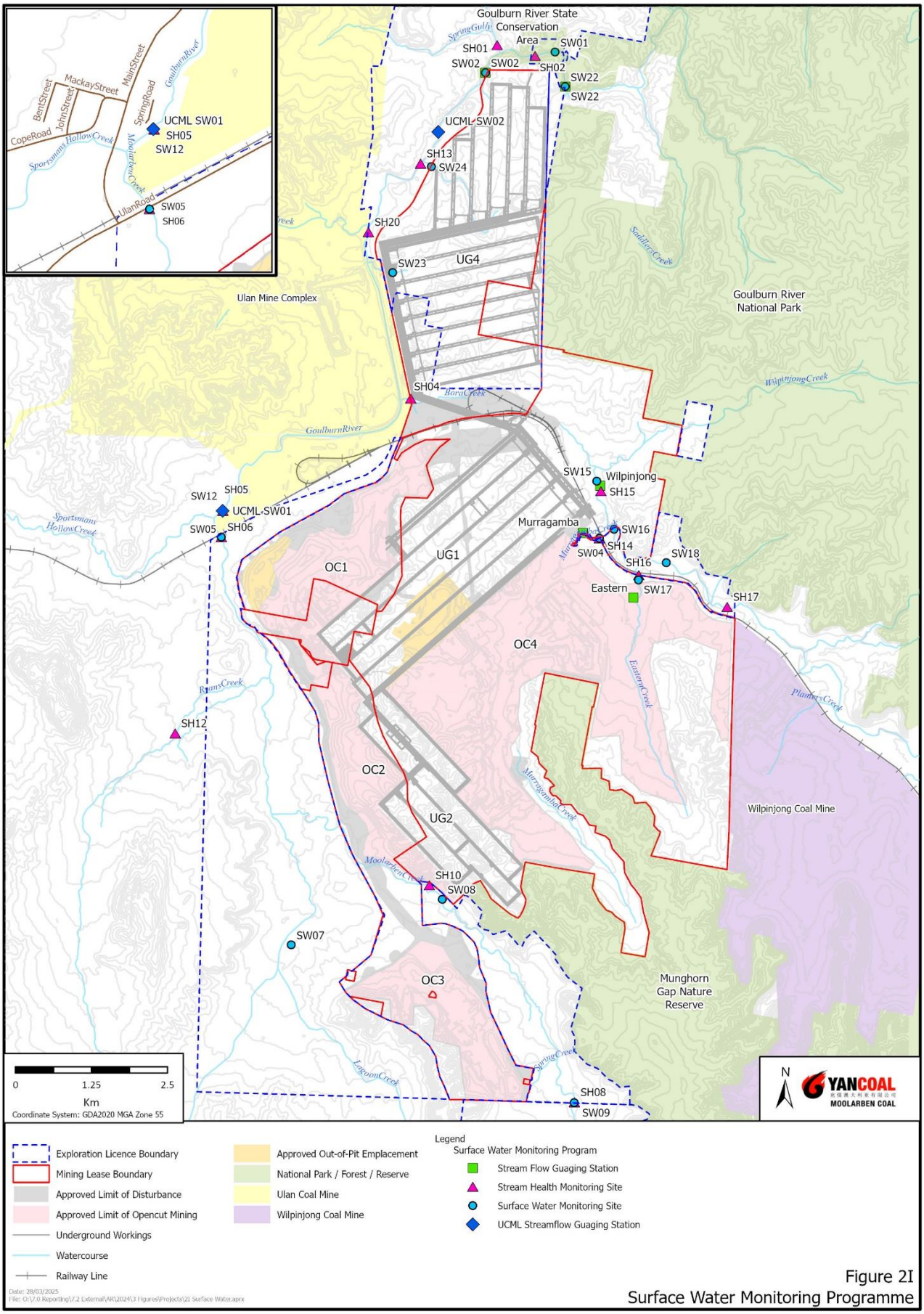


Figure 2-j Channel Stability Monitoring Locations

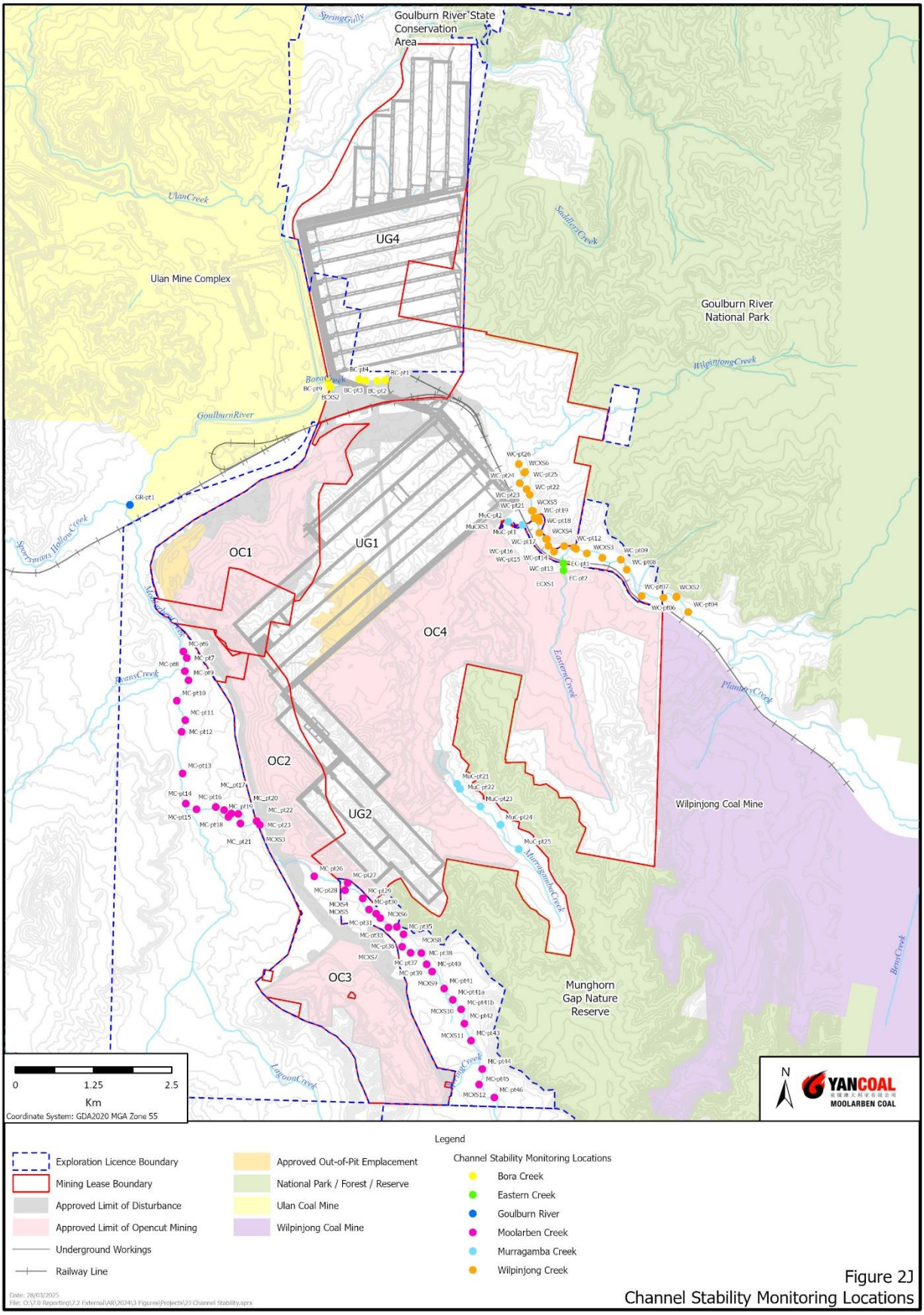


Figure 2-k Groundwater Monitoring Locations

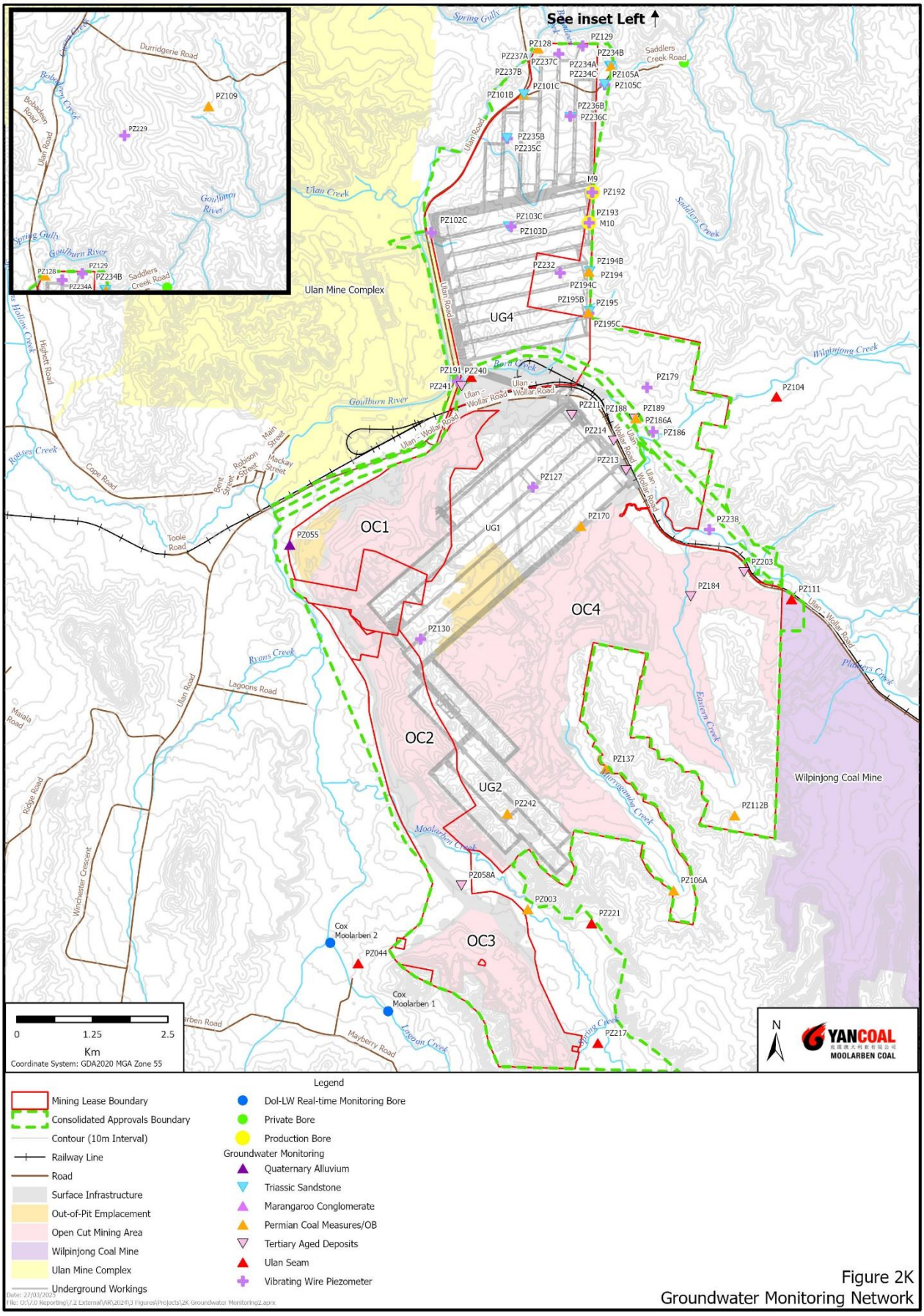
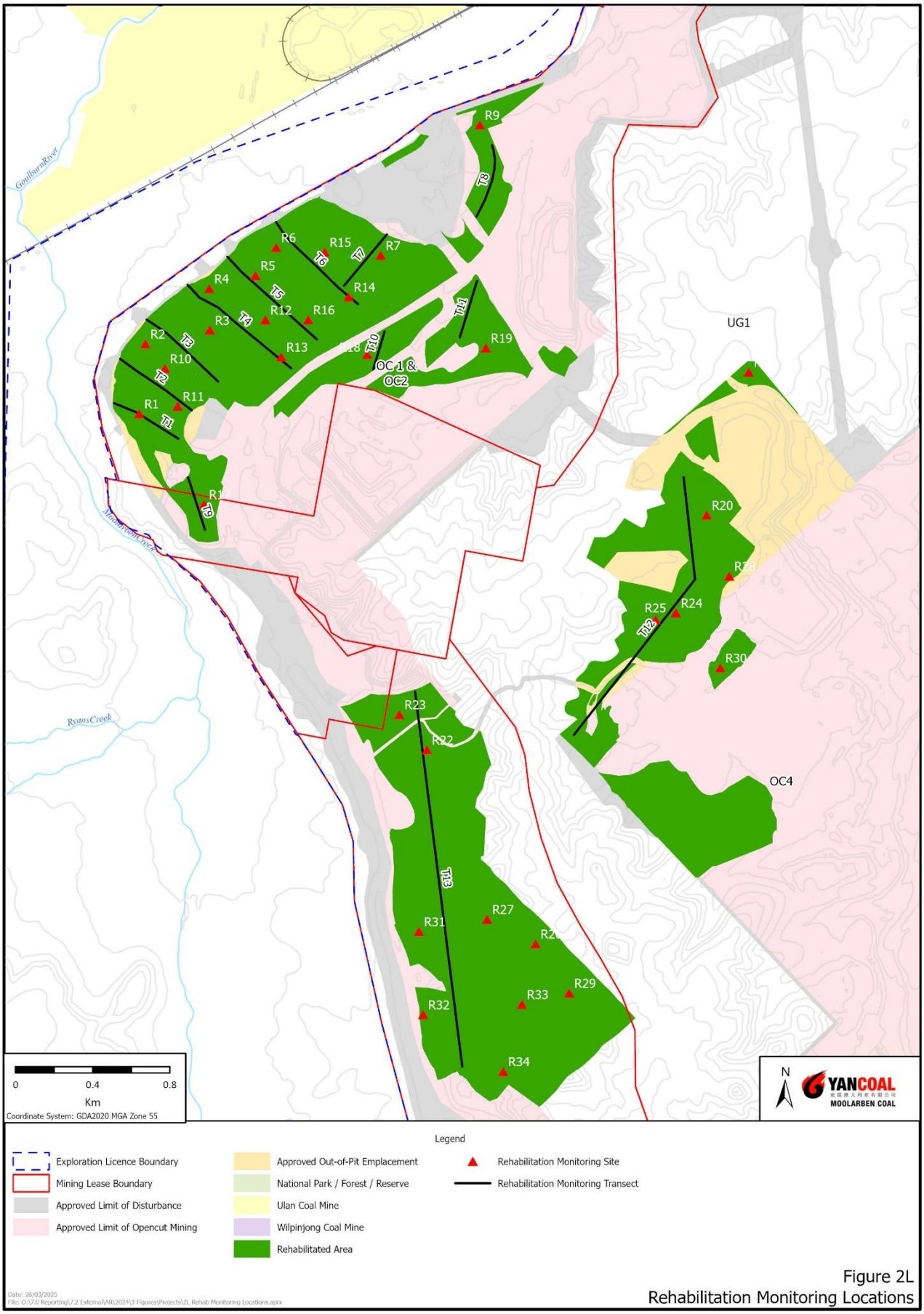


Figure 2-l Rehabilitation Monitoring Locations



APPENDIX 3. MONITORING DATA

APPENDIX 3A. DAILY METEOROLOGICAL DATA (WS03)

Date	Temperature (2m) (°C)		Temperature (10m) (°C)		Relative Humidity (%)	Rain (mm)
	Min	Max	Min	Max	Average	
1/01/2024	16.4	29.7	22.5	28.9	65.6	0
2/01/2024	17.8	31.8	24.6	31	64.5	0
3/01/2024	17.4	33.6	23.9	32.9	69.5	0
4/01/2024	14.5	34.4	22.6	33.5	77.1	4.8
5/01/2024	18	24.2	20.5	23.5	72.8	0
6/01/2024	16.4	26	20.7	25.4	62.4	0
7/01/2024	16.3	29.4	22.8	28.8	61.4	0
8/01/2024	18.8	23.7	21.4	24	83.7	19.2
9/01/2024	17.9	31	23.2	30.9	81.4	4.8
10/01/2024	19.9	31.3	24	30.9	78.2	0
11/01/2024	17.6	31.5	25.1	31.1	72.8	0
12/01/2024	20.4	30.4	25.1	29.7	63.6	0
13/01/2024	15.5	33.9	26	33.2	59.4	0
14/01/2024	20.2	26.9	23.3	26	66.7	0
15/01/2024	18.5	25.3	20.8	24.5	72.8	0
16/01/2024	18.1	25.5	21	24.8	74.3	1.4
17/01/2024	19.2	27.4	21	26.8	90.6	55.8
18/01/2024	13.2	27.1	22.6	26.8	73	0.6
19/01/2024	8.7	31.2	20.9	30.4	56.9	0
20/01/2024	15.1	33.4	24.1	32.9	58.5	0
21/01/2024	12.6	36.6	25.9	36.1	60.7	0
22/01/2024	12.9	30.1	23	29.6	62.6	0
23/01/2024	17.9	28.4	22.2	27.8	62.9	0
24/01/2024	12.3	35.1	24.2	34.6	62.9	0
25/01/2024	17.3	37.8	28	37.1	59.2	0
26/01/2024	17.2	37	29	36.3	54.5	0
27/01/2024	18.9	33.1	24.1	32.6	71.6	0
28/01/2024	13.3	29.9	22.4	29.2	71.4	0
29/01/2024	19.7	36.6	27.5	35.9	58.2	0
30/01/2024	23.2	33	27.9	32.4	63.1	0
31/01/2024	18.8	32.4	24.7	32	75.5	8
1/02/2024	20.1	34.1	20.5	32.9	65.4	0
2/02/2024	15	35.8	17.4	35	43.9	0
3/02/2024	18.4	34.8	18.8	34.5	56.5	0
4/02/2024	18	37.4	19.2	36.5	55.5	0
5/02/2024	23.1	33.9	25.3	33.4	54	0
6/02/2024	17	28.3	17.5	28.7	80.3	25.6
7/02/2024	14.6	17.7	14.9	18	83.4	2
8/02/2024	16.2	21.1	16.8	21.1	70.8	1
9/02/2024	13.1	27.2	13.9	27	66.9	0
10/02/2024	16.6	24.5	18.1	24	67.5	0
11/02/2024	16.8	25.1	17.4	24.7	69.6	0
12/02/2024	15.5	31.6	16.4	31.3	63	0
13/02/2024	14.7	33	16.2	32.2	59.8	0.2
14/02/2024	18.2	33.3	19.7	32.8	55.6	8.8
15/02/2024	18.6	26.5	19.1	25.9	75.6	0
16/02/2024	19.5	31.1	19.9	30.8	68	1
17/02/2024	16.8	32.1	17.9	31.6	68.3	0.8
18/02/2024	15.7	33.2	16.9	32	75.4	3.6
19/02/2024	13.7	28.3	15	27.6	68.6	0
20/02/2024	12.9	25.4	14.2	24.7	72.3	0.2
21/02/2024	18.3	29.2	18.8	28.5	65.8	0
22/02/2024	15.7	33.9	17.4	32.8	64.1	0
23/02/2024	16.9	36.4	18.8	35.2	59.6	2.8
24/02/2024	18	24.3	18.4	24	71.1	0
25/02/2024	16.5	30.6	16.9	30.3	64.1	0
26/02/2024	13.6	34.3	15	33.3	58.1	0
27/02/2024	20.2	29.6	20.5	29.1	67.3	0
28/02/2024	20.1	34.2	20.5	33.3	67.4	0.4
29/02/2024	18.8	37.6	19.9	36.3	62.6	24.8
1/03/2024	19.2	36.7	20.6	35.4	60	0

Date	Temperature (2m) (°C)		Temperature (10m) (°C)		Relative Humidity (%)	Rain (mm)
	Min	Max	Min	Max	Average	
2/03/2024	18.5	30.9	19.7	30.2	72.6	0.6
3/03/2024	12.9	30.1	16.4	29.6	60.4	0
4/03/2024	9	25.6	11.4	25	66.5	0
5/03/2024	14.3	27.9	14.8	27.7	63.6	0
6/03/2024	13.2	32.7	14.4	31.7	63.3	0
7/03/2024	17.2	33.9	18.6	32.5	67	12.8
8/03/2024	17.7	28.9	18.3	28.6	61.4	0
9/03/2024	14.1	28.4	16.1	28	59.3	0
10/03/2024	13.4	28.4	15	28	60.7	0
11/03/2024	13.6	29.2	15.3	28.6	61.8	0
12/03/2024	10.3	33.5	11.6	33.2	56.6	0
13/03/2024	10.2	31.4	12.5	31.2	51.5	0
14/03/2024	11.8	33.8	13.3	32.8	56.1	0
15/03/2024	16.4	23.2	17	23.6	63.4	0
16/03/2024	15.5	21	16	20.8	70.2	1.2
17/03/2024	14.8	25	15.2	24.2	79.9	5.6
18/03/2024	16.1	24.2	16.7	24	80.4	17.4
19/03/2024	17.1	30.9	17.8	30.3	70.5	0
20/03/2024	14.4	22.4	15.9	22.4	84.3	12.4
21/03/2024	13.3	20.6	14	20.3	61.3	0
22/03/2024	10	24.5	11.3	23.9	69.6	0
23/03/2024	9.1	21.9	10.2	21.7	82.5	0.4
24/03/2024	11.6	26.9	13.7	26	68	0.2
25/03/2024	8.2	27.6	9.5	27	59.7	0
26/03/2024	7.1	30.3	8.7	29.4	53.7	0
27/03/2024	9.9	26.4	11.7	26.2	67.8	0
28/03/2024	16.1	26.5	17.2	26.2	67.8	0
29/03/2024	11.6	27	13.1	26.7	69.3	0
30/03/2024	9	29.6	10.5	29.5	64.2	0
31/03/2024	9.5	26.8	11.3	26.4	64.6	0
1/04/2024	10.1	28.5	12.1	28.2	62	0
2/04/2024	10.3	23.4	13.5	23	76.3	12.2
3/04/2024	6.1	24.6	7.3	24	69.1	0.2
4/04/2024	12.9	19	14.7	19.2	81.1	5.4
5/04/2024	13.1	17.8	14	18.1	85.6	33.6
6/04/2024	11.7	23.3	12.7	22.9	77.2	1
7/04/2024	9.5	23.8	11	22.8	76.3	0
8/04/2024	9	23.7	10.4	23.1	72.7	0.2
9/04/2024	6.9	20.1	8	19.4	72.6	3.6
10/04/2024	3.5	20.2	5	19.7	65.2	0.2
11/04/2024	3.1	21.7	4.6	21.6	72.2	0
12/04/2024	6.3	24.1	8.2	23.6	74.5	0
13/04/2024	6.8	24.9	8.3	24.7	68.2	0
14/04/2024	6.7	25.5	8	25	70.5	0
15/04/2024	6	25.9	7.1	25	67.9	0
16/04/2024	7.7	25.7	9.1	25.2	65.9	0
17/04/2024	7.8	24.6	9.8	24.4	82.5	10
18/04/2024	6.7	21.9	10.6	21.6	72.3	0.2
19/04/2024	3.6	16.9	5.1	16.1	75.5	0.4
20/04/2024	10.7	15.7	11.2	16.1	82	4
21/04/2024	7.8	20.3	10.5	20.1	74.5	0
22/04/2024	6	20.8	7.8	20.4	78.2	0.2
23/04/2024	6.2	24.4	7.4	24.2	74.1	0
24/04/2024	8.2	23.6	9.8	23	65.2	0
25/04/2024	6.1	20.7	7.1	20.5	66.1	0
26/04/2024	3.6	19	5.1	19	73.4	0
27/04/2024	3.7	20.5	5.3	20.2	77.7	0
28/04/2024	4.9	23.5	6.5	23	75.8	0
29/04/2024	5.8	23.9	7.3	23.2	79.1	0.8
30/04/2024	9.9	16.9	11.2	16.9	86.5	7.2
1/05/2024	9.2	16.3	10.6	16.4	79	0.6
2/05/2024	6	16.9	7.3	16.8	77.4	0
3/05/2024	6.7	18.2	7.8	17.8	76.4	0
4/05/2024	11.2	13.4	11.8	13.8	86.7	19.6
5/05/2024	8.2	17.6	9.9	17.7	81.6	0.2
6/05/2024	7.2	18.7	8.8	18.6	73.8	0

Date	Temperature (2m) (ºC)		Temperature (10m) (ºC)		Relative Humidity (%)	Rain (mm)
	Min	Max	Min	Max	Average	
7/05/2024	10.2	18.3	11.3	18.1	69.4	0
8/05/2024	4.8	18.9	6.2	18.7	79.5	0.2
9/05/2024	8.5	19.9	9.9	19.4	77.6	0
10/05/2024	13.3	17.4	13.9	17.4	72	0
11/05/2024	12.5	16.1	13	16.3	87.5	16
12/05/2024	8	18.9	9	18.8	81.8	0.2
13/05/2024	5.2	20.6	6	20.7	81.5	0.4
14/05/2024	4	21.4	5.2	21.3	75.3	0
15/05/2024	3.3	20.7	4.7	21.1	80.9	0.2
16/05/2024	4.3	19.2	5.7	19	81.5	0
17/05/2024	5	20.7	6	20.3	79.3	0.2
18/05/2024	1.1	15.2	2.4	15.1	75.1	0.2
19/05/2024	-1	15.9	0.6	15.8	68.9	0.2
20/05/2024	-1.6	16.7	-0.5	17.2	69.6	0
21/05/2024	1.9	18.2	3.4	17.9	80.4	0
22/05/2024	2.8	18.2	4.3	17.5	79.8	0.2
23/05/2024	0.1	17.3	1.5	17.5	79	0
24/05/2024	1	19.6	2.4	19.4	80	0
25/05/2024	4.3	17.7	6.1	18.1	86.2	0
26/05/2024	3.7	19.2	5.3	18.6	79.3	0.2
27/05/2024	1	18.7	2.3	18.8	75.4	0
28/05/2024	0.8	19.6	1.9	19.7	78.7	0
29/05/2024	2	21.4	3.4	21.3	77.3	0
30/05/2024	2.2	21.1	3.8	20.9	76.4	0.2
31/05/2024	9.9	16.8	11.5	17.4	82.8	21.4
1/06/2024	9.1	14.4	10	14.6	86	44.4
2/06/2024	4.3	12	5.6	12.1	83.4	6.6
3/06/2024	1.6	12.9	3.5	12.8	78.2	0
4/06/2024	1.5	11.1	2.8	11	82.6	0.2
5/06/2024	2.2	11	3.5	10.9	87.3	0
6/06/2024	1.1	15.2	2.2	14.7	85.6	0
7/06/2024	6.7	10.6	7.9	10.8	89.7	5.2
8/06/2024	8.4	13.5	9.1	13	83.4	0
9/06/2024	4.1	13.9	5.8	13.1	81.8	0.2
10/06/2024	0.7	15.3	1.9	14.8	81.9	0
11/06/2024	0.4	15.8	1.6	15.5	76.7	0.2
12/06/2024	2.3	14.4	4.6	14	73.4	0
13/06/2024	-2	13.8	-0.5	13.9	78.9	0.2
14/06/2024	5.8	12.9	6.5	12.8	83.2	0.2
15/06/2024	7.3	11.6	8.1	11.8	90.3	8.6
16/06/2024	3.4	14	4.8	13.5	72.7	0.2
17/06/2024	1.2	14.5	2.8	14.5	77.3	0.2
18/06/2024	-0.5	13.9	0.5	13.7	80.7	0
19/06/2024	-2.4	12.6	-1.2	12.4	80.7	0.2
20/06/2024	0.9	15.3	1.8	15.2	77	0
21/06/2024	3.4	14.1	4.4	13.4	84	2.2
22/06/2024	-1.1	14.1	-0.2	14.3	83.6	0.2
23/06/2024	0.1	14.6	1.4	14.7	85.3	0.2
24/06/2024	0	15.8	0.6	15.5	84.1	0.2
25/06/2024	-1.5	17.3	-0.3	17.1	82.9	0
26/06/2024	1.5	19.3	3	19.1	79	0.2
27/06/2024	-1.5	15.3	-0.2	14.9	78.8	0
28/06/2024	-2.7	16.2	-1.6	16.1	78.2	0.2
29/06/2024	-2.5	19.2	-1.1	19.1	83.7	0
30/06/2024	5	15.6	5.9	16.4	81.7	16.4
1/07/2024	2.6	13.1	3.8	13.1	77.3	0.6
2/07/2024	1.2	13	2.5	12.8	82.9	0
3/07/2024	2.7	14.8	4.4	14.5	79.3	0
4/07/2024	1.4	14.8	2.7	14.6	74.6	0
5/07/2024	4.7	13.7	6.7	14	79.5	0.8
6/07/2024	2.2	14.3	4	14.2	78.6	0.2
7/07/2024	0	12.9	1.5	13.1	85.7	0.2
8/07/2024	9.7	11.1	10.1	11.4	90.4	20.6
9/07/2024	5.7	15.6	7.1	15	82.2	1.4
10/07/2024	4.3	12.6	6.6	12.4	83.9	0
11/07/2024	-0.1	13.8	0.7	13.7	86.5	0.2

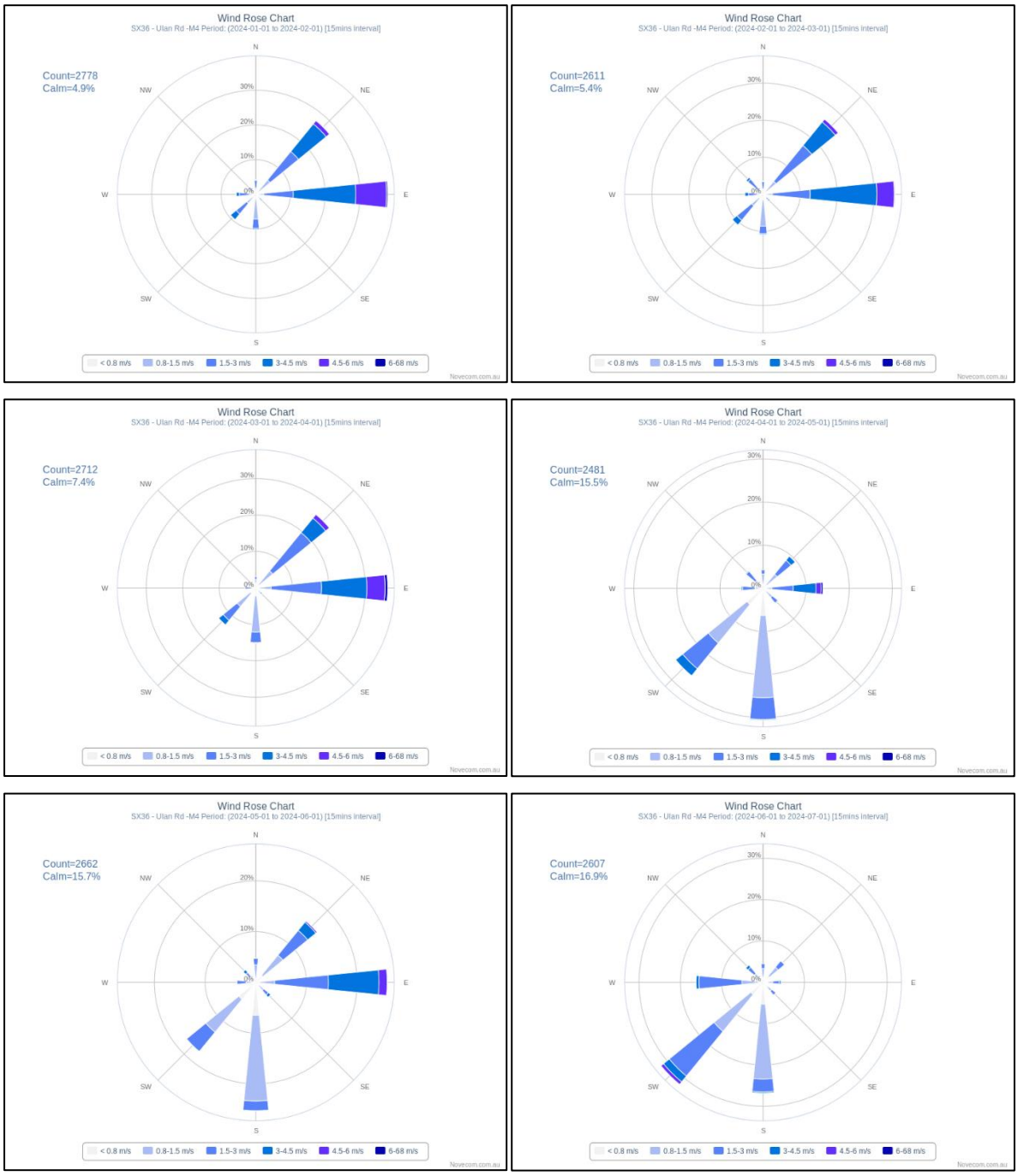
Date	Temperature (2m) (ºC)		Temperature (10m) (ºC)		Relative Humidity (%)	Rain (mm)
	Min	Max	Min	Max	Average	
12/07/2024	1.8	15	2.7	14.7	81.4	0
13/07/2024	1	14.7	2.1	14	80.6	0
14/07/2024	1.7	9.9	3.5	9.9	81.2	0.4
15/07/2024	1.6	9.6	3.3	9.1	83.9	1.8
16/07/2024	4.8	7.7	5	7.6	87.5	2
17/07/2024	5.6	11.4	6.5	11.2	86.6	1.8
18/07/2024	3.2	10.9	4.4	10.5	81.7	0.2
19/07/2024	3.8	12	4.5	11.7	68.1	0
20/07/2024	6.5	12.6	7.3	12.4	65	1.2
21/07/2024	1.2	12.1	3.2	11.8	70.1	0
22/07/2024	-0.8	15.2	0.3	14.6	84	0
23/07/2024	-1.6	15.6	-0.6	15.5	81.3	0
24/07/2024	-1.9	17.7	-0.8	17.5	77.7	0
25/07/2024	1.1	18.8	2.6	18.6	77.6	1.4
26/07/2024	5	18.5	6.6	18.3	79.7	5
27/07/2024	6.6	12.9	7.4	13.4	93.6	29.8
28/07/2024	3.7	9.5	4.4	9.2	71.6	0.4
29/07/2024	-0.7	11.4	0.2	11.3	73.1	0.2
30/07/2024	-3.8	14.1	-2.5	13.8	78	0.2
31/07/2024	-2.4	14	-1.2	14	79.1	0
1/08/2024	-2.2	14.6	-0.9	14.2	80.2	0.2
2/08/2024	-1.4	13.8	-0.1	13.9	83.3	0
3/08/2024	-1.3	15.5	-0.2	15.7	82.1	0.2
4/08/2024	-1.2	14.9	-0.2	14.5	79.2	0
5/08/2024	4.4	14.1	5.7	14.1	86.9	8.8
6/08/2024	1.3	15.1	2.2	14.6	84.2	1.4
7/08/2024	-1.4	16.7	-0.7	16.7	77.7	0
8/08/2024	-0.5	17.3	0.6	17.3	83.5	0.2
9/08/2024	4.2	18.4	5.6	17.9	81.4	0
10/08/2024	5.4	18.7	6.3	18.9	83.5	1.6
11/08/2024	6.8	16.7	8.2	17	78.9	0.2
12/08/2024	6.1	14.7	7.8	14.8	83.4	0
13/08/2024	10.9	18	11.5	18	82.1	1.8
14/08/2024	11.7	14.7	12.8	15	89.1	13.6
15/08/2024	11.6	16.6	12	16.8	80.7	0
16/08/2024	10.3	20.3	10.8	19.5	75.9	3.6
17/08/2024	8.4	15.5	9.3	15.2	76	10.4
18/08/2024	6.1	16.6	7.3	16.2	78.8	0
19/08/2024	5.9	17.5	7.5	17.5	76.6	0
20/08/2024	7.2	20.2	9.2	20.3	78	0
21/08/2024	7.9	21.8	8.8	21.2	63.2	0
22/08/2024	5.1	19.6	6.5	19.1	73.7	0
23/08/2024	1.8	19.3	3	19.4	75.1	0
24/08/2024	5.8	22.5	7	22.5	73.9	1.8
25/08/2024	10.1	16.1	12.1	16.6	90.9	14.8
26/08/2024	4.6	19.7	6.1	19.2	66.4	0.2
27/08/2024	1.6	22.3	2.9	21.9	70.7	0
28/08/2024	4.8	24.3	8.3	23.6	55.5	0
29/08/2024	3.8	19.4	5.5	18.8	60.7	0
30/08/2024	2.8	28	4	27.7	59.6	0
31/08/2024	5.5	19.3	6.9	20	53.9	0
1/09/2024	5.4	23.3	6.9	22.7	28	0
2/09/2024	4.4	19.5	5.9	19	29	0
3/09/2024	0.4	18.6	1.7	18.1	26.6	0
4/09/2024	-0.9	21.3	0.5	20.8	20.7	0
5/09/2024	2.5	22.7	4.4	22.2	40.5	0
6/09/2024	4.3	24.4	6.2	24.1	39.3	0
7/09/2024	7.6	27.2	9.9	26.9	32.5	0
8/09/2024	7.6	16.7	9.4	16.6	46.1	0.8
9/09/2024	4	19.7	5	19	38	0
10/09/2024	1.5	20.4	3.1	20.3	38.8	0
11/09/2024	2.6	24.2	4.2	23.7	35.5	0
12/09/2024	7.7	19.9	8.9	19.7	44.9	17
13/09/2024	3.6	17.9	6	17.6	39.1	0.2
14/09/2024	2.6	20.1	4.1	19.3	32.3	0
15/09/2024	-0.2	15.3	1.1	14.9	26.1	0

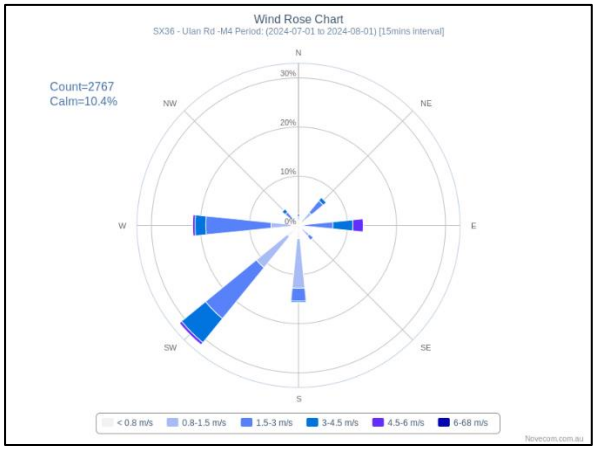
Date	Temperature (2m) (ºC)		Temperature (10m) (ºC)		Relative Humidity (%)	Rain (mm)
	Min	Max	Min	Max	Average	
16/09/2024	-2.9	17.4	-1.6	17	20.4	0
17/09/2024	-0.2	18.9	1.1	18.4	31.1	0
18/09/2024	-1.1	21.2	0.4	20.8	20.7	0
19/09/2024	2.2	23.2	5.7	22.8	13.4	0
20/09/2024	0.6	19.2	2	18.8	30.3	0
21/09/2024	1.4	19.4	3	18.6	34.5	0
22/09/2024	0.5	21	1.8	20.6	31.8	0
23/09/2024	2.1	24.3	3.5	23.6	23.9	0
24/09/2024	4.4	25.8	6	25.5	24	0
25/09/2024	10.2	24.4	12.5	24.4	37.3	0
26/09/2024	7.5	15	8.1	15.6	76.9	18.8
27/09/2024	7.1	15.5	8.2	15.3	52.5	0
28/09/2024	3.4	17.6	5.4	17.5	51.2	0
29/09/2024	10.9	20.3	11.5	20.2	61.9	1.6
30/09/2024	9.9	22	11.4	21.3	28.6	4.8
1/10/2024	6.3	22.6	7.7	21.6	68.6	0
2/10/2024	6.5	20.6	8.4	20.4	72.9	0
3/10/2024	8.4	20.1	10.2	19.9	64.7	0
4/10/2024	4.5	23.4	5.5	23.1	69.1	2
5/10/2024	8.8	24	11.2	23.3	67.4	1.4
6/10/2024	8.2	24.1	10.4	23.4	56.3	0
7/10/2024	5.6	26.4	6.8	25.9	59.7	0
8/10/2024	6.5	26	8	25.5	68.2	0
9/10/2024	10.7	16	11.1	15.7	70.2	0
10/10/2024	7.3	23.8	8.6	23.5	67.6	0
11/10/2024	5.3	27.3	6.6	26.8	62.8	0
12/10/2024	6.7	17.8	8.3	17.6	71.2	0
13/10/2024	10.5	21.2	10.9	20.8	65.9	0
14/10/2024	9.1	20.9	10.1	20.7	85.4	16
15/10/2024	11.5	16.8	12.1	16.8	85.4	2
16/10/2024	9.7	11.8	9.9	12.1	90.3	21
17/10/2024	10.8	22	11.3	21.8	80.3	0
18/10/2024	14.3	25.4	14.8	25.3	84.3	34.2
19/10/2024	11.6	21.1	13.1	20.3	74.1	0.2
20/10/2024	7.5	26.3	8.8	26.1	69	0
21/10/2024	9	22.7	10.2	22.7	67.2	0
22/10/2024	9	26.7	9.8	26	67.2	0
23/10/2024	6.8	28.8	8.3	28	63.3	0
24/10/2024	11.3	25.4	14.2	24	49.6	0
25/10/2024	3.5	20.3	5.6	19.4	50.3	0
26/10/2024	3.8	20.9	5.2	20.7	63.3	0
27/10/2024	7	24.4	8	23.5	61.4	0
28/10/2024	4.5	28.5	6.3	27.6	51.5	0
29/10/2024	14	26.7	14.3	26.4	55.5	0
30/10/2024	8.9	28	10.5	27.3	62.7	0
31/10/2024	6.2	28.9	7.5	27.8	48.9	0
1/11/2024	7.1	27.2	8.8	26	57.7	0
2/11/2024	11.4	24.9	13	24.9	66.5	0
3/11/2024	11.1	32	12.3	31.3	59	0
4/11/2024	13.4	30.4	15.4	29.7	53.9	0
5/11/2024	11.4	27.5	13.4	27.2	71.4	0
6/11/2024	16.3	35.1	16.8	34.4	60.1	0
7/11/2024	15.3	33.2	16.3	32.5	60	1.6
8/11/2024	10.4	26.3	11.6	25.7	61.4	2.4
9/11/2024	7	29.2	8.6	28.7	55.5	0
10/11/2024	11.3	31.4	12.5	30.4	54.6	0
11/11/2024	15.6	19.1	16.1	19.2	80.2	6.6
12/11/2024	14	22.7	14.8	22.6	77.5	0.2
13/11/2024	11.2	30.4	12.4	28.9	78.1	0.6
14/11/2024	9.9	29.4	10.9	28.9	72.9	0.2
15/11/2024	16.5	23.6	16.9	23	73.3	0
16/11/2024	16.8	28.6	17.2	28.4	66.8	0
17/11/2024	14.1	31	15.5	30.6	70.7	14.6
18/11/2024	11.7	26.1	14.2	25.5	61.7	45.2
19/11/2024	10.8	25.2	12.4	24.8	65.4	0
20/11/2024	10.3	25.6	11.3	25.3	66.8	0

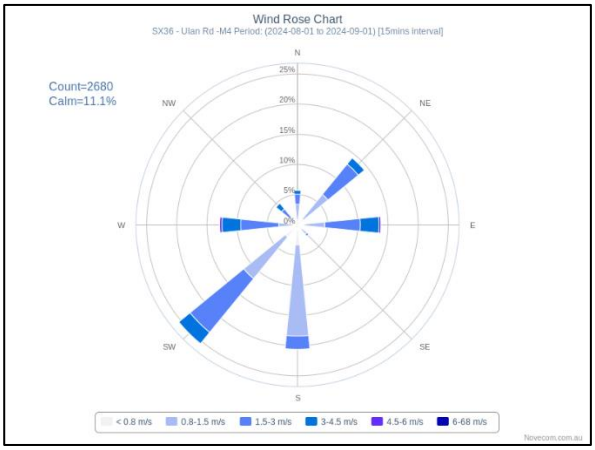
Date	Temperature (2m) (ºC)		Temperature (10m) (ºC)		Relative Humidity (%)	Rain (mm)
	Min	Max	Min	Max	Average	
21/11/2024	9.3	24.6	10.8	24.4	62.7	0
22/11/2024	9.2	28.2	10.5	27.9	62.5	0
23/11/2024	10.8	32.6	12.3	31.7	59.5	0
24/11/2024	13.3	33.8	15.3	32.8	48.3	0
25/11/2024	14.1	34.1	15.7	33.6	54.4	0
26/11/2024	14.4	34.1	16.5	33.3	52.3	0
27/11/2024	15	31.2	17.1	30.6	63.3	0
28/11/2024	16.9	25.1	17.7	24.6	89.6	18.2
29/11/2024	17.9	21.9	18.6	22.1	86.8	10.6
30/11/2024	18.3	20.3	18.9	20.4	87.3	28.4
1/12/2024	15.3	30	16.7	29.2	69.2	0
2/12/2024	12.8	33.2	14	32.5	64.9	0.2
3/12/2024	16.1	24.7	17.7	25	82.6	36
4/12/2024	14	27.3	17.6	29.2	69.5	14.6
5/12/2024	17.3	29.8	18.6	30.4	72.6	0
6/12/2024	19	33.1	20	32.6	77.3	3
7/12/2024	19.9	31.2	20.7	30.4	71.3	4.6
8/12/2024	18.8	32.1	20.1	31.3	64.8	0.4
9/12/2024	*	*	*	*	*	*
10/12/2024	-2.6	30.5	-3.2	29.3	50.5	0
11/12/2024	15.1	30	15.8	28.7	59.1	0
12/12/2024	9.5	32.2	10.7	30.5	51.4	0
13/12/2024	11.5	33.3	12.9	32	53.4	0
14/12/2024	13.8	35.1	15.2	33.8	58.8	0
15/12/2024	16.6	36.2	18	34.8	55.6	0
16/12/2024	19.6	34.2	20.4	34.3	56	0
17/12/2024	16.3	36.3	18	34.6	57.2	0
18/12/2024	14.9	22.3	15.6	21.6	58.6	0
19/12/2024	13.5	25.9	14.2	25.5	54.7	0
20/12/2024	9.2	32.7	10	30.8	54.6	0
21/12/2024	10.7	34.5	11.9	32.7	51.8	0
22/12/2024	15.8	35.1	17.7	33.8	48	0
23/12/2024	10.8	25.4	12.4	24.4	35.1	0
24/12/2024	6.3	29.3	7.7	28.3	38.7	0
25/12/2024	11.3	33	12.8	32.7	50	0
26/12/2024	11.6	34.1	13.5	33.4	50.3	0
27/12/2024	16.6	34.7	17.2	34.2	52.2	18.6
28/12/2024	12.6	28	14.1	26.7	41.6	0
29/12/2024	7.3	30.8	9.2	29.7	44.8	0
30/12/2024	13	31.5	16.3	30.8	53	0
31/12/2024	17.7	33.3	18.4	31.6	64.8	0

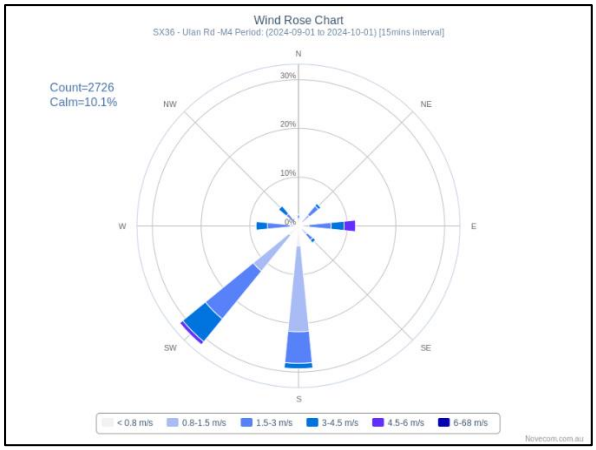
* - Data not available due to power outage

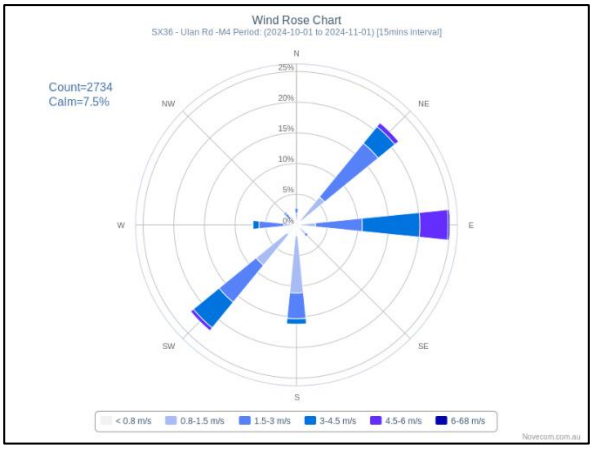
Figure 3-a Monthly Wind Rose (WS03)

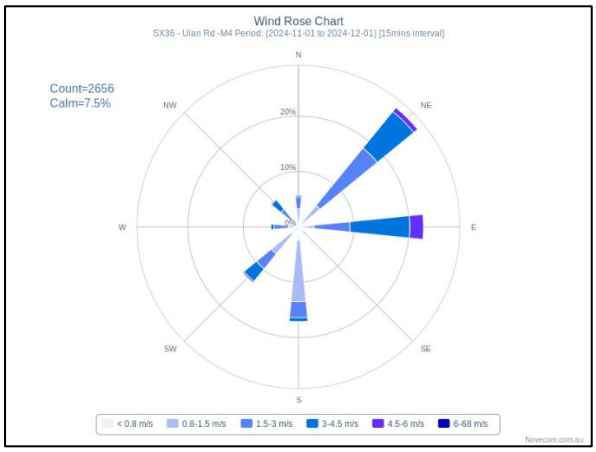


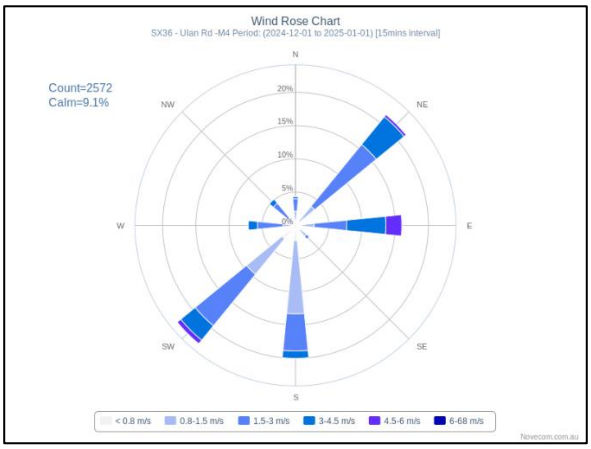

Wind Rose Chart
SX36 - Ulan Rd -M4 Period: (2024-07-01 to 2024-08-01) [15mins interval]
Count=2767
Calm=10.4%
N
NE
E
SE
S
SW
W
NW
30%
20%
10%
0%
< 0.8 m/s
0.8-1.5 m/s
1.5-3 m/s
3-4.5 m/s
4.5-6 m/s
6-68 m/s
Novecom.com.au


Wind Rose Chart
SX36 - Ulan Rd -M4 Period: (2024-08-01 to 2024-09-01) [15mins interval]
Count=2680
Calm=11.1%
N
NE
E
SE
S
SW
W
NW
25%
20%
15%
10%
5%
0%
< 0.8 m/s
0.8-1.5 m/s
1.5-3 m/s
3-4.5 m/s
4.5-6 m/s
6-68 m/s
Novecom.com.au


Wind Rose Chart
SX36 - Ulan Rd -M4 Period: (2024-09-01 to 2024-10-01) [15mins interval]
Count=2726
Calm=10.1%
N
NE
E
SE
S
SW
W
NW
30%
20%
10%
0%
< 0.8 m/s
0.8-1.5 m/s
1.5-3 m/s
3-4.5 m/s
4.5-6 m/s
6-68 m/s
Novecom.com.au


Wind Rose Chart
SX36 - Ulan Rd -M4 Period: (2024-10-01 to 2024-11-01) [15mins interval]
Count=2734
Calm=7.5%
N
NE
E
SE
S
SW
W
NW
25%
20%
15%
10%
5%
0%
< 0.8 m/s
0.8-1.5 m/s
1.5-3 m/s
3-4.5 m/s
4.5-6 m/s
6-68 m/s
Novecom.com.au


Wind Rose Chart
SX36 - Ulan Rd -M4 Period: (2024-11-01 to 2024-12-01) [15mins interval]
Count=2656
Calm=7.5%
N
NE
E
SE
S
SW
W
NW
20%
10%
0%
< 0.8 m/s
0.8-1.5 m/s
1.5-3 m/s
3-4.5 m/s
4.5-6 m/s
6-68 m/s
Novecom.com.au


Wind Rose Chart
SX36 - Ulan Rd -M4 Period: (2024-12-01 to 2025-01-01) [15mins interval]
Count=2572
Calm=9.1%
N
NE
E
SE
S
SW
W
NW
20%
15%
10%
5%
0%
< 0.8 m/s
0.8-1.5 m/s
1.5-3 m/s
3-4.5 m/s
4.5-6 m/s
6-68 m/s
Novecom.com.au

Appendix 3B. NOISE MONITORING RESULTS

Environmental Noise Monitoring – January 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level[1,2,3] LAeq dB (15min)	Measured Level[1,2,3] LA1,dB (1min)	Noise Criteria[4]	Monitoring required during the period	Exceedance (Yes/No)[5]
44	Ulan Primary School	NA1	Compliance - Attended	Monthly	IA	IA	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	No
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	-	-	-	No	-
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	IA	IA	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	NA
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	No	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	IA	IA	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Yes	NA
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
3. Site-only noise levels attributed to MCO, including modifying factors where applicable
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable

Environmental Noise Monitoring – February 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level[1,2,3] LAeq dB (15min)	Measured Level[1,2,3] LA1,dB (1min)	Noise Criteria[4]	Monitoring required during the period	Exceedance (Yes/No)[5]
44	Ulan Primary School	NA1	Compliance - Attended	Monthly	IA	NA	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	No
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	<20	-	-	Yes	No
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	IA	IA	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	NA
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	No	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	<20	<20	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Yes	NA
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
3. Site-only noise levels attributed to MCO, including modifying factors where applicable
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable

Environmental Noise Monitoring – March 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level[1,2,3] LAeq dB (15min)	Measured Level[1,2,3] LA1,dB (1min)	Noise Criteria[4]	Monitoring required during the period	Exceedance (Yes/No)[5]
44	Ulan Primary School	NA1	Compliance - Attended	Monthly	IA	NA	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	No
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	-	-	-	No	-
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	<25	28	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	NA
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	No	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	28	30	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Yes	NA
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
3. Site-only noise levels attributed to MCO, including modifying factors where applicable
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable

Environmental Noise Monitoring – April 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level[1,2,3] LAeq dB (15min)	Measured Level[1,2,3] LA1,dB (1min)	Noise Criteria[4]	Monitoring required during the period	Exceedance (Yes/No)[5]
44	Ulan Primary School	NA1	Compliance - Attended	Monthly	IA	-	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	NA
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	-	-	-	No	
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	<20	<20	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	No
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	No	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	<25	<25	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Yes	No
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
3. Site-only noise levels attributed to MCO, including modifying factors where applicable
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable

Environmental Noise Monitoring – May 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level[1,2,3] LAeq dB (15min)	Measured Level[1,2,3] LA1,dB (1min)	Noise Criteria[4]	Monitoring required during the period	Exceedance (Yes/No)[5]
44	Ulan PrimarySchool	NA1	Compliance - Attended	Monthly	<30	-	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	NA
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	<25	-	-	Yes	NA
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	-	-	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	No
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	26	28	-	No	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	-	-	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Yes	No
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	26	30	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
3. Site-only noise levels attributed to MCO, including modifying factors where applicable
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable

Environmental Noise Monitoring – June 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level[1,2,3] LAeq dB (15min)	Measured Level[1,2,3] LA1,dB (1min)	Noise Criteria[4]	Monitoring required during the period	Exceedance (Yes/No)[5]
44	Ulan Primary School	NA1	Compliance - Attended	Monthly	IA	-	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	NA
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	-	-	-	No	-
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	IA	IA	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	No
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	No	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	26	28	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Yes	No
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
3. Site-only noise levels attributed to MCO, including modifying factors where applicable
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable

Environmental Noise Monitoring – July 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level [1,2,3] LAeq dB (15min)	Measured Level [1,2,3] LA1,1dB (1min)	Noise Criteria [4]	Monitoring Completed during the period	Exceedance (Yes/No)
44	Ulan Public School	NA1	Compliance - Attended	Monthly	IA	N/A	Daytime (07:00 – 18:00) LAeq, 15minute: 35 dB	Yes	N/A
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	-	-	-	-	-
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	-	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	28	32	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	No
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	-	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	30	38	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1, 1minute: 45 dB	Yes	No
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	-	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	NM	N/A	All periods LAeq, 15minute: 50 dB	Yes	N/A
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	28	N/A	All periods LAeq, 15minute: 50 dB	Yes	N/A

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions and were not applicable for comparison.
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location.
3. Site-only noise levels attributed to MCO, including modifying factors where applicable.
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions.
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable.

Environmental Noise Monitoring – August 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level[1,2,3] LAeq dB (15min)	Measured Level[1,2,3] LA1,dB (1min)	Noise Criteria[4]	Monitoring required during the period	Exceedance (Yes/No)[5]
44	Ulan Public School	NA1	Compliance - Attended	Monthly	IA	IA	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	No
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	IA	IA	-	Yes	No
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	IA	IA	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	No
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	No	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	25	28	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Yes	No
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
3. Site-only noise levels attributed to MCO, including modifying factors where applicable
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable

Environmental Noise Monitoring –September 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level[1,2,3] LAeq dB (15min)	Measured Level[1,2,3] LA1,dB (1min)	Noise Criteria[4]	Monitoring required during the period	Exceedance (Yes/No)[5]
44	Ulan Public School	NA1	Compliance - Attended	Monthly	IA	IA	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	No
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	-	-	-	No	-
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	IA	IA	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	No
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	No	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	IA	IA	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Yes	No
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
3. Site-only noise levels attributed to MCO, including modifying factors where applicable
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable

Environmental Noise Monitoring – October 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level[1,2,3] LAeq dB (15min)	Measured Level[1,2,3] LA1,dB (1min)	Noise Criteria[4]	Monitoring required during the period	Exceedance (Yes/No)[5]
44	Ulan Public School	NA1	Compliance - Attended	Monthly	IA	IA	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	N/A
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	-	-	-	No	-
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	<25	27	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	No
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	No	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	28	30	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Yes	No
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
3. Site-only noise levels attributed to MCO, including modifying factors where applicable
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable

Environmental Noise Monitoring – November 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level[1,2,3] LAeq dB (15min)	Measured Level[1,2,3] LA1,dB (1min)	Noise Criteria[4]	Monitoring required during the period	Exceedance (Yes/No)[5]
44	Ulan Public School	NA1	Compliance - Attended	Monthly	NM*	NM*	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	N/A
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	IA	IA	-	Yes	N/A
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	IA	IA	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	No
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	No	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	IA	IA	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Yes	No
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
3. Site-only noise levels attributed to MCO, including modifying factors where applicable
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable

Environmental Noise Monitoring – December 2024

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level[1,2,3] LAeq dB (15min)	Measured Level[1,2,3] LA1,dB (1min)	Noise Criteria[4]	Monitoring required during the period	Exceedance (Yes/No)[5]
44	Ulan Public School	NA1	Compliance - Attended	Monthly	<30	<30	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	No
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	-	-	-	No	-
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	<20	<20	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	N/A
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	No	-
41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	<25	35	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Yes	N/A
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq,15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions, and were not applicable for comparison
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location
3. Site-only noise levels attributed to MCO, including modifying factors where applicable
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable

APPENDIX 3C. BLAST MONITORING DATA

Date	Time	BM1 Ulan School		BM5 Ridge Road		BM8 Moolarben Road	
		Ground Vibration (mm/s)	Blast Overpressure (dBL)	Ground Vibration (mm/s)	Blast Overpressure (dBL)	Ground Vibration (mm/s)	Blast Overpressure (dBL)
2/01/2024	16:09	0.15	94.6	0.11	104.5	0.13	105.5
2/01/2024	16:44	0.13	96.3	0.11	101.7	0.06	92.7
3/01/2024	12:27	0.22	88	0.13	95.5	0.09	91.4
6/01/2024	15:54	0.06	98.4	0.08	97.8	0.07	100.5
9/01/2024	12:26	0.11	88.6	0.06	91.4	0.02	86.1
9/01/2024	12:38	0.18	90.1	0.10	94.7	0.09	95.4
13/01/2024	16:11	0.12	90.1	0.15	94.7	0.15	101.0
15/01/2024	12:48	0.10	86.5	0.03	106.9	0.02	105.5
15/01/2024	16:02	0.20	106.2	0.31	110.2	0.36	108.5
18/01/2024	12:14	0.19	92.6	0.21	103.6	0.14	97.8
22/01/2024	16:14	0.10	86.5	0.18	95.4	0.11	99.1
23/01/2024	12:16	0.19	94.0	0.14	107.0	0.17	108.3
24/01/2024	12:08	0.09	83.4	0.09	85.9	0.08	84.5
27/01/2024	13:18	0.34	94.2	0.17	87.8	0.09	82.6
29/01/2024	12:17	0.29	92.6	0.15	97.9	0.16	100.5
30/01/2024	12:07	0.13	99.1	0.07	100.9	0.04	95.5
31/01/2024	16:03	0.18	88.1	0.09	96.8	0.10	90.2
2/02/2024	12:57	0.22	94.7	0.20	97.1	0.24	98.1
8/02/2024	16:19	0.18	104.6	0.17	113.0	0.34	125.8
9/02/2024	12:06	0.12	88.1	0.07	98.8	0.08	94.8
12/02/2024	16:34	0.13	88.3	0.09	87.6	0.05	85.2
12/02/2024	16:35	0.13	88.3	0.09	87.6	0.05	85.2
15/02/2024	12:00	0.10	106.1	0.05	98.3	0.02	92.5
15/02/2024	12:01	0.08	91.6	0.03	105.7	0.01	96.1
17/02/2024	12:01	0.11	86.2	0.12	95.9	0.25	98.2
20/02/2024	16:13	0.13	91.1	0.06	95.9	0.03	105.1
23/02/2024	12:50	0.39	106.4	0.13	92.1	0.06	103.8
24/02/2024	12:15	0.22	98.0	0.13	101.6	0.09	97.0
24/02/2024	12:27	0.17	91.7	0.10	102.7	0.16	100.7
27/02/2024	16:12	0.18	105.6	0.20	100.5	0.18	99.3
28/02/2024	16:17	0.14	86.8	0.10	86.3	0.05	85.0
4/03/2024	12:04	0.08	99.4	0.09	107.1	0.13	102.3
5/03/2024	13:06	0.20	102.4	0.14	100.4	0.13	98.4
5/03/2024	16:13	0.05	82.5	0.07	89.2	0.06	91.5
8/03/2024	16:05	0.17	104.5	0.16	109.0	0.34	100.5
11/03/2024	16:14	0.09	91.1	0.12	93.7	0.12	95.8
12/03/2024	11:53	0.30	96.4	0.11	95.1	0.06	93.0
12/03/2024	16:12	0.13	98.7	0.36	104.9	0.26	101.6
15/03/2024	16:08	0.04	109.4	0.06	113.9	0.05	105.6
18/03/2024	16:23	0.25	93.6	0.20	93.7	0.19	98.8
19/03/2024	11:59	0.13	86.4	0.06	90.0	0.06	90.9
19/03/2024	15:34	0.13	81.3	0.08	82.5	0.05	77.8
22/03/2024	16:22	0.12	89.7	0.21	96.9	0.15	98.4
25/03/2024	12:04	0.18	91.2	0.29	104.0	0.30	102.3
27/03/2024	16:01	0.21	99.7	0.19	108.4	0.26	116.9
28/03/2024	15:57	0.16	90.9	0.13	85.6	0.17	90.3
2/04/2024	15:58	0.09	103.4	0.05	93.9	0.08	92.0

Date	Time	BM1 Ulan School		BM5 Ridge Road		BM8 Moolarben Road	
		Ground Vibration (mm/s)	Blast Overpressure (dBL)	Ground Vibration (mm/s)	Blast Overpressure (dBL)	Ground Vibration (mm/s)	Blast Overpressure (dBL)
2/04/2024	16:31	0.31	95.1	0.10	99.8	0.05	95.9
4/04/2024	12:02	0.10	92.8	0.05	95.7	0.03	97.7
5/04/2024	12:08	0.19	101.2	0.11	108.8	0.09	106.8
8/04/2024	16:11	0.15	84.8	0.12	90.3	0.18	91.1
13/04/2024	16:00	0.14	84.3	0.09	88.4	0.25	92.9
15/04/2024	12:02	0.25	94.9	0.21	94.6	0.13	92.6
15/04/2024	16:03	0.21	102.9	0.36	101.7	0.47	94.2
22/04/2024	12:18	0.28	103.6	0.19	100.5	0.17	100.6
23/04/2024	15:59	0.24	82.7	0.16	89.1	0.13	84.1
24/04/2024	11:56	0.09	85.8	0.17	104.2	0.16	99.4
26/04/2024	12:08	0.23	96.7	0.22	103.4	0.32	105.3
26/04/2024	12:18	0.17	88.3	0.12	97.3	0.18	91.7
29/04/2024	12:06	0.09	87.1	0.09	92.7	0.10	93.4
30/04/2024	16:17	0.16	99.2	0.10	101.8	0.06	97.6
2/05/2024	12:14	0.04	103.6	0.02	101.6	0.03	102.1
2/05/2024	16:22	0.10	97.6	0.06	101.2	0.08	100.3
4/05/2024	16:10	0.45	105.1	0.20	105.7	0.26	112.1
8/05/2024	12:12	0.30	100.4	0.29	107.9	0.36	111.7
9/05/2024	12:21	0.37	98.9	0.29	113.0	0.49	102.0
11/05/2024	12:09	0.09	83.9	0.16	92.2	0.20	100.1
14/05/2024	12:09	0.12	88.3	0.09	88.1	0.05	82.6
14/05/2024	16:05	2.69	101.2	0.38	104.1	0.11	84.3
16/05/2024	12:10	0.09	91.2	0.06	96.2	0.03	96.7
20/05/2024	12:13	0.04	78.3	0.09	91.6	0.06	94.6
21/05/2024	12:05	0.21	91.6	0.14	90.7	0.11	90.8
22/05/2024	12:04	0.04	84.1	0.05	80.9	0.03	78.1
27/05/2024	12:37	0.28	101.8	0.36	98.9	0.40	90.6
27/05/2024	12:45	0.11	89.4	0.07	89.3	0.06	84.7
29/05/2024	12:09	1.12	120.3	0.50	97.7	0.25	87.3
29/05/2024	16:05	0.11	84.5	0.13	82.7	0.12	85.8
30/05/2024	12:00	0.09	93.5	0.12	99.4	0.09	102.5
3/06/2024	12:03	0.06	100.1	0.11	101.5	0.05	99.7
6/06/2024	16:34	0.16	103.8	0.18	99.2	0.12	100.3
11/06/2024	12:15	0.19	91.6	0.34	87.1	0.18	89.6
11/06/2024	16:02	0.04	83.8	0.08	79.7	0.05	89.8
13/06/2024	12:13	0.15	99.6	0.15	93.8	0.14	91.6
15/06/2024	16:19	0.35	95.2	0.46	106.6	0.31	101.3
17/06/2024	12:06	0.27	94.9	0.19	89.6	0.05	86.6
18/06/2024	12:23	0.25	97.5	0.30	92.5	0.31	92.4
20/06/2024	16:04	0.15	84.5	0.23	88.3	0.16	94.1
22/06/2024	16:32	0.15	98.9	0.12	105.6	0.08	104.0
25/06/2024	16:15	0.39	92.1	0.48	110.5	0.37	108.8
27/06/2024	15:56	0.16	93.7	0.38	94.8	0.38	102.3
29/06/2024	12:00	0.08	83.9	0.10	96.4	0.09	102.0
1/07/2024	12:21	0.05	85.2	0.10	98.1	0.05	94.8
1/07/2024	16:02	0.76	102.8	0.27	100.8	0.16	97.5
6/07/2024	15:57	0.21	102.3	0.56	104.8	0.50	106
6/07/2024	16:04	0.10	96.2	0.14	101.0	0.05	97.9
8/07/2024	12:10	0.11	91.0	0.10	93.9	0.05	100.1

Date	Time	BM1 Ulan School		BM5 Ridge Road		BM8 Moolarben Road	
		Ground Vibration (mm/s)	Blast Overpressure (dBL)	Ground Vibration (mm/s)	Blast Overpressu re (dBL)	Ground Vibration (mm/s)	Blast Overpressu re (dBL)
9/07/2024	12:00	0.20	94.7	0.46	83.4	0.21	96.8
9/07/2024	12:01	0.14	94.7	0.12	83.4	0.07	98.4
10/07/2024	16:03	0.12	83.2	0.13	85.6	0.07	85.5
12/07/2024	12:16	0.09	87.8	0.05	90.3	0.01	83.6
13/07/2024	12:09	0.06	88.2	0.08	81.1	0.06	80.6
15/07/2024	12:07	0.18	88.4	0.13	102.2	0.11	95.6
17/07/2024	12:23	0.17	88.1	0.24	97.4	0.11	89.6
17/07/2024	16:54	0.15	102.2	0.33	96.3	0.35	91.2
22/07/2024	16:14	0.18	91.3	0.50	92.4	0.60	96.3
25/07/2024	12:01	0.10	104.0	0.07	107.7	0.05	109.6
25/07/2024	12:02	0.45	103.2	0.28	107.7	0.12	109.6
27/07/2024	12:01	0.21	89.0	0.21	82.1	0.10	84.7
31/07/2024	12:05	0.09	91.8	0.09	92.1	0.04	96.1
1/08/2024	16:06	0.07	89.0	0.09	86.3	0.05	85.3
3/08/2024	12:03	0.09	85.7	0.14	81.6	0.09	81.4
5/08/2024	12:00	0.03	84.3	0.07	81.4	0.04	84.1
8/08/2024	12:14	0.21	91.7	0.45	92.6	0.19	101.6
8/08/2024	12:30	0.23	89.9	0.21	91.3	0.08	96.7
10/08/2024	12:05	0.08	99.6	0.13	90.7	0.08	81.9
16/08/2024	12:04	0.12	97.0	0.16	89.6	0.08	91.5
17/08/2024	12:09	0.11	112.6	0.35	96.4	0.21	107.3
17/08/2024	16:28	0.20	107.2	0.28	106.5	0.27	104.8
22/08/2024	12:23	0.33	88.5	0.78	100.6	0.43	92.7
23/08/2024	12:01	0.15	92.6	0.10	99.7	0.06	99.7
26/08/2024	12:05	0.09	89.2	0.12	102.9	0.11	95.1
27/08/2024	12:03	0.09	87.3	0.08	87.3	0.06	83.4
28/08/2024	12:08	0.45	99.2	0.19	107.7	0.11	108.7
28/08/2024	12:18	0.21	100.8	0.16	106.3	0.05	106.8
29/08/2024	12:00	0.14	90.3	0.32	88.0	0.21	97.3
31/08/2024	16:11	0.15	89.6	0.13	96.2	0.07	98.2
2/09/2024	12:04	0.13	107.0	0.44	99.4	0.25	106.9
4/09/2024	13:03	0.12	98.0	0.11	94.6	0.11	96.0
5/09/2024	13:05	1.07	104.0	0.58	94.9	0.22	98.8
7/09/2024	10:08	0.06	93.0	0.09	103.3	0.04	98.8
7/09/2024	13:09	0.03	103.3	0.12	101.5	0.03	105.0
9/09/2024	15:59	0.10	85.3	0.12	91.3	0.05	103.7
14/09/2024	11:55	0.10	98.0	0.17	100.2	0.19	96.6
14/09/2024	16:26	0.13	81.8	0.17	91.6	0.19	98.4
16/09/2024	12:48	0.08	99.9	0.10	100.8	0.04	99.5
16/09/2024	16:07	0.11	103.8	0.17	101.0	0.26	100.0
18/09/2024	10:06	0.07	83.8	0.09	90.4	0.04	92.9
18/09/2024	16:01	0.16	91.3	0.19	98.0	0.04	93.1
21/09/2024	12:14	0.14	104.3	0.13	108.8	0.07	100.4
23/09/2024	12:11	0.08	90.3	0.05	89.3	0.02	95.3
26/09/2024	12:13	0.28	102.1	0.23	98.5	0.07	99.9
27/09/2024	15:59	0.04	103.2	0.06	106.7	0.05	107.1
28/09/2024	12:13	0.19	100.8	0.18	103.8	0.11	109.3
2/10/2024	12:06	0.07	97.3	0.09	95.2	0.06	96.6
3/10/2024	15:56	0.15	98.9	0.16	101.9	0.22	104.9

Date	Time	BM1 Ulan School		BM5 Ridge Road		BM8 Moolarben Road	
		Ground Vibration (mm/s)	Blast Overpressure (dBL)	Ground Vibration (mm/s)	Blast Overpressure (dBL)	Ground Vibration (mm/s)	Blast Overpressure (dBL)
5/10/2024	12:02	0.10	90.5	0.09	101.0	0.05	102.7
8/10/2024	12:04	0.11	91.9	0.09	97.0	0.12	90.0
9/10/2024	16:05	0.12	100.6	0.36	112.2	0.35	105.4
9/10/2024	16:16	0.10	104.1	0.06	103.6	0.03	103.7
10/10/2024	16:00	0.35	86.5	0.63	88.5	0.22	95.0
14/10/2024	12:04	0.12	89.0	0.11	104.1	0.09	115.0
14/10/2024	16:03	0.16	85.2	0.12	85.5	0.13	93.9
15/10/2024	12:09	0.06	89.5	0.11	94.6	0.10	96.6
18/10/2024	12:13	0.19	100.6	0.17	97.8	0.08	104.0
21/10/2024	12:03	0.09	93.4	0.14	93.8	0.13	100.8
23/10/2024	16:04	0.14	92.3	0.14	102.4	0.17	93.2
24/10/2024	16:01	0.21	103.4	0.11	92.7	0.04	91.2
26/10/2024	16:03	0.13	90.1	0.18	91.6	0.19	96.5
28/10/2024	12:02	0.10	92.3	0.08	99.3	0.06	89.9
30/10/2024	12:00	0.18	100.0	0.20	98.8	0.30	91.7
4/11/2024	11:01	0.20	98.5	0.11	98.3	0.08	93.4
4/11/2024	16:04	0.12	83.6	0.21	91.3	0.16	96.8
5/11/2024	16:03	0.15	96.0	0.14	95.3	0.09	88.3
7/11/2024	15:58	0.55	103.2	0.40	106.1	0.18	102.9
11/11/2024	12:02	0.27	102.5	0.33	97.6	0.24	105.2
14/11/2024	12:09	0.08	95.5	0.08	98.6	0.06	92.9
14/11/2024	12:17	0.16	93.7	0.11	94.4	0.06	95.5
15/11/2024	16:26	0.18	101.7	0.13	100.0	0.21	106.6
19/11/2024	16:02	0.23	98.0	0.17	101.6	0.11	103.4
22/11/2024	12:07	0.13	86.5	0.13	91.2	0.10	93.2
26/11/2024	12:03	0.13	86.1	0.14	93.7	0.31	94.8
29/11/2024	11:58	0.19	91.7	0.17	93.2	0.23	90.4
29/11/2024	12:09	0.16	94.4	0.26	97.5	0.22	98.3
2/12/2024	12:15	0.24	89.2	0.15	87.9	0.07	96.7
9/12/2024	12:03	0.15	103.5	0.18	103.3	0.26	95.3
9/12/2024	15:08	0.04	86.1	0.07	91.8	0.07	102.2
10/12/2024	12:10	0.09	90.0	0.21	99.1	0.31	90.3
11/12/2024	15:55	0.14	83.9	0.16	89.8	0.16	101.3
12/12/2024	12:04	0.05	83.6	0.04	93.7	0.01	87.4
14/12/2024	10:01	0.12	86.5	0.15	94.0	0.12	93.3
17/12/2024	12:02	0.07	94.5	0.39	93.0	0.08	91.2
17/12/2024	16:06	0.08	89.1	0.06	89.0	0.08	83.6
18/12/2024	12:32	0.16	99.4	0.03	106.2	0.02	99.4
20/12/2024	13:58	0.18	103.0	0.10	96.5	0.03	81.6
20/12/2024	16:01	0.10	85.5	0.09	83.9	0.07	82.3
23/12/2024	12:08	0.24	107.9	0.13	106.0	0.26	94.6
23/12/2024	16:04	0.14	96.0	0.12	102.6	0.09	95.9
27/12/2024	12:02	0.05	87.2	0.06	86.3	0.04	92.0
28/12/2024	13:17	0.11	96.3	0.14	99.0	0.12	103.7
30/12/2024	12:03	0.12	94.0	0.10	105.4	0.09	99.5
31/12/2024	15:04	0.16	100.3	0.11	105.4	0.07	113.7

APPENDIX 3D. AIR QUALITY DATA

Table A : Summary of the MCO Air Quality-Monitoring Program

Monitoring Parameter	Monitoring Location	Frequency	Justification
Dust Deposition	DG01 – Bobadeen	Every 30 days ± 2 days	Background monitoring north of the Moolarben Coal Complex.
	DG04 – Ulan Village	Every 30 days ± 2 days	Representative of nearest non-mine owned residences to the north-west of the Moolarben Coal Complex.
	DG05 – Glenmoor	Every 30 days ± 2 days	Representative of nearest non-mine owned residences to the south-west and west of the Moolarben Coal Complex.
	DG09 – Wilga	Every 30 days ± 2 days	Representative of non-mine owned residences to the south-west and west of the Moolarben Coal Complex.
HVAS – PM10	PM 01 (Ulan Village)	Every 6 days	Indicative of potential impacts to nearest non-mine owned residences to the north-west of the Moolarben Coal Complex.
	PM 02 (Ridge Road)	Every 6 days	Background monitoring south-west and west of the Moolarben Coal Complex.
Real Time PM_{10}	TEOM 01 (Ulan School)	Real Time PM_{10}	Real time monitoring at Ulan Public School.
	TEOM 04 (Ulan Road)	Real Time PM_{10}	Real time monitoring representative of nearest non-mine owned residences to the west of the Moolarben Coal Complex.
	TEOM 07 (Ulan Road)	Real Time PM_{10}	Real time monitoring representative of non-mine owned residences to the south-west of and west of the Moolarben Coal Complex.
	TEOM 06 (Ulan-Wollar Rd)	Real Time PM_{10}	Real time monitoring not representative of private residences, used to measure “upwind” air quality.
	TEOM 08 (Core Shed)	Real Time PM_{10}	Real time monitoring not representative of private residences, used to measure “upwind” air quality.
Real Time $PM_{2.5}$	TEOM 07 (Ulan Road)	Real Time $PM_{2.5}$	Real time monitoring representative of non-mine owned residences to the south-west of and west of the Moolarben Coal Complex.

Table B : Summary of the MCO Air Quality-Monitoring Program – Dust Deposition

Dust Gauge	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul- 24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
DG1	0.7	0.3	1.0	1.1	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
DG4	0.9	0.9	0.9	0.9	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.6
DG5	0.7	1.0	0.7	0.7	0.8	0.8	1.2	1.1	1.0	0.9	1.1	1.1
DG9	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.7	0.9	0.8

Figure 3-b 2020 to 2024 Dust Depositional Results

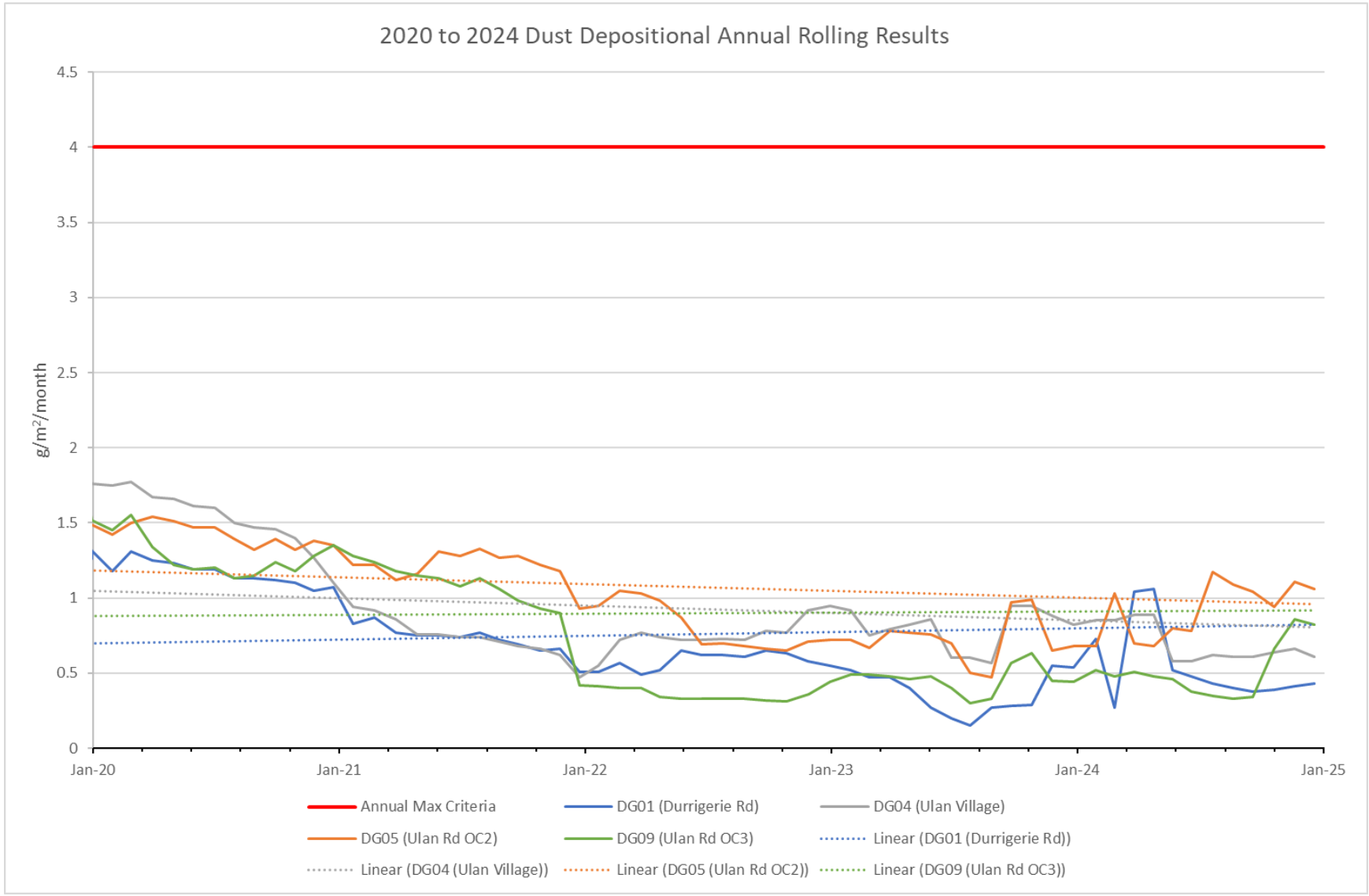


Table 3: TEOM Monitoring Data (Cumulative)

Date	Ulan School TEOM01 EPL 17	Lagoons Road TEOM04	Ulan Road TEOM07 EPL27		Ulan-Wollar Road TEOM06^ EPL15	Ulan-Wollar Road TEOM08^	Comment
	PM10 Daily Result (24hr Average Limit = 50µg/m³)			PM2.5 Daily Result (24hr Average Limit = 25µg/m³)	PM10 Daily Result (µg/m³)		
1/01/2024	17.7	20.1	11.4	5.7	13.9	13.9	
2/01/2024	23.4	19.4	11.8	5.6	15.1	13.7	
3/01/2024	20.2	21.4	14.1	6.9	22.7	16.7	
4/01/2024	16.4	14.7	9.8	4.7	13.8	12.5	
5/01/2024	12.4	10.7	8.0	4.9	8.2	9.0	
6/01/2024	16.9	16.7	12.4	6.4	13.0	13.5	
7/01/2024	21.2	24.1	15.5	6.2	17.9	17.8	
8/01/2024	16.9	16.5	11.9	5.7	14.3	13.2	
9/01/2024	11.8	Insufficient data	8.8	6.0	10.8	8.7	Power Loss
10/01/2024	15.4	15.7	12.7	8.9	13.5	11.8	
11/01/2024	20.8	17.9	15.1	11.2	8.7	14.5	
12/01/2024	14.8	15.9	9.4	3.9	8.9	10.5	
13/01/2024	23.7	21.7	16.8	8.6	17.1	17.9	
14/01/2024	17.9	15.0	8.0	5.0	10.4	10.8	
15/01/2024	20.1	13.6	9.1	5.5	9.6	10.0	
16/01/2024	18.7	19.4	11.4	5.4	13.6	14.5	
17/01/2024	10.4	10.9	8.3	4.7	Insufficient data	8.6	Power Loss
18/01/2024	7.4	7.5	7.2	4.2	Insufficient data	14.7	Power Loss
19/01/2024	9.5	7.9	6.7	3.1	Insufficient data	20.3	Power Loss
20/01/2024	17.8	21.3	14.6	7.3	11.0	19.5	
21/01/2024	21.2	16.0	13.8	5.0	20.9	31.3	
22/01/2024	35.6	29.6	22.7	9.3	30.5	46.2	
23/01/2024	21.6	19.8	13.2	6.6	12.1	14.9	
24/01/2024	18.7	17.0	15.0	6.3	14.5	17.3	
25/01/2024	19.5	20.7	17.4	7.5	29.7	40.6	
26/01/2024	20.9	21.1	18.2	7.5	46.5	30.6	
27/01/2024	25.1	24.6	17.7	10.1	22.2	23.9	
28/01/2024	23.1	25.2	16.4	8.7	15.2	16.4	
29/01/2024	21.7	20.4	15.3	7.6	15.6	16.3	
30/01/2024	31.4	Insufficient data	20.6	9.3	16.0	17.7	Power Loss
31/01/2024	24.1	24.2	19.2	9.6	16.2	18.4	
1/02/2024	15.7	15.8	14.1	8.3	12.3	17.2	
2/02/2024	19.7	17.2	17.0	6.4	32.9	39.7	
3/02/2024	29.9	35.5	27.5	12.2	22.5	24.9	
4/02/2024	30.9	31.0	23.4	10.7	21.6	24.9	
5/02/2024	24.5	18.9	15.1	8.7	16.5	17.8	
6/02/2024	11.8	Insufficient data	11.6	8.7	Insufficient data	14.5	Power Loss
7/02/2024	8.1	9.8	Insufficient data	Insufficient data	11.5	8.2	Power Loss
8/02/2024	13.1	13.2	10.4	3.5	10.0	11.6	
9/02/2024	19.1	20.3	12.4	4.4	12.3	14.2	
10/02/2024	18.1	11.3	8.2	4.6	9.1	9.6	

Date	Ulan School TEOM01 EPL 17	Lagoons Road TEOM04	Ulan Road TEOM07 EPL27		Ulan-Wollar Road TEOM06^ EPL15	Ulan-Wollar Road TEOM08^	Comment
	PM10 Daily Result (24hr Average Limit = 50µg/m³)			PM2.5 Daily Result (24hr Average Limit = 25µg/m³)	PM10 Daily Result (µg/m³)		
11/02/2024	16.5	15.9	10.0	3.8	11.7	Insufficient data	Power Loss
12/02/2024	18.2	18.9	12.7	4.9	12.0	Insufficient data	Power Loss
13/02/2024	17.7	15.1	Insufficient data	Insufficient data	Insufficient data	21.8	Scheduled Maintenance
14/02/2024	19.2	14.0	Insufficient data	Insufficient data	16.7	18.0	Scheduled Maintenance
15/02/2024	10.6	13.6	6.4	3.7	7.4	7.7	
16/02/2024	14.6	17.8	12.0	7.5	10.1	9.5	
17/02/2024	14.4	13.2	9.3	4.3	12.5	10.3	
18/02/2024	14.3	13.8	7.8	3.7	19.6	17.5	
19/02/2024	17.4	11.7	8.9	6.0	11.6	10.7	
20/02/2024	13.9	10.2	4.8	2.8	6.5	6.6	
21/02/2024	14.5	14.4	8.3	5.3	10.9	11.1	
22/02/2024	25.6	20.9	13.5	7.1	17.1	17.0	
23/02/2024	19.6	19.9	11.9	3.5	32.6	33.2	
24/02/2024	29.7	24.1	15.8	9.2	15.9	23.1	
25/02/2024	11.9	17.2	11.5	5.8	15.4	12.1	
26/02/2024	26.2	25.2	19.7	9.0	24.1	25.6	
27/02/2024	24.9	27.5	16.3	8.8	17.4	17.9	
28/02/2024	24.3	23.5	16.3	8.6	15.9	15.2	
29/02/2024	Insufficient data	17.7	13.2	4.9	26.1	19.5	Power Loss
1/03/2024	19.6	Insufficient data	10.7	4.0	23.0	22.4	Equipment Breakdown
2/03/2024	20.1	Insufficient data	16.6	6.1	28.8	28.0	Equipment Breakdown
3/03/2024	16.8	Insufficient data	12.9	5.5	22.0	18.0	Equipment Breakdown
4/03/2024	27.4	Insufficient data	16.7	6.8	35.0	35.5	Equipment Breakdown
5/03/2024	23.5	24.6	17.4	6.9	16.8	17.9	
6/03/2024	23.1	19.7	13.8	4.4	22.8	24.9	
7/03/2024	34.2	29.3	25.6	9.7	43.1	43.8	
8/03/2024	15.6	16.1	9.3	4.7	11.7	11.8	
9/03/2024	21.0	19.7	13.7	7.1	14.9	16.3	
10/03/2024	23.8	20.5	13.2	5.7	15.9	16.3	
11/03/2024	22.7	20.2	16.7	6.6	14.4	19.1	
12/03/2024	23.7	21.1	20.7	7.1	31.4	31.4	
13/03/2024	36.4	31.6	20.2	7.6	33.7	28.7	
14/03/2024	35.1	30.2	26.6	9.7	43.7	39.7	
15/03/2024	27.5	21.2	10.8	3.8	14.5	14.4	
16/03/2024	16.3	15.0	7.2	2.4	11.7	12.4	
17/03/2024	11.2	11.2	6.6	3.3	9.0	9.2	
18/03/2024	9.8	9.1	5.6	4.3	8.2	8.0	
19/03/2024	15.2	13.5	13.7	10.0	11.4	12.2	
20/03/2024	19.3	13.4	7.4	4.1	16.3	19.1	
21/03/2024	16.8	14.1	8.2	2.4	13.3	13.2	
22/03/2024	19.4	15.0	9.0	5.0	10.4	11.1	
23/03/2024	16.9	14.1	4.7	1.8	13.4	14.1	

Date	Ulan School TEOM01 EPL 17	Lagoons Road TEOM04	Ulan Road TEOM07 EPL27		Ulan-Wollar Road TEOM06^ EPL15	Ulan-Wollar Road TEOM08^	Comment
	PM10 Daily Result (24hr Average Limit = 50µg/m³)			PM2.5 Daily Result (24hr Average Limit = 25µg/m³)	PM10 Daily Result (µg/m³)		
24/03/2024	16.4	11.9	9.3	6.0	23.7	18.8	
25/03/2024	13.8	9.9	9.1	5.2	33.7	33.2	
26/03/2024	18.3	16.9	11.2	5.3	39.0	39.3	
27/03/2024	43.8	31.8	19.6	13.6	Data invalidated	45.4	Extraordinary Event
28/03/2024	31.2	35.3	26.3	20.2	27.6	24.1	
29/03/2024	30.5	27.7	24.8	20.1	25.2	20.6	
30/03/2024	30.0	26.4	19.4	15.8	26.7	25.1	
31/03/2024	34.5	27.2	19.3	13.8	32.3	28.5	
1/04/2024	27.9	29.6	17.5	9.8	28.7	19.3	
2/04/2024	33.0	22.8	13.9	7.8	39.4	27.0	
3/04/2024	13.6	9.7	7.7	3.9	14.6	15.8	
4/04/2024	13.6	14.4	8.9	6.0	10.6	10.6	
5/04/2024	5.2	4.8	2.1	1.5	Insufficient data	Insufficient data	Scheduled Maintenance
6/04/2024	8.6	5.8	3.2	2.4	2.5	2.6	
7/04/2024	9.6	6.7	3.8	2.6	15.8	13.2	
8/04/2024	13.9	7.6	7.4	5.4	11.8	14.5	
9/04/2024	11.5	7.6	4.5	2.5	15.0	14.0	
10/04/2024	10.3	6.1	2.1	0.8	13.1	12.2	
11/04/2024	18.0	17.9	9.3	4.1	17.6	15.6	
12/04/2024	19.7	15.5	6.7	2.7	28.6	15.8	
13/04/2024	17.7	15.7	10.1	5.0	31.8	31.0	
14/04/2024	21.1	17.4	13.3	7.8	35.1	34.9	
15/04/2024	23.0	17.1	11.7	5.3	28.3	35.8	
16/04/2024	21.1	17.8	15.0	7.7	40.8	41.4	
17/04/2024	Insufficient data	Insufficient data	Insufficient data	Insufficient data	43.8	48.6	Scheduled Maintenance
18/04/2024	13.7	9.4	7.8	3.8	21.7	18.5	
19/04/2024	18.7	13.7	11.2	3.1	21.4	25.7	
20/04/2024	10.1	6.8	3.8	2.2	8.9	10.8	
21/04/2024	18.6	8.6	3.4	1.2	12.0	11.5	
22/04/2024	14.8	11.1	7.1	3.6	16.1	16.0	
23/04/2024	12.1	Insufficient data	4.2	1.8	14.2	17.1	Equipment Breakdown
24/04/2024	17.9	Insufficient data	11.0	3.2	36.2	47.2	Equipment Breakdown
25/04/2024	20.9	Insufficient data	13.0	4.6	29.1	34.6	Equipment Breakdown
26/04/2024	16.8	Insufficient data	7.3	2.9	27.7	32.6	Equipment Breakdown
27/04/2024	21.4	Insufficient data	8.5	3.6	18.6	15.4	Equipment Breakdown
28/04/2024	15.7	Insufficient data	6.5	4.0	26.1	17.4	Equipment Breakdown
29/04/2024	15.2	Insufficient data	10.1	6.2	35.5	27.2	Equipment Breakdown
30/04/2024	11.3	Insufficient data	5.4	3.7	16.6	16.9	Equipment Breakdown
1/05/2024	9.3	9.8	3.4	1.5	Insufficient data	Insufficient data	Power Loss

Date	Ulan School TEOM01 EPL 17	Lagoons Road TEOM04	Ulan Road TEOM07 EPL27		Ulan-Wollar Road TEOM06^ EPL15	Ulan-Wollar Road TEOM08^	Comment
	PM10 Daily Result (24hr Average Limit = 50µg/m³)			PM2.5 Daily Result (24hr Average Limit = 25µg/m³)	PM10 Daily Result (µg/m³)		
2/05/2024	11.4	7.4	2.4	1.3	Insufficient data	Insufficient data	Power Loss
3/05/2024	10.4	7.6	3.7	2.2	6.8	Insufficient data	Power Loss
4/05/2024	6.9	7.0	2.3	1.2	5.9	Insufficient data	Power Loss
5/05/2024	7.8	5.4	Insufficient data	Insufficient data	5.7	Insufficient data	Power Loss
6/05/2024	11.0	7.1	3.4	1.8	8.7	Insufficient data	Power Loss
7/05/2024	17.7	10.8	5.8	2.1	11.3	10.5	
8/05/2024	14.5	8.9	3.2	1.6	11.3	9.6	
9/05/2024	16.9	13.0	5.5	1.8	12.4	10.1	
10/05/2024	11.4	8.5	5.4	2.9	7.1	7.4	
11/05/2024	7.8	7.3	1.8	1.1	6.5	6.1	
12/05/2024	10.4	7.3	2.0	0.9	7.9	10.5	
13/05/2024	12.0	7.5	3.2	2.4	13.0	16.4	
14/05/2024	15.1	8.4	4.4	2.5	15.7	19.3	
15/05/2024	18.3	13.0	7.1	3.6	23.3	25.2	
16/05/2024	21.5	16.6	9.1	4.4	23.4	22.7	
17/05/2024	17.0	13.8	11.5	7.5	20.0	19.5	
18/05/2024	13.8	11.2	9.6	5.2	16.1	18.4	
19/05/2024	8.9	7.0	4.9	2.0	18.1	19.1	
20/05/2024	14.7	10.7	5.2	1.6	14.1	15.9	
21/05/2024	19.8	10.3	5.5	2.2	14.7	14.7	
22/05/2024	11.6	8.5	4.5	2.0	21.0	18.3	
23/05/2024	17.3	12.8	5.3	2.1	19.1	15.3	
24/05/2024	17.4	11.4	4.8	1.8	23.2	22.4	
25/05/2024	21.3	19.7	12.1	7.2	28.2	23.7	
26/05/2024	16.4	13.6	9.7	7.0	28.5	28.5	
27/05/2024	15.9	12.2	8.7	4.1	22.6	27.5	
28/05/2024	23.1	18.8	10.4	4.4	27.5	27.1	
29/05/2024	21.5	15.3	10.0	4.9	28.0	25.0	
30/05/2024	26.6	14.9	9.0	4.3	Insufficient data	Insufficient data	Power Loss
31/05/2024	13.5	11.0	Insufficient data	Insufficient data	20.5	21.3	Power Loss
1/06/2024	4.9	4.6	1.7	1.3	5.5	5.6	
2/06/2024	6.5	5.1	2.4	1.6	6.8	7.9	
3/06/2024	9.7	5.9	2.9	1.7	7.8	11.8	
4/06/2024	Insufficient data	8.2	4.0	2.7	Insufficient data	10.9	Scheduled Maintenance
5/06/2024	Insufficient data	7.1	4.8	3.0	Insufficient data	11.5	Scheduled Maintenance
6/06/2024	12.9	6.8	5.0	3.6	14.9	16.9	
7/06/2024	3.1	3.8	2.1	1.8	5.3	7.9	
8/06/2024	4.1	5.5	3.2	2.2	6.6	8.2	
9/06/2024	5.0	6.2	4.0	3.0	7.6	9.5	
10/06/2024	6.2	4.7	3.0	2.0	10.8	10.2	
11/06/2024	6.3	4.4	3.7	2.8	9.3	11.5	
12/06/2024	9.6	7.4	3.4	1.2	22.4	16.2	

Date	Ulan School TEOM01 EPL 17	Lagoons Road TEOM04	Ulan Road TEOM07 EPL27		Ulan-Wollar Road TEOM06^ EPL15	Ulan-Wollar Road TEOM08^	Comment
	PM10 Daily Result (24hr Average Limit = 50µg/m³)			PM2.5 Daily Result (24hr Average Limit = 25µg/m³)	PM10 Daily Result (µg/m³)		
13/06/2024	15.1	7.8	5.1	2.1	10.9	13.0	
14/06/2024	16.1	11.2	4.5	1.9	17.8	18.1	
15/06/2024	3.6	5.4	1.8	1.1	6.4	7.0	
16/06/2024	4.9	4.1	1.7	1.1	11.5	9.0	
17/06/2024	6.2	4.9	2.2	1.4	8.9	8.4	
18/06/2024	11.5	5.4	3.3	2.2	10.0	12.0	
19/06/2024	14.5	6.6	4.0	2.4	13.3	17.6	
20/06/2024	15.2	8.0	5.3	2.5	18.8	18.7	
21/06/2024	9.6	6.2	1.8	1.1	15.0	10.6	
22/06/2024	7.5	6.4	2.1	1.3	8.4	9.9	
23/06/2024	9.4	5.3	2.7	1.6	11.3	13.2	
24/06/2024	8.4	5.3	3.3	2.2	12.7	10.6	
25/06/2024	15.7	9.3	4.7	2.4	22.5	21.2	
26/06/2024	20.6	10.4	4.9	1.9	26.9	24.5	
27/06/2024	16.7	7.7	4.0	2.0	22.0	24.0	
28/06/2024	12.6	8.3	5.1	1.9	15.5	18.6	
29/06/2024	12.1	10.1	6.4	3.2	24.8	23.2	
30/06/2024	4.3	5.8	1.3	0.8	6.4	6.6	
1/07/2024	6.5	6.5	2.7	1.9	6.9	7.0	
2/07/2024	9.8	6.2	2.3	1.4	8.0	8.2	
3/07/2024	15.5	7.9	2.6	1.2	8.1	7.7	
4/07/2024	15.9	9.0	3.6	1.4	18.0	14.3	
5/07/2024	13.6	8.5	2.2	1.1	9.1	8.6	
6/07/2024	9.9	6.8	2.7	1.5	8.1	7.1	
7/07/2024	7.9	8.3	3.3	2.0	10.9	9.7	
8/07/2024	5.6	7.5	3.0	3.0	6.4	5.8	
9/07/2024	10.2	5.7	3.2	2.9	7.3	9.0	
10/07/2024	9.8	4.6	2.4	2.1	6.5	8.4	
11/07/2024	9.5	5.5	1.9	1.3	7.5	8.9	
12/07/2024	12.2	6.5	2.1	1.2	14.4	14.3	
13/07/2024	5.2	4.8	1.2	0.8	9.8	7.8	
14/07/2024	5.6	4.6	2.4	1.4	8.8	7.8	
15/07/2024	6.8	3.6	0.9	0.6	6.3	7.0	
16/07/2024	5.1	3.7	0.2	0.1	4.2	7.3	
17/07/2024	6.1	4.7	1.2	0.9	6.8	7.2	
18/07/2024	10.2	6.7	3.0	1.7	10.8	10.8	
19/07/2024	8.5	5.0	2.1	1.2	9.6	11.1	
20/07/2024	9.7	9.6	4.8	1.4	15.2	14.2	
21/07/2024	15.7	14.7	7.7	2.2	30.4	25.2	
22/07/2024	14.6	9.5	4.7	1.4	21.1	18.1	
23/07/2024	13.6	8.4	3.8	1.7	19.0	19.7	
24/07/2024	15.4	8.5	4.0	1.4	16.3	21.0	
25/07/2024	17.9	10.4	5.3	3.7	25.0	21.7	
26/07/2024	11.1	6.8	Insufficient data	Insufficient data	10.1	9.6	Power Loss
27/07/2024	6.9	7.3	2.9	2.7	13.4	13.6	
28/07/2024	4.9	4.6	1.1	0.6	6.7	13.1	
29/07/2024	8.9	6.1	2.5	1.1	9.7	9.9	
30/07/2024	10.4	6.7	2.2	1.1	11.1	13.3	

Date	Ulan School TEOM01 EPL 17	Lagoons Road TEOM04	Ulan Road TEOM07 EPL27		Ulan-Wollar Road TEOM06^ EPL15	Ulan-Wollar Road TEOM08^	Comment
	PM10 Daily Result (24hr Average Limit = 50µg/m³)			PM2.5 Daily Result (24hr Average Limit = 25µg/m³)	PM10 Daily Result (µg/m³)		
31/07/2024	10.9	6.9	2.0	0.7	13.6	14.4	
1/08/2024	14.3	10.5	5.8	2.7	16.3	18.9	
2/08/2024	9.5	7.7	2.1	1.1	14.4	14.0	
3/08/2024	12.3	10.5	7.3	4.9	14.7	13.6	
4/08/2024	13.3	11.0	7.4	4.2	21.5	18.3	
5/08/2024	16.0	13.4	8.3	5.1	21.7	18.9	
6/08/2024	13.0	7.6	3.2	2.5	9.9	13.1	
7/08/2024	15.4	6.9	2.8	1.6	13.5	20.0	
8/08/2024	18.3	11.9	7.1	4.4	19.8	17.2	
9/08/2024	19.9	12.4	7.9	5.7	26.9	23.7	
10/08/2024	14.3	11.3	6.3	4.6	24.6	23.1	
11/08/2024	16.9	13.8	7.8	5.9	19.4	14.9	
12/08/2024	14.1	7.8	3.0	2.0	14.5	9.4	
13/08/2024	8.6	9.9	Insufficient data	Insufficient data	7.4	6.7	Equipment Breakdown
14/08/2024	9.2	Insufficient data	Insufficient data	Insufficient data	7.2	5.7	Scheduled Maintenance
15/08/2024	13.0	Insufficient data	Insufficient data	Insufficient data	8.7	6.4	Scheduled Maintenance
16/08/2024	11.9	6.6	4.6	3.7	10.0	9.4	
17/08/2024	4.6	3.2	1.9	1.1	6.4	8.7	
18/08/2024	6.8	4.5	2.2	1.3	6.9	10.5	
19/08/2024	18.7	12.8	8.1	2.2	10.8	10.2	
20/08/2024	18.1	15.4	11.7	6.4	23.0	14.1	
21/08/2024	18.2	13.7	9.8	6.1	25.5	20.8	
22/08/2024	11.3	6.3	4.8	2.1	17.1	28.9	
23/08/2024	19.2	12.5	7.7	2.8	20.7	21.0	
24/08/2024	13.7	10.3	8.2	5.2	31.2	28.0	
25/08/2024	10.1	10.0	3.0	2.2	18.6	17.6	
26/08/2024	16.1	9.7	5.8	2.8	16.7	18.8	
27/08/2024	15.6	5.9	5.1	2.0	13.8	23.5	
28/08/2024	15.1	9.0	6.6	2.0	21.3	33.0	
29/08/2024	19.8	14.6	11.9	3.5	22.4	23.3	
30/08/2024	19.9	12.6	11.4	4.6	21.4	29.0	
31/08/2024	16.5	15.3	10.2	2.2	27.0	25.6	
1/09/2024	14.1	11.5	8.4	3.0	27.0	31.9	
2/09/2024	19.0	15.4	14.6	5.2	63.1	42.3	
3/09/2024	16.0	13.7	8.5	2.4	18.6	20.0	
4/09/2024	21.4	16.6	11.6	3.6	23.2	16.1	
5/09/2024	24.8	18.9	14.2	7.3	33.0	27.9	
6/09/2024	20.2	17.4	11.5	5.0	20.4	26.1	
7/09/2024	19.2	15.8	10.8	6.7	29.2	27.8	
8/09/2024	14.0	10.0	5.9	3.2	15.5	18.5	
9/09/2024	10.8	8.0	4.7	1.6	17.7	20.7	
10/09/2024	23.1	17.6	8.9	2.4	22.4	20.8	
11/09/2024	26.7	18.1	11.1	4.7	39.8	36.3	
12/09/2024	12.6	10.2	4.4	2.9	14.4	14.9	
13/09/2024	10.1	7.1	3.8	0.9	19.1	8.8	
14/09/2024	10.5	8.6	5.5	1.3	53.5	14.7	
15/09/2024	8.7	7.2	2.0	0.8	12.4	12.7	

Date	Ulan School TEOM01 EPL 17	Lagoons Road TEOM04	Ulan Road TEOM07 EPL27		Ulan-Wollar Road TEOM06^ EPL15	Ulan-Wollar Road TEOM08^	Comment
	PM10 Daily Result (24hr Average Limit = 50µg/m³)			PM2.5 Daily Result (24hr Average Limit = 25µg/m³)	PM10 Daily Result (µg/m³)		
16/09/2024	10.1	7.8	5.8	2.1	24.2	16.8	
17/09/2024	13.3	13.9	8.9	2.9	23.2	23.7	
18/09/2024	12.1	9.1	7.4	1.7	22.0	29.0	
19/09/2024	14.6	10.4	9.0	1.9	40.3	30.9	
20/09/2024	14.1	12.6	9.7	1.8	28.8	35.3	
21/09/2024	10.7	9.8	6.8	1.5	25.0	30.6	
22/09/2024	12.3	11.1	6.3	1.9	30.1	28.4	
23/09/2024	15.9	12.2	8.0	2.5	28.4	31.4	
24/09/2024	19.9	18.2	11.5	3.5	31.2	26.9	
25/09/2024	30.9	25.0	15.5	8.0	46.7	39.7	
26/09/2024	13.8	12.7	4.9	4.3	14.1	13.2	
27/09/2024	12.6	6.5	1.8	0.6	7.5	6.5	
28/09/2024	14.3	6.8	1.6	0.8	8.3	7.7	
29/09/2024	12.8	11.8	Insufficient data	Insufficient data	9.3	9.7	Equipment Breakdown
30/09/2024	10.8	8.7	3.4	1.8	11.8	9.6	
1/10/2024	17.8	13.2	9.0	4.2	15.2	12.6	
2/10/2024	18.9	17.6	10.5	4.2	18.5	14.9	
3/10/2024	20.3	18.2	9.0	2.1	14.1	13.0	
4/10/2024	19.5	16.1	10.4	3.2	16.6	16.8	
5/10/2024	10.8	9.0	8.2	5.8	19.1	14.2	
6/10/2024	13.6	11.0	7.3	3.5	33.0	20.2	
7/10/2024	11.5	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Power Loss
8/10/2024	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Power Loss
9/10/2024	11.3	11.6	4.1	1.5	6.9	6.7	
10/10/2024	11.8	12.4	7.8	3.9	13.6	14.0	
11/10/2024	17.7	16.7	13.2	5.4	33.7	29.9	
12/10/2024	18.6	17.8	9.7	3.1	28.2	22.8	
13/10/2024	17.3	20.0	11.4	5.2	13.7	12.6	
14/10/2024	16.8	15.5	12.3	8.5	13.0	13.5	
15/10/2024	9.4	8.9	6.5	4.6	Insufficient data	Insufficient data	Power Loss
16/10/2024	8.5	8.9	7.4	3.1	9.1	8.0	
17/10/2024	11.3	10.4	6.9	5.3	9.5	9.5	
18/10/2024	13.2	10.0	7.1	4.4	11.1	11.7	
19/10/2024	8.2	6.5	1.6	0.7	10.2	8.7	
20/10/2024	14.3	12.0	5.8	3.1	17.7	16.4	
21/10/2024	18.2	16.4	7.1	2.2	12.1	10.6	
22/10/2024	18.6	16.4	9.5	4.6	15.6	13.7	
23/10/2024	21.1	14.0	12.0	6.3	36.5	34.3	
24/10/2024	17.0	12.9	8.3	2.8	33.2	23.4	
25/10/2024	12.5	9.5	7.6	2.4	32.8	18.2	
26/10/2024	22.3	21.4	14.4	2.9	17.6	16.6	
27/10/2024	17.8	19.0	10.4	3.2	27.0	18.8	
28/10/2024	15.8	14.4	10.3	4.0	44.3	32.4	
29/10/2024	24.1	23.6	Insufficient data	Insufficient data	23.3	20.9	Power Loss
30/10/2024	22.6	21.1	17.8	8.7	24.1	20.0	

Date	Ulan School TEOM01 EPL 17	Lagoons Road TEOM04	Ulan Road TEOM07 EPL27		Ulan-Wollar Road TEOM06^ EPL15	Ulan-Wollar Road TEOM08^	Comment
	PM10 Daily Result (24hr Average Limit = 50µg/m³)			PM2.5 Daily Result (24hr Average Limit = 25µg/m³)	PM10 Daily Result (µg/m³)		
31/10/2024	17.7	13.8	7.8	2.2	40.8	31.3	
1/11/2024	17.4	16.3	10.7	6.6	20.1	17.4	
2/11/2024	19.8	21.4	12.2	8.9	13.4	12.9	
3/11/2024	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Power Loss
4/11/2024	24.2	19.8	Insufficient data	Insufficient data	41.0	35.3	Equipment Breakdown
5/11/2024	20.7	22.1	Insufficient data	Insufficient data	25.8	27.6	Equipment Breakdown
6/11/2024	20.4	18.8	11.5	6.3	17.3	17.7	
7/11/2024	25.8	18.9	17.0	9.4	72.1	63.8	
8/11/2024	12.0	9.3	Insufficient data	Insufficient data	21.5	16.8	Equipment Breakdown
9/11/2024	17.7	16.9	9.4	4.9	26.5	32.1	
10/11/2024	21.9	25.0	13.1	8.6	30.1	32.7	
11/11/2024	17.9	17.1	Insufficient data	Insufficient data	12.9	13.8	Equipment Breakdown
12/11/2024	11.9	10.7	Insufficient data	Insufficient data	8.8	8.5	Equipment Breakdown
13/11/2024	14.5	11.3	Insufficient data	Insufficient data	11.6	10.7	Equipment Breakdown
14/11/2024	16.5	15.1	Insufficient data	Insufficient data	13.0	13.1	Equipment Breakdown
15/11/2024	17.9	18.7	Insufficient data	Insufficient data	13.3	13.3	Equipment Breakdown
16/11/2024	14.8	18.1	12.1	5.7	10.3	10.8	
17/11/2024	14.1	13.4	11.8	5.4	11.2	10.4	
18/11/2024	10.4	8.2	8.9	5.6	11.6	12.1	
19/11/2024	19.7	19.3	13.8	5.5	17.8	17.5	
20/11/2024	18.6	19.7	11.4	5.8	12.6	12.7	
21/11/2024	14.9	16.5	11.0	5.7	10.5	10.4	
22/11/2024	15.8	16.2	7.4	2.2	9.5	8.8	
23/11/2024	23.8	21.1	15.0	5.2	21.3	23.7	
24/11/2024	28.7	29.7	17.7	7.5	29.8	29.4	
25/11/2024	28.7	19.6	14.1	5.2	25.5	20.6	
26/11/2024	20.4	16.5	13.2	5.9	29.5	30.2	
27/11/2024	25.6	17.7	11.2	5.7	60.8	46.9	
28/11/2024	16.5	14.9	Insufficient data	Insufficient data	17.0	15.7	Equipment Breakdown
29/11/2024	12.6	10.0	Insufficient data	Insufficient data	11.8	11.4	Equipment Breakdown
30/11/2024	5.4	5.5	Insufficient data	Insufficient data	Insufficient data	5.0	Equipment Breakdown
1/12/2024	9.9	10.2	Insufficient data	Insufficient data	9.7	9.7	Equipment Breakdown
2/12/2024	15.9	12.3	4.9	2.8	16.6	17.4	
3/12/2024	17.1	13.2	Insufficient data	Insufficient data	16.3	17.8	Equipment Breakdown
4/12/2024	9.6	18.7	Insufficient data	Insufficient data	13.1	16.2	Equipment Breakdown
5/12/2024	18.6	22.5	13.8	9.7	16.2	15.9	

Date	Ulan School TEOM01 EPL 17	Lagoons Road TEOM04	Ulan Road TEOM07 EPL27		Ulan-Wollar Road TEOM06^ EPL15	Ulan-Wollar Road TEOM08^	Comment
	PM10 Daily Result (24hr Average Limit = 50µg/m³)			PM2.5 Daily Result (24hr Average Limit = 25µg/m³)	PM10 Daily Result (µg/m³)		
6/12/2024	15.1	17.0	Insufficient data	Insufficient data	13.7	14.3	Equipment Breakdown
7/12/2024	9.9	12.8	Insufficient data	Insufficient data	11.4	14.5	Equipment Breakdown
8/12/2024	10.7	9.2	Insufficient data	Insufficient data	13.9	13.7	Equipment Breakdown
9/12/2024	13.5	15.2	Insufficient data	Insufficient data	12.1	11.5	Equipment Breakdown
10/12/2024	15.3	15.3	Insufficient data	Insufficient data	16.8	13.1	Equipment Breakdown
11/12/2024	18.1	18.2	5.6	3.6	23.0	Insufficient data	Equipment Breakdown
12/12/2024	17.2	13.0	4.5	2.4	24.0	Insufficient data	Equipment Breakdown
13/12/2024	19.0	15.9	6.1	4.0	32.7	37.4	
14/12/2024	26.1	26.8	13.8	9.3	39.4	38.9	
15/12/2024	30.0	30.3	Insufficient data	Insufficient data	35.8	31.1	Equipment Breakdown
16/12/2024	23.6	26.8	Insufficient data	Insufficient data	16.1	16.2	Equipment Breakdown
17/12/2024	21.0	22.3	Insufficient data	Insufficient data	23.3	23.9	Equipment Breakdown
18/12/2024	17.5	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Insufficient data	Power Loss
19/12/2024	20.4	22.2	3.8	2.2	12.7	13.8	
20/12/2024	18.4	19.2	Insufficient data	Insufficient data	15.6	15.1	Equipment Breakdown
21/12/2024	27.3	26.6	Insufficient data	Insufficient data	25.1	21.0	Equipment Breakdown
22/12/2024	24.4	25.2	Insufficient data	Insufficient data	29.8	25.6	Equipment Breakdown
23/12/2024	26.1	21.9	5.1	2.4	72.9	46.9	
24/12/2024	16.3	17.2	Insufficient data	Insufficient data	25.1	19.0	Equipment Breakdown
25/12/2024	15.5	17.6	Insufficient data	Insufficient data	14.4	14.5	Equipment Breakdown
26/12/2024	14.1	16.1	Insufficient data	Insufficient data	14.2	13.7	Equipment Breakdown
27/12/2024	21.1	21.0	Insufficient data	Insufficient data	29.9	21.3	Equipment Breakdown
28/12/2024	14.3	13.9	Insufficient data	Insufficient data	29.8	16.6	Equipment Breakdown
29/12/2024	12.4	12.7	Insufficient data	Insufficient data	21.5	17.7	Equipment Breakdown
30/12/2024	26.5	26.4	Insufficient data	Insufficient data	23.9	23.3	Equipment Breakdown
31/12/2024	25.4	27.5	Insufficient data	Insufficient data	25.2	21.9	Equipment Breakdown

Notes:

All readings are cumulative (Moolarben Mine Contribution plus background). PM10 24 hour average criteria is cumulative. PM2.5 24 hour average criteria is Incremental Impact (Concentration due to Moolarben Mine Complex on its own).

^ TEOM06 and TEOM08 are used to measure "upwind" air quality when wind is in the direction of private residences. They are not representative of private residences.

Figure 3-c 2020 to 2024 TEOM Rolling Average

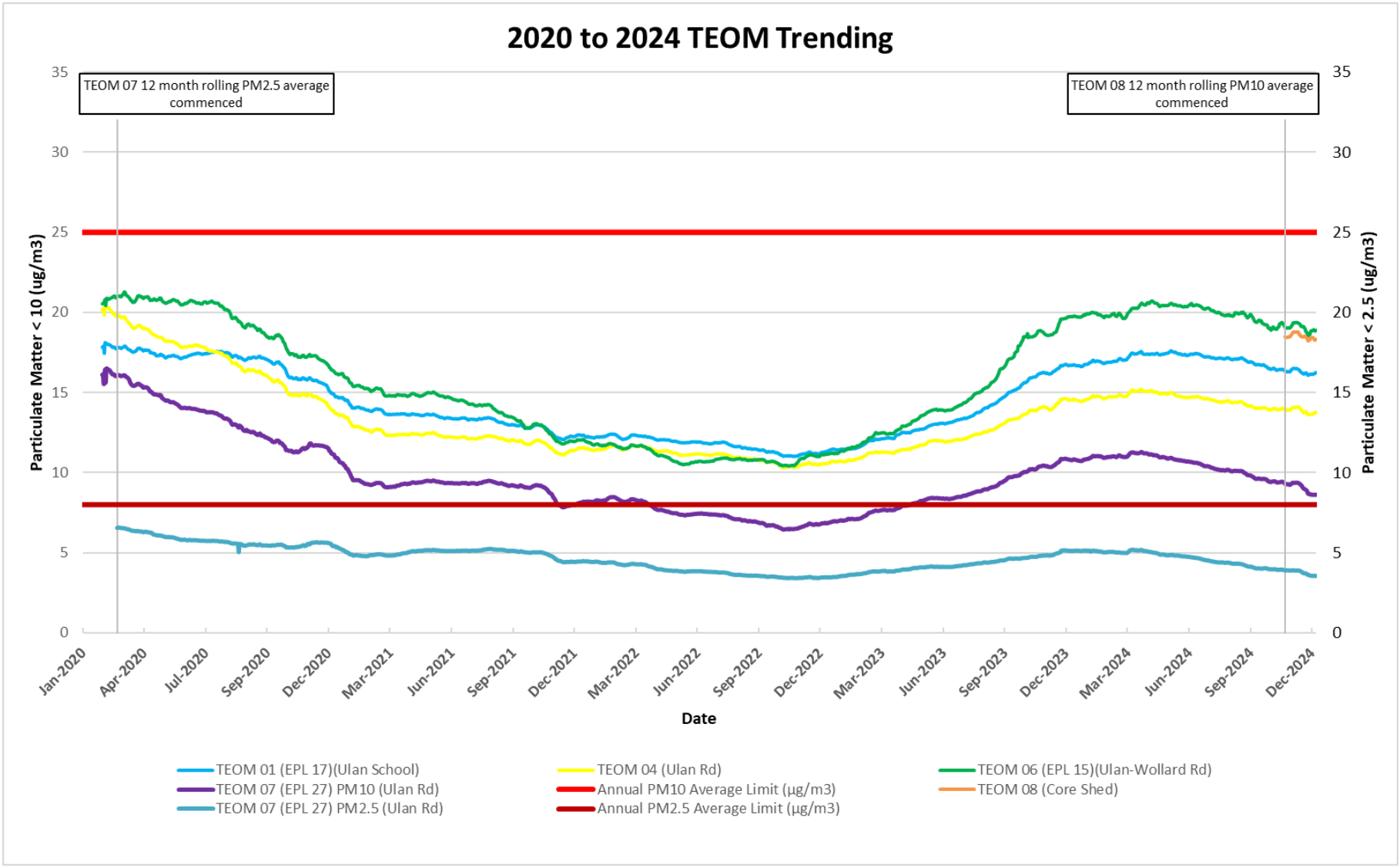
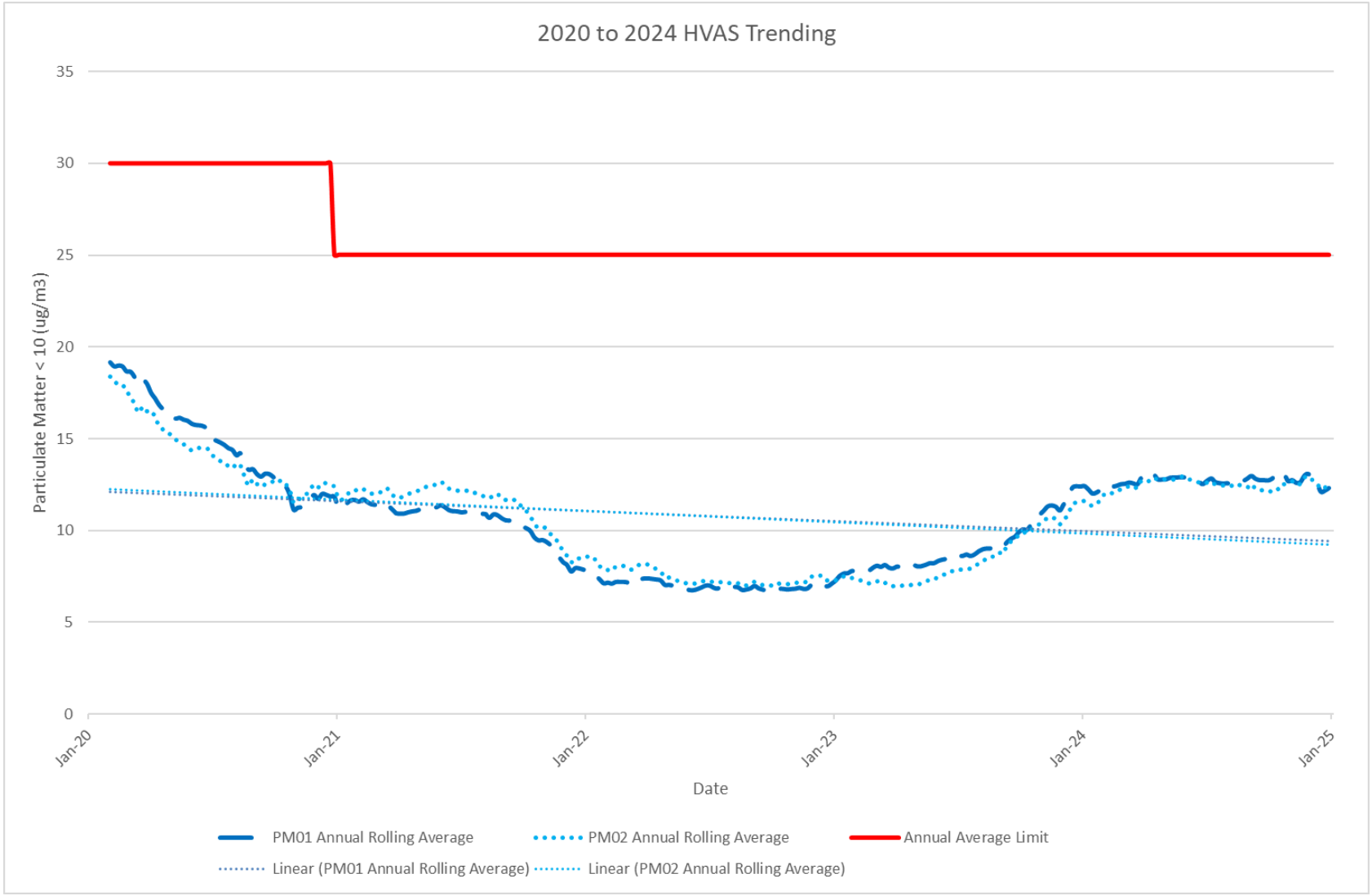


Table 4: HVAS monitoring results

Sampling Date	PM01 (EPL 16)	PM02
	Particulate Matter <10 µm (µg/m³)	Particulate Matter <10 µm (µg/m³)
6/01/2024	14.6	14.7
12/01/2024	13.6	13.2
18/01/2024	6.1	5.5
24/01/2024	14.0	13.2
30/01/2024	26.3	27.1
5/02/2024	18.8	19.6
11/02/2024	12.3	11.9
17/02/2024	14.0	13.2
23/02/2024	15.1	13.0
29/02/2024	17.5	13.9
6/03/2024	19.1	18.8
12/03/2024	19.6	21.3
18/03/2024	7.7	8.8
24/03/2024	14.3	10.6
30/03/2024	31.4	32.4
5/04/2024	2.4	1.0
11/04/2024	10.9	11.9
17/04/2024	21.4	16.3
23/04/2024	4.2	4.3
29/04/2024	5.3	8.4
5/05/2024	7.0	3.1
11/05/2024	8.3	7.4
17/05/2024	10.6	16.1
23/05/2024	9.5	11.3
29/05/2024	13.4	18
4/06/2024	3.8	4.2
10/06/2024	4.9	4.4
16/06/2024	3.9	3.9
22/06/2024	5.5	3.7
28/06/2024	6.1	9.2
4/07/2024	12	6.1
11/07/2024	3.4	2.6
16/07/2024	2.2	2.1
22/07/2024	2.2	2.1
28/07/2024	2.4	3.1
3/08/2024	9.3	10.9
9/08/2024	9.5	9.3
15/08/2024	8.1	6.4
21/08/2024	12.4	11.1
27/08/2024	6.4	5.4
2/09/2024	18.0	16.0
8/09/2024	11.8	16.5
14/09/2024	8.1	13.6
20/09/2024	11.2	13.8

Sampling Date	PM01 (EPL 16)	PM02
	Particulate Matter <10 µm (µg/m³)	Particulate Matter <10 µm (µg/m³)
26/09/2024	8.8	7.8
2/10/2024	15.7	18.1
8/10/2024	15.6	19.7
14/10/2024	17.1	14.1
20/10/2024	12.6	12.0
26/10/2024	20.8	26.1
1/11/2024	13.8	20.7
7/11/2024	24.4	20.3
13/11/2024	11.1	9.8
19/11/2024	15.0	18.2
25/11/2024	23.7	22.4
1/12/2024	10.1	8.7
7/12/2024	13.1	11.6
13/12/2024	15.5	17.0
19/12/2024	17.7	19.8
25/12/2024	15.1	16.6
31/12/2024	23.0	28.4

Figure 3-d 2020 to 2024 HVAS Trending



APPENDIX 3E. BIODIVERSITY MONITORING DATA

2024 Stage 1 and Stage 1 Mod 9 Autumn Flora Monitoring Results

BOA	Plot Number	Native Overstorey Species	Native Mid Storey Species	Native ground cover (Grasses)	Native Ground Cover (Shrubs)	Native Ground Cover (Other)	Exotic Ground Cover	Litter	Bare soil	Crypto
BOA 1	**1a**	12	5	26	0	6	0	66	0	2
BOA 1	**1b**	17	5	21	0	0	0	75	4	0
BOA 1	**4a**	6	0	34	0	0	20	38	8	0
BOA 1	**4b**	8	3	16	0	0	4	64	16	0
BOA 1	**2c**	27	11	18	2	10	0	69	2	0
BOA 1	**2d**	29	6	18	2	10	0	70	0	0
BOA 1	**5a**	26	11	30	0	6	0	64	0	0
BOA 1	**5b**	28	18	4	8	16	0	72	0	0
BOA 1	**5c**	14	11	10	10	18	0	54	6	2
BOA 1	**6a**	12	8	4	26	6	0	62	2	0
BOA 1	**6b**	26	12	4	12	8	0	72	2	0
BOA 1	**7b**	1	8	22	12	14	0	28	16	4
BOA 1	**9a**	9	0	46	0	6	4	40	4	0
BOA 1	**9b**	2	0	22	0	0	2	36	14	0
BOA 1	**14a**	18	3	46	0	6	0	48	0	0
BOA 1	**14b**	10	25	20	0	12	2	62	4	0
BOA 1	**24a**	0	0	30	2	2	16	18	32	0
BOA 1	**24b**	0	7	38	0	0	2	42	18	0
BOA 1	**21a**	0	0	42	0	12	8	30	6	2
BOA 1	**21b**	0	0	12	0	40	6	26	14	2
BOA 2	**25a**	0	0	45	4	0	14	33	4	0
BOA 2	**11a**	15	6	34	0	2	0	54	10	0
BOA 2	**11b**	17	14	36	0	0	0	44	12	0
BOA 2	**11c**	16	2	14	2	0	0	74	0	10
BOA 2	**11d**	12	4	2	2	2	0	58	2	34
BOA 2	**10b**	12	19	2	4	2	0	66	4	0

BOA	Plot Number	Native Overstorey Species	Native Mid Storey Species	Native ground cover (Grasses)	Native Ground Cover (Shrubs)	Native Ground Cover (Other)	Exotic Ground Cover	Litter	Bare soil	Crypto
BOA 2	**13a**	9	0	4	2	0	0	26	4	64
BOA 2	**13e**	4	11	10	10	8	0	66	4	0
BOA 2	**13g**	35	8	12	0	6	0	80	2	0
BOA 2	**13h**	16	8	14	0	10	0	68	2	4
BOA 3	**1e**	17	5	24	10	2	0	48	8	8
BOA 3	**1f**	2	4	48	16	8	0	22	6	0
BOA 3	**1h**	5	7	36	12	4	0	48	0	0
BOA 3	**4e**	0	8	40	6	6	0	40	6	2
BOA 3	**4f**	0	11	30	6	12	2	22	6	22
BOA 3	**5e**	15	13	30	18	24	0	18	14	8
BOA 3	**5h**	8	8	22	24	10	0	42	10	0
BOA 3	**6d**	5	14	30	4	0	0	60	4	2
BOA 3	**6c**	4	8	36	2	0	0	42	10	0
BOA 3	**8a**	12	7	0	28	2	0	36	20	14
BOA 3	**8c**	31	2	0	2	8	0	86	4	0
BOA 3	**8d**	15	12	4	38	6	0	40	8	4
BOA 3	**15a**	2	20	42	18	16	0	10	6	8
BOA 3	**15b**	2	17	4	17	69	0	6	4	0
BOA 3	**16a**	0	5	4	46	12	0	14	6	18
BOA 3	**16b**	0	12	26	24	10	0	18	14	8
BOA 3	**17a**	26	11	6	30	2	0	42	4	16
BOA 3	**17b**	1	15	22	20	4	0	38	4	12
BOA 3	**17c**	0	26	6	24	2	0	50	6	12
BOA 3	**17d**	0	9	22	22	4	0	18	12	22
BOA 3	**19a**	1	20	26	14	4	0	26	18	12
BOA 3	**19b**	5	6	40	10	6	0	32	0	8
BOA 3	**19c**	1	20	8	6	14	0	60	4	2
Bobadeen	**Mod9_Fl1**	31	9	22	0	32	4	36	0	2
Bobadeen	**Mod9_Fl2**	0	0	52	0	2	38	8	0	0
Bobadeen	**Mod9_Fl3**	16	29	43	2	8	2	35	10	0

BOA	Plot Number	Native Overstorey Species	Native Mid Storey Species	Native ground cover (Grasses)	Native Ground Cover (Shrubs)	Native Ground Cover (Other)	Exotic Ground Cover	Litter	Bare soil	Crypto
Bobadeen	**Mod9_Fl4**	0	0	46	0	0	42	8	4	0
Bobadeen	**Mod9_Fl5**	0	1	28	2	6	54	10	0	0
Bobadeen	**Mod9_Fl6**	0	8	20	6	24	20	30	0	0
Bobadeen	**Mod9_Fl7**	14	3	26	0	10	62	2	0	0
Bobadeen	**Mod9_Fl8**	0	0	62	0	0	34	4	0	0
Bobadeen	**Mod9_Fl9**	0	9	68	6	14	8	4	0	0
Elward	**Mod9_Fl10**	13	8	4	4	16	0	50	2	0
Elward	**Mod9_Fl11**	5	5	36	2	2	4	42	14	0
Elward	**Mod9_Fl12**	13	4	28	2	0	0	58	12	0
Elward	**Mod9_Fl13**	21	0	0	20	0	0	78	2	0
Elward	**Mod9_Fl14**	13	38	58	4	2	0	32	4	0
Clarkes	**Mod9_Fl15**	0	0	84	0	4	0	12	0	0
Clarkes	**Mod9_Fl16**	5	0	44	0	2	4	42	8	0
Clarkes	**Mod9_Fl17**	23	2	26	4	2	0	64	4	0
Clarkes	**Mod9_Fl19**	1	0	0	0	18	4	26	26	0
Clarkes	**Mod9_Fl20**	11	0	0	4	18	0	62	16	0
Clarkes	**Mod9_Fl21**	8	1	6	4	22	0	38	30	0
Clarkes	**Mod9_Fl22**	18	0	2	6	4	0	32	56	0
Clifford	**Mod9_Fl18**	17	3	22	2	12	0	56	6	2
Clifford	**Mod9_Fl23**	11	0	26	0	4	0	48	22	0
Clifford	**Mod9_Fl24**	17	0	14	0	8	0	66	12	0
Clifford	**Mod9_Fl25**	19	0	16	2	4	0	72	6	0
Property 5	**Mod9_Fl26**	0	0	50	0	10	30	10	0	0
Property 5	**Mod9_Fl27**	0	0	30	0	2	48	20	0	0
Property 5	**Mod9_Fl28**	21	7	48	0	34	0	16	2	0
Property 24 & 25	**Mod9_Fl29**	11	10	36	2	18	0	40	0	0
Property 24 & 25	**Mod9_Fl30**	0	0	34	2	26	36	2	0	0
Property 24 & 25	**Mod9_Fl31**	0	0	48	0	22	28	2	0	0
Moolarmoo	**Mod9_Fl32**	27	3	0	32	2	0	44	6	0

BOA	Plot Number	Native Overstorey Species	Native Mid Storey Species	Native ground cover (Grasses)	Native Ground Cover (Shrubs)	Native Ground Cover (Other)	Exotic Ground Cover	Litter	Bare soil	Crypto
Moolarmoo	**Mod9_FI33**	7	15	14	0	28	0	14	22	0
Moolarmoo	**Mod9_FI34**	0	0	74	0	16	6	2	2	0
Moolarmoo	**Mod9_FI35**	0	5	50	0	12	30	8	0	0

2024 Stage 2 Autumn Flora Monitoring Results

BOA	Plot Number	Native Overstorey Species	Native Mid Storey Species	Native ground cover (Grasses)	Native Ground Cover (Shrubs)	Native Ground Cover (Other)	Exotic Ground Cover	Litter	Bare soil	Crypto
Dun Dun East	**Stage2_FI20**	3.2	0	52.0	0.0	12.0	20.0	12.0	2.0	0
Dun Dun East	**Stage2_FI26**	25.5	2.7	6.3	6.3	0.0	2.1	83.3	2.1	0
Dun Dun East	**Stage2_FI29**	8.4	0	0.0	0.0	8.0	0.0	66.0	12.0	0
Dun Dun East	**Stage2_FI36**	6.5	0.5	47.5	5.0	10.0	0.0	30.0	7.5	0
Dun Dun East	**Stage2_FI37**	1.1	0.3	44.9	0.0	0.0	26.5	22.0	6.1	0
Dun Dun East	**Stage2_FI71**	1.5	0	44.9	0.0	10.2	6.1	28.6	10.2	0
Dun Dun East	**Stage2_FI107**	4.8	0.3	23.5	2.0	23.5	19.6	19.6	9.8	0
Dun Dun East	**Stage2_FI108**	20.5	0	0.0	0.0	0.0	0.0	94.0	4.0	0
Dun Dun East	**Stage2_FI109**	0	0	52.0	0.0	0.0	8.0	10.0	10.0	0
Dun Dun East	**Stage2_FI110**	0	0	38.0	0.0	14.0	32.0	12.0	4.0	0
Dun Dun East	**Stage2_FI111**	0	0	43.8	0.0	6.3	43.8	6.3	0.0	0
Dun Dun East	**Stage2_FI112**	0	0	38.0	0.0	12.0	42.0	8.0	0.0	0
Dun Dun East	**Stage2_FI113**	8.5	3.5	30.8	10.3	33.3	0.0	20.5	0.0	0
Dun Dun East	**Stage2_FI114**	0	0	51.0	0.0	10.2	20.4	16.3	0.0	0
Dun Dun East	**Stage2_FI115**	0	0	50.0	0.0	24.0	10.0	4.0	0.0	0
Dun Dun East	**Stage2_FI116**	0	0.5	52.2	0.0	0.0	0.0	32.6	6.5	6.5
Dun Dun West	**Stage2_FI10**	18	0	4.0	4.0	6.0	0.0	56.0	12.0	0.0
Dun Dun West	**Stage2_FI14**	12.9	2.0	0.0	0.0	4.0	4.0	80.0	4.0	0.0
Dun Dun West	**Stage2_FI16**	0.0	0.0	78.7	2.1	6.4	0.0	2.1	2.1	0.0
Dun Dun West	**Stage2_FI17**	0.0	0.0	50.0	0.0	8.0	16.0	16.0	0.0	0.0
Dun Dun West	**Stage2_FI117**	4.1	0.0	6.0	0.0	2.0	0.0	34.0	46.0	4.0
Dun Dun West	**Stage2_FI118**	9.4	0.0	6.0	0.0	8.0	0.0	26.0	26.0	0.0
Dun Dun West	**Stage2_FI119**	3.5	0.1	22.0	2.4	12.2	19.5	2.4	17.1	0.0

BOA	Plot Number	Native Overstorey Species	Native Mid Storey Species	Native ground cover (Grasses)	Native Ground Cover (Shrubs)	Native Ground Cover (Other)	Exotic Ground Cover	Litter	Bare soil	Crypto
Dun Dun West	Stage2_Fl120	0.0	0.0	60.0	0.0	8.0	24.0	4.0	4.0	0.0
Dun Dun West	Stage2_Fl121	0.0	0.0	58.0	2.0	4.0	18.0	16.0	2.0	0.0
Dun Dun West	Stage2_Fl122	9.0	18.1	36.7	10.2	6.1	0.0	36.7	8.2	0.0
Dun Dun West	Stage2_Fl123	1.0	0.0	51.0	0.0	24.5	6.1	8.2	6.1	0.0
Dun Dun West	Stage2_Fl124	0.0	0.2	36.0	28.0	20.0	0.0	10.0	0.0	0.0
Libertus	Stage2_Fl125	8.5	20.5	14.3	12.2	20.4	0.0	42.9	10.2	0.0
Libertus	Stage2_Fl126	13.0	17.5	18.0	22.0	12.0	0.0	42.0	2.0	4.0
Libertus	Stage2_Fl127	15.0	20.5	3.9	33.3	15.7	0.0	41.2	3.9	2.0
Libertus	Stage2_Fl128	15.0	12.4	36.0	6.0	12.0	0.0	44.0	2.0	0.0
Libertus	Stage2_Fl129	0.0	0.0	48.0	0.0	12.0	14.0	16.0	10.0	0.0
Libertus	Stage2_Fl130	0.0	0.0	26.0	0.0	34.0	24.0	4.0	12.0	0.0
Libertus	Stage2_Fl131	20.5	7.5	24.0	10.0	36.0	4.0	26.0	0.0	0.0
Libertus	Stage2_Fl132	13.0	15.5	30.0	14.0	12.0	0.0	44.0	0.0	0.0
Old Bobadeen	Stage2_Fl52	0.0	0.0	50.0	0.0	14.0	34.0	2.0	0.0	0.0
Old Bobadeen	Stage2_Fl142	17.5	26.5	42.0	2.0	28.0	0.0	22.0	4.0	0.0
Old Bobadeen	Stage2_Fl143	12.0	23.5	28.0	10.0	16.0	0.0	26.0	16.0	2.0
Old Bobadeen	Stage2_Fl144	8.5	25.0	24.0	18.0	0.0	0.0	52.0	4.0	0.0
Old Bobadeen	Stage2_Fl145	22.5	0.0	26.0	2.0	2.0	0.0	64.0	4.0	0.0
Old Bobadeen	Stage2_Fl146	21.0	0.0	50.0	0.0	14.0	14.0	20.0	2.0	0.0
Old Bobadeen	Stage2_Fl153	0.0	4.0	47.5	0.0	7.5	7.5	37.5	0.0	0.0
Old Bobadeen	Stage2_Fl154	0.0	6.0	8.9	0.0	22.2	42.2	22.2	4.4	0.0
Old Bobadeen	Stage2_Fl156	0.0	0.0	58.6	0.0	10.3	13.8	17.2	0.0	0.0
Onsite Offset	Stage2_Fl58	31.0	3.5	4.0	8.0	8.0	0.0	62.0	10.0	4.0
Onsite Offset	Stage2_Fl64	0.0	0.0	77.6	0.0	2.0	0.0	18.4	2.0	0.0
Onsite Offset	Stage2_Fl69	5.5	2.0	56.0	6.0	16.0	0.0	16.0	6.0	0.0
Onsite Offset	Stage2_Fl133	30.5	4.5	4.0	34.0	8.0	0.0	50.0	0.0	0.0
Onsite Offset	Stage2_Fl134	17.0	13.7	2.0	14.0	10.0	0.0	54.0	14.0	0.0
Onsite Offset	Stage2_Fl135*	29.5	5.5	18.0	34.0	4.0	0.0	44.0	0.0	0.0
Onsite Offset	Stage2_Fl136	0.0	0.0	60.9	2.2	28.3	0.0	8.7	0.0	0.0
Onsite Offset	Stage2_Fl137	0.0	0.0	39.6	0.0	0.0	56.3	4.2	0.0	0.0

BOA	Plot Number	Native Overstorey Species	Native Mid Storey Species	Native ground cover (Grasses)	Native Ground Cover (Shrubs)	Native Ground Cover (Other)	Exotic Ground Cover	Litter	Bare soil	Crypto
Onsite Offset	**Stage2_Fl138***	20.0	10.0	14.0	24.0	2.0	0.0	58.0	2.0	0.0
Onsite Offset	**Stage2_Fl139**	20.0	9.5	48.0	8.0	14.0	0.0	30.0	0.0	0.0
Onsite Offset	**Stage2_Fl140**	6.2	0.0	56.0	4.0	4.0	0.0	30.0	6.0	0.0
Onsite Offset	**Stage2_Fl141**	0.0	0.0	48.0	0.0	16.0	18.0	2.0	0.0	0.0
Ulan 18	**Stage2_Fl43**	0.0	0.0	70.0	0.0	0.0	10.0	16.0	4.0	0.0
Ulan 18	**Stage2_Fl45**	0.0	0.0	55.2	0.0	3.4	13.8	24.1	3.4	0.0
Ulan 18	**Stage2_Fl147**	22.0	26.5	10.0	0.0	0.0	0.0	90.0	0.0	0.0
Ulan 18	**Stage2_Fl148**	12.2	4.5	10.0	4.0	22.0	0.0	62.2	2.0	0.0
Ulan 18	**Stage2_Fl149**	5.5	9.0	2.0	12.0	12.0	0.0	52.0	6.0	0.0
Ulan 18	**Stage2_Fl150**	18.0	4.4	28.0	0.0	12.0	0.0	56.0	4.0	0.0
Ulan 18	**Stage2_Fl151**	20.5	6.5	28.0	4.0	0.0	0.0	58.0	10.0	0.0
Ulan 18	**Stage2_Fl152**	22.0	0.0	22.0	0.0	14.0	0.0	60.0	4.0	0.0
Ulan 18	**Stage2_Fl155**	0.0	0.0	64.1	0.0	28.2	7.7	0.0	0.0	0.0

*****_Note due to a change in site location, going forward Stage2_Fl138 has been renamed Stage2_Fl158 and Stage2_Fl135 has been renamed Stage2_Fl157._

Appendix 3F. SURFACE WATER MONITORING DATA

Table 5: 2024 Surface water quality data

Sample Point	Sample Date	pH (Field) (Unit)	pH (Lab) (Unit)	EC (Field) (µS/cm)	EC (Lab) (µS/cm)	TSS (mg/L)	TDS (mg/L)	Temperature (°C)	Turbidity (Lab) (NTU)	Turbidity (Field) (NTU)	Al - T (mg/L)	Cu - T (mg/L)	Pb - T (mg/L)	Zn - T (mg/L)	Ni - T (mg/L)	Fe - T (mg/L)	Mn - T (mg/L)	As - T (mg/L)	Se - T (mg/L)	Cd - T (mg/L)	Cr - T (mg/L)	Li (mg/L)	Ba - T (mg/L)	Sr (mg/L)	DO (mg/L)	N - T (mg/L)	P - T (mg/L)	As - D (mg/L)	Cd - D (mg/L)	Ni - D (mg/L)	Cu - D (mg/L)	Pb - D (mg/L)	Mn - D (mg/L)	Al - D (mg/L)	Zn - D (mg/L)
SW01	3/01/2024	8.2	8.3	915	853	<5	532	29.7	2.0	2.9	0.10	<0.001	<0.001	<0.005	0.008	0.18	0.044	<0.001	<0.01	<0.0001	<0.001	0.09	0.031	0.211	7.12	0.2	<0.01	<0.001	<0.0001	0.007	<0.001	<0.001	0.037	<0.01	<0.005
SW01	18/01/2024*	7.8	7.9	716	^	31	371	24.9	53.0	63.8				0.008		1.57																			
SW01	6/02/2024	7.8	7.9	445	445	8	287	25.5	17.2	18.6																									
SW01	5/03/2024	8.4	8.4	590	569	<5	331	23.4	4.6	4.8																									
SW01	3/04/2024	8.0	8.0	888	742	<5	434	14.7	2.1	2.9																									
SW01	6/04/2024*	8.1	8.2	636	637	<5	372	18.3	5.9	5.3				<0.005		0.41																			
SW01	1/05/2024	8.1	8.1	690	649	<5	386	16.6	3.2	3.1																									
SW01	2/06/2024*	7.5	7.6	388	408	19	291	11.5	53.8	32.0				0.007		1.13																			
SW01	5/06/2024	7.6	7.8	423	446	<5	260	6.9	28.3	23.9	0.66	<0.001	<0.001	<0.005	0.003	1.08	0.014	<0.001	<0.01	<0.0001	<0.001	0.064	0.015	0.075	11.55	0.3	0.01	<0.001	<0.0001	0.003	<0.001	<0.001	0.008	0.02	<0.005
SW01	2/07/2024	7.9	6.7	537	555	<5	358	8.2	14.5	12.1																									
SW01	6/08/2024	8.0	7.0	614	631	<5	374	8.2	5.5	6.2																									
SW01	4/09/2024	7.8	7.6	737	640	<5	422	5.7	4.9	5.8																									
SW01	1/10/2024	7.7	8.0	577	574	12	342	13.1	6.8	4.8																									
SW01	19/10/2024*	7.5	7.8	428	401	78	286	15.4	132.0	147.0				0.012		2.57																			
SW01	4/11/2024	7.8	8.0	864	693	<5	410	23.7	2.5	2.3																									
SW01	18/11/2024*	7.9	8.1	529	514	8	432	20.7	10.7	9.2				<0.005		0.48																			
SW01	1/12/2024*	7.6	7.2	163	499	23	405	21.3	29.3	28.1				0.012		1.44																			
SW01	5/12/2024*	7.5	7.8	457	470	24	388	22.2	77.1	74.4				0.012		2.61																			
SW01	19/12/2024	7.5	7.8	625	571	<5	324	18.5	10.2	13.3																									
SW02	3/01/2024	8.2	8.3	881	832	6	528	28.5	4.6	6.5	0.13	<0.001	<0.001	<0.005	0.008	0.3	0.067	<0.001	<0.01	<0.0001	<0.001	0.093	0.03	0.201	7.23	0.2	0.04								
SW02	18/01/2024*	7.9	7.8	685	600	22	335	24.8	35.0	60.0				0.015		1.63																			
SW02	6/02/2024	7.8	7.9	403	404	8	270	25.0	18.7	19.9																									
SW02	5/03/2024	8.5	8.4	617	595	<5	304	23.1	5.0	5.1																									
SW02	3/04/2024	8.0	8.0	877	750	<5	430	15.2	3.6	4.1																									
SW02	6/04/2024*	8.1	8.0	619	548	<5	366	18.6	10.5	8.9				<0.005		0.51																			
SW02	1/05/2024	8.4	8.3	669	646	<5	387	17.5	2.9	3.1																									
SW02	2/06/2024*	7.5	7.7	397	404	20	277	11.5	53.4	42.3				0.007		0.76																			
SW02	5/06/2024	7.8	7.8	420	440	<5	260	7.5	28.9	22.6	0.90	<0.001	<0.001	<0.005	0.003	1.19	0.019	<0.001	<0.01	<0.0001	<0.001	0.056	0.013	0.07	11.21	0.3	0.01								
SW02	2/07/2024	8.1	7.1	545	568	<5	352	8.7	13.8	11.5																									
SW02	6/08/2024	8.2	7.0	621	626	<5	402	8.5	5.2	5.4																									
SW02	4/09/2024	8.0	7.6	684	630	13	379	7.6	12.4	10.1																									
SW02	1/10/2024	8.0	8.1	559	565	<5	358	13.4	5.3	5.2																									
SW02	19/10/2024*	7.6	7.8	401	371	102	258	15.8	160.0	171.0				0.013		2.32																			
SW02	4/11/2024	8.1	7.5	845	694	<5	421	23.3	2.7	2.5																									
SW02	18/11/2024*	8.2	8.1	494	467	<5	326	21.5	9.8	9.0				<0.005		0.66																			
SW02	1/12/2024*	7.8	7.2	480	502	18	392	21.8	33.6	32.9				0.007		1.24																			
SW02	5/12/2024*	7.7	7.7	499	469	13	384	22.7	82.0	74.7				<0.005		1.44																			
SW02	19/12/2024	7.9	7.4	195	563	<5	336	19.2	9.4	9.6																									

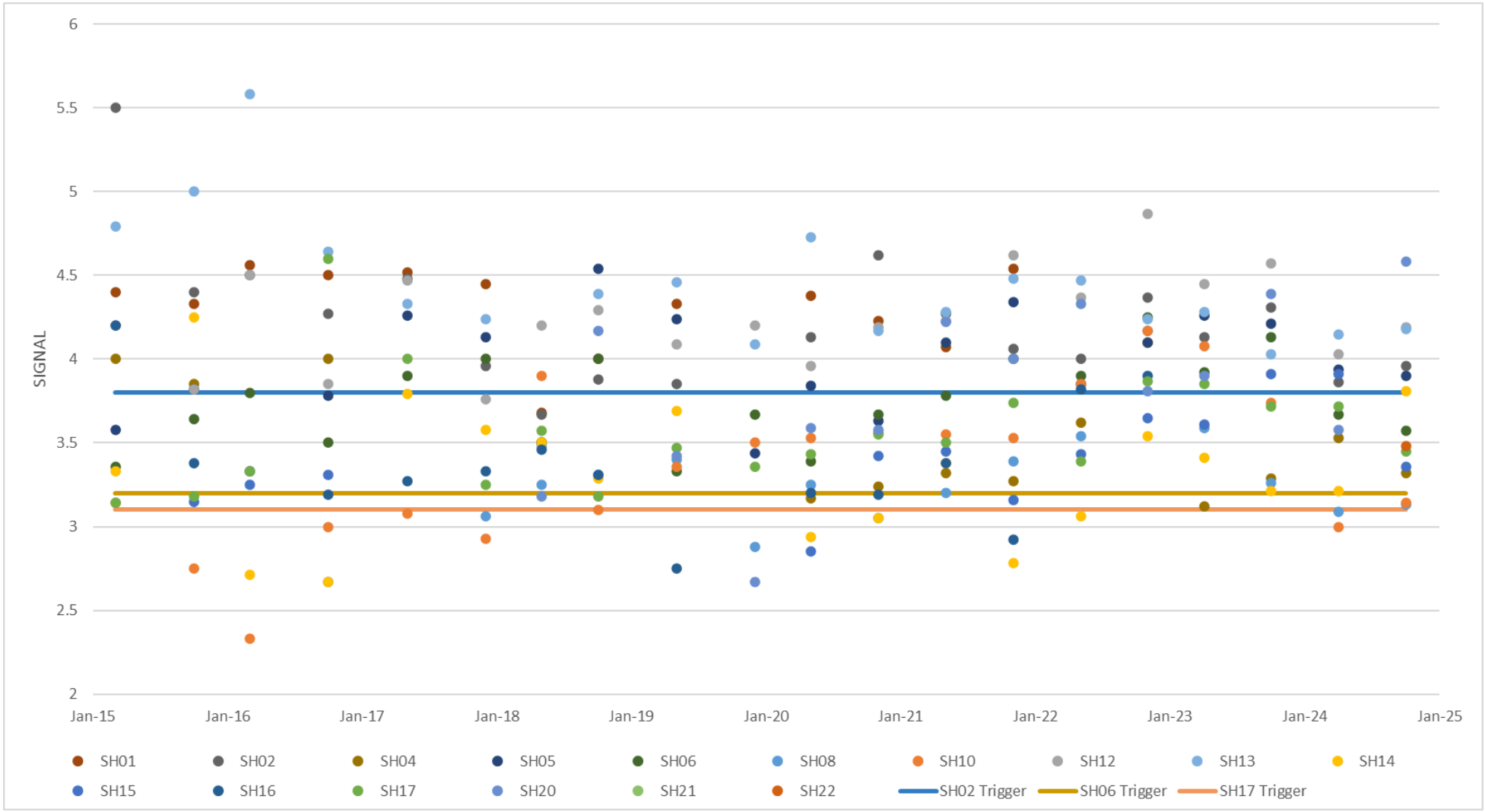
Sample Point	Sample Date	pH (Field) (Unit)	pH (Lab) (Unit)	EC (Field) (µS/cm)	EC (Lab) (µS/cm)	TSS (mg/L)	TDS (mg/L)	Temperature (°C)	Turbidity (Lab) (NTU)	Turbidity (Field) (NTU)	Al - T (mg/L)	Cu - T (mg/L)	Pb - T (mg/L)	Zn - T (mg/L)	Ni - T (mg/L)	Fe - T (mg/L)	Mn - T (mg/L)	As - T (mg/L)	Se - T (mg/L)	Cd - T (mg/L)	Cr - T (mg/L)	Li (mg/L)	Ba - T (mg/L)	Sr (mg/L)	DO (mg/L)	N - T (mg/L)	P - T (mg/L)	As - D (mg/L)	Cd - D (mg/L)	Ni - D (mg/L)	Cu - D (mg/L)	Pb - D (mg/L)	Mn - D (mg/L)	Al - D (mg/L)	Zn - D (mg/L)
SW04	18/01/2024*	6.4	6.6	467	396	34	428	27.9	133.0	164.0				0.039		2.06																			
SW04	7/02/2024	6.7	6.7	307	306	38	313	20.2	147.0	199.0																									
SW04	2/06/2024*	6.7	7.1	227	248	26	270	11.6	125.0	113.0				0.024		1.17																			
SW04	6/08/2024	6.9	6.5	328	367	6	296	10.0	42.8	73.4																									
SW04	19/10/2024*	7.1	7.2	202	197	74	257	19.5	244.0	281.0				0.025		3.37																			
SW04	19/11/2024*	6.5	6.9	176	170	97	250	17.8	281.0	378.0				0.022		1.38																			
SW04	1/12/2024*	6.8	7.0	217	241	68	271	22.9	165.0	202.0				0.014		1.87																			
SW04	5/12/2024*	6.6	6.8	229	232	16	242	23.7	87.3	93.7				0.024		3.14																			
SW05	3/01/2024	7.2	7.3	498	468	14	336	29.0	27.4	30.4	0.62	<0.001	0.001	<0.005	0.002	1.81	0.593	0.002	<0.01	<0.0001	<0.001	0.003	0.021	0.122	3.9	1	0.15							
SW05	18/01/2024*	7.3	7.3	555	455	34	298	25.5	36.6	36.4				<0.005		1.65																			
SW05	6/02/2024	6.9	7.0	439	421	28	310	25.1	45.5	41.6																									
SW05	5/03/2024	7.0	7.0	468	454	<5	292	23.8	15.4	16.8																									
SW05	3/04/2024	7.2	7.0	458	430	8	264	17.6	13.4	11.5																									
SW05	6/04/2024*	7.3	7.8	365	434	34	280	19.6	36.7	26.1				<0.005		0.88																			
SW05	1/05/2024	7.6	7.4	430	394	10	271	17.2	28.0	32.0																									
SW05	2/06/2024*	7.4	7.5	328	351	12	260	10.6	27.7	19.4				<0.005		1.35																			
SW05	5/06/2024	7.4	7.3	392	424	10	290	7.6	39.1	31.0	1.54	<0.001	<0.001	<0.005	<0.001	1.77	0.066	<0.001	<0.01	<0.0001	<0.001	0.004	0.014	0.086	8.63	0.8	0.03							
SW05	2/07/2024	7.4	6.4	485	493	22	361	8.2	37.4	45.2																									
SW05	6/08/2024	7.5	6.9	642	648	31	470	7.8	53.4	43.7																									
SW05	4/09/2024	7.3	7.5	1062	985	16	618	9.7	25.2	25.1																									
SW05	1/10/2024	7.3	7.4	930	998	16	604	16.0	15.9	15.9																									
SW05	19/10/2024*	7.5	7.7	986	925	24	512	17.2	17.8	17.3				<0.005		0.87																			
SW05	4/11/2024	7.3	7.6	1052	918	8	550	23.4	10.5	11.1																									
SW05	18/11/2024*	7.5	7.5	874	797	18	528	22.2	13.7	13.0				<0.005		0.55																			
SW05	1/12/2024*	7.2	7.2	690	728	25	448	23.8	23.1	20.1				<0.005		1.12																			
SW05	5/12/2024*	7.7	7.2	611	653	57	506	23.8	100.0	112.0				0.009		2.59																			
SW05	19/12/2024	7.2	7.2	744	672	8	390	22.7	13.6	17.0																									
SW07	3/01/2024	6.9	6.8	4420	4380	93	3590	26.9	68.3	25.7	0.11	<0.001	<0.001	<0.005	0.006	30.2	33.8	0.01	<0.01	<0.0001	<0.001	0.003	0.195	2.24	1.76	3	0.52							
SW07	18/01/2024*	7.1	7.2	3097	2740	<5	2290	25.0	2.9	3.3				<0.005		0.67																			
SW07	6/02/2024	7.2	7.2	3290	3210	31	2480	22.5	2.9	4.0																									
SW08	3/01/2024	7.1	7.2	2125	2080	11	1360	25.8	7.9	11.8	0.03	0.001	<0.001	<0.005	0.01	0.82	5.19	<0.001	<0.01	<0.0001	<0.001	0.005	0.074	0.52	8.07	1.1	0.1							
SW08	18/01/2024*	7.1	7.1	2828	2570	7	1800	25.1	12.2	11.9				<0.005		2.33																			
SW08	6/02/2024	6.8	6.9	2351	2260	7	1590	23.8	15.8	18.0																									
SW08	5/03/2024	6.4	6.5	2177	2070	<5	1450	19.4	14.5	37.4																									
SW08	3/04/2024	6.3	6.4	1892	2010	21	1220	19.4	18.3	16.5																									
SW08	6/04/2024*	6.8	7.5	2037	1940	12	1100	19.9	17.8	19.5				0.007		3.24																			
SW08	1/05/2024	6.4	6.8	1736	1880	<5	1160	15.1	15.4	19.8																									
SW08	2/06/2024*	6.4	6.9	1719	1670	<5	1130	10.4	40.4	36.6				0.009		2.7																			
SW08	4/06/2024	6.9	6.6	2677	2600	<5	1500	7.3	19.3	13.9	0.11	<0.001	<0.001	0.013	0.008	1.68	2.7	<0.001	<0.01	<0.0001	<0.001	0.003	0.06	0.496	5.71	0.9	0.05							
SW08	1/07/2024	7.2	6.6	3273	3570	<5	2350	8.4	6.6	5.6																									
SW08	6/08/2024	6.5	6.6	2107	2440	<5	1540	7.8	11.7	11.2																									

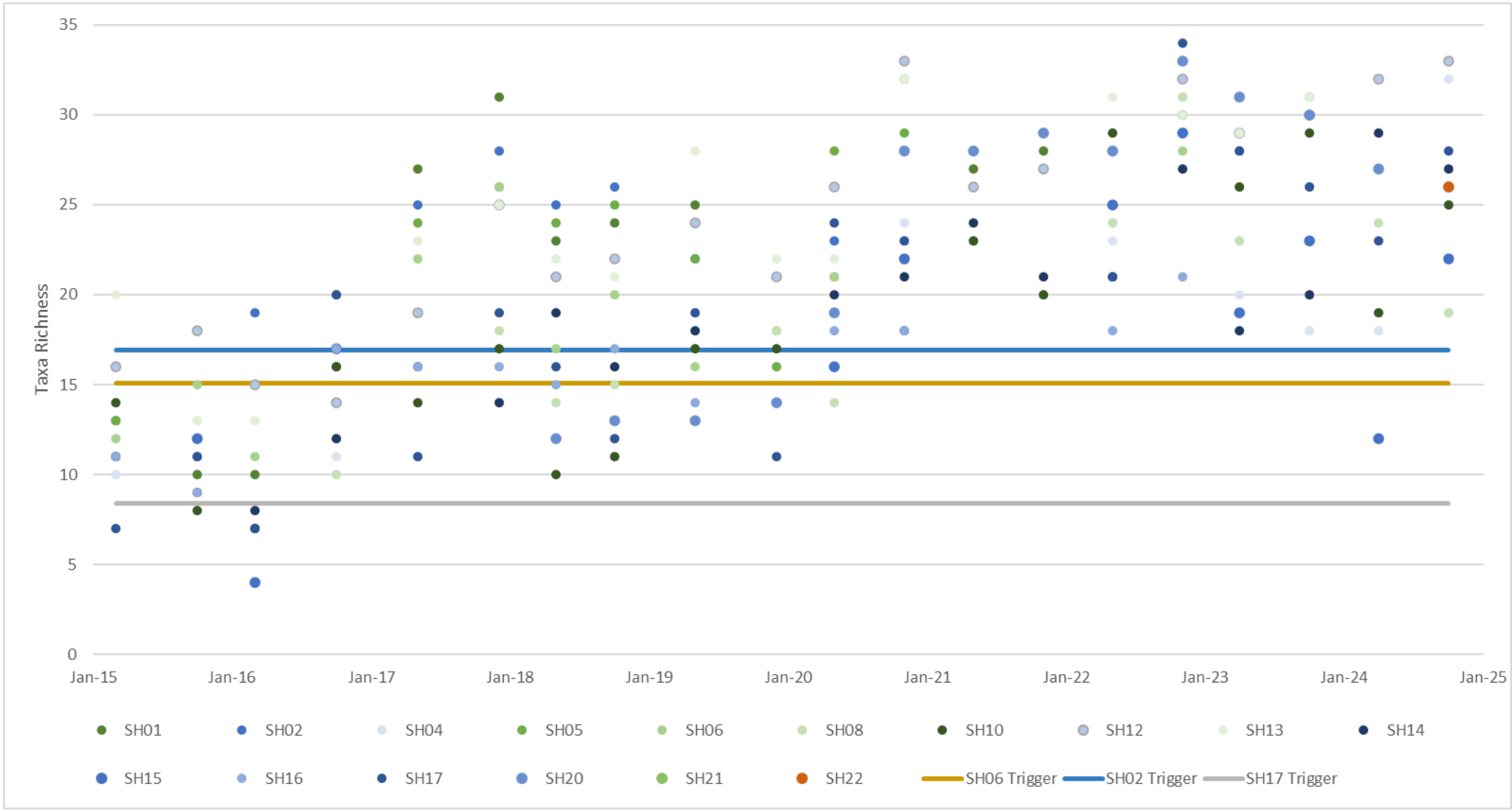
Sample Point	Sample Date	pH (Field) (Unit)	pH (Lab) (Unit)	EC (Field) (µS/cm)	EC (Lab) (µS/cm)	TSS (mg/L)	TDS (mg/L)	Temperature (°C)	Turbidity (Lab) (NTU)	Turbidity (Field) (NTU)	Al - T (mg/L)	Cu - T (mg/L)	Pb - T (mg/L)	Zn - T (mg/L)	Ni - T (mg/L)	Fe - T (mg/L)	Mn - T (mg/L)	As - T (mg/L)	Se - T (mg/L)	Cd - T (mg/L)	Cr - T (mg/L)	Li (mg/L)	Ba - T (mg/L)	Sr (mg/L)	DO (mg/L)	N - T (mg/L)	P - T (mg/L)	As - D (mg/L)	Cd - D (mg/L)	Ni - D (mg/L)	Cu - D (mg/L)	Pb - D (mg/L)	Mn - D (mg/L)	Al - D (mg/L)	Zn - D (mg/L)
SW08	4/09/2024	6.9	7.2	2657	2490	<5	1580	9.9	9.1	9.6																								
SW08	1/10/2024	6.9	7.3	2322	2960	6	1590	15.4	8.4	8.0																								
SW08	19/10/2024*	7.5	7.9	2586	2590	<5	1390	16.5	6.3	7.5				<0.005		0.9																		
SW08	4/11/2024	7.1	7.2	2622	2410	<5	1400	24.2	4.4	5.1																								
SW08	19/11/2024*	6.5	6.6	2312	2010	35	1460	20.5	82.0	83.3				0.011		7.62																		
SW08	1/12/2024*	7.1	7.5	2950	3390	16	2160	24.0	10.8	12.4				<0.005		1.56																		
SW08	5/12/2024*	7.4	7.5	2065	1910	12	1250	25.1	11.5	60.8				<0.005		1.55																		
SW08	19/12/2024	6.7	7.1	2019	2220	16	1280	22.4	65.0	82.9																								
SW09	3/01/2024	6.8	6.9	1975	1930	21	1120	24.8	76.0	94.0	0.02	<0.001	<0.001	<0.005	0.002	8.85	3.08	0.002	<0.01	<0.0001	<0.001	<0.001	0.15	0.52	2.4	0.8	0.17							
SW09	18/01/2024*	6.3	6.4	2129	1850	7	1650	24.6	14.2	8.5				0.267		1.99																		
SW09	6/02/2024	6.7	6.8	2036	1960	<5	1250	22.9	63.9	20.5																								
SW09	5/03/2024	6.9	6.9	2114	2010	30	1230	19.4	115.0	128.0																								
SW09	3/04/2024	6.9	6.9	2233	2140	48	1210	19.0	37.4	41.5																								
SW09	6/04/2024*	7.6	7.4	3131	3070	20	2320	20.1	42.8	7.6				0.246		6.96																		
SW09	2/06/2024*	6.4	6.9	2425	2440	17	1730	11.3	43.1	18.5				0.058		6.27																		
SW09	6/08/2024	6.8	7.0	2330	2370	26	1450	9.5	87.7	12.1																								
SW09	1/10/2024	6.9	7.5	2106	2320	28	1340	14.8	63.0	69.4																								
SW09	19/10/2024*	7.2	7.5	1475	1420	10	854	17.6	16.0	11.8				<0.005		2.67																		
SW09	1/12/2024*	6.7	7.1	2264	2440	74	1600	23.5	99.7	57.4				<0.005		19.2																		
SW09	5/12/2024*	7.0	7.0	206	2040	8	1220	24.0	11.7	11.2				<0.005		2.77																		
SW09	19/12/2024	6.8	7.4	2303	2370	45	1350	20.9	117.0	158.0																								
SW12	3/01/2024	7.3	7.4	386	450	18	464	30.2	33.5	39.7	0.18	<0.001	0.001	<0.005	0.002	1.25	0.358	0.002	<0.01	<0.0001	<0.001	0.002	0.02	0.116	5.73	1.2	0.1							
SW12	18/01/2024*	7.1	6.9	284	255	102	591	24.7	423.0	503.0				0.007		3.56																		
SW12	6/02/2024	7.0	7.1	398	394	56	296	24.7	64.4	67.7																								
SW12	5/03/2024	7.1	7.2	431	419	<5	280	24.0	15.5	18.7																								
SW12	3/04/2024	7.2	7.2	454	418	22	268	18.3	18.6	17.1																								
SW12	6/04/2024*	7.2	7.8	360	408	52	290	19.6	66.1	49.1				0.208		1.67																		
SW12	1/05/2024	7.4	7.6	377	381	26	275	17.3	39.6	46.5																								
SW12	2/06/2024*	6.7	6.8	219	252	71	438	10.7	252.0	226.0				0.017		6.35																		
SW12	5/06/2024	7.3	7.2	323	349	<5	269	8.0	77.1	60.6	1.96	<0.001	<0.001	<0.005	<0.001	2.1	0.06	<0.001	<0.01	<0.0001	0.002	0.004	0.017	0.064	9.31	0.9	0.04							
SW12	2/07/2024	7.2	7.0	357	403	6	326	8.7	48.6	43.6																								
SW12	6/08/2024	7.5	7.2	510	518	22	428	8.0	65.9	54.2																								
SW12	4/09/2024	7.4	7.3	467	422	14	330	10.2	49.9	53.3																								
SW12	1/10/2024	7.4	7.6	522	533	32	363	18.1	51.0	53.3																								
SW12	19/10/2024*	7.4	7.1	478	433	131	584	16.22	365.0	455.0				0.008		7.06																		
SW12	4/11/2024	7.3	7.3	533	394	<5	289	23.7	31.0	24.9																								
SW12	18/11/2024*	7.1	6.6	283	275	40	335	21.3	130.0	117.0				0.016		4.34																		
SW12	1/12/2024*	7.2	7.4	354	400	92	567	23.2	233.0	280.0				<0.005		2.3																		
SW12	5/12/2024*	7.2	7.1	558	577	44	490	24.8	121.0	131.0				0.01		3.14																		
SW12	19/12/2024	7.1	7.4	338	289	7	206	24.6	31.6	30.2																								
SW15	19/10/2024*	6.4	6.5	65	80	20	204	18.4	130.0	124.0				0.008		3.37																		

Sample Point	Sample Date	pH (Field) (Unit)	pH (Lab) (Unit)	EC (Field) (µS/cm)	EC (Lab) (µS/cm)	TSS (mg/L)	TDS (mg/L)	Temperature (°C)	Turbidity (Lab) (NTU)	Turbidity (Field) (NTU)	Al - T (mg/L)	Cu - T (mg/L)	Pb - T (mg/L)	Zn - T (mg/L)	Ni - T (mg/L)	Fe - T (mg/L)	Mn - T (mg/L)	As - T (mg/L)	Se - T (mg/L)	Cd - T (mg/L)	Cr - T (mg/L)	Li (mg/L)	Ba - T (mg/L)	Sr (mg/L)	DO (mg/L)	N - T (mg/L)	P - T (mg/L)	As - D (mg/L)	Cd - D (mg/L)	Ni - D (mg/L)	Cu - D (mg/L)	Pb - D (mg/L)	Mn - D (mg/L)	Al - D (mg/L)	Zn - D (mg/L)
SW15	5/12/2024*	6.2	6.0	76	85	13	230	23.1	107.0	98.2				0.016		5.5																			
SW16	18/01/2024*	6.7	6.7	719	636	15	634	29.5	89.4	96.5				0.02		1.58																			
SW16	7/02/2024	6.8	6.9	339	334	41	334	20.3	149.0	192.0																									
SW16	2/06/2024*	6.9	7.1	227	250	17	272	11.6	124.0	108.0				0.02		1.94																			
SW16	6/08/2024	7.0	6.4	298	330	<5	248	11.1	32.0	31.6																									
SW16	19/10/2024*	6.6	6.8	139	144	39	246	19.7	178.0	222.0				0.016		5.29																			
SW16	1/12/2024*	7.2	7.4	75	245	23	270	23.0	130.0	146.0				0.01		1.55																			
SW16	5/12/2024*	6.5	6.6	115	117	12	214	22.7	90.9	85.4				0.011		4.05																			
SW17	18/01/2024*	5.4	5.7	335	291	29	629	27.5	325.0	366.0				0.076		1.37																			
SW17	2/06/2024*	6.5	6.0	162	179	34	457	11.7	290.0	253.0				0.039		4.53																			
SW18	7/02/2024	7.1	6.9	519	478	8	458	19.8	45.3	50.9																									
SW22	3/01/2024	8.3	8.4	919	839	<5	540	27.8	1.6	3.1	0.04	<0.001	<0.001	<0.005	0.007	0.22	0.041	<0.001	<0.01	<0.0001	<0.001	0.067	0.031	0.211	7.21	0.2	<0.01							
SW22	18/01/2024*	8.0	8.1	727	620	26	399	23.8	53.9	64.1				0.008		1.69																			
SW22	6/02/2024	8.0	8.0	479	467	10	334	24.6	16.4	18.1																									
SW22	5/03/2024	8.4	8.4	576	563	<5	338	23.3	3.7	4.3																									
SW22	3/04/2024	8.1	8.1	865	737	<5	416	14.7	1.6	2.1																									
SW22	6/04/2024*	8.2	8.3	667	636	<5	368	18.6	5.6	4.4				<0.005		0.36																			
SW22	1/05/2024	8.4	8.3	620	632	<5	380	17.0	3.0	2.8																									
SW22	2/06/2024*	7.7	7.5	390	415	27	290	10.9	56.2	42.7				0.008		1.76																			
SW22	5/06/2024	8.0	7.9	421	436	<5	266	7.0	27.2	20.5	0.80	<0.001	<0.001	<0.005	0.003	1.09	0.018	<0.001	<0.01	<0.0001	<0.001	0.061	0.014	0.068	11.46	0.3	0.01							
SW22	2/07/2024	8.1	7.1	545	537	<5	341	7.6	13.5	11.2																									
SW22	6/08/2024	8.3	7.2	622	628	<5	376	7.6	4.9	5.2																									
SW22	4/09/2024	8.1	7.4	730	637	<5	357	7.1	4.7	5.3																									
SW22	1/10/2024	8.2	8.1	559	574	<5	360	15.4	3.9	4.3																									
SW22	19/10/2024*	7.9	7.8	427	404	91	273	16.7	122.0	139.0				0.01		2.62																			
SW22	4/11/2024	8.3	8.2	873	682	<5	426	22.4	2.4	2.0																									
SW22	18/11/2024*	8.2	8.2	538	520	6	330	21.1	10.4	8.8				<0.005		0.54																			
SW22	1/12/2024*	8.0	7.8	480	517	21	360	22.9	29.2	26.3				<0.005		1.01																			
SW22	5/12/2024*	7.9	8.0	481	478	14	373	22.6	75.4	74.8				<0.005		1.93																			
SW22	19/12/2024	8.2	7.6	607	592	<5	333	21.1	9.6	9.8																									
SW24	5/12/2024*	6.6	6.2	78	82	<5	81	21.2	6.7	5.3				<0.005		0.37																			

Notes:
Sampling events where location was too low to sample have not been included.
* Denotes Rainfall Event sampling.
^ Data invalidated.

Figure 3-e Stream Health Trending data

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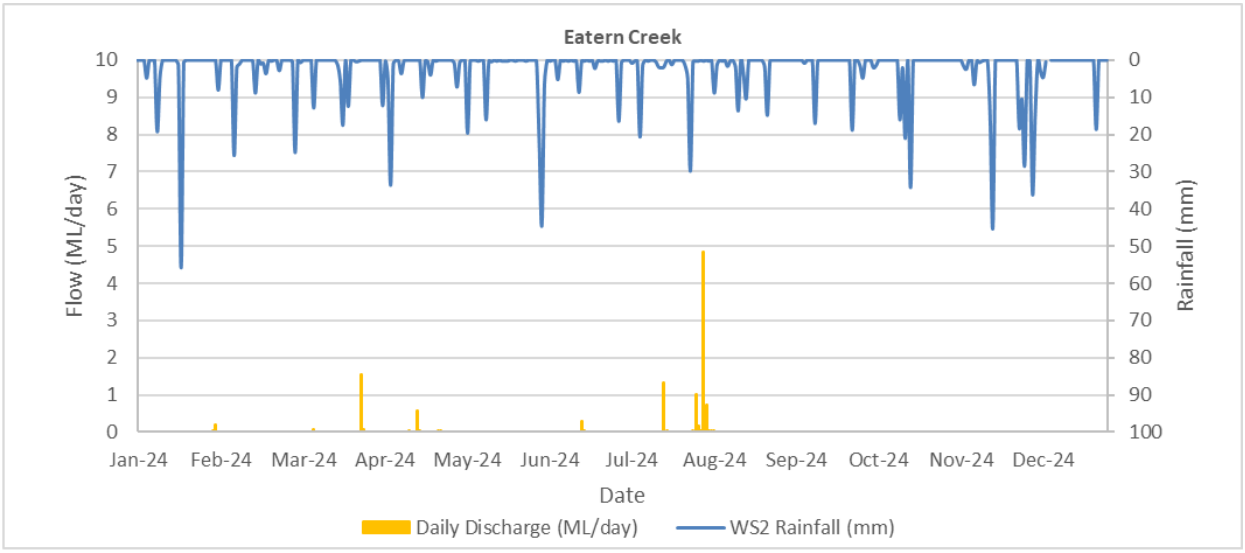
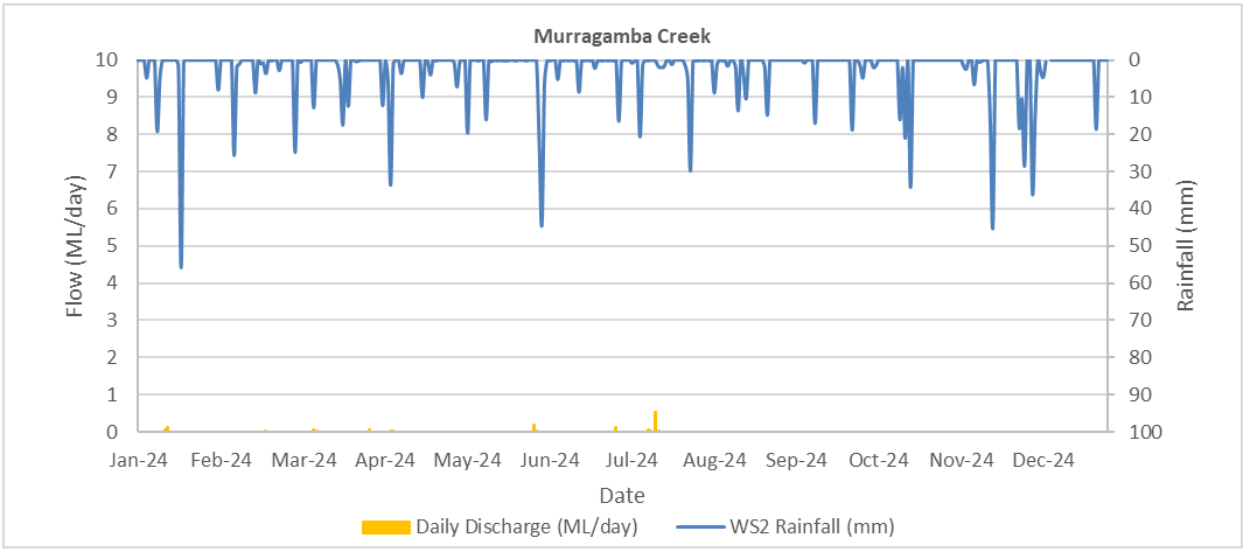
SH16
SH17
SH20
SH21
SH22
SH06 Trigger
SH02 Trigger
SH17 Trigger

Table 6: Effluent Discharge Quality

Sample Location	Sample Date	Biological Oxygen Demand (mg/L)	Total Nitrogen (mg/L)	Oil & Grease (mg/L)	Total Phosphorus (mg/L)	pH	Total Suspended Solids (mg/L)
OC Effluent Tank	29/02/2024	17	91.9	14	11.2	7.51	69
OC Effluent Tank	22/05/2024	53	98.7	7	11.7	7.94	53
OC Effluent Tank	8/08/2024	34	69.9	12	6.5	7.79	65
OC Effluent Tank	26/11/2024	94	118.0	19	13.1	7.65	102
Admin Effluent	29/02/2024	4	26.0	<5	22.2	7.3	15
Admin Effluent	22/05/2024	24	312.0	<5	68.5	8.16	112
Admin Effluent	8/08/2024	33	146.0	7	29.5	7.29	32
Admin Effluent	26/11/2024	5	13.7	<5	20.3	7.25	28
CHPP Effluent	29/02/2024	3	7.3	<5	0.5	7.26	35
CHPP Effluent	22/05/2024	14	5.9	<5	0.6	7.39	42
CHPP Effluent	8/08/2024	32	6.8	7	0.8	7.19	36
CHPP Effluent	26/11/2024	23	6.2	<5	0.4	7.25	44
UG Effluent Tank	6/03/2024	16	81.7	<5	14.3	6.8	16
UG Effluent Tank	22/05/2024	26	21.8	8	3.6	7.19	23
UG Effluent Tank	8/08/2024	44	9.8	8	1.0	7.17	18
UG Effluent Tank	9/12/2024	36	12.5	7	1.9	7.22	26

Figure 3-f 2024 Stream Flow and rainfall





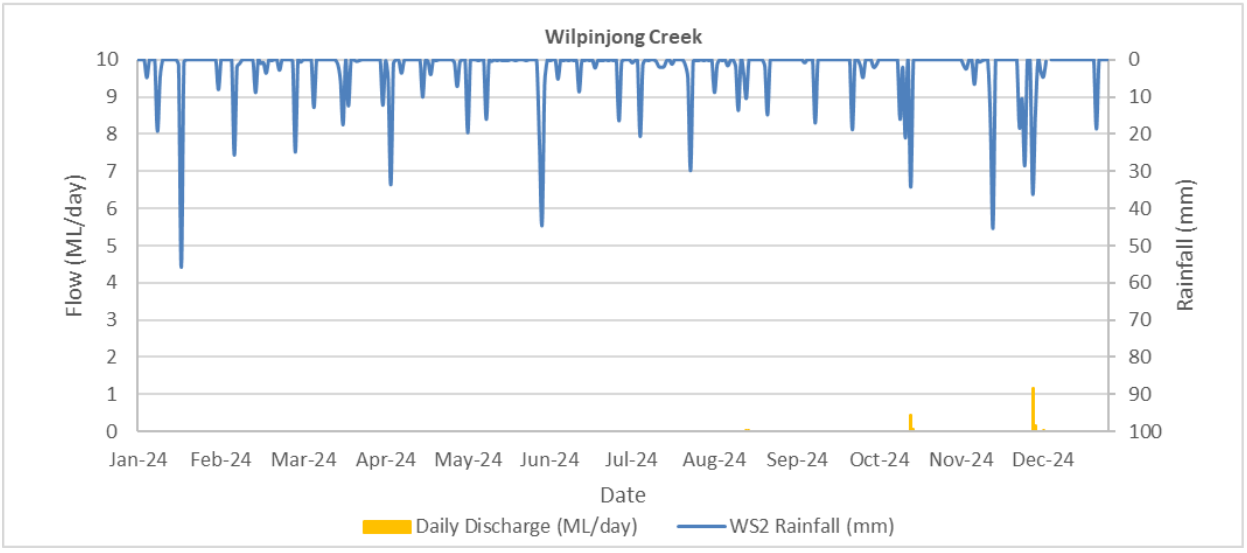


Table 7: LDP01 Discharge Quality

Date	Flow (ML)	Electrical Conductivity -Field (µS/cm)	pH (Field) (Unit)	Turbidity (NTU)	Oil & Grease	Total Suspended Solids (mg/L)	Aluminium – Dissolved (mg/L)	Manganese – Dissolved (mg/L)	Nickel – Dissolved (mg/L)	Zinc – Dissolved (mg/L)	Copper – Dissolved (mg/L)	Cadmium – Dissolved (mg/L)	Arsenic – Dissolved (mg/L)	Lead – Dissolved (mg/L)
1/02/2024	3.3	149.7	7.0	0.1										
2/02/2024	8.9	150.3	6.9	0.0	<5	<1	0.009	0.002	<0.0005	0.001	<0.0005	<0.0001	<0.0002	<0.0001
3/02/2024	8.7	148.2	7.0	0.0										
4/02/2024	8.6	153.1	7.0	0.0										
5/02/2024	9.1	156.4	7.0	0.0	<5	2								
6/02/2024	7.8	158.1	7.0	0.0										
7/02/2024	7.3	151.7	7.1	0.0										
8/02/2024	8.3	151.6	7.1	0.0										
9/02/2024	6.5	167.2	7.2	0.0										
10/02/2024	6.8	166.0	7.1	0.0										
11/02/2024	8.0	155.1	7.0	0.0										
12/02/2024	8.0	160.0	6.9	0.0	<5	<1								
13/02/2024	6.2	191.0	6.9	0.0										
14/02/2024	7.9	188.7	6.8	0.0										
15/02/2024	5.0	183.1	6.8	0.9										
16/02/2024	8.3	178.4	6.8	0.0										
17/02/2024	8.5	175.4	6.9	0.0										
18/02/2024	8.3	178.1	7.0	0.0										
19/02/2024	8.0	178.9	7.1	0.0	<5	<1								
20/02/2024	8.2	182.7	7.1	0.0										
21/02/2024	8.1	191.7	7.1	0.0										
22/02/2024	7.3	191.4	7.1	0.0										
23/02/2024	5.3	194.1	7.1	0.1										
24/02/2024	3.7	191.1	7.2	0.1										
25/02/2024	8.2	189.1	7.1	0.0										
26/02/2024	6.2	194.7	7.0	0.1	<5	<1								
27/02/2024	6.5	191.2	7.2	0.1										
28/02/2024	4.3	222.5	7.2	0.2										
29/02/2024	7.8	236.0	7.2	0.2										
1/03/2024	10.3	203.4	7.1	0.1										
2/03/2024	12.8	161.7	7.0	0.2										
3/03/2024	12.6	160.0	7.1	0.1										
4/03/2024	4.5	159.1	7.1	0.4										

Date	Flow (ML)	Electrical Conductivity -Field (µS/cm)	pH (Field) (Unit)	Turbidity (NTU)	Oil & Grease	Total Suspended Solids (mg/L)	Aluminium – Dissolved (mg/L)	Manganese – Dissolved (mg/L)	Nickel – Dissolved (mg/L)	Zinc – Dissolved (mg/L)	Copper – Dissolved (mg/L)	Cadmium – Dissolved (mg/L)	Arsenic – Dissolved (mg/L)	Lead – Dissolved (mg/L)
5/03/2024	8.8	165.0	7.2	0.2	<5	<1	<0.005	0.0031	0.0015	0.001	<0.0005	<0.0001	<0.0002	<0.0001
6/03/2024	13.1	165.5	7.1	0.4										
7/03/2024	13.5	168.5	7.1	0.0										
8/03/2024	12.9	171.9	7.3	0.1										
9/03/2024	13.4	168.2	7.2	0.0										
10/03/2024	13.6	176.5	7.3	0.0										
11/03/2024	6.0	209.5	7.3	0.0	<5	1								
15/03/2024	4.4	197.3	7.2	0.2										
16/03/2024	7.1	179.5	7.3	0.1										
17/03/2024	8.3	178.6	7.1	0.0										
18/03/2024	10.0	177.5	7.0	0.9	<5	<1								
19/03/2024	13.7	168.1	6.9	0.0										
20/03/2024	13.5	168.6	6.9	0.0										
21/03/2024	13.5	170.3	7.1	0.1										
22/03/2024	11.6	166.9	7.2	0.1										
23/03/2024	12.9	176.6	7.1	0.0										
24/03/2024	12.3	193.2	7.2	0.0										
25/03/2024	12.3	175.8	7.1	0.0	<5	<1								
26/03/2024	12.6	182.5	7.1	0.0										
27/03/2024	10.2	210.2	7.2	0.1										
28/03/2024	2.1	259.1	7.2	0.0										
8/04/2024	3.9	160.5	7.1	0.3	<5	<1	<0.005	0.0046	0.0007	0.001	<0.0005	<0.0001	<0.0002	<0.0001
9/04/2024	7.9	154.7	7.1	0.1										
10/04/2024	8.0	157.5	7.2	0.0										
11/04/2024	6.5	154.0	7.2	0.0										
12/04/2024	8.0	154.8	7.3	0.0										
13/04/2024	8.1	158.3	7.2	0.0										
14/04/2024	7.5	159.9	7.2	0.2										
15/04/2024	7.4	154.5	7.2	0.0	<5	<1								
16/04/2024	8.0	150.7	7.2	0.0										
17/04/2024	7.7	163.5	7.3	0.0										
18/04/2024	7.5	170.1	7.3	0.0										
19/04/2024	7.5	165.7	7.3	0.1										
20/04/2024	8.0	172.7	7.3	0.0										
21/04/2024	7.9	168.7	7.3	0.0										

Date	Flow (ML)	Electrical Conductivity -Field (µS/cm)	pH (Field) (Unit)	Turbidity (NTU)	Oil & Grease	Total Suspended Solids (mg/L)	Aluminium – Dissolved (mg/L)	Manganese – Dissolved (mg/L)	Nickel – Dissolved (mg/L)	Zinc – Dissolved (mg/L)	Copper – Dissolved (mg/L)	Cadmium – Dissolved (mg/L)	Arsenic – Dissolved (mg/L)	Lead – Dissolved (mg/L)
22/04/2024	7.8	166.2	7.3	0.0	<5	<1								
23/04/2024	7.8	167.4	7.2	0.0										
24/04/2024	7.8	167.9	7.3	0.0										
25/04/2024	8.0	167.8	7.2	0.1										
26/04/2024	4.4	178.3	7.5	0.0										
27/04/2024	2.9	185.4	7.5	0.0										
28/04/2024	3.1	186.6	7.5	0.0										
29/04/2024	2.9	188.6	7.4	0.0	<5	<1								
30/04/2024	3.1	184.1	7.4	0.0										
1/05/2024	2.4	183.2	7.5	0.0										
2/05/2024	6.3	168.1	7.3	0.0										
3/05/2024	7.8	152.3	7.2	0.1										
4/05/2024	8.1	147.5	7.2	0.0										
5/05/2024	6.9	148.4	7.2	0.0										
10/05/2024	4.0	154.7	7.6	0.3										
11/05/2024	8.1	139.8	7.4	0.0										
12/05/2024	7.2	142.5	7.4	0.1										
13/05/2024	7.3	142.9	7.5	0.3	<5	<1	<0.005	<0.0005	<0.0005	<0.0010	<0.0005	<0.0001	<0.0002	<0.0001
14/05/2024	7.8	139.4	7.4	0.0										
15/05/2024	7.8	139.5	7.5	0.1										
16/05/2024	7.7	139.0	7.5	0.0										
17/05/2024	4.7	148.0	7.6	0.0										
18/05/2024	3.1	162.6	7.6	0.0										
19/05/2024	2.6	159.1	7.8	0.4										
20/05/2024	3.2	163.6	7.6	0.0	<5	<1								
21/05/2024	0.5	165.1	7.5	0.0										
22/05/2024	0.4	160.8	7.7	0.5										
24/05/2024	1.0	155.6	7.6	0.9										
25/05/2024	3.2	158.8	7.4	0.0										
26/05/2024	3.1	154.1	7.4	0.0										
27/05/2024	3.1	152.8	7.4	0.0	<5	<1								
28/05/2024	2.9	155.9	7.5	0.0										
29/05/2024	3.3	161.4	7.4	0.0										
30/05/2024	6.0	152.2	7.4	0.2										
31/05/2024	9.6	137.6	7.3	0.0										

Date	Flow (ML)	Electrical Conductivity -Field (µS/cm)	pH (Field) (Unit)	Turbidity (NTU)	Oil & Grease	Total Suspended Solids (mg/L)	Aluminium – Dissolved (mg/L)	Manganese – Dissolved (mg/L)	Nickel – Dissolved (mg/L)	Zinc – Dissolved (mg/L)	Copper – Dissolved (mg/L)	Cadmium – Dissolved (mg/L)	Arsenic – Dissolved (mg/L)	Lead – Dissolved (mg/L)
1/06/2024	9.5	135.9	7.3	0.0										
2/06/2024	9.7	136.5	7.3	0.0										
3/06/2024	8.4	136.4	7.4	0.0	<5	<1	<0.005	<0.0005	<0.0005	0.002	<0.0005	<0.0001	<0.0002	<0.0001
4/06/2024	7.2	134.9	7.3	0.0										
5/06/2024	7.4	122.4	7.2	0.0										
6/06/2024	7.8	109.4	7.2	0.0										
7/06/2024	8.5	117.6	7.2	0.0										
8/06/2024	9.6	140.8	7.2	0.0										
9/06/2024	9.1	140.6	7.2	0.0										
10/06/2024	9.6	142.6	7.2	0.0										
11/06/2024	9.5	143.5	7.3	0.0	<5	<1								
12/06/2024	9.5	144.9	7.3	0.0										
13/06/2024	8.3	146.8	7.3	0.0										
14/06/2024	9.5	145.2	7.2	0.0										
15/06/2024	7.5	150.7	7.1	0.0										
16/06/2024	9.5	142.6	7.1	0.0										
17/06/2024	9.6	138.6	7.2	0.0	<5	<1								
18/06/2024	8.2	140.6	7.2	0.0										
19/06/2024	7.7	146.0	7.2	0.0										
20/06/2024	6.7	146.6	7.2	0.0										
21/06/2024	7.8	149.1	7.3	0.0										
22/06/2024	7.2	145.8	7.3	0.0										
23/06/2024	8.0	144.2	7.2	0.0										
24/06/2024	7.1	147.7	7.2	0.0	<5	<1								
25/06/2024	7.4	145.2	7.2	0.0										
26/06/2024	7.3	148.3	7.2	0.0										
27/06/2024	8.0	153.4	7.2	0.0										
28/06/2024	7.8	147.5	7.2	0.0										
29/06/2024	8.0	149.8	7.2	0.0										
30/06/2024	5.3	152.0	7.2	0.0										
1/07/2024	2.1	175.1	7.5	0.0	<5	<1	<0.005	0.001	<0.0005	<0.001	<0.0005	<0.0001	<0.0002	<0.0001
2/07/2024	3.0	179.0	7.5	0.0										
3/07/2024	1.1	174.8	7.5	0.0										
5/07/2024	3.7	162.8	7.4	0.0										
6/07/2024	8.0	143.0	7.3	0.0										

Date	Flow (ML)	Electrical Conductivity -Field (µS/cm)	pH (Field) (Unit)	Turbidity (NTU)	Oil & Grease	Total Suspended Solids (mg/L)	Aluminium – Dissolved (mg/L)	Manganese – Dissolved (mg/L)	Nickel – Dissolved (mg/L)	Zinc – Dissolved (mg/L)	Copper – Dissolved (mg/L)	Cadmium – Dissolved (mg/L)	Arsenic – Dissolved (mg/L)	Lead – Dissolved (mg/L)
7/07/2024	8.1	143.6	7.2	0.0										
8/07/2024	7.6	148.7	7.2	0.0	<5	<1								
9/07/2024	2.3	148.1	7.2	0.0										
10/07/2024	2.6	146.0	7.2	0.0										
11/07/2024	6.3	151.0	7.2	0.0										
12/07/2024	7.0	146.1	7.2	0.0										
13/07/2024	8.1	147.7	7.2	0.0										
14/07/2024	8.1	147.9	7.1	0.0										
15/07/2024	7.2	147.9	7.1	0.0	<5	<1								
16/07/2024	8.1	143.8	7.2	0.0										
17/07/2024	7.9	139.2	7.1	0.0										
18/07/2024	7.2	142.8	7.1	0.0										
19/07/2024	7.9	144.5	7.1	0.0										
20/07/2024	8.0	145.4	7.1	0.0										
21/07/2024	8.0	143.9	7.1	0.0										
22/07/2024	3.1	142.5	7.1	0.0	<5	<1								
23/07/2024	5.3	146.6	7.1	0.0										
24/07/2024	7.8	144.0	7.1	0.0										
25/07/2024	8.0	149.2	7.1	0.0										
26/07/2024	8.0	150.6	7.1	0.0										
27/07/2024	7.9	156.6	7.2	0.0										
28/07/2024	7.0	155.2	7.3	0.0										
29/07/2024	4.6	137.8	7.3	0.0	<5	<1								
30/07/2024	2.1	128.1	7.2	0.0										
31/07/2024	2.3	140.3	7.2	0.1										
1/08/2024	5.5	144.4	7.2	0.0										
2/08/2024	8.4	155.7	7.1	0.0										
3/08/2024	9.6	162.4	7.2	0.0										
4/08/2024	9.3	161.5	7.2	0.0										
5/08/2024	6.1	163.0	7.2	0.0	<5	<1	<0.005	0.0043	<0.0005	0.002	<0.0005	<0.0001	<0.0002	<0.0001
6/08/2024	8.1	163.3	7.3	0.0										
7/08/2024	7.8	161.1	7.2	0.0										
8/08/2024	8.1	165.9	7.2	0.0										
9/08/2024	7.9	158.3	7.1	0.0										
10/08/2024	12.1	146.2	7.2	0.0										

Date	Flow (ML)	Electrical Conductivity -Field (µS/cm)	pH (Field) (Unit)	Turbidity (NTU)	Oil & Grease	Total Suspended Solids (mg/L)	Aluminium – Dissolved (mg/L)	Manganese – Dissolved (mg/L)	Nickel – Dissolved (mg/L)	Zinc – Dissolved (mg/L)	Copper – Dissolved (mg/L)	Cadmium – Dissolved (mg/L)	Arsenic – Dissolved (mg/L)	Lead – Dissolved (mg/L)
11/08/2024	10.0	151.8	7.2	0.1										
12/08/2024	7.3	171.8	7.1	0.8	<5	<1								
13/08/2024	2.6	177.8	7.1	0.0										
14/08/2024	6.3	170.8	7.2	0.0										
15/08/2024	8.1	174.9	7.1	0.0										
16/08/2024	5.8	177.1	7.1	0.0										
19/08/2024	3.5	165.3	7.0	0.0	<5	<1								
20/08/2024	7.5	151.1	7.1	0.0										
21/08/2024	7.8	142.3	7.1	0.0										
22/08/2024	7.7	123.1	7.0	0.0										
23/08/2024	8.0	129.3	6.9	0.0										
24/08/2024	6.7	131.1	7.0	0.0										
25/08/2024	8.0	125.7	6.9	0.0										
26/08/2024	7.9	131.1	7.1	0.0	<5	<1								
27/08/2024	8.1	131.2	7.2	0.0										
28/08/2024	7.6	136.0	7.3	0.0										
29/08/2024	8.1	134.7	7.2	0.0										
30/08/2024	8.0	133.5	7.3	0.0										
31/08/2024	8.1	130.2	7.4	0.0										
1/09/2024	4.9	144.4	7.3	0.0										
2/09/2024	7.0	164.2	7.3	0.0	<5	<1	<0.005	<0.0005	<0.0005	0.001	<0.0005	<0.0001	<0.0002	<0.0001
3/09/2024	7.3	173.7	7.2	0.0										
4/09/2024	8.1	179.2	7.1	0.0										
5/09/2024	6.6	184.8	7.2	0.0										
6/09/2024	8.8	178.3	7.2	0.0										
7/09/2024	9.5	181.0	7.2	0.0										
8/09/2024	9.6	187.2	7.2	0.0										
9/09/2024	2.7	186.6	7.1	0.0										
10/09/2024	4.9	195.2	7.3	0.0	<5	<1								
11/09/2024	7.9	190.1	7.3	0.0										
12/09/2024	8.0	192.4	7.2	0.0										
13/09/2024	8.0	186.1	7.3	0.0										
14/09/2024	8.1	187.8	7.3	0.0										
15/09/2024	7.3	191.2	7.4	0.0										
16/09/2024	7.6	169.6	7.3	0.0	<5	<1								

Date	Flow (ML)	Electrical Conductivity -Field (µS/cm)	pH (Field) (Unit)	Turbidity (NTU)	Oil & Grease	Total Suspended Solids (mg/L)	Aluminium – Dissolved (mg/L)	Manganese – Dissolved (mg/L)	Nickel – Dissolved (mg/L)	Zinc – Dissolved (mg/L)	Copper – Dissolved (mg/L)	Cadmium – Dissolved (mg/L)	Arsenic – Dissolved (mg/L)	Lead – Dissolved (mg/L)
17/09/2024	4.8	167.4	7.4	0.6										
18/09/2024	7.8	168.2	7.5	1.0										
19/09/2024	8.0	169.8	7.5	1.0										
20/09/2024	8.0	169.3	7.4	1.0										
21/09/2024	8.0	169.4	7.5	1.0										
22/09/2024	8.0	168.3	7.4	1.0										
23/09/2024	7.6	165.5	7.5	1.0	<5	<1								
24/09/2024	8.0	162.1	7.4	1.0										
25/09/2024	8.1	143.6	7.4	1.0										
26/09/2024	8.0	137.8	7.3	1.0										
27/09/2024	7.8	134.6	7.4	1.0										
28/09/2024	5.8	134.3	7.4	1.0										
29/09/2024	8.0	132.5	7.4	1.0										
30/09/2024	8.0	133.4	7.4	1.0	<5	<1								
1/10/2024	8.0	137.9	7.4	1.0										
2/10/2024	8.0	134.5	7.4	1.0										
3/10/2024	2.7	139.3	7.4	1.0										
4/10/2024	3.3	156.5	7.3	1.0										
5/10/2024	7.8	141.5	7.4	1.0										
6/10/2024	8.0	144.9	7.4	1.0										
7/10/2024	7.9	146.9	7.4	1.0	<5	<1	<0.005	0.0006	<0.0005	0.001	<0.0005	<0.0001	<0.0002	<0.0001
8/10/2024	7.7	147.0	7.4	1.0										
9/10/2024	7.6	158.3	7.6	1.0										
10/10/2024	7.8	169.3	7.5	1.0										
11/10/2024	7.7	169.4	7.4	1.0										
12/10/2024	7.6	168.4	7.5	1.0										
13/10/2024	7.8	168.7	7.5	1.0										
14/10/2024	8.1	191.6	7.4	1.0	<5	<1								
15/10/2024	6.7	189.4	7.5	1.0										
16/10/2024	7.5	181.9	7.4	1.0										
17/10/2024	8.0	185.1	7.3	1.0										
18/10/2024	7.9	182.3	7.4	1.0										
19/10/2024	8.0	185.9	7.5	1.0										
20/10/2024	8.0	191.7	7.4	1.0										
21/10/2024	7.0	200.6	7.5	1.0	<5	<1								

Date	Flow (ML)	Electrical Conductivity -Field (µS/cm)	pH (Field) (Unit)	Turbidity (NTU)	Oil & Grease	Total Suspended Solids (mg/L)	Aluminium – Dissolved (mg/L)	Manganese – Dissolved (mg/L)	Nickel – Dissolved (mg/L)	Zinc – Dissolved (mg/L)	Copper – Dissolved (mg/L)	Cadmium – Dissolved (mg/L)	Arsenic – Dissolved (mg/L)	Lead – Dissolved (mg/L)
22/10/2024	7.7	189.3	7.4	1.0										
23/10/2024	7.9	178.9	7.3	1.0										
24/10/2024	7.5	187.2	7.3	1.1										
25/10/2024	8.0	192.4	7.2	1.0										
26/10/2024	7.6	191.6	7.2	1.0										
27/10/2024	8.1	194.6	7.1	1.0										
28/10/2024	7.9	181.7	7.1	1.0	<5	<1								
29/10/2024	7.8	175.2	7.1	1.0										
30/10/2024	4.5	173.5	7.0	1.0										
6/11/2024	2.6	127.2	7.2	1.0	<5	<1	<0.005	<0.0005	0.0006	0.002	<0.0005	<0.0001	<0.0002	<0.0001
7/11/2024	3.7	123.9	7.2	1.0										
8/11/2024	3.3	126.5	7.3	1.0										
9/11/2024	3.3	125.8	7.2	1.0										
10/11/2024	3.3	128.5	7.2	1.0										
11/11/2024	3.1	183.1	7.4	1.0	<5	<1								
12/11/2024	3.0	227.8	7.5	1.0										
13/11/2024	5.4	197.2	7.1	0.5										
14/11/2024	8.1	178.1	7.0	0.0										
15/11/2024	6.9	182.3	7.3	0.1										
16/11/2024	7.9	178.5	7.4	0.0										
17/11/2024	7.6	179.8	7.3	0.0										
18/11/2024	7.8	176.6	7.2	0.0	<5	<1								

Notes:
Days of no discharge have not been included.

APPENDIX 3G. GROUNDWATER MONITORING DATA

Sample Point	Date	Electrical Conductivity - Field (µS/cm)	Electrical Conductivity - Lab (µS/cm)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	pH (Field) (Unit)	pH Lab (Unit)	Calcium - Dissolved (mg/L)	Magnesium - Dissolved (mg/L)	Sodium - Dissolved (mg/L)	Potassium - Dissolved (mg/L)	Alkalinity Carbonate (mg/L)	Alkalinity Bicarbonate (mg/L)	Chloride (mg/L)	Sulphate - Turbidimetric (mg/L)	Aluminium - Dissolved (mg/L)	Arsenic - Dissolved (mg/L)	Boron - Dissolved (mg/L)	Cobalt - Dissolved (mg/L)	Cadmium - Dissolved (mg/L)	Chromium - Dissolved (mg/L)	Copper - Dissolved (mg/L)	Iron - Dissolved (mg/L)	Lead - Dissolved (mg/L)	Manganese - Dissolved (mg/L)	Mercury - Dissolved (mg/L)	Nickel - Dissolved (mg/L)	Selenium - Dissolved (mg/L)	Silver - Dissolved (mg/L)	Zinc - Dissolved (mg/L)	Ammonia as N (mg/L)	Nitrate (mg/L)	Phosphorus - Total (mg/L)	Reactive Phosphorus - Total (mg/L)	Fluoride (mg/L)
PZ003	17/04/2024	2119	1640	918	9	6.6	7.1	62	73	181	14	<1	367	293	135	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	4.77	<0.001	0.167	<0.0001	<0.001	<0.01	<0.001	<0.005	0.17	0.07	0.08	<0.01	0.5
PZ003	23/10/2024	1739	1700	1010	<5	6.9	7.1	58	70	204	14	<1	377	306	125	0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.001	0.003	<0.0001	<0.001	<0.01	<0.001	<0.005	<0.01	0.26	0.03	<0.01	0.5
PZ044	12/04/2024	3009	2740	2420	35	6.6	7.1	442	74	103	41	<1	446	241	943	<0.01	0.003	<0.05	0.001	<0.0001	<0.001	<0.001	4.18	<0.001	0.657	<0.0001	0.001	<0.01	<0.001	0.011	0.22	0.01	0.09	<0.01	0.2
PZ044	22/10/2024	2863	2970	2300	22	6.6	7.0	463	84	111	41	<1	449	278	935	<0.01	0.004	<0.05	0.002	<0.0001	<0.001	<0.001	4.96	<0.001	0.699	<0.0001	0.003	<0.01	<0.001	0.024	0.33	<0.01	0.1	<0.01	0.2
PZ055	17/04/2024	2792	2350	1500	57	5.6	5.9	24	80	285	20	<1	52	498	490	0.02	<0.001	<0.05	0.304	<0.0001	<0.001	<0.001	35	<0.001	8.12	<0.0001	0.088	<0.01	<0.001	0.069	1.19	<0.01	0.02	<0.01	0.1
PZ055	18/10/2024	2309	2340	1380	63	5.7	6.0	22	82	294	17	<1	70	478	424	<0.01	0.001	<0.05	0.289	<0.0001	<0.001	<0.001	38.6	<0.001	7.8	<0.0001	0.082	<0.01	<0.001	0.046	0.99	<0.01	0.04	<0.01	<0.1
PZ058A	17/04/2024																																		
PZ058A	23/10/2024																																		
PZ101C	11/04/2024	667.5	585	326	76	6.7	7.2	32	18	63	10	<1	228	67	2	<0.01	0.002	<0.05	0.002	<0.0001	<0.001	<0.001	0.8	<0.001	0.587	<0.0001	0.002	<0.01	<0.001	0.042	0.26	0.05	0.28	<0.01	0.5
PZ101C	17/10/2024	624.4	574	301	21	6.8	7.0	34	16	65	9	<1	230	66	3	<0.01	0.002	<0.05	0.002	<0.0001	<0.001	<0.001	0.8	<0.001	0.587	<0.0001	0.002	<0.01	<0.001	0.015	0.37	0.05	0.16	0.01	0.5
PZ101B	11/04/2024	955.2	752	448	425	7.3	7.8	57	22	75	18	<1	363	54	<1	<0.01	0.006	<0.05	<0.001	<0.0001	<0.001	<0.001	1.68	<0.001	0.227	<0.0001	0.002	<0.01	<0.001	0.146	0.7	0.25	0.75	0.01	1.1
PZ101B	17/10/2024	780.0	748	406	845	7.4	7.5	58	21	81	17	<1	368	47	1	<0.01	0.006	<0.05	<0.001	<0.0001	<0.001	<0.001	2.13	<0.001	0.191	<0.0001	0.002	<0.01	<0.001	<0.005	0.31	0.02	1.94	0.01	1.1
PZ103C	11/04/2024	389.6	290	151	4110	5.7	6.0	6	10	38	7	<1	31	65	11	0.12	0.005	<0.05	0.010	<0.0001	<0.001	<0.001	8.52	<0.001	0.439	<0.0001	0.07	<0.01	<0.001	0.03	0.05	0.02	1.29	<0.01	<0.1
PZ103C	17/10/2024	303.2	292	164	5260	5.5	5.7	5	8	34	6	<1	27	64	16	<0.01	0.001	<0.05	0.010	<0.0001	<0.001	<0.001	2.5	<0.001	0.401	<0.0001	0.077	<0.01	<0.001	0.028	0.36	0.05	1.65	<0.01	<0.1
PZ105C	11/04/2024	267.9	214	136	20	5.9	6.4	5	4	31	3	<1	28	52	2	<0.01	<0.001	<0.05	0.014	<0.0001	<0.001	<0.001	1.28	<0.001	0.946	<0.0001	0.057	<0.01	<0.001	<0.005	0.53	0.27	0.23	<0.01	<0.1
PZ105C	16/10/2024	194.6	219	114	48	5.3	6.1	6	4	28	3	<1	33	45	2	<0.01	<0.001	<0.05	0.016	<0.0001	<0.001	<0.001	2.7	0.002	0.889	<0.0001	0.057	<0.01	<0.001	0.029	0.94	0.11	0.16	<0.01	<0.1
PZ106A	17/04/2024	941.9	759	392	43	7.9	7.7	35	4	103	16	<1	92	183	9	0.15	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.001	<0.001	<0.0001	<0.001	<0.01	<0.001	<0.005	<0.01	0.86	0.06	0.01	0.2
PZ106A	22/10/2024	715.2	778	405	79	7.9	7.3	37	4	110	15	<1	101	200	10	0.14	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.001	0.01	<0.0001	<0.001	<0.01	<0.001	<0.005	0.01	0.84	0.09	0.05	0.2
PZ109	11/04/2024	876.6	654	364	30	6.7	7.3	34	34	57	3	<1	226	88	14	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.001	0.003	<0.0001	0.002	<0.01	<0.001	0.014	0.02	0.24	0.06	0.02	0.1
PZ109	16/10/2024	663.6	660	336	12	6.7	7.0	34	33	59	2	<1	226	91	15	<0.01	<0.001	<0.05	<0.001	<0.0001	0.001	<0.001	<0.05	<0.001	0.002	<0.0001	0.002	<0.01	<0.001	0.016	<0.01	0.24	0.09	0.02	0.1
PZ111	16/04/2024	1076	1050	693	1290	6.9	7.4	91	42	45	23	<1	250	198	22	<0.01	<0.001	<0.05	0.001	<0.0001	<0.001	<0.001	<0.05	<0.001	0.069	<0.0001	0.002	<0.01	<0.001	<0.005	0.9	<0.10	1	<0.01	0.3
PZ111	17/10/2024	1137	1040	630	1510	6.9	7.2	95	41	47	22	<1	251	224	25	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.001	0.034	<0.0001	<0.001	<0.01	<0.001	<0.005	0.22	0.4	2.85	<0.01	0.3
PZ112B	15/04/2024	1474	1260	788	40	5.2	5.6	<1	12	247	7	<1	5	231	336	0.06	<0.001	<0.05	0.008	<0.0001	<0.001	<0.001	<0.05	<0.001	0.022	<0.0001	0.024	<0.01	<0.001	0.071	0.16	1.87	0.06	<0.01	<0.1
PZ112B	17/10/2024	1334	1240	744	15	5.2	5.7	<1	10	241	5	<1	7	261	236	0.06	<0.001	<0.05	0.010	<0.0001	<0.001	0.002	<0.05	<0.001	0.021	<0.0001	0.026	<0.01	<0.001	0.054	<0.01	1.75	0.07	<0.01	<0.1
PZ137	17/04/2024	1646	1330	810	131	5.8	6.4	51	46	117	30	<1	72	354	64	<0.01	<0.001	<0.05	0.002	<0.0001	<0.001	<0.001	6.61	<0.001	0.661	<0.0001	0.003	<0.01	<0.001	0.014	0.13	0.06	0.09	<0.01	<0.1
PZ137	22/10/2024	1263	1250	758	433	5.7	6.0	48	41	117	30	<1	51	392	42	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	3.11	<0.001	0.391	<0.0001	0.003	<0.01	<0.001	0.014	0.13	0.02	1.24	<0.01	<0.1
PZ170	16/04/2024	1538	1620	963	33	6.2	7.2	43	75	152	11	<1	206	379	16	<0.01	<0.001	<0.05	0.010	<0.0001	<0.001	<0.001	0.12	<0.001	0.049	<0.0001	0.075	<0.01	<0.001	0.144	<0.01	<0.01	0.03	<0.01	0.2
PZ170	18/10/2024	1512	1480	804	19	6.2	6.6	44	74	145	8	<1	210	399	15	<0.01	0.001	<0.05	0.010	<0.0001	<0.001	<0.001	<0.05	<0.001	0.052	<0.0001	0.069	<0.01	<0.001	0.127	0.02	<0.01	0.15	<0.01	0.2
PZ184	15/04/2024																																		
PZ184	17/10/2024																																		
PZ188	16/04/2024	199.4	226	152	230	5.1	6.1	3	4	36	2	<1	16	63	<1	0.02	<0.001	<0.05	0.005	<0.0001	<0.001	0.001	<0.05	<0.001	0.035	0.0001	0.015	<0.01	<0.001	0.04	<0.01	0.08	0.29	<0.01	<0.1
PZ188	18/10/2024	210.3	210	105	163	5.2	5.6	2	3	34	1	<1	9	55	3	0.01	<0.001	<0.05	0.005	<0.0001	<0.001	<0.001	<0.05	<0.001	0.026	0.0002	0.016	<0.01	<0.001	0.025	<0.01	<0.01	0.25	0.01	<0.1
PZ189	16/04/2024	457.0	458	312	35	5.9	6.3	16	13	43	6	<1	31	109	<1	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	19.6	<0.001	0.557	<0.0001	<0.001	<0.01	<0.001	0.021	0.01	0.02	0.14	<0.01	0.1
PZ189	18/10/2024	504.7	475	257	<5	6.0	6.2	15	10	43	5	<1	58	122	5	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	21.4	<0.001	0.538	<0.0001	<0.001	<0.01	<0.001	0.012	0.04	<0.01	0.16	<0.01	0.2
PZ191	15/04/2024																																		
PZ191	23/10/2024																																		

Sample Point	Date	Electrical Conductivity - Field (µS/cm)	Electrical Conductivity - Lab (µS/cm)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	pH (Field) (Unit)	pH Lab (Unit)	Calcium - Dissolved (mg/L)	Magnesium - Dissolved (mg/L)	Sodium - Dissolved (mg/L)	Potassium - Dissolved (mg/L)	Alkalinity Carbonate (mg/L)	Alkalinity Bicarbonate (mg/L)	Chloride (mg/L)	Sulphate - Turbidimetric (mg/L)	Aluminium - Dissolved (mg/L)	Arsenic - Dissolved (mg/L)	Boron - Dissolved (mg/L)	Cobalt - Dissolved (mg/L)	Cadmium - Dissolved (mg/L)	Chromium - Dissolved (mg/L)	Copper - Dissolved (mg/L)	Iron - Dissolved (mg/L)	Lead - Dissolved (mg/L)	Manganese - Dissolved (mg/L)	Mercury - Dissolved (mg/L)	Nickel - Dissolved (mg/L)	Selenium - Dissolved (mg/L)	Silver - Dissolved (mg/L)	Zinc - Dissolved (mg/L)	Ammonia as N (mg/L)	Nitrate (mg/L)	Phosphorus - Total (mg/L)	Reactive Phosphorus - Total (mg/L)	Fluoride (mg/L)
PZ203	15/04/2024	436.0	379	212	51	4.9	6.2	6	8	52	1	<1	17	94	19	0.04	<0.001	<0.05	0.061	<0.0001	<0.001	0.001	0.05	<0.001	0.374	<0.0001	0.054	<0.01	<0.001	0.069	0.03	0.08	0.04	<0.01	<0.1
PZ203	17/10/2024	3367	327	167	<5	5.1	5.7	3	6	48	<1	<1	8	86	12	0.01	<0.001	<0.05	0.05	<0.0001	<0.001	<0.001	<0.05	<0.001	0.225	<0.0001	0.048	<0.01	<0.001	0.041	<0.01	0.04	0.04	<0.01	<0.1
PZ211	16/04/2024																																		
PZ211	18/10/2024																																		
PZ213	16/04/2024	144.3	148	86	86	5.4	6.4	3	3	20	1	<1	18	35	4	<0.01	<0.001	<0.05	0.008	<0.0001	<0.001	<0.001	2.84	<0.001	0.135	<0.0001	0.010	<0.01	<0.001	0.015	0.01	<0.01	0.28	<0.01	<0.1
PZ213	17/10/2024	145.5	151	76	22	5.3	6.0	4	3	19	2	<1	21	29	7	<0.01	<0.001	<0.05	0.007	<0.0001	<0.001	<0.001	1.52	<0.001	0.122	<0.0001	0.009	<0.01	<0.001	0.038	0.06	<0.01	0.62	<0.01	<0.1
PZ214	16/04/2024	171.1	241	115	85	5.6	6.5	8	7	29	2	<1	45	47	2	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.001	0.026	<0.0001	0.006	<0.01	<0.001	0.041	<0.01	0.1	0.37	<0.01	<0.1
PZ214	17/10/2024	255.8	255	145	7	5.5	6.1	8	7	30	2	<1	37	56	5	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.001	0.001	<0.0001	0.006	<0.01	<0.001	0.006	<0.01	1.66	0.24	0.01	<0.1
PZ217	17/04/2024	4130	3700	2220	223	6.9	8.0	95	133	496	19	<1	402	788	445	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.001	0.006	<0.0001	0.002	<0.01	<0.001	0.019	<0.01	2.25	0.2	0.02	0.6
PZ217	23/10/2024	3330	3980	2330	258	7.1	7.4	107	152	536	15	<1	423	803	417	0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.001	0.006	<0.0001	0.002	<0.01	<0.001	0.032	<0.01	2.1	0.43	0.02	0.6
PZ221	17/04/2024	1459	1290	806	<5	6.5	7.4	35	54	160	12	<1	310	196	66	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	1.78	<0.001	0.238	<0.0001	0.001	<0.01	<0.001	0.038	0.07	0.12	0.1	<0.01	0.6
PZ221	23/10/2024	1292	1230	671	90	6.5	7.0	36	51	158	11	<1	311	213	59	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	1.81	<0.001	0.226	<0.0001	0.002	<0.01	<0.001	0.035	0.08	0.08	0.25	<0.01	0.6
PZ236A	11/04/2024	327.2	244	164	191	10.5	9.3	27	1	23	3	22	8	48	11	0.02	<0.001	<0.05	<0.001	<0.0001	0.017	<0.001	<0.05	<0.001	<0.001	<0.0001	<0.001	<0.01	<0.001	<0.005	<0.01	0.25	0.09	<0.01	0.1
PZ235C	11/04/2024	7014	736	420	334	6.7	7.8	83	20	39	9	<1	297	35	63	<0.01	0.02	<0.05	0.026	<0.0001	<0.001	<0.001	9.10	<0.001	2.37	<0.0001	0.131	<0.01	<0.001	0.036	0.06	<0.01	0.09	<0.01	0.2
PZ235C	17/10/2024	809.1	704	416	120	6.8	7.1	98	19	36	6	<1	347	30	52	<0.01	0.019	<0.05	0.028	<0.0001	<0.001	<0.001	13.30	<0.001	1.86	<0.0001	0.232	<0.01	<0.001	0.043	0.64	<0.01	0.37	<0.01	0.2
PZ234A	11/04/2024	653.2	514	302	56	6.1	7.1	24	13	52	5	<1	75	114	25	<0.01	0.004	<0.05	0.061	<0.0001	<0.001	<0.001	20	<0.001	3.27	<0.0001	0.342	<0.01	<0.001	0.023	0.17	0.02	0.09	<0.01	0.1
PZ234A	16/10/2024	533.4	488	284	96	6.2	6.4	27	10	46	4	<1	97	95	19	<0.01	0.011	<0.05	0.05	<0.0001	<0.001	<0.001	30.60	<0.001	3.25	<0.0001	0.270	<0.01	<0.001	0.018	0.2	0.35	0.16	<0.01	0.1
PZ234B	11/04/2024	568.9	434	262	66	6.4	7.2	28	6	47	4	<1	97	60	37	<0.01	0.016	<0.05	0.021	<0.0001	<0.001	<0.001	10.00	<0.001	0.789	<0.0001	0.122	<0.01	<0.001	0.027	0.3	<0.01	0.33	<0.01	0.2
PZ234B	16/10/2024	401.5	360	209	47	6.3	6.5	19	5	46	3	<1	76	48	27	0.02	0.016	<0.05	0.014	<0.0001	<0.001	<0.001	16.40	0.003	0.663	<0.0001	0.105	<0.01	<0.001	0.027	0.26	<0.01	0.44	<0.01	0.1
PZ234C	11/04/2024	812.4	720	424	120	7.5	8.2	37	14	86	23	<1	337	50	<1	<0.01	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	0.11	<0.001	0.023	<0.0001	<0.001	<0.01	<0.001	<0.005	0.67	<0.01	0.08	<0.01	1.7
PZ234C	16/10/2024	718.7	708	396	97	7.7	7.8	42	14	95	28	<1	342	42	<1	0.03	<0.001	<0.05	<0.001	<0.0001	<0.001	<0.001	0.10	<0.001	0.058	<0.0001	0.002	<0.01	<0.001	0.009	0.76	<0.01	0.62	<0.01	1.7
PZ236C	16/10/2024																																		
PZ237A	11/04/2024	440.9	331	188	61	6.2	7.2	20	6	31	4	<1	58	59	15	<0.01	<0.001	<0.05	0.032	<0.0001	<0.001	<0.001	19	<0.001	1.24	<0.0001	0.201	<0.01	<0.001	0.037	0.21	0.02	0.12	<0.01	<0.1
PZ237A	16/10/2024	275.0	300	164	24	6.0	6.4	14	5	32	6	<1	48	48	16	<0.01	<0.001	<0.05	0.022	<0.0001	<0.001	<0.001	<0.05	<0.001	0.929	<0.0001	0.169	<0.01	<0.001	0.096	0.41	<0.01	0.31	<0.01	0.1
PZ237B	11/04/2024	405.7	359	222	16	6.4	7.5	22	8	36	5	<1	102	37	29	<0.01	0.005	<0.05	0.01	<0.0001	<0.001	<0.001	8.52	<0.001	0.418	<0.0001	0.042	<0.01	<0.001	<0.005	0.2	0.04	0.22	<0.01	0.1
PZ237B	16/10/2024	302.2	310	172	17	6.4	6.8	24	7	27	6	<1	100	29	19	<0.01	0.001	<0.05	0.005	<0.0001	<0.001	<0.001	3.04	<0.001	0.302	<0.0001	0.016	<0.01	<0.001	0.03	0.34	<0.01	0.42	<0.01	0.1
PZ237C	11/04/2024	850.0	740	448	58	8.3	8.3	41	17	78	25	<1	296	46	39	<0.01	0.013	<0.05	<0.001	<0.0001	<0.001	<0.001	<0.05	<0.001	0.019	<0.0001	0.001	<0.01	<0.001	<0.005	0.47	0.02	0.11	0.03	0.4
PZ237C	16/10/2024	659.2	648	370	56	7.7	7.8	52	17	60	18	<1	302	38	13	0.01	0.005	<0.05	<0.001	<0.0001	<0.001	<0.001	0.12	<0.001	0.026	<0.0001	0.002	<0.01	<0.001	0.01	0.07	0.02	0.07	0.01	0.4
PZ241	23/10/2024	501.9	495	260	152	5.6	6.1	8	9	68	1	<1	18	98	48	0.08	0.004	<0.05	0.031	0.0003	<0.001	0.001	7.75	<0.001	0.409	<0.0001	0.06	<0.01	<0.001	0.261	0.17	0.03	0.71	<0.01	<0.1

Gaps in data indicate that no result is available, data determined to be anomalous or bore is dry.

BORE	PZ102C – 28m	PZ102C – 64m	PZ103D – 31m	PZ103D – 55m	PZ103D – 85m	PZ105A – 28m	PZ105A – 80m	PZ105A – 118m	PZ105A – 130m	PZ127 - 43m	PZ127 - 68m	PZ128 - 20m	PZ128 - 36m	PZ128 - 55m
Jan-24	381.6	345.5	396.7	396.7	346.2	377.1	356.9	336.1	326.9	448.5	423.6	388.4	373.8	367.5
Feb-24	381.5	345.4	370.7	370.7	346.1	377.0	356.5	335.8	326.4	448.5	423.6	388.4	373.8	367.5
Mar-24	381.5	345.3	396.7	396.7	346.1	377.0	356.2	335.4	325.9	448.5	423.6	388.5	373.8	367.4
Apr-24	381.5	345.2	396.8	396.8	346.1	377.0	355.9	335.4	324.8	448.5	423.6	388.4	373.8	367.3
May-24	381.6	345.2	396.9	396.9	346.2	377.0	355.5	335.0	322.4	448.6	423.6	338.5	373.8	367.2
Jun-24	381.6	345.1	396.8	396.8	346.1	377.0	355.0	334.4	319.4	448.6	423.6	388.7	373.8	367.1
Jul-24	381.5	345.0	396.8	396.8	346.0	376.8	354.5	334.0	317.6	448.5	423.6	388.6	373.8	367.0
Aug-24	381.5	345.1	396.8	396.8	345.9	376.9	354.0	333.6	316.5	448.6	423.6	388.5	373.8	367.9
Sep-24	381.5	345.1	396.7	396.7	346.8	376.8	353.4	333.2	315.8	448.5	423.5	388.4	373.8	367.9
Oct-24	381.5	345.0	396.8	396.8	345.7	376.8	353.3	333.0	315.0	448.5	423.5	388.4	373.8	367.9
Nov-24	381.4	344.9	396.7	396.7	345.6	376.8	352.9	332.5	314.1	448.5	423.5	388.4	373.7	367.8
Dec-24	381.4	344.8	396.7	396.7	345.5	376.8	352.5	332.1	313.4	448.5	423.5	388.5	373.7	366.7
Min	381.4	344.8	370.7	370.7	345.5	376.8	352.5	332.1	313.4	448.5	423.5	338.5	373.7	366.7
Max	381.6	345.5	396.9	396.9	346.8	377.1	356.9	336.1	326.9	448.6	423.6	388.7	373.8	367.9

BORE	PZ129 - 35m	PZ129 - 53m	PZ129 - 74m	PZ130 - 38.5m	PZ130 - 64m	PZ179 - 29m	PZ179 - 33m	PZ179 - 145m	PZ186a – 13.5m	PZ186 – 40m	PZ186 – 65m	PZ186 – 86m	PZ186 – 118m	PZ192-68m
Jan-24	390.0	383.3	364.5	495.1	470.7	418.3	417.5	318.9	405.8	386.8	372.9	365.7	322.5	400.3
Feb-24	390.0	383.3	364.5	495.0	470.7	418.2	417.4	318.8	405.8	386.8	372.7	365.6	322.5	399.6
Mar-24	389.9	383.2	364.5	495.0	470.7	418.2	417.4	318.8	405.8	386.9	372.8	365.7	322.6	399.5
Apr-24	389.9	383.2	364.5	494.9	470.7	418.2	417.4	318.6	405.8	386.9	373.7	365.7	322.6	394.3
May-24	390.0	383.2	364.5	494.9	470.7	418.2	417.4	318.3	405.8	387.0	373.9	365.8	322.4	398.1
Jun-24	390.0	383.1	364.5	494.9	470.7	418.2	417.3	317.9	405.9	387.1	373.8	365.7	322.2	399.1
Jul-24	390.0	383.1	364.5	494.8	470.7	418.2	417.3	317.7	405.8	387.1	373.7	365.7	322.0	399.4
Aug-24	389.0	383.1	364.5	494.8	470.8	418.1	417.3	317.6	405.8	387.1	374.0	365.7	321.9	399.0
Sep-24	389.0	383.1	364.5	494.7	470.6	418.1	417.2	317.4	405.8	387.1	374.1	365.6	321.8	399.0

BORE	PZ129 - 35m	PZ129 - 53m	PZ129 - 74m	PZ130 - 38.5m	PZ130 - 64m	PZ179 - 29m	PZ179 - 33m	PZ179 - 145m	PZ186a – 13.5m	PZ186 – 40m	PZ186 – 65m	PZ186 – 86m	PZ186 – 118m	PZ192-68m
Oct-24	389.1	383.0	364.5	494.7	470.7	418.1	417.2	317.4	405.8	387.1	374.4	365.7	321.9	399.0
Nov-24	389.1	384.0	364.5	494.6	470.6	418.1	417.1	317.2	405.8	387.1	374.6	365.6	321.7	399.0
Dec-24	390.1	382.9	364.5	494.6	470.6	418.1	417.1	317.1	405.8	387.1	375.3	365.5	321.7	398.9
Min	389.0	382.9	364.5	494.6	470.6	418.1	417.1	317.1	405.8	386.8	372.7	365.5	321.7	394.3
Max	390.1	384.0	364.5	495.1	470.8	418.3	417.5	318.9	405.9	387.1	375.3	365.8	322.6	400.3

BORE	PZ192-166m	PZ192-178m	PZ193 - 80m	PZ193 - 162m	PZ193 - 184m	PZ194 - 78m	PZ194 - 173m	PZ194 - 196m	PZ195 - 72m	PZ195 - 162m	PZ195 - 175m	PZ240 - 59m	PZ229 - 84m	PZ229 - 140m
Jan-24	314.7	311.1	409.4	320.8	306.6	406.7	323.7	291.9	400.2	311.3	268.4		429.2	388.7
Feb-24	314.1	310.6	407.3	318.3	305.7	407.1	316.0	289.3	399.6	312.3	268.5		429.3	388.6
Mar-24	313.0	309.7	405.1	318.2	304.5	407.3	315.7	288.9	399.6	312.5	268.6		429.3	388.6
Apr-23	310.4	307.1	404.4	317.8	300.9	407.4	316.8	288.5	399.6	312.6	268.8		429.4	388.6
May-24	304.5	300.9	401.6	300.4	289.6	407.4	317.8	288.3	399.7	313.2	268.9		429.4	388.7
Jun-24	300.6	288.2	404.8	298.6	288.1	407.4	318.7	288.1	399.6	313.8	269.1		429.5	388.7
Jul-24	300.1	288.5	402.4	298.2	278.8	407.3	318.0	288.5	399.4	314.2	269.2		429.5	388.7
Aug-24	299.9	288.8	400.8	298.0	287.4	407.4	316.6	288.3	399.5	314.2	269.4		429.5	388.7
Sep-24	299.6	288.4	400.9	298.0	286.9	407.2	316.6	287.9	399.3	314.2	269.5	361.4	429.5	388.6
Oct-24	299.5	288.4	401.0	297.9	286.7	407.3	316.3	288.7	399.4	314.1	269.7	361.8	429.5	388.6
Nov-24	299.1	288.0	401.0	297.9	286.4	407.3	316.3	288.3	399.3	314.1	269.8	361.9	429.5	388.6
Dec-24	299.0	287.9	401.0	298.0	286.3	407.2	316.3	288.3	399.2	314.0	269.9	361.8	429.4	388.6
Min	299.0	287.9	400.8	297.9	278.8	406.7	315.7	287.9	399.2	311.3	268.4	361.4	429.2	388.6
Max	314.7	311.1	409.4	320.8	306.6	407.4	323.7	291.9	400.2	314.2	269.9	361.9	429.5	388.7

Gaps in data indicate that no result is available, data determined to be anomalous, bore is dry or not yet commissioned.

BORE	PZ229 - 198m	PZ229 - 253m	PZ229 - 319m	PZ232 – 45m	PZ232 – 75m	PZ232 – 96m	PZ232 – 132m	PZ235B – 68m	PZ235B – 96m	PZ235B – 147m	PZ236B – 85m	PZ236B – 110m	PZ236B – 157m
Jan-24	385.5	379.3	377.0	442.4	409.2	391.7	352.1	376.6	348.0	310.2	371.0	355.1	314.7
Feb-24	385.5	379.3	377.1	442.6	408.5	397.5		376.7	347.5	309.8	370.9	355.0	314.5
Mar-24	385.5	379.4	377.2					376.8	347.2	309.5	370.8	354.7	314.2
Apr-24	385.5	379.5	377.2					377	346.1	309.1	370.7	354.5	313.4
May-24	385.5	379.6	377.4					377.3	345.4	308.8	370.7	354.4	310.8
Jun-24	385.5	379.7	377.3					377.6	344.7	308.4	370.6	353.1	308.0
Jul-24	385.5	379.7	377.4					377.8	345.8	307.8	370.5	352.8	306.8
Aug-23	385.5	379.8	377.5					378.1	345.9	307.4	370.5	352.6	305.8
Sep-24	385.4	379.8	377.4					378.1	343.4	306.9	370.3	352.1	305.0
Oct-24	385.4	379.8	377.5					378.4	344.8	306.8	370.1	351.5	304.2
Nov-24	385.3	379.8	377.5					378.6	343.8	306.2	370.0	350.7	303.2
Dec-24	385.3	379.8	377.5					378.8	343.03	305.75	369.7	350.04	302.8
Min	385.3	379.3	377	442.4	408.5	391.7	352.1	376.6	343.03	305.75	369.7	350.04	302.8
Max	385.5	379.8	377.5	442.6	409.2	397.5	352.1	378.8	348	310.2	370.7	354.5	313.4

Gaps in data indicate that no result is available, data determined to be anomalous, bore is dry or not yet commissioned.

BORE	PZ003	PZ40B	PZ44	PZ55	PZ58A	PZ101C	PZ101B	PZ103C	PZ104	PZ105C	PZ106A	PZ109	PZ111	PZ112B
Jan-24	472.8	406.7	478.6	423.9	467.7	379.6	354.3	397.0		374.9	426.0	382.1	357.7	482.2
Feb-24	472.8	406.2	478.6	423.8	467.7	379.7	354.1	397.0		374.8	426.1	382.0	357.0	482.0
Mar-24	472.7	402.5	478.6	423.8		379.6	353.9	397.0		374.7	426.2	382.0	356.3	481.9
Apr-24	472.7	402.7	478.5	423.9	467.7	379.6	353.7	397.0		374.6	426.3	382.1	356.0	481.7
May-24	472.7	402.1	478.4	423.8	467.7	379.6	353.5	397.0		374.6	424.4	381.8	355.0	481.5
Jun-24	472.6	400.5	478.4	423.9	467.9	379.6	353.1	396.9		374.6	424.7	381.6	355.3	481.4
Jul-24	472.6	398.7	478.5	424	470.9	379.7	351.5	397.0		374.5	425.0	381.7	357.2	481.4
Aug-24	473.0	398.8	478.4	423.5	467.8	379.5	351.9	396.9		374.4	425.2	381.6	353.8	481.3

BORE	PZ003	PZ40B	PZ44	PZ55	PZ58A	PZ101C	PZ101B	PZ103C	PZ104	PZ105C	PZ106A	PZ109	PZ111	PZ112B
Sep-24	473.0	397.4	478.4	423.8	467.9	379.6	352.0	396.7		374.4	425.4	381.8	353.2	481.4
Oct-24	473.2	395.7	478.4	423.8		379.6	351.7	396.8		374.3	425.5	381.7	352.3	481.4
Nov-24	472.8		477.7	424.0	467.4	379.6	351.4	396.8		374.3	425.5	382.0	352.0	481.3
Dec-24	473.4		478.4		468.0	379.6	351.1	395.8		374.2	423.4	382.0	351.6	481.3
Min	472.6	395.7	477.7	423.5	467.4	379.5	351.1	395.8		374.2	423.4	381.6	351.6	481.3
Max	473.4	406.7	478.6	424.0	470.9	379.7	354.3	397.0		374.9	426.3	382.1	357.7	482.2

Gaps in data indicate that no result is available, data determined to be anomalous, bore is dry or not yet commissioned.

BORE	PZ137	PZ170	PZ184	PZ188	PZ189	PZ191	PZ194B	PZ194C	PZ195B	PZ195C	PZ203	PZ211	PZ213	PZ214
Jan-24	460.7	421.6		410.4	388.5	347.2	406.6	402.4	406.3	385.7	402.2		409.2	409.9
Feb-24	460.6	421.5		410.4	388.5	347.2	403.8	401.1	405.7	385.6	402.2		409.1	409.9
Mar-24	460.7	421.4		410.4	388.5	347.2	404.4	398.2	405.5	385.7	402.1		409.0	409.8
Apr-24	460.7	421.4		410.3	388.6	347.2	404.5	397.2	405.5	385.7	402.1		408.9	409.7
May-24	460.7	421.4		410.3	388.5	347.2	404.6	397.1		385.7	402.0		408.9	409.7
Jun-24	460.8	422.4		410.2	388.5	347.2	404.6	396.5		385.7	402.1		408.8	409.6
Jul-24	460.8	421.4		410.1	388.6	347.2	403.6	393.3		385.8	402		408.8	409.6
Aug-24	460.7	421.3		410.1	388.5	347.2	404.0	390.0		385.7	402.1		408.7	409.5
Sep-24	460.8	421.4		410.1	388.6	347.2	404.0	389.3		385.7	402.0		408.7	409.5
Oct-24	460.9	421.5		411.0	388.6		404.0	389.1		385.8	401.9		408.6	409.4
Nov-24	460.9	420.9		410.0	388.5	347.2	404.6	389.8		386.4	401.2		408.0	408.8
Dec-24	460.3	421.6		409.9	388.5	346.6	404.4	389.6		386.5	401.8		408.5	409.3
sMin	460.3	420.9		409.9	388.5	346.6	406.3	389.1	405.5	385.6	401.2		408.0	408.8
Max	460.9	422.4		411.0	388.6	347.2	415.6	402.4	406.3	386.5	402.2		409.2	409.9

Gaps in data indicate that no result is available, data determined to be anomalous, bore is dry or not yet commissioned.

BORE	PZ217	PZ221	PZ235C	PZ236A	PZ236C	PZ237A	PZ237B	PZ237C	PZ234A	PZ234B	PZ234C	PZ241
Jan-24	491.3	472.7	390.7	391.1		383.3	382.2	361.5	373.5	373.3	352.2	
Feb-24	491.3	472.7	390.7	389.7		383.3	382.2	361.4	373.5	373.3	351.9	
Mar-24	491	472.7	390.7	389.6		383.3	382.1	360.6	373.4	373.2	351.6	
Apr-24	491.0	472.7	390.8	389.6		383.3	382.2	360.8	374.4	373.2	351.3	
May-24	491.0	472.7	390.6	388.3		383.3	382.2	361.1	374.4	373.2	351.0	
Jun-24	491.1	472.8	390.7	386.3		383.3	382.2	361.1	374.4	373.2	350.5	
Jul-24	490.8	472.8	390.8			383.3	382.3	361.1	374.4	373.2	349.9	
Aug-24	490.4	473.0	390.7		389.3	383.4	382.2	360.8	374.4	373.1	349.4	403.8
Sep-24	490.5	472.9	390.7		388.7	383.4	382.3	360.8	373.3	372.1	349.3	404.6
Oct-24	490.6	473.0	390.7		388.6	383.3	382.2	362.1	373.3	373.0	349.1	404.5
Nov-24	490.0	472.5	390.7		388.6	383.3	382.2	361.2	373.3	373.0	348.8	405.6
Dec-24	490.1	473.3	390.8		388.7	383.3	382.2	361.1	373.3	373.0	348.5	405.0
Min	490.0	472.5	390.6	386.3	388.6	383.3	382.2	361.1	373.3	373.0	348.5	403.8
Max	491.3	473.3	390.8	391.1	389.3	383.3	382.2	361.1	373.3	373.0	348.5	405.6

Gaps in data indicate that no result is available, data determined to be anomalous, bore is dry or not yet commissioned.

GROUNDWATER LEVEL GRAPHS

Figure 3-g: Ulan Granite Composite Hydrograph

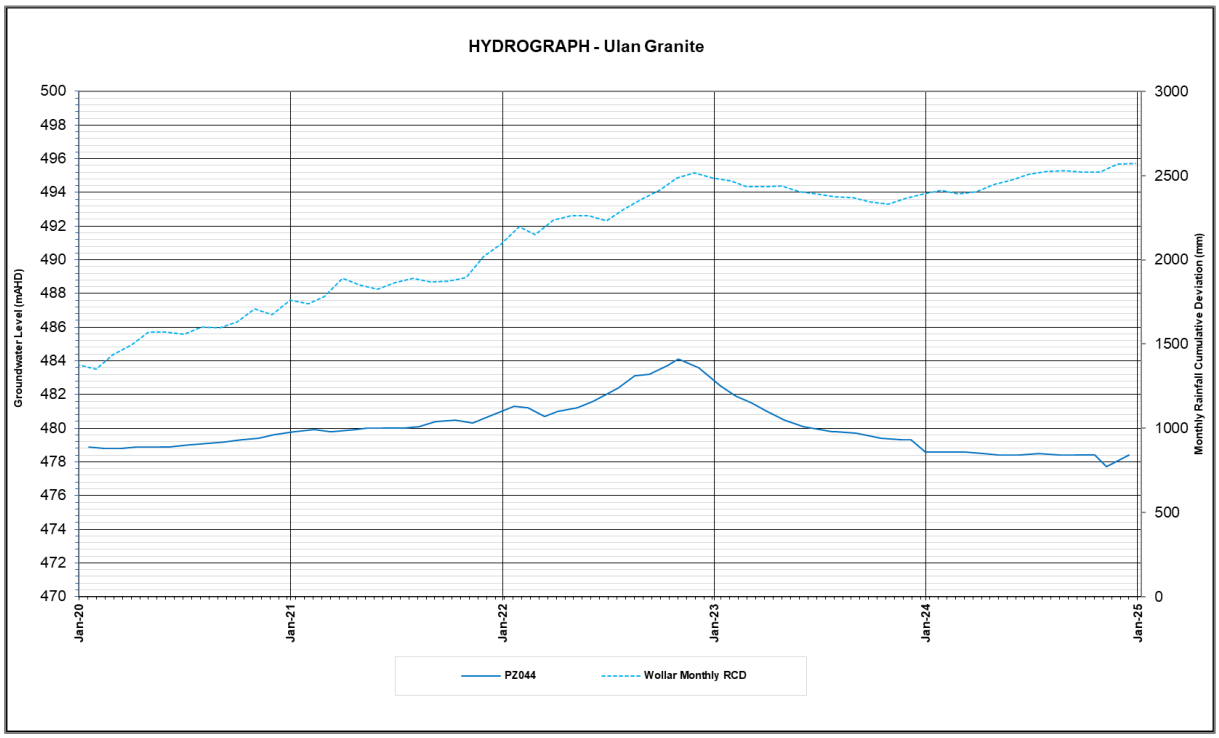


Figure 3-h: Marrangaroo and Ulan Seam Composite Hydrograph

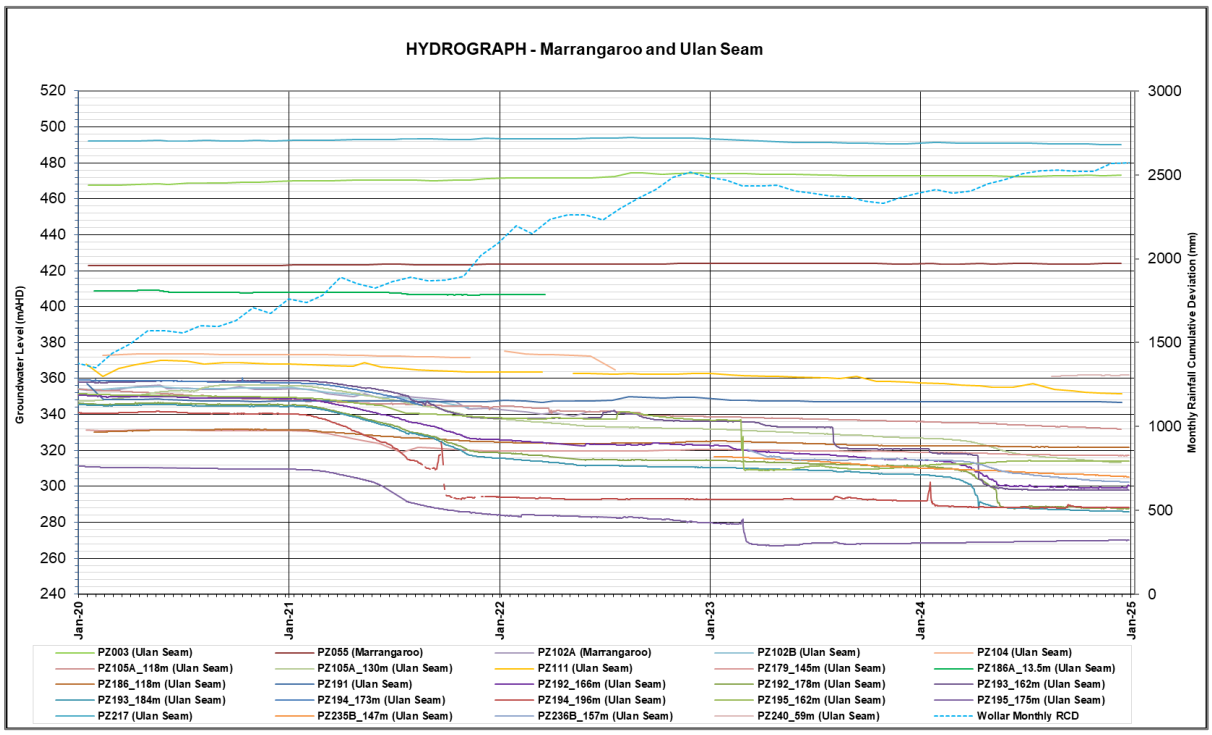


Figure 3-i: Permian Overburden Composite Hydrograph

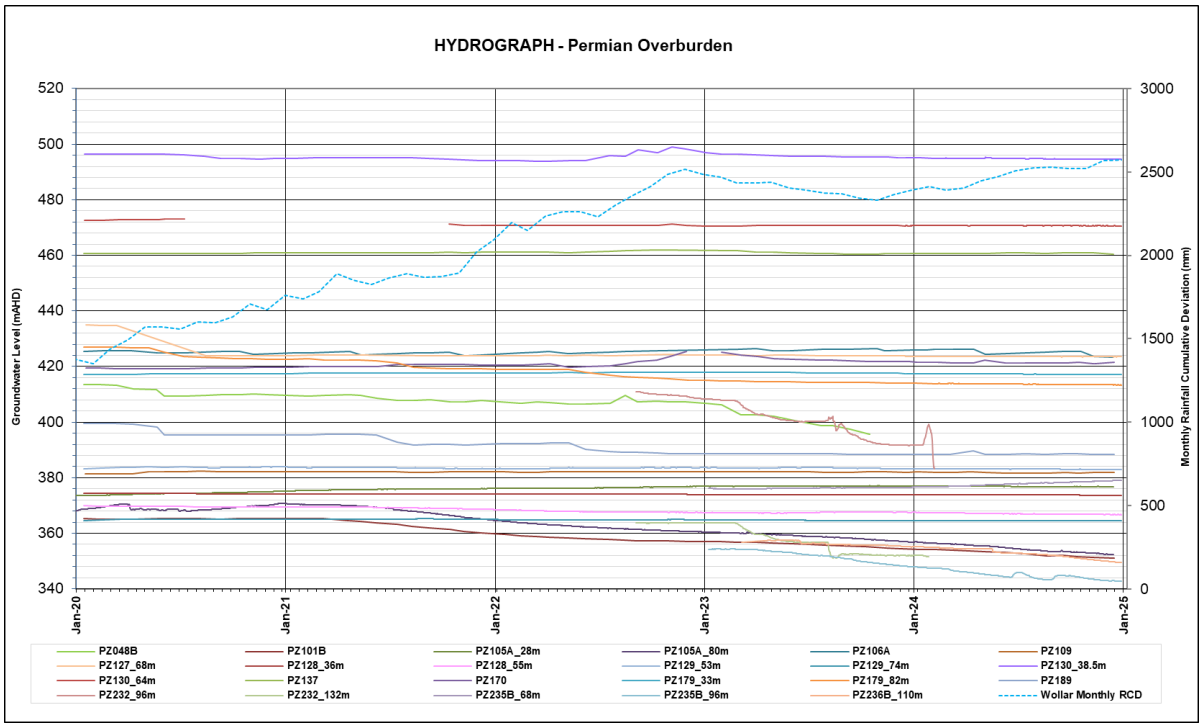


Figure 3-j: Triassic Composite Hydrograph

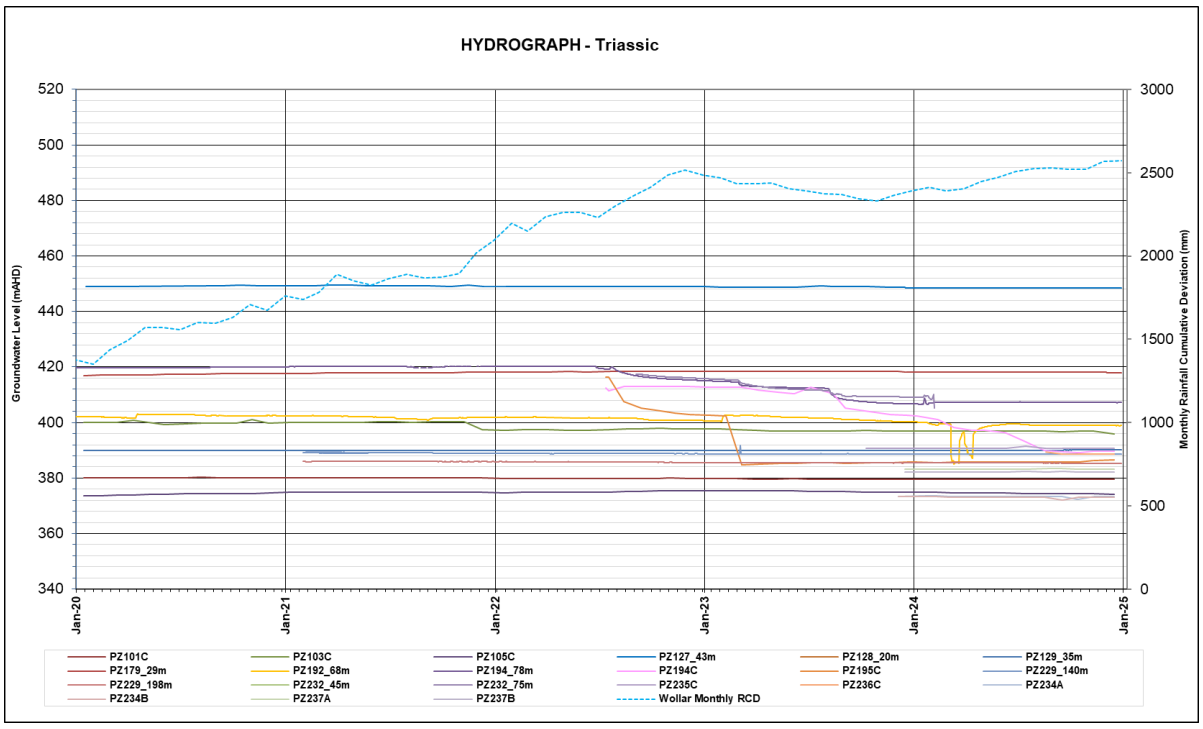
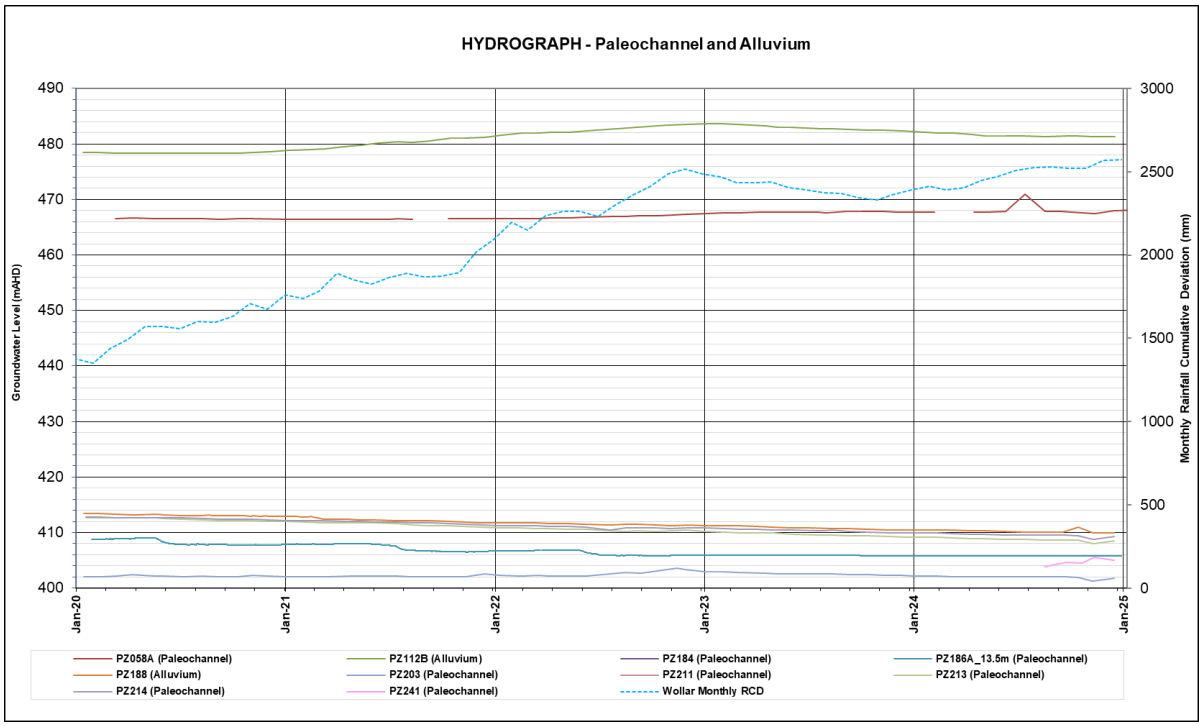


Figure 3-k Alluvium Composite Hydrograph



APPENDIX 4. COMMUNITY COMPLAINTS SUMMARY 2024

Date	Type	Location	Complaint Description
22/01/2024	Blasting (V/O)	Wollar	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results indicated acceptable overpressure and vibration levels. Complainant contacted to advise of investigation, results and actions.
13/04/2024	Noise	Ulan	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results indicated acceptable noise levels. No actions required.
21/04/2024	Noise	Cooks Gap	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results indicated acceptable noise levels. Complainant contacted to advise of investigation, results and actions.
07/07/2024	Air (Dust)	Cooks Gap	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results indicated acceptable dust levels. No actions required. Complainant contacted to advise of investigation, results and actions.
12/08/2024	Noise	Cooks Gap	Investigation revealed no unusual mining operations were occurring at the time. Monitoring results indicated acceptable noise levels. No actions required. Complainant contacted to advise of investigation, results and actions.
15/12/2024	Traffic	Cooks Gap	Investigation revealed no unusual mining operations were occurring at the time. No actions required.
30/12/2024	Other	Ulan	Investigation revealed no unusual mining operations were occurring at the time. No actions required.

APPENDIX 5. COMMUNITY CONTRIBUTIONS

Beneficiary	Project/Event
Moolarben Coal Celebrity Golf Classic	Moolarben Coal Celebrity Golf Classic
Mudgee Show and Rodeo	Mudgee Show and Rodeo
Kandos and Rylstone show	Kandos and Rylstone show
Mudgee Pre-School	Shade Sails
Gulgong Public School	Riding for the disabled
Rylstone, Kandos and District Volunteer Search and Rescue Organisation	Water Sonar Vision equipment for search and rescue vessel
Mudgee Pre-School	Family Day Donation
CanAssist	Family Day Donation
Mudgee Rescue	Family Day Donation
Life Skills	Family Day Donation
Wingsforkidz	Participation
Lifeskills Plus	Running Festival donation
National Association of Loss and Grief (NALAG)	Grief Support Sessions
The Business Concierge	School Workshops on Budgeting for Life
Mid-Western Regional Council Library	Hearing impairment Sound Equipment in Library
Gulgong and District Avicultural Society	Annual Bird Show
Cooks Gap and District Progress Association	Community Hall Renovations
Mudgee Can Assist	Support to patients undergoing cancer treatment
Warrabinga Native Title Claimants Aboriginal Corporation	2024 Language Course Camp
Northern NSW Helicopter Rescue Service	2024 Mudgee Charity Golf Day
Gulgong Show Society Inc.	Gulgong Show 2024
Rotary Club of Mudgee Inc.	Mudgee Showground Carols
Rylstone Streetfeast	Rylstone Streetfeast 2024
Mudgee & Districts Vietnam Veterans & Peacekeepers. Assoc. Inc	Mudgee & District VVPPAA Outreach Program
Cudgegong Cruisers Inc.	Can Cruise 2024
Educar Foundation Ltd	Leadership Development Program for Year 10 Students
Cassils Bowling Club	Cassilis Country Music, Camping and Campfires
Mid-Western Regional Council	2024 Midwestern Regional Seniors Festival
Mudgee Touch Association Inc.	First Aid equip and referee courses
Mudgee Public School Parents and Citizens Association	Bus for Educational Events
Mudgee District Junior Cricket Association Inc	Bowling Machine
Mudgee Region MTB Incorporated	MRMTB- Update Trail Signage
Mudgee Region MTB Incorporated	Mountain Bike Skills Training- Mudgee Common
Henry Lawson Society Gulgong	Henry Lawson Heritage Festival 2024
Business Mudgee / Mudgee Chamber of Commerce	Magnificent Mudgee Business Awards 2024
Lions Club of Mudgee	Lions Community Festival & Market 2024
Gulgong Holtermann Museum Inc	Reprint of the "Lens on the Goldfield"
Mudgee Gulgong Wolves Football Club	Moveable Scoreboard
McGrath Foundation c/ Pink Up Mudgee	Pink Up Mudgee
Mudgee Tri Club	Mudgee Running Festival 2024
Merriwa Can Assist	Support to patients undergoing cancer treatment
Mudgee Sporting Clays	FITASC Oceania Championship
Watershed Landcare Inc	Green Day 2024