



SUNRISE PROJECT

ANNUAL REVIEW 2023



MARCH 2024

TABLE OF CONTENTS

1	STATEMENT OF COMPLIANCE	1
2	INTRODUCTION	2
	2.1 CONDITIONS COMPLIANCE TABLE	2
	2.2 SUNRISE PROJECT BACKGROUND	3
	2.3 KEY PERSONNEL CONTACTS	6
3	APPROVALS	7
	3.1 CURRENT LIST OF CONSENTS, LEASES, LICENCES AND PERMITS	7
4	OPERATIONS SUMMARY	9
	4.1 MINING	9
	4.2 EXPLORATION	9
	4.3 OTHER ACTIVITIES	9
	4.4 NEXT REPORTING PERIOD	9
5	ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW	10
6	ENVIRONMENTAL PERFORMANCE	11
	6.1 AIR QUALITY	12
	6.2 METEOROLOGICAL MONITORING	16
	6.3 CONSTRUCTION NOISE	21
	6.4 EROSION AND SEDIMENT	22
	6.5 FLORA	22
	6.6 FAUNA	23
	6.7 WEEDS AND PESTS	23
	6.8 ABORIGINAL HERITAGE	25
	6.9 EUROPEAN HERITAGE	26
7	WATER MANAGEMENT	27
	7.1 WATER SUPPLY	27
	7.2 SURFACE WATER	28
	7.3 GROUNDWATER	29
8	REHABILITATION	34
	8.1 REHABILITATION OF DISTURBED LAND	34
	8.2 REHABILITATION MONITORING	34
	8.3 PERFORMANCE INDICATORS	34
9	COMMUNITY RELATIONS	35
	9.1 COMMUNITY COMPLAINTS	35
	9.2 COMMUNITY LIAISON	35
	9.3 COMMUNITY INVESTMENT	36
10	INDEPENDENT ENVIRONMENTAL AUDIT	37
11	INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD	38
12	ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD	39
	12.1 EXPLORATION	39
	12.2 PROJECT EARLY WORKS	39
	12.3 PROJECT DEVELOPMENT	39
13	REFERENCES	40

LIST OF TABLES

TABLE 1 STATEMENT OF COMPLIANCE	1
TABLE 2 ANNUAL REVIEW DEVELOPMENT CONSENT INFORMATION REQUIREMENTS	2
TABLE 3 KEY PERSONNEL CONTACTS	6
TABLE 4 KEY CONSENTS, LEASES, LICENCES AND PERMITS	7
TABLE 5 PRODUCTION SUMMARY	9
TABLE 6 ACTIONS FROM THE PREVIOUS ANNUAL REVIEW	10
TABLE 7 ENVIRONMENTAL MANAGEMENT PLANS AND STRATEGIES.....	11
TABLE 8 MAXIMUM TOTAL DEPOSITED DUST LEVEL - ANNUAL AVERAGE	14
TABLE 9 SHORT TERM IMPACT ASSESSMENT CRITERION FOR PARTICULATE MATTER - 2023 EXCEEDANCES	15
TABLE 10 LONG TERM IMPACT ASSESSMENT CRITERIA FOR PARTICULATE MATTER - 2023 RESULTS	15
TABLE 11 MONTHLY RAINFALL RECORDED BY THE AWS (2019-2023)	17
TABLE 12 SUMMARY OF PROJECT WATER ACCESS LICENCES	27
TABLE 13 NEW MONITORING WELLS – CONSTRUCTION DETAILS	28

LIST OF FIGURES

FIGURE 1 REGIONAL LOCATION	5
FIGURE 2 AIR QUALITY AND METEOROLOGICAL MONITORING SITES	13
FIGURE 3 DUST DEPOSITION (INSOLUBLE SOLIDS) 2023.....	14
FIGURE 4 MONTHLY TEMPERATURE RECORDS FOR 2023 AT THE SUNRISE AWS	17
FIGURE 5 MONTHLY RAINFALL RECORDS (AND CUMULATIVE) FOR THE 2023 CALENDAR YEAR AT THE SUNRISE AWS	18
FIGURE 6 ANNUAL RAINFALL TREND (2019-2023)	19
FIGURE 7 ANNUAL WIND ROSE 2023 (WIND SPEED METRES/SEC).....	20
FIGURE 8 LOCAL HYDROLOGY AND BASELINE SURFACE WATER QUALITY MONITORING – MINE SITE	30
FIGURE 9 GROUNDWATER MONITORING LOCATIONS WITHIN AND IN THE VICINITY OF ML 1770	32
FIGURE 10 GROUNDWATER MONITORING PROGRAM – BOREFIELD.....	33

LIST OF APPENDICES

Appendix 1	Air Quality Monitoring Results
Appendix 2	Meteorological Monitoring Results
Appendix 3	Noise Monitoring Results
Appendix 4	Surface Water Monitoring Results
Appendix 5	Groundwater Monitoring Results

SUNRISE PROJECT

2023 Annual Review

Name of Operation/Mine	<i>Sunrise Project</i>
Name of Operator	<i>Sunrise Energy Metals Limited</i>
Development Consent	<i>DA 374-11-00 (as modified)</i>
Name of Holder of Development Consent	<i>SRL Ops Pty Ltd</i>
Mining Leases	<i>ML1770, ML1769</i>
Name of Holder of Mining Lease	<i>SRL Ops Pty Ltd</i>
Environmental Protection Licence (EPL)	<i>21146</i>
Name of Holder of EPL	<i>SRL Ops Pty Ltd</i>
Water Licences	<i>WALs 32068, 39837, 28681, 42370, 1798, 6679</i>
Name of Holder of Water Licences	<i>SRL Ops Pty Ltd</i>
Annual Review Start Date	<i>01 January 2023</i>
Annual Review End Date	<i>31 December 2023</i>
<i>I, Bronwyn Flynn, certify that this audit report is a true and accurate record of the compliance status of the Sunrise Project for the period 01 January 2023 – 31 December 2023 and that I am authorised to make this statement on behalf of Sunrise Energy Metals Limited.</i>	

Name of Authorised Reporting Officer	Bronwyn Flynn
Title of Authorised Reporting Officer	Environment, Approvals & Community Lead
Signature of Authorised Reporting Officer	
Date	31 March 2024

1 STATEMENT OF COMPLIANCE

The compliance status of the Sunrise Project (the Project) with its relevant approval conditions as at the end of the reporting period (31 December 2023) is provided in Table 1.

Table 1 Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	
Development Consent DA 374-11-00	YES
Mining Lease (ML) 1769	YES
ML1770	YES

All the conditions of the relevant approvals (Table 1) were complied with during the reporting period therefore no non-compliances were identified.

2 INTRODUCTION

This Annual Review (AR) has been prepared by Sunrise Energy Metals Limited (SEM) for the Sunrise Project (the Project) for the 2023 calendar year from the 1st January 2023 through to 31st December 2023 (the reporting period).

This AR is generally consistent with the *Annual Review Guideline – Post-approval Requirements for State Significant Mining Developments* [1], *Annual Rehabilitation Report and Forward Program for Large Mines* [2] and also meets:

- the Annual Review requirements of the Department of Planning, Housing & Industry (DPHI) (Schedule 5, Condition 5 of Development Consent DA 374-11-00 (the Development Consent) granted on 23rd May 2001);
- the Annual Rehabilitation Report requirements of the NSW Resources Regulator (NSW RR) under the Standard Conditions of Mining leases – Rehabilitation (condition 13); and
- the routine reporting expectations of the NSW Natural Resources Access Regulator (NRAR).

As the Project's security deposit is at the minimum deposit prescribed under s 261BF of the *Mining Act 1992* and s 93 of the *Mining Regulation 2016*, an Annual Rehabilitation Report as required by s 13(2), 13(4), 15(2) and 16 of the *Mining Amendment (Standard Conditions of Mining Leases – Rehabilitation) Regulation 2021* is not required for the reporting period.

If required for future reporting periods, the ARR (and forward program) will form an attachment to this AR to avoid duplicating reporting requirements under the MLs held by SEM and the Development Consent.

2.1 CONDITIONS COMPLIANCE TABLE

Table 2 below lists the AR information requirements in Condition 5, Schedule 5 of the Development Consent and the corresponding section of this AR where the requirement is addressed.

Table 2 Annual Review Development Consent Information Requirements

Development Consent DA 374-11-00 Schedule 5 Condition 5	Section in this AR document
Annual Review <i>By the end of March each year, the Applicant must review the environmental performance of the development for the previous calendar year to the satisfaction of the Planning Secretary. This review must:</i>	This review
describe the development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the current calendar year;	Sections 4, 8 and 12
include a comprehensive review of the monitoring results and complaints records of the development over the past year, which includes a comparison of these results against the: - relevant statutory requirements, limits or performance measures/criteria; - monitoring results of previous years; and - relevant predictions in the EIS;	Sections 6 and 9
identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;	Section 6
identify any trends in the monitoring data over the life of the development;	Section 6
identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and	Section 6
describe what measures will be implemented over the next year to improve the environmental performance of the development.	Section 6

A request by SEM to change the annual submission date of the ARR for ML 1770 from 15 February to 31 March each year to align with the Annual Review was accepted by the Resources Regulator (letter dated 25 March 2020).

2.2 SUNRISE PROJECT BACKGROUND

SRL Ops Pty Ltd owns the rights to develop the Project and is a wholly owned subsidiary of SEM.

The Project is a nickel-cobalt-scandium open cut mining project situated near the village of Fifield, approximately 350 kilometres (km) west-northwest of Sydney (Figure 1). The Project includes the establishment and operation of the following:

- mine (including the processing facility) on ML 1770;
- limestone quarry (including limestone processing facility) on ML 1769;
- rail siding;
- gas pipeline;
- borefields, surface water extraction infrastructure and water pipeline;
- accommodation camp; and
- associated transport activities and transport infrastructure (e.g. the Fifield Bypass, road and intersection upgrades).

The Development Consent for the Project was issued under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) in 2001. Seven modifications to the Development Consent have since been granted under the EP&A Act:

- 2005 - to allow for an increase of the autoclave feed rate, limestone quarry extraction rate and adjustments to ore processing operations;
- 2006 – to allow for the reconfiguration of the borefields;
- 2017 – to allow for the production of scandium oxide;
- 2017 – to amend hazard study requirements;
- 2018 – to relocate the accommodation camp;
- 2018 – to implement opportunities to improve the overall efficiency of the Project; and
- 2022 – to allow for design and operational changes that would improve the efficiency of the Project.

The Project was commenced in 2006 with the construction of components of the borefields (i.e. two production bores and associated monitoring wells). The remaining three production bores were constructed during the reporting period, however recommencement of other construction activities associated with the Project are yet to be initiated.

The land immediately adjacent to and surrounding the Project (ML 1770) consists of farming land and carbon sequestration offsets.

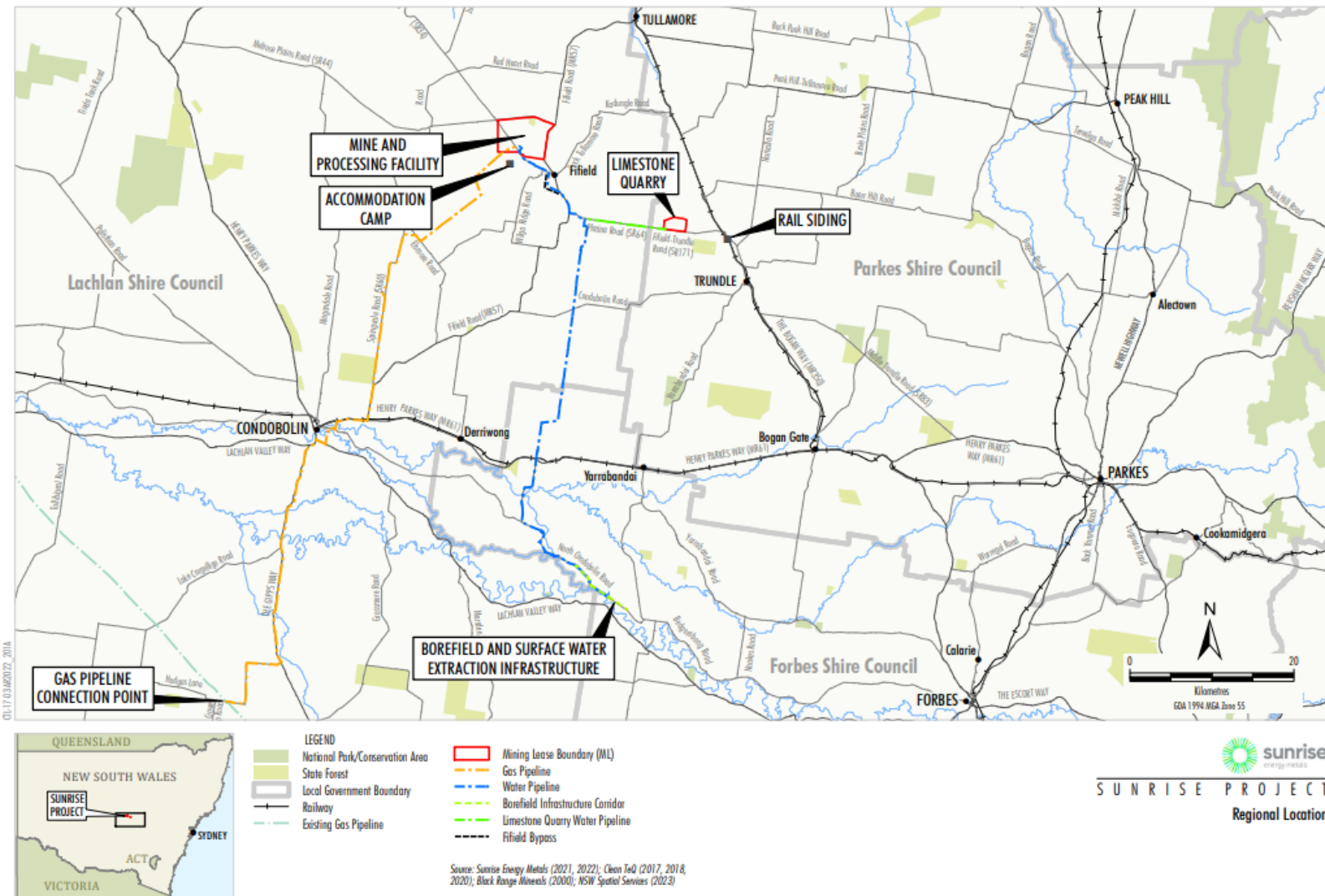


Figure 1 Regional Location

2.3 KEY PERSONNEL CONTACTS

Contact details for SEM key personnel responsible for the environmental management of the Project are provided in Table 3:

Table 3 Key Personnel Contacts

Position	Name	Telephone	Email
Sunrise Regional Manager	Michael Wood	0418 818 372	mwood@sunriseem.com
Environment, Approvals and Community Lead	Bronwyn Flynn	0429 066 086	bflynn@sunriseem.com

The postal address for the Project is provided below:

Postal Address

PO Box 68
Flinders Lane
Melbourne VIC 8009

3 APPROVALS

3.1 CURRENT LIST OF CONSENTS, LEASES, LICENCES AND PERMITS

The key consents, leases, licences and permits current at the end of the reporting period for the Project are listed in Table 4. Any applicable changes to these approvals during the reporting period are also described in Table 4.

Table 4 Key Consents, Leases, Licences and Permits

Instrument	Description	Relevant Authority	Date of Grant	Expiry Date or Duration	Changes During AR Period
Project Approval					
DA 374-11-00	Development Consent	DPHI	23/05/2001	21 years (from commencement of mining operations)	No change
Mining Leases (ML)					
ML 1769	Mining Lease (389.7 ha)	MEG	15/2/2018	21 years	No change
ML 1770	Mining Lease (2676 ha)	MEG	16/2/2018	21 years	No change
Environment Protection Licence					
EPL21146	Environment Protection Licence (EPL)	NSW EPA	09/01/2019	Until surrendered	No change
Exploration Licences (EL)					
EL8928 Ezy Lime	Exploration Lease (57.5 km ²)	NSW RR	06/01/2023 (renewal)	3 years	EL renewed during the reporting period
EL4573 Sunrise East	Exploration Lease (22.7 km ²)	NSW RR	17/08/2021	3 years	No change
EL8833 Boona Gap	Exploration Lease (112.5 km ²)	NSW RR	18/04/2022	3 years	No change
EL8882 Gleninga	Exploration Lease (80.9 km ²)	NSW RR	14/08/2022	3 years	No change
EL8883 Meloola	Exploration Lease (138.4 km ²)	NSW RR	14/08/2022	3 years	No change
EL9259 Sunrise North	Exploration Lease (1229.4km ²)	NSW RR	06/08/2021	3 years	No change
EL9317 Burra Creek	Exploration Lease (72.5km ²)	NSW RR	29/10/2021	3 years	No change
EL9627 Hunters	Exploration Lease (92.1km ²)	NSW RR	20/12/2023	3 years	EL granted during the reporting period
Permits/Agreements/Licences					
AHIP #C0003049	Aboriginal Heritage Impact Permit	BCS	10/10/2017	10 years	No change
AHIP #C0003887	Aboriginal Heritage Impact Permit	BCS	10/08/2018	23 years	No change
Agreement	Compensation Agreement	FCNSW	17/01/2019	-	No change

Table 4 (Cont.) Key Consents, Leases, Licences and Permits

Instrument	Description	Relevant Authority	Date of Grant	Expiry Date or Duration	Changes During AR Period
Permits/Agreements/Licences (cont.)					
119039 v3	Class 2 - Heavy Vehicle Authorisation Permit	NHVR	02/05/2018	30/01/2024	No change
LN 603648	Crown Lands Licence	DPE- Crown Lands	06/08/2019	-	No change
Agreement	Mining Lease Compensation Agreement	DPE- Crown Lands and Central West LLS	20/03/2020	Until land becomes freehold or relinquishment of ML (and certificate to say rehab completed etc.)	No change
5099691	Radiation Management Licence	NSW EPA		01/10/2024	Licence renewed
5099494	Radiation User Licence	NSW EPA	25/09/2020	25/09/2024	No change
Water Licences					
WAL32068	Water Access Licence	NRAR	18/09/2018	Continuing	No change
WAL28681	Water Access Licence	NRAR	18/09/2018	Continuing	No change
WAL39837	Water Access Licence	NRAR	25/10/2018	Continuing	No change
WAL6679	Water Access Licence	NRAR	13/03/2019	Continuing	No change
WAL42370	Water Access Licence	NRAR	24/05/2019	Continuing	No change
WAL1798	Water Access Licence	NRAR	03/06/2019	Continuing	No change
Water Supply Works Approvals (WSWAs)					
70CA614098	WSWA	NRAR	14/09/2012	12/03/2026	Three production bores and five monitoring wells were constructed at the Sunrise Project borefield during April – June 2023. Following completion of the bores, an application was made to DPE-Water to make the bores inactive so the Non-Urban Water Metering requirements did not apply. This was granted on 22/08/2023. SEM subsequently applied to make the production bores active again so that pump testing could be completed as per the conditions of WSWA 70CA614098. This approval was received on 22 December 2023.
70WA617095	WSWA	NRAR	13/07/2020	09/07/2030	No change

DPHI: NSW Department of Planning, Housing and Industry.

EPA: NSW Environment Protection Agency – within the Department of Climate Change, Energy, the Environment and Water

NRAR: NSW Natural Resources Access Regulator – within the Department of Climate Change, Energy, the Environment and Water

MEG – Mining, Exploration and Geoscience

BCS: NSW Biodiversity, Conservation and Science Directorate – within the Department of Climate Change, Energy, the Environment and Water

FCNSW: Forestry Corporation of New South Wales

NHVR: National Heavy Vehicle Regulator NSW

LLS: Local Land Services

RR: NSW Resources Regulator - within the Department of Regional NSW

4 OPERATIONS SUMMARY

4.1 MINING

As mining (or construction) has not commenced, SEM did not extract or process any ore or limestone for the Project during the reporting period. Furthermore, no off-site product transport was undertaken from the mine. A production summary is shown in Table 5 below.

Table 5 Production Summary

Material		Approved Limit* (tonnes/calendar year)	Actuals		Forecast
			Previous Reporting Period	This Reporting Period	Next Reporting Period
Autoclave feed rate of ore		2.5 million	0	0	0
Off –site Product Transport	Ni and Co metal equivalents as sulphate precipitate products	40,000	0	0	0
	Scandium Oxide	180	0	0	0
	Ammonium Sulphate	100,000	0	0	0
Limestone	Extracted from ML 1769	790,000	0	0	0

*Source: Development Consent DA 374-11-00

4.2 EXPLORATION

Exploration activities during the reporting period were limited to localised rehabilitation tasks.

Historical data was reviewed during the reporting period, and samples archived in anticipation of future exploration activities.

4.3 OTHER ACTIVITIES

Three production bores and five monitoring wells were constructed at the Sunrise Project borefield during the period April – June 2023. A further test bore was drilled in the western borefield, however this bore did not intersect the aquifer and was subsequently rehabilitated. The 1999 test bore known as PB-W1 was decommissioned during the reporting period a licensed driller following the installation of the three production bores. This test bore was no longer required for the Project.

No other activities occurred during the reporting period.

4.4 NEXT REPORTING PERIOD

No significant changes to operations are forecast for the next reporting period i.e. mining (or construction) are not forecast to commence in the next reporting period.

Exploration activities may include additional soil sampling throughout 2024.

5 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

The previous AR (2022 AR for the period 1 January 2022 to 31 December 2022) was submitted to the DPHI on 31 March 2023.

The DPHI responded to the 2022 AR submission (letter dated 27/04/2023) advising they had reviewed the AR and considered that it satisfied the reporting requirements of the Development Consent and the DPHI's *Annual Review Guideline* (October 2015).

The DPHI requested that a copy of the 2022 AR be made publicly available on the company website and ensure the website is up to date with all the required documents. SEM uploaded the 2022 AR to the company website in April 2023 (Table 6).

Actions required to be undertaken as an outcome of the previous AR and actions that have been undertaken and when they were completed are identified below in Table 6.

Table 6 Actions from the Previous Annual Review

Action required from previous AR	Requested by	Action taken by SEM	Where discussed in AR
Make a copy of the 2022 AR publicly available on the SEM website and ensure the website is up to date with all the required documents	DPE	A copy of the 2022 AR was made publicly available on the SEM website in April 2023 and the website checked to ensure it was up to date with all the required documents	This section (Section 5)

6 ENVIRONMENTAL PERFORMANCE

Environmental management at the Project during the reporting period was conducted under the guidance of the approved Environmental Management Plans (EMPs). Mainly low risk activities, including land management activities were undertaken during the reporting period.

EMPs and strategies required under the Development Consent prepared (by SEM) and approved by the DPHI are shown below in Table 7.

Table 7 Environmental Management Plans and Strategies

Description	Current Status		DPHI Approval Date
	Revision	Dated	
Air Quality and Greenhouse Gas Management Plan	3	1/8/2022	12/8/2022
Blast Management Plan	2	24/6/2022	28/06/2022
Biodiversity Management Plan and Revegetation Strategy	3	12/5/2022	4/7/2022
Environmental Management Strategy	2	12/5/2022	1/7/2022
Heritage Management Plan	3	12/5/2022	16/6/2022
Noise Management Plan	4	11/5/2022	12/9/2022
Pollution Incident Response Management Plan	3	15/12/2023	Not Required
Rehabilitation Management Plan*	2	11/07/2019	15/08/2019
Road Upgrade and Maintenance Strategy	2	03/11/2022	14/11/2022
Traffic Management Plan	2	8/02/2023	17/04/2023
Water Management Plan	2	12/5/2022	24/6/2022
- Appendix A Water Balance	2	12/5/2022	27/6/2022
- Appendix B Surface Water Management Plan	2	12/5/2022	27/6/2022
- Appendix C Groundwater Management Plan	2	11/5/2022	13/5/2022

* Note the Rehabilitation Management Plan was replaced by the Rehabilitation Strategy in Modification 7 and will be prepared during the next reporting period.

The Traffic Management Plan (Mod 7 version) was submitted to the DPHI in February 2023 for approval, and was subsequently approved on 17 April 2023. In addition, a Pollution Incident Response Management Plan (PIRMP) (as required by S.153A of the *Protection of the Environment Operations Act (1997)* was prepared during the reporting period. The PIRMP does not require approval from the NSW Government, therefore this Plan was prepared and placed directly on the SEM website.

All approved EMPs can be found on the SEM website at <https://www.sunriseem.com/sunrise-project/management-plans>.

6.1 AIR QUALITY

The Development Consent (Schedule 3, Condition 23) requires the preparation of an Air Quality and Greenhouse Gas Management Plan (AQGGMP) for the Project. A construction phase AQGGMP (Mod 7 version) was approved by DPHI on 12 August 2022. The AQGGMP outlines the control strategies for managing air quality, and the monitoring program to measure performance.

6.1.1 Environmental Management

Control Strategies

Dust from vehicle movements on unsealed roads was identified as a potential impact to sensitive receivers surrounding the mine site. Therefore, SEM implemented the following air quality management measures to minimise and mitigate these impacts:

- Vehicle speeds on-site were limited to 40 kilometres per hour (km/h) on formed tracks and 20 km/h on unformed tracks.

Effectiveness of Control Strategies

No drilling took place during the reporting period, therefore the control strategies implemented were considered to be effective.

Variations from Proposed Control Strategies

There were no variations from the proposed control strategies during the reporting period.

Monitoring Programme

As required by the Development Consent (Schedule 3, Condition 23) and subsequently described in the approved AQGGMP, the air quality monitoring program for the Project includes the monitoring of:

- PM₁₀ (particulate matter with an aerodynamic diameter less than or equal to 10 micrometres [µm]);
- PM_{2.5} (particulate matter with an aerodynamic diameter less than or equal to 2.5 µm); and
- Depositional dust (insoluble solids).

The location of the monitoring stations is shown in Figure 2.

The real time (continuous) particulate monitors (PM₁₀ and PM_{2.5}) were required to be in place prior to the commencement of construction activities on ML 1770, in accordance with Condition M2.2 of EPL 21146. Two solar powered T640x monitors were installed at two locations in the vicinity of the Project in December 2019. One was installed adjacent to the Automatic Weather Station (AWS) and approved accommodation camp location, and the other on the northern boundary of the mine site (Figure 2). Both monitors have been operating since they were installed in December 2019. This allows time for collection of background data, and calibration of the units prior to the commencement of construction activities on ML 1770.

Depositional dust monitoring is undertaken at locations representative of nearby sensitive receivers, via a network of four static dust deposition gauges. In accordance with the approved AQGGMP, four dust deposition gauges were installed in January 2019 (Figure 2), prior to exploration or construction activities being undertaken. Monitoring was undertaken monthly from the four locations during the reporting period.

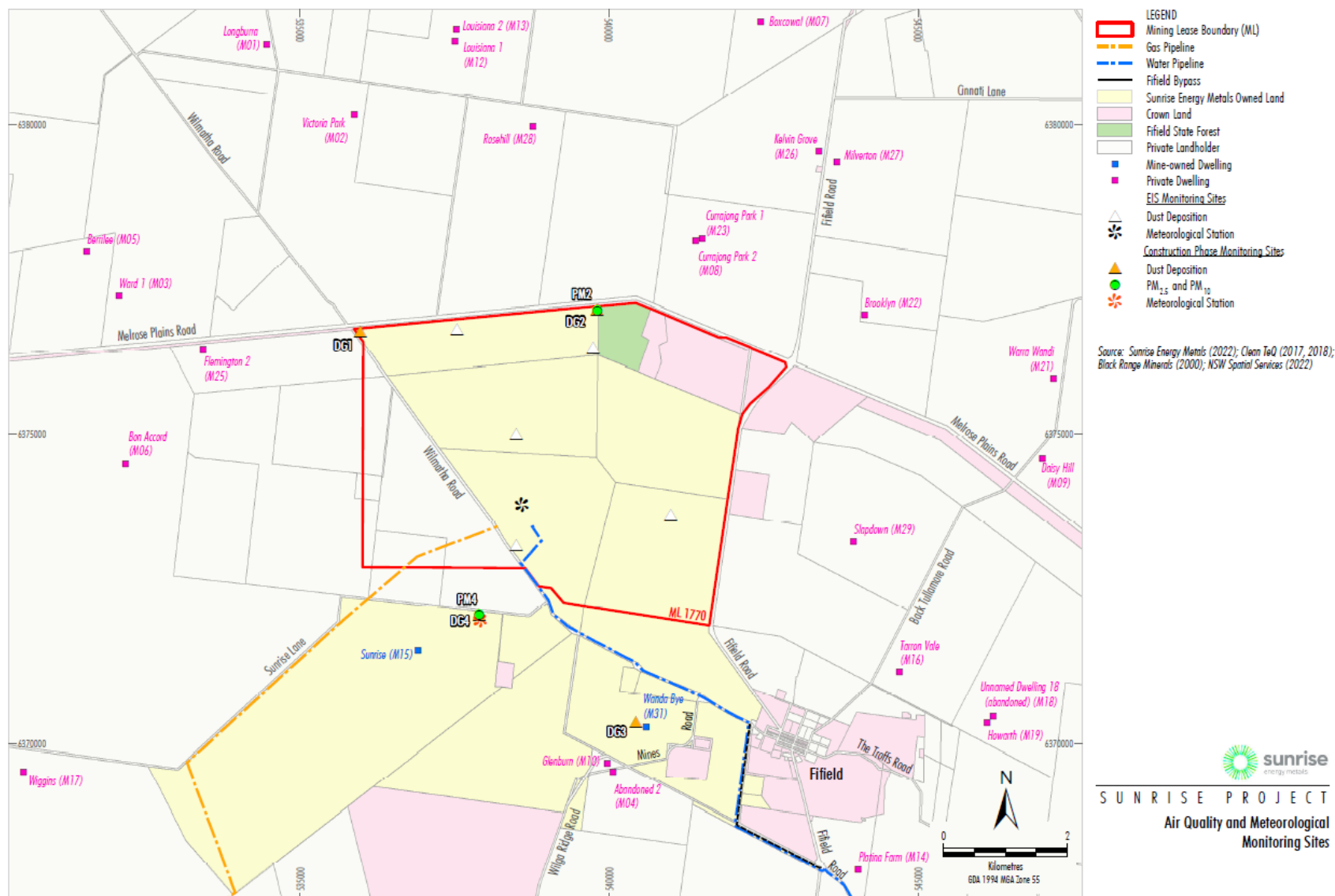


Figure 2 Air quality and meteorological monitoring sites

6.1.2 Environmental Performance

Depositional Dust Monitoring

Dust deposition results were generally higher during 2023 compared to the previous year. This is assumed to be due to the drier conditions experienced in 2023 compared to the significantly wetter years prior. Agricultural activities (e.g. ploughing, harvesting and/or harvesting truck movements) have contributed to the higher dust levels as no exploration activities were conducted on ML 1770 during the reporting period. DG2 was significantly elevated compared to the other dust gauges across most months and is assumed to be as a result of agricultural activities (i.e. harvesting) at the neighbouring property. Results for each month have been published on the SEM website at <https://www.sunriseem.com/sunrise-project/reports/> and are presented below in Figure 3.

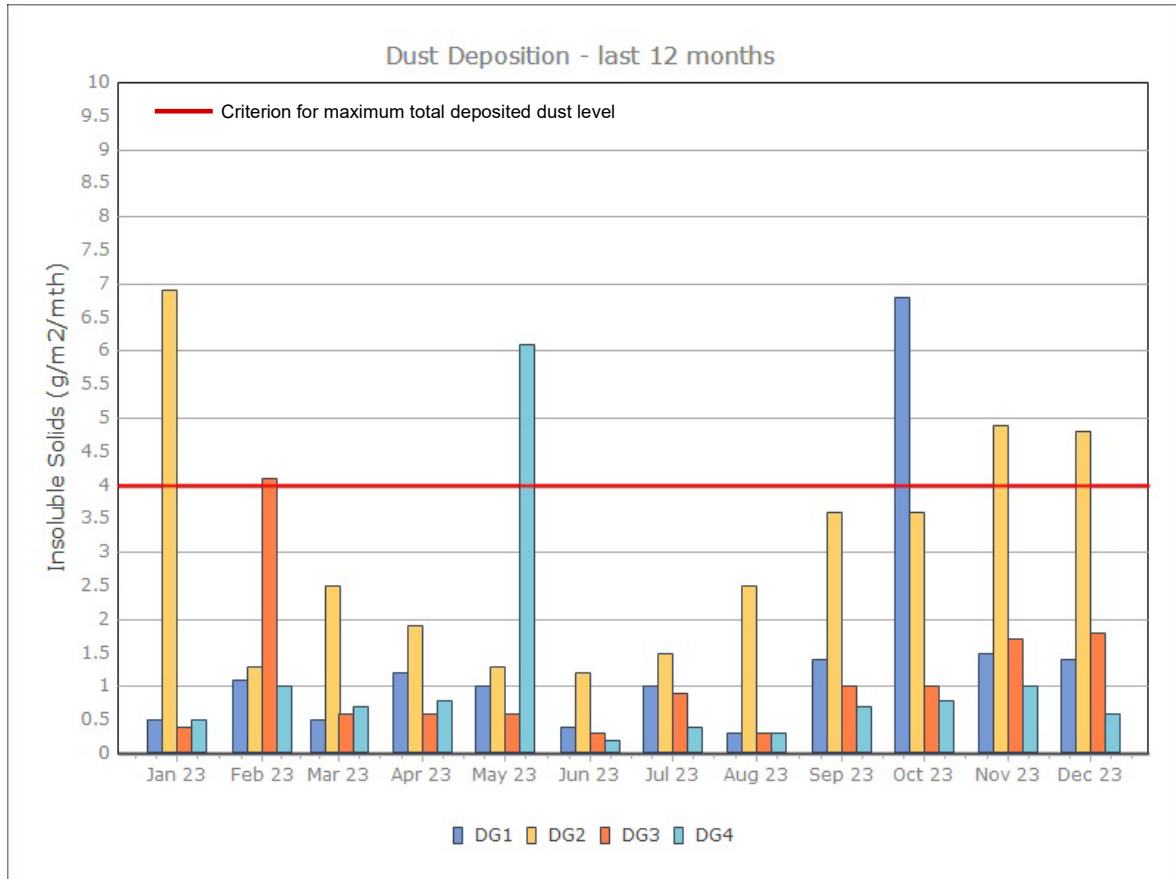


Figure 3 Dust Deposition (Insoluble Solids) 2023

Table 8 in Condition 21, Schedule 3 of the Development Consent sets the long-term criteria for deposited dust (insoluble solids). The permitted maximum total deposited dust level averaged over a year is 4 grams per metre squared per month ($\text{g/m}^2/\text{month}$), while the maximum increase (incremental increase due to the development on its own) is $2 \text{ g/m}^2/\text{month}$. Table 8 shows the 2023 reporting period annual average, along with the previous data. The baseline monitoring data (annual average) collected for the Environmental Impact Statement (EIS) (September 1997 – August 2000) is also shown as a comparison.

Table 8 Maximum Total Deposited Dust Level - Annual Average

Year	Criterion	DG1	DG2	DG3	DG4	ALL
2023	4g/m ² /month	1.4	2.9	0.8	1.4	1.6
2022		1.1	1.3	0.5	0.6	0.9
2021		2.1	1.0	3.7	1.8	2.1
2020		3.1	2.6	2.3	3.2	2.8
2019		3.4	2.8	2.5	3.0	2.9
EIS (2000)						2.5

Particulate Matter Monitors

Monitoring results have been reviewed (as per Section 11.1 of the approved AQGGMP) and a summary is presented below. Daily data for PM₁₀ and PM_{2.5} is shown in Appendix 1B, 1C and 1D. No exceedances of the 24-hour average criteria for PM₁₀ and PM_{2.5} occurred at monitoring sites PM2 or PM4 (see Table 9).

Table 9 Short term impact assessment criterion for particulate matter - 2023 exceedances

Pollutant	Averaging Period	Criterion	PM2	PM4
PM ₁₀	24 hour	50 µg/m ³	nil	nil
PM _{2.5}	24 hour	25 µg/m ³	nil	nil

a - excluding extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.

Condition 21, Schedule 3 (Table 6) of the Development Consent sets the long-term criteria for particulate matter (excluding extraordinary events such as bushfires, dust storms etc.). The 2023 results against the criterion are shown below in Table 10.

Table 10 Long term impact assessment criteria for particulate matter - 2023 results

Year	PM ₁₀ (µg/m ³)		PM _{2.5} (µg/m ³)		TSP ¹ (µg/m ³)	
	PM2	PM4	PM2	PM4	PM2	PM4
2023	12.79	13.18	4.67	4.79	31.97	32.95
2022	9.14	8.88	3.19	3.14	22.82	22.66
2021	12.5	11.8	4.2	3.9	31	30
2020	10.4	12.9	3.6	4.25	26	32
Criterion	25		8		90	

¹ Estimated based on PM₁₀ being 40% of TSP levels (NSW Minerals Council, 2000).

a - excluding extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Secretary.

6.1.3 Reportable Incidents

There were no reportable incidents during the reporting period.

No community complaints were received regarding air quality from nearby sensitive receivers at any time during the reporting period.

6.1.4 Management Issues and Implemented Actions

Management Issue:

No management issues occurred with the particulate matter monitors during the reporting period.

Implemented Action:

No actions were required to be undertaken during the reporting period.

6.1.5 Further Improvements

No further improvements are proposed.

6.2 METEOROLOGICAL MONITORING

The Development Consent (Schedule 3, Condition 25) requires a meteorological station to operate in the vicinity of the mine site for the life of the development (after establishment). Other than described below, no meteorological monitoring was required to be undertaken at other Project areas (e.g. ML 1769) during the reporting period.

6.2.1 Environmental Management

Monitoring Programme

The AWS [meteorological station] (Figure 2), located on property owned by SEM (in close proximity to ML 1770), continued to collect meteorological data during the reporting period in accordance with the required parameters listed in Condition M4 of the EPL. The AWS (installed in 2018) measures real time wind speed and direction (at 10 m), temperature (at 2 m and 10 m), barometric pressure, humidity, solar radiation and rainfall.

Real time meteorological data from the AWS can be accessed remotely. The data has been used to undertake noise modelling for MOD 7 as well as proactive rainfall runoff predictions and thereby surface water monitoring opportunities.

Six monthly independent maintenance and calibration of the AWS is also undertaken to ensure valid data is being recorded.

Effectiveness of Monitoring Programme

The strategies implemented during the reporting period were considered to be effective.

Variations from Proposed Control Strategies

There were no variations from the proposed control strategies during the reporting period.

6.2.2 Environmental Performance

Temperature

Average monthly maximum and minimum temperatures from data recorded (temperature at 2m) by the AWS are shown below in Figure 4 . The highest mean monthly maximum temperature (24.63 degrees Celsius [°C]) occurred in December and the lowest mean monthly minimum temperature (9.01°C) occurred in June. This compares to 33.4°C (January) and 2.6°C (July) stated in the Project Environmental Impact Statement (EIS) as recorded at the Condobolin Agricultural Research Station (Station #50052) (Appendix 2). The maximum and minimum daily temperatures for the year were generally lower than average.

The highest maximum daily temperature of 41.2°C was recorded in December and the lowest minimum daily temperature in July of -4.4°C.

.

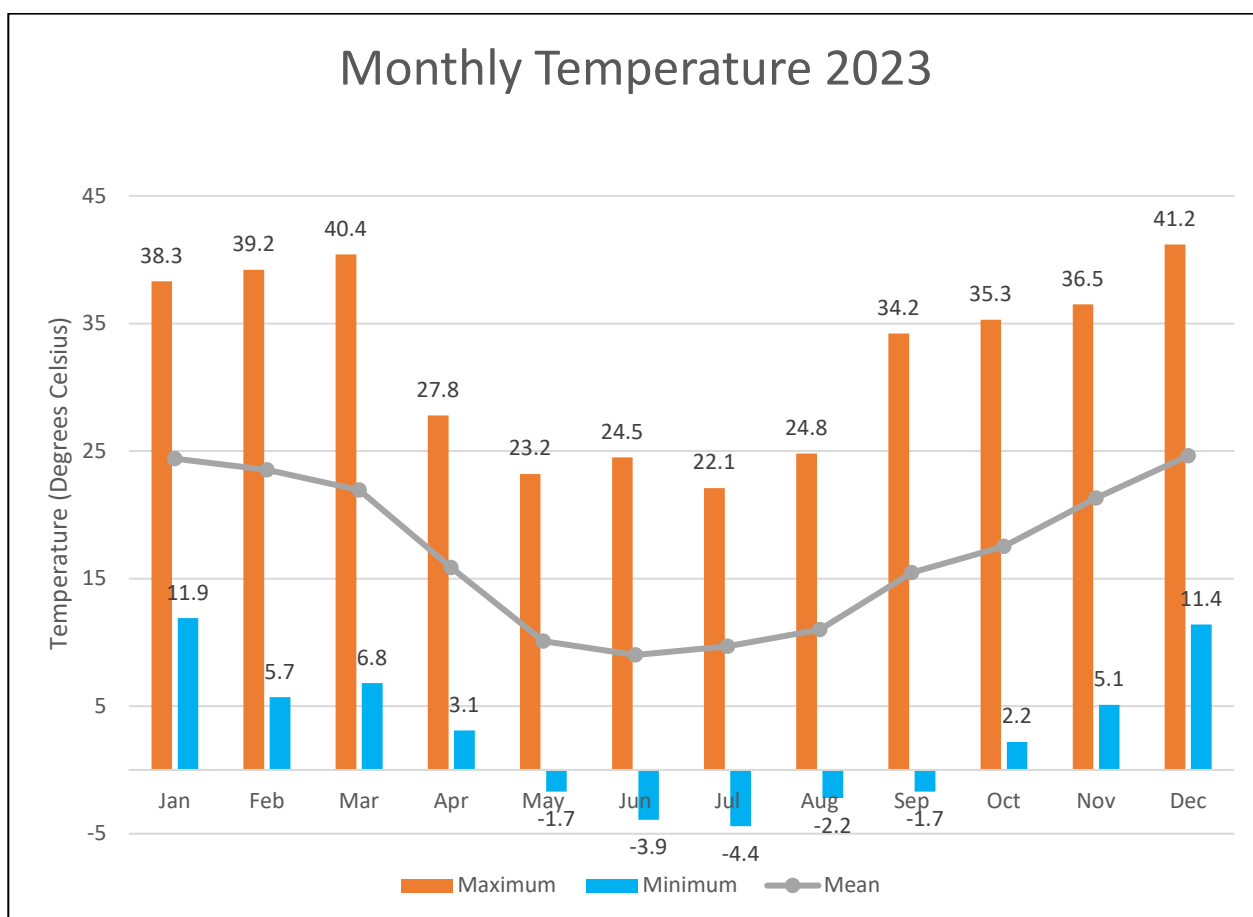


Figure 4 Monthly Temperature Records for 2023 at the Sunrise AWS

Rainfall

Total rainfall of 444 mm was recorded by the AWS during the 2023 reporting period as shown in Table 11 and Figure 5 below. This total is below the mean annual rainfall described in the EIS of 480 mm recorded at the Murrumbogie Station at Trundle (Murrumbogie Station (#50028) (Figure 6). This is the nearest long-record daily rainfall station located approximately 30 km southeast of the mine site. Monthly totals are also shown in Table 11.

Rainfall was less than the regional average in most months, except for January, March, November and December.

Annual rainfall recorded by the AWS over the period 2019 – 2023 is shown in Figure 6.

Table 11 Monthly rainfall recorded by the AWS (2019-2023)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2019	50	62	13	0	29	14	19	9	6	13	20	0	236
2020	24	60	96	143	15	48	73	68	35	90	28	115	795
2021	93	116	200	0	16	89	72	37	51	28	179	87	968
2022	108	15	83	132	115	9	54	88	116	180	101	17	1019
2023	97	1	68	32	5	36	30	11	5	19	60	79	444
Average (Murrumbogie Station 50028)	51	43	41	37	39	39	36	37	33	42	38	44	480

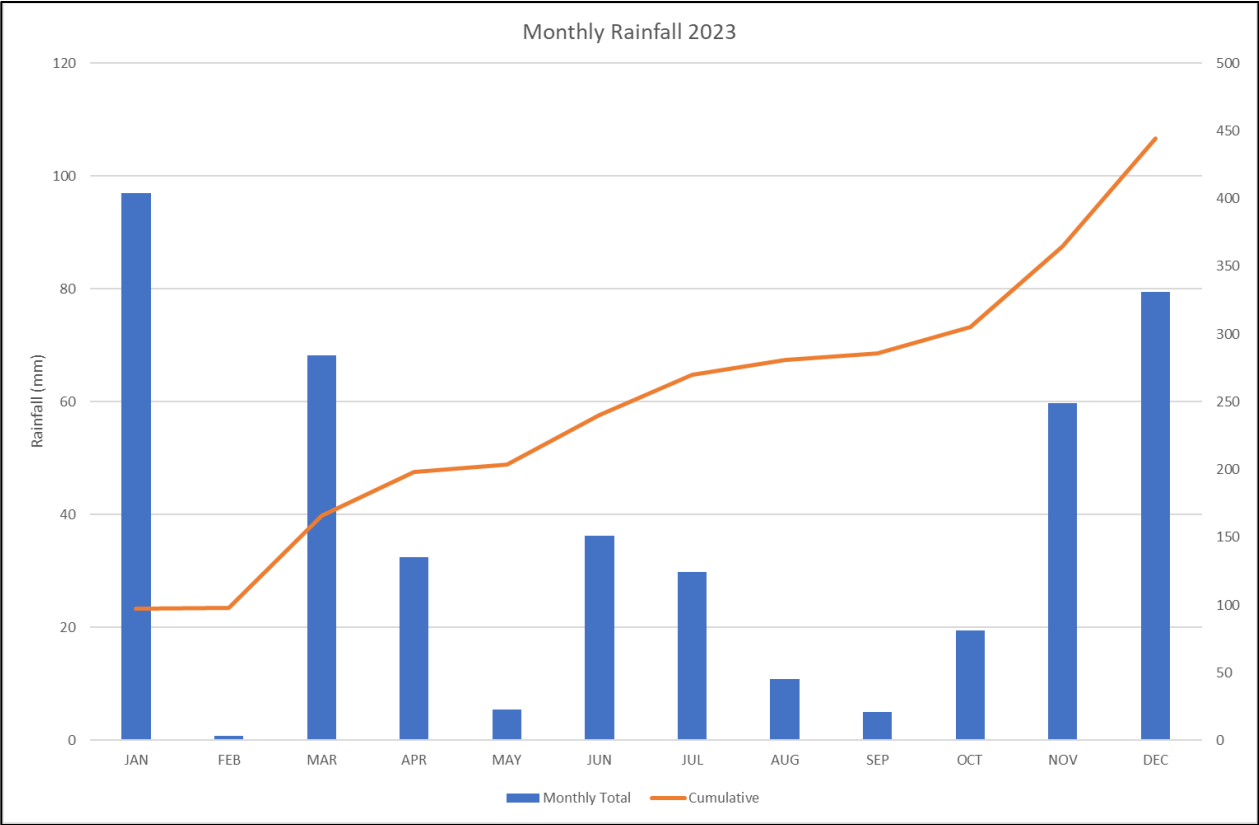


Figure 5 Monthly Rainfall Records (and cumulative) for the 2023 calendar year at the Sunrise AWS

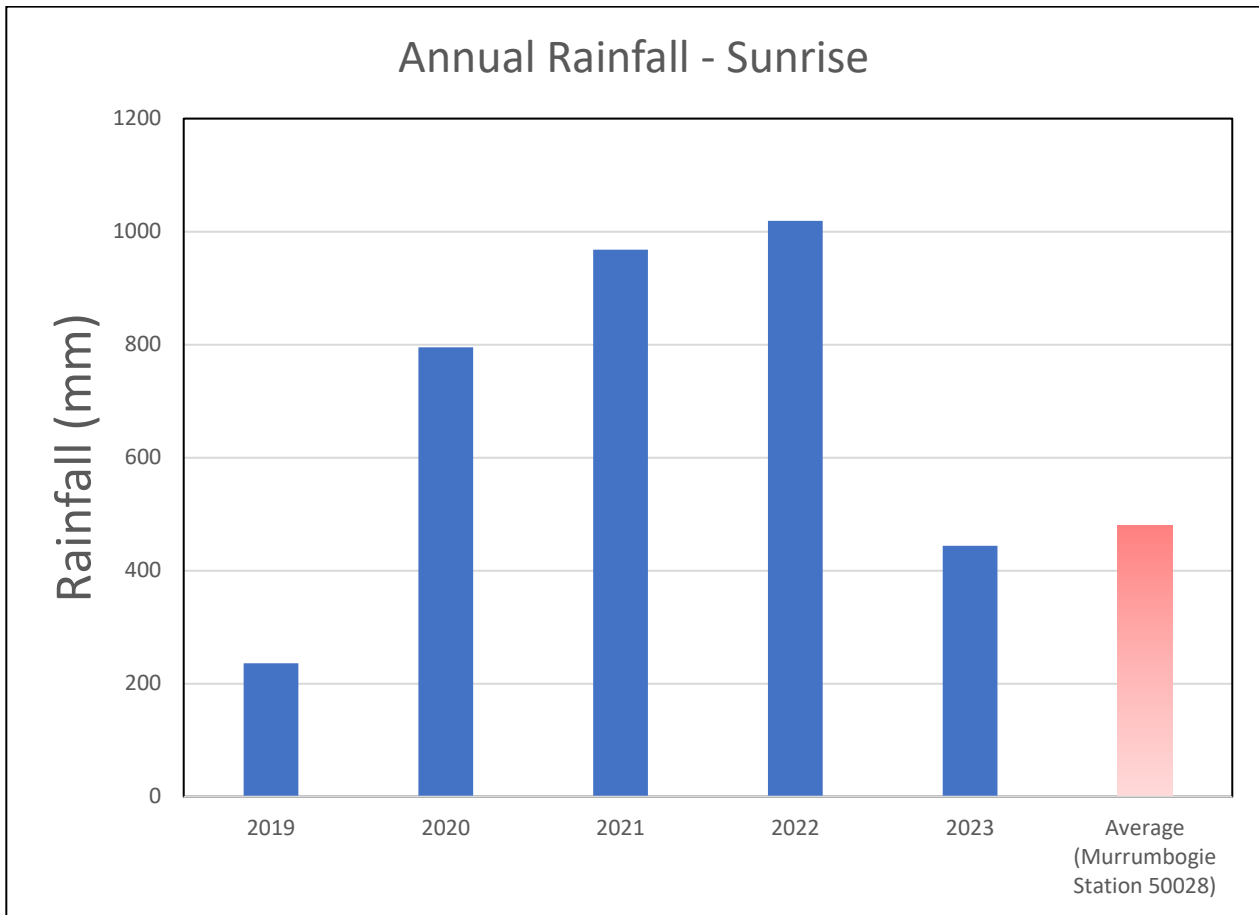


Figure 6 Annual Rainfall Trend (2019-2023)

Wind

Wind speed and direction (blowing from) data for the 2023 reporting period are presented in the wind rose in Figure 7. Wind speed values are displayed as metres per second (m/s). Monthly wind roses are presented in Appendix 2A.

The prevailing wind directions during the reporting period were winds blowing from the north-east and south-west directions. Summer and Spring months had more north-east and south-west winds, winter was predominantly southerly and south-west.

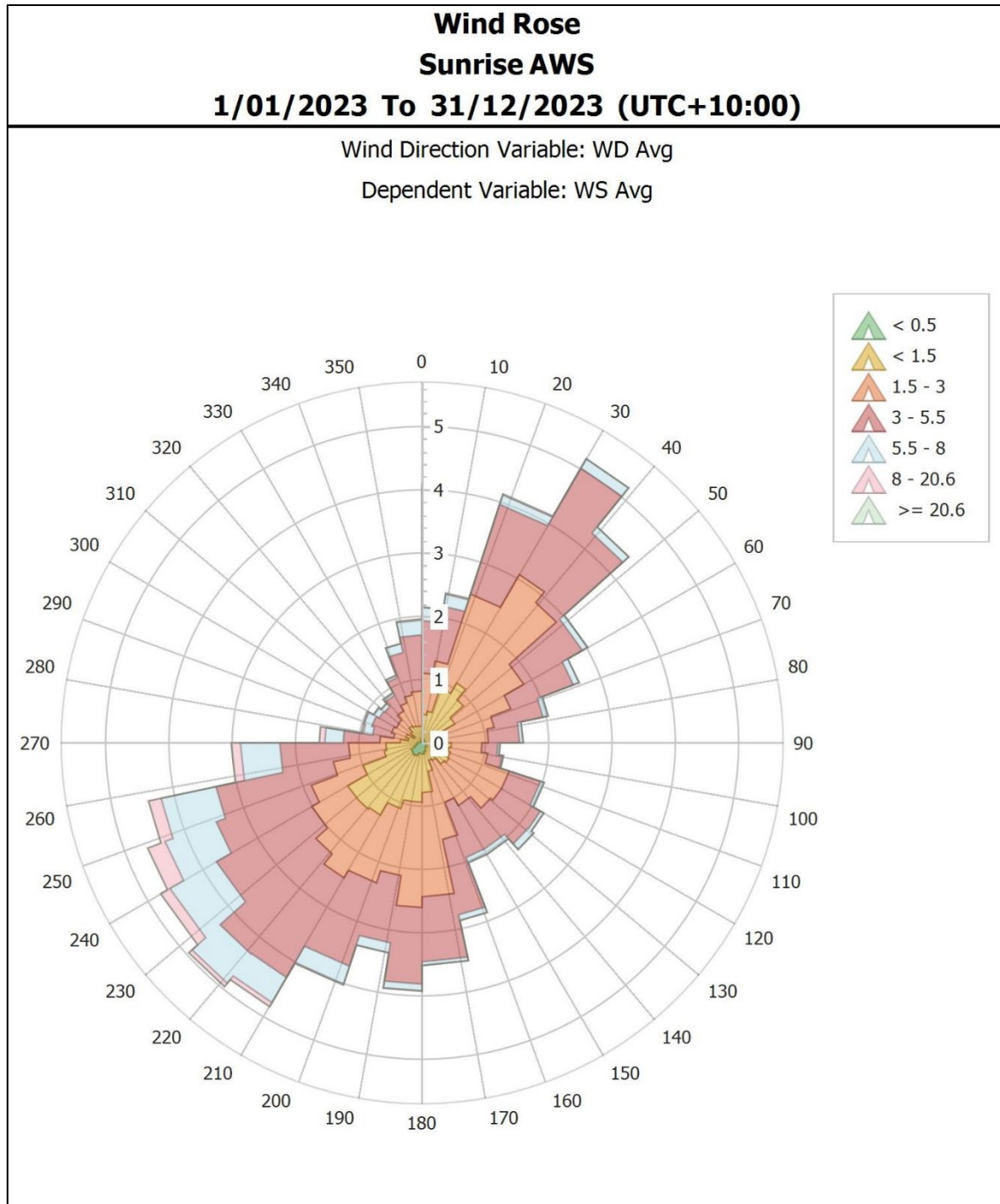


Figure 7 Annual Wind Rose 2023 (Wind Speed metres/sec)

6.2.3 Reportable Incidents

There were no reportable incidents during the reporting period,

6.2.4 Further Improvements

No further improvements are proposed for the next reporting year.

6.3 CONSTRUCTION NOISE

The Development Consent (Schedule 3, Condition 9) requires development of a Noise Management Plan (NMP) for the Project. The construction phase NMP (Mod 7 version) was approved by the DPHI on the 12 September 2022.

Other than described below, no noise monitoring was required to be undertaken at other Project areas (e.g. ML 1769) during the reporting period.

6.3.1 Environmental Management

Control Strategies

Noise from construction activities was identified in the NMP as a potential impact to sensitive receivers surrounding the mine site. The noise management and control measures to be implemented during the construction phase of the Project are consistent with Strategies 1 to 7 described in the ICNG.

Noise management and control measures include:

- planning controls; and
- controls on construction activities.

Effectiveness of Control Strategies

None of the control strategies listed above were required to be implemented during the reporting period as construction activities are yet to commence. No noise complaints were received during the reporting period.

Variations from Proposed Strategies

There were no variations from the proposed control strategies during the reporting period.

Monitoring Programme

The NMP states the noise monitoring program will commence prior to the commencement of Project construction activities. Attended noise monitoring will be conducted at various locations considered representative of sensitive receivers in the areas that may be potentially influenced by initial construction activities.

Operator-attended noise monitoring will be conducted on a quarterly basis at four locations representative of the privately-owned receivers most likely to be affected by noise generated by the initial construction activities. Monitoring would be conducted in accordance with *Australian Standard 1055:2018 Acoustics – Description and measurement of environmental noise*, the Noise Policy for Industry and the requirements (including applicable meteorological conditions) of Condition 6, Schedule 3 of the Development Consent.

Quarterly attended noise monitoring was commenced in Q1 in 2019 and ceased in Q1 in 2020 at four nearby sensitive receivers.

Variations from Proposed Monitoring Programme

No construction activities were planned for 2023, and as more than 12 months of monitoring had already been conducted as a baseline, further monitoring was not deemed necessary. The attended noise monitoring programme will recommence prior to the start of construction activities.

6.3.2 Environmental Performance

Monitoring Results

Noise monitoring was not undertaken during 2023.

6.3.3 Reportable Incidents

There were no reportable incidents during the reporting period.

6.3.4 Further Improvements

No further improvements are proposed.

6.4 EROSION AND SEDIMENT

The Development Consent (Schedule 3, Condition 30(b)) requires a detailed description of erosion and sediment control strategies in the Surface Water Management Plan (SWMP). A construction phase SWMP (Mod 7 version) for the Project was approved by the DPHI on the 27 June 2022.

6.4.1 Reportable Incidents

There were no reportable incidents during the reporting period.

6.4.2 Further Improvements

The erosion control measures outlined in the SWMP will be implemented prior to commencement of initial Project construction activities, including the construction of sediment ponds and installation of silt fences and hay bales where necessary to control erosion. Disturbance areas will also be kept to a minimum to minimise erosion and sedimentation issues.

6.5 FLORA

Management of flora for the initial Project construction activities is described in the approved construction phase Biodiversity Management Plan and Revegetation Strategy (BMP-RS). The BMP-RS is required by Conditions 33 and 35, Schedule 3 of the Development Consent.

6.5.1 Environmental Management

Control Strategies

Vegetation clearance activities are managed using the Ground Disturbance Permit process and Vegetation Clearance Protocol (VCP) as outlined in the BMP-RS. The VCP involves:

- Clearing restrictions;
- Pre-clearance fauna surveys;
- Applying clearing methods to minimise impact on fauna;
- Salvaging of material for habitat enhancement;
- Installation of artificial bat roosts; and
- Reporting.

Vegetation clearance activities associated with construction of the Project will commence during a future reporting period and will be implemented using the Ground Disturbance Permit process and VCP as outlined in the BMP-RS.

Effectiveness of Control Strategies

No control strategies were required to be implemented during the reporting period.

Variations from proposed Control Strategies

There were no variations from the proposed control strategies during the reporting period.

6.5.2 Reportable Incidents

There were no reportable incidents during the reporting period.

6.6 FAUNA

Management of fauna for the initial Project construction activities is described in the approved construction phase BMP-RS. The BMP-RS is required by Schedule 3, Conditions 33 and 35 of the Development Consent.

6.6.1 Environmental Management

Control Strategies

Vegetation clearance activities are managed using the Ground Disturbance Permit process and VCP as outlined in the BMP-RS. No vegetation clearing activities were undertaken during the reporting period.

Vegetation clearance activities associated with construction of the Project will commence during a future reporting period and will be implemented using the Ground Disturbance Permit process and VCP as outlined in the BMP-RS.

The Development Consent (Schedule 3, Condition 35(c)) requires measures to identify and manage significant impacts on threatened fauna species not identified in the EIS. As described in the BMP-RS, no threatened fauna species are likely to be significantly affected by the Project, therefore measures to manage significant impacts are not required and general measures to manage impacts on threatened species will be applied (e.g. implementing the VCP).

Effectiveness of Control Strategies

No control strategies were required to be implemented during the reporting period.

Variations from proposed Control Strategies

There were no variations from the proposed control strategies during the reporting period.

6.7 WEEDS AND PESTS

Weeds and pests were managed as per the approved construction phase BMP-RS.

6.7.1 Environmental Management

Control Strategies

In accordance with the BMP-RS, control strategies for weed management on SEM-owned land include the following:

- identification of weeds by regular site inspections;

- mechanical removal of identified noxious weeds and/or the application of approved herbicides in authorised areas;
- implementing follow-up site inspections to determine the effectiveness of weed control measures; and
- where practicable, prevention of the establishment of new weeds on SEM-owned land by minimising seed transport of weed species to and from the Project using a vehicle inspection process (primarily for use on agricultural and earthmoving equipment that are likely to carry weed seeds),

The implementation of weed management strategies occur according to seasonal and climatic requirements.

The pest control activities within the Project areas are described in the BMP-RS and include the following measures:

- regular property inspections to assess the status of pest populations within SEM owned- land;
- implement pest control methods for declared pests (i.e. rabbits, pigs and wild dogs) in accordance with Pest Control Orders under the NSW *Local Land Services Act, 2013*; and
- inspections to assess the effectiveness of control measures implemented and review these if necessary.

Effectiveness of Control Strategies

Weeds

The control strategies implemented during the reporting period were considered effective.

Several weed spraying events occurred during the reporting period including:

- a total of 80-man hours of weed spraying to control Bathurst Burr weed; and
- broad acre spraying of weeds on cultivated land on properties located within the MLs held by SEM (Syerston, Kingsdale and Slapdown).

Nine African Boxthorn plants were removed from the property. Property inspections resulted in no sightings of the Apple of Sodom weed.

Feral Pests

Feral animal sightings were recorded in a register during the reporting period. No coordinated fox control programs were conducted during 2023.

An aerial feral pig eradication program organized by local landholders was conducted in April 2023. Thirty-eight (38) feral pigs were eradicated from ML 1770.

Variations from Proposed Control Strategies

There were no variations from the proposed control strategies during the reporting period.

6.7.2 Environmental Performance

Monitoring

Weekly and monthly monitoring of weeds and pests continued as described in the BMP-RS.

6.7.3 Performance Outcomes

Weed Management

The performance indicator for weed management is the extent of weed species, which will be reduced then maintained at 40% below the baseline weed abundance percentage across the mine site, and that no new priority weed species will be introduced. Weed control actions undertaken, as described above, were considered effective, however the performance indicator was not applicable due to insufficient baseline data, as described in Section 6.7.5.

Pest Management

The performance indicator is the extent of feral animal species, which will be reduced then maintained at 25% below the feral animal abundance baseline across the mine site. Feral animal control actions undertaken, as described above, were considered effective however, the performance indicator was not applicable due to insufficient baseline data, as described in Section 6.7.5.

6.7.4 Reportable Incidents

There were no reportable incidents during the reporting period.

6.7.5 Further Improvements

Consideration will be given to conducting an additional baseline survey in the future (prior to commencement of construction activities on ML 1770) as the 2019 “drought” baseline survey [4] is not considered representative. This was confirmed by the baseline survey’s findings:

- *Overall the study areas exhibited a low abundance of weeds in line with the presence of stock, the time of year surveys were conducted and the drought conditions.*
- *In general, populations of vertebrate pest species were in low concentrations across the two study sites. This was due mainly to the severe drought conditions experienced translating to meagre food and water available to support significant populations.*

6.8 ABORIGINAL HERITAGE

The Development Consent (Schedule 3, Condition 40) requires the development of a Heritage Management Plan (HMP) for the Project. The HMP (Mod 7 version) was submitted to the DPHI for approval and subsequently approved on the 16 June 2022.

Aboriginal Heritage Impact Permits (AHIPs) (#C0003049 and #C0003887) are issued for the Project. AHIP #C0003049 was issued by the NSW Office of Environment and Heritage (OEH) on the 10th October 2017 for a period of 10 years and covers ML 1770 and other components of the Project (e.g. limestone quarry, rail siding etc) [5]. AHIP #C0003887 was issued by the OEH on the 10th August 2018 for a period of 23 years and covers the accommodation camp on the Sunrise property [6].

6.8.1 Environmental Management

Control Strategies

The HMP and AHIPs set out the salvage, excavation, monitoring and other management measures required to be undertaken for each of the registered archaeological sites and other Aboriginal objects within the Project area. In general, the strategies include protection, investigation, collection, excavation, documentation and storage of Aboriginal objects in an on-site temporary “Keeping Place”.

Effectiveness of Control Strategies

No control strategies were required to be implemented during the reporting period.

Variations from Proposed Control Strategies

There were no variations from the proposed control strategies during the reporting period.

6.8.2 Environmental Performance

Monitoring

No activities impacting on Aboriginal cultural heritage were undertaken during the reporting period.

Performance Outcomes

No non-compliance issues were identified during the reporting period.

6.8.3 Reportable Incidents

There were no reportable incidents during the reporting period.

6.8.4 Further Improvements

No further improvements are proposed for the next reporting period.

6.9 EUROPEAN HERITAGE

The Development Consent (Schedule 3, Condition 40) requires the preparation of a HMP for the Project. The HMP (Mod 7 version) was submitted to the DPHI for approval and subsequently approved on the 16 June 2022.

Sites of known and potential historic heritage have been identified within the Project area and are described in the HMP. These sites include the old magnesite mining area on ML 1770; the pastoral outstation on ML 1770; and pine trunk telephone poles and a log hut along the gas pipeline route. All of these sites have been assessed as being significant on the local level, however no sites of State significance have been identified in the Project area.

No impact to any sites of historic heritage occurred during the reporting period. Prior to the commencement of construction activities, sites recommended for avoidance (such as the pastoral outstation) will be temporarily fenced to avoid any inadvertent disturbance.

6.9.1 Reportable Incidents

There were no reportable incidents during the reporting period.

6.9.2 Further Improvements

No further improvements are proposed for the next reporting period.

7 WATER MANAGEMENT

7.1 WATER SUPPLY

A summary of the Water Access Licences (WALs) held by SEM is shown in Table 12 below.

Table 12 Summary of Project Water Access Licences

Water Licence #	Water Sharing Plan, Source, Management Zone	Entitlement (Share component - Units)	Passive Take/Inflows (ML)	Active Pumping (ML)	TOTAL (ML)
Groundwater					
WAL32068	<i>Water Sharing Plan for the Lachlan Alluvial Groundwater Sources 2020.</i> Upper Lachlan Alluvial Groundwater Source. Upper Lachlan Alluvial Zone 5 Management Zone	3,154	-	0	0
WAL28681 (pit dewatering)	<i>Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2011.</i> Lachlan Fold Belt Murray Darling Basin Groundwater Source. Lachlan Fold Belt MDB (Other) Management Zone	243	0	0	0
Surface Water					
WAL6679	<i>Water Sharing Plan for the Lachlan Regulated River Water Source 2016.</i> Lachlan Regulated River Water Source.	123 ¹	-	0	0
WAL42370		0 ²	-	0	0
WAL1798		300 ¹	-	0	0

Notes:

ML – megalitre for the previous water year

¹ General Security

² High Security

In addition, SEM also holds WAL39837 (766 units) in the Upper Lachlan Alluvial Groundwater Source, Upper Lachlan Alluvial Zone 5 Management Zone however, this WAL does not form part of the Project water supply.

7.1.1 Surface Water

No surface water was extracted or used during the previous water year as shown in Table 12 above. However on 20th December 2023, 423 units were traded on the temporary market (WAL6679 and WAL1798).

SEM holds Water Supply Works Approval (WSWA 70WA617095) for surface water extraction infrastructure located next to the Project borefields. The WSWA was not varied during the reporting period.

7.1.2 Groundwater

No groundwater was extracted from the Project borefields during the previous water year (Table 12). As shown in section 7.1 above, SEM holds three groundwater Water Access Licences:

- WAL 32068 in the Upper Lachlan Alluvial Groundwater Source (Upper Lachlan Alluvial Zone 5 Management Zone) for 3,154 share components under the Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources 2020;
- WAL 39837 in the Upper Lachlan Alluvial Groundwater Source (Upper Lachlan Alluvial Zone 5 Management Zone) for 766 share components under the Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources 2020 (does not form part of the Project water supply); and
- WAL 28681 in the Lachlan Fold Belt Murray-Darling Basin (MDB) Groundwater Source (Lachlan Fold Belt MDB [Other] Management Zone), for 243 share components under the Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020.

SEM holds Water Supply Works Approval (WSWA 70CA614098) for groundwater bores located at the Project borefields. The WSWA was amended (19/9/2022) by DPE-Water to include a new metering equipment condition and related recording and reporting conditions to apply from 1 December 2022. The commencement of these new conditions was subsequently delayed by DPE Water until 1 June 2023.

Three production bores and five monitoring wells were constructed at the Sunrise Project borefield during April – June 2023. Details of the new monitoring wells are shown in Table 13 below. Following completion of the bores, an application was made to DPE-Water to make the bores inactive so the new metering requirements did not apply. This was granted on 22 August 2023.

Table 13 New Monitoring Wells – Construction Details

	Construction Date	Screened Interval (m)	Total Depth (m)
SRLMW03	26 June 2023	115-121	123
SRLMW04	26 June 2023	118-124	125
SRLMW06A	20 June 2023	115-121	132
SRLMW06B	22 June 2023	82-88	90
SRLMW06C	23 June 2023	15-21	22

In preparation to commence pump testing, SRL Ops subsequently applied to make the new production bores active so that pump testing could be completed as per the conditions of WSWA 70CA614098. This approval was received on 22 December 2023, with pump testing scheduled to commence in January 2024.

7.2 SURFACE WATER

The Development Consent (Schedule 3, Condition 30) requires the development of a Water Management Plan (WMP) which must include a SWMP for the Project (Schedule 3, Condition 30(b) of the Development Consent). The construction phase WMP (Mod 7 version), including the construction phase SWMP, was approved by DPHI on 26 June 2022.

The Mod 7 version of the SWMP was approved by DPHI on the 27 June 2022.

7.2.1 Environmental Management

Monitoring Programme

Despite there being a number of rainfall events during the year, no event generated enough surface water flow to enable surface water monitoring to take place.

Surface water monitoring locations within and surrounding ML 1770 are shown in Figure 8.

7.2.2 Reportable Incidents

There were no reportable incidents to DPHI for the reporting period.

7.2.3 Further Improvements

No further improvements are proposed for the next reporting period.

7.3 GROUNDWATER

The Development Consent (Schedule 3, Condition 30) requires the development of a WMP which must include a Groundwater Management Plan for the Project (Schedule 3, Condition 30 (c) of the Development Consent). The construction phase WMP (Mod 7 version), including the construction phase Groundwater Management Plan, was approved by DPE on 26 June 2022.

The Mod 7 version of the Groundwater Management Plan was approved by DPHI on 13 May 2022. This version was updated to include references to MOD 7 and includes trigger levels at several bores surrounding the Project borefield, that have been agreed between SEM and DPE-Water.

7.3.1 Environmental Performance

Monitoring – Mining Lease

Two groundwater monitoring events occurred in ML 1770 during the reporting period. Water samples were collected for analysis and standing water levels (SWLs) were measured in May and November 2023. Groundwater monitoring locations within and surrounding ML 1770 are shown on Figure 9. Manually gauged and recorded standing water level results as well as results of continuous measurements recorded by automatic SWL dataloggers are shown in Appendix 5A. Groundwater quality results from the sampling events are shown in Appendix 5B.

The standing water level measurements and water quality data have provided important baseline information for the site.

Monitoring – Borefields

Two groundwater monitoring events at the borefields occurred during the reporting period, with water samples collected for analysis and SWLs measured in May and November 2023. Manually gauged and recorded SWL results and results of continuous measurements recorded by automatic SWL dataloggers are shown in Appendix 5A. Groundwater monitoring locations within the borefields are shown in Figure 10. Groundwater quality results from both monitoring events are shown in Appendix 5B.

The groundwater standing water level measurements and water quality results have provided important baseline information on the borefields.

7.3.2 Reportable Incidents

There were no reportable incidents during the reporting period.

7.3.3 Further Improvements

No further improvements were implemented during the reporting period.

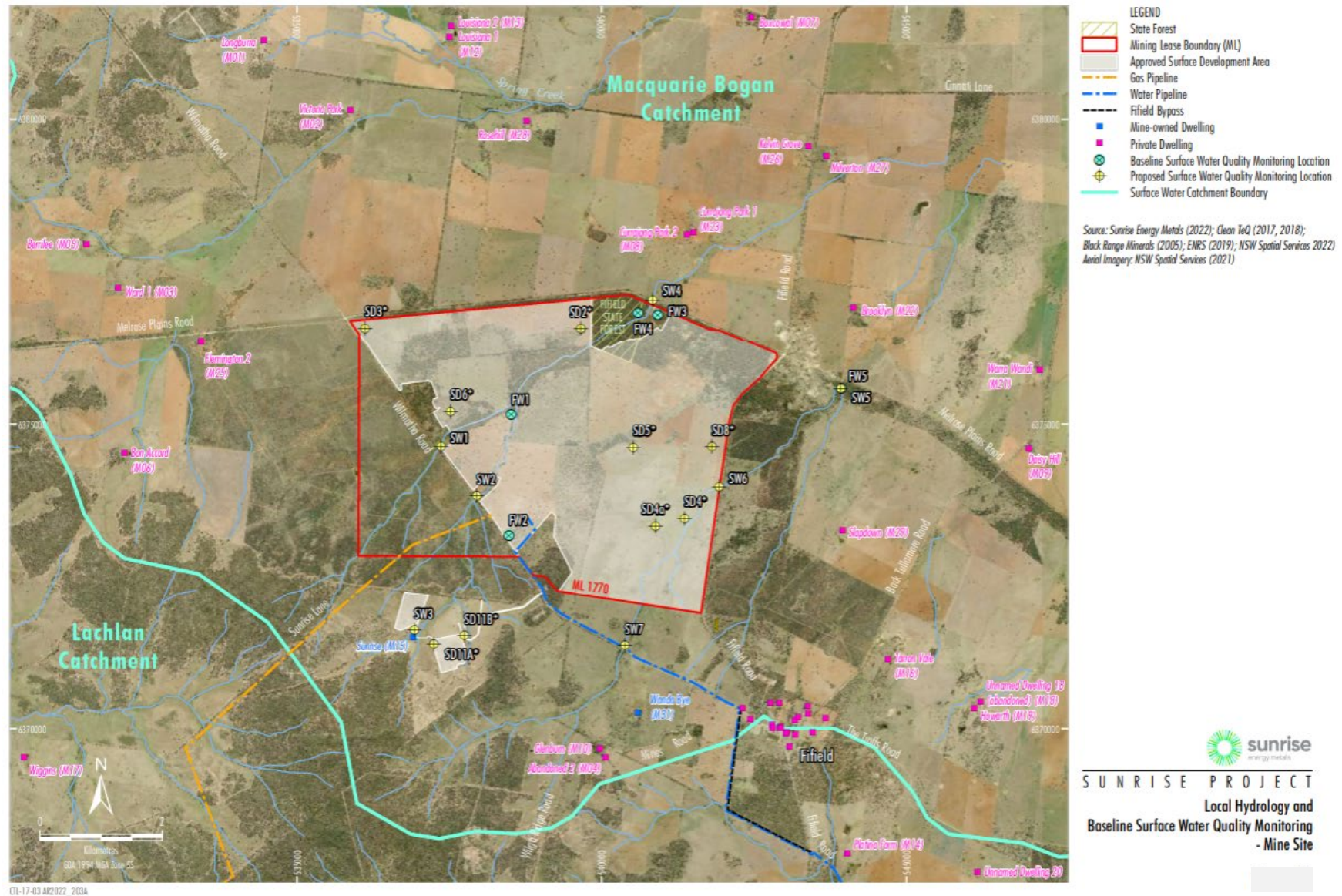


Figure 8 Local hydrology and baseline surface water quality monitoring – mine site

7.3.4 Management Issues and Implemented Actions

Management Issue:

Two of the installed water level loggers at the mine site and borefield (within GAM101 and ISMW02) had been found to have failed during the previous reporting period. The loggers stopped recording data at various times during the monitoring interval between December 2022/January 2023 and May 2023. Data could not be retrieved. The Barologger (to measure barometric compensation) at ISMW02 had also been found to have failed at the May 2023 monitoring round.

Another two water level data loggers in monitoring bores at the mine site (GAM4 and GAM6) were found to have failed in the monitoring interval between May and November 2023. The logger in GAM4 was replaced under warranty due to water ingress. Some data was retrieved from the GAM4 logger, however data from the GAM6 logger could not be retrieved for the period May to November 2023.

Implemented Action:

New water level loggers were installed at GAM101 and ISMW02 in August 2023. The new loggers are Solinst Levellogger 5. A new Solinst Barologger was also installed at ISMW02 to allow for automated correction of data from the new loggers in subsequent monitoring rounds. All loggers at the borefield were changed to Solinst loggers prior to the commencement of pump testing (towards the end of 2023).

New loggers were installed in GAM2, GAM4, GAM10, GAM14C and GAM15 bores on the mine site on 16 January 2023.

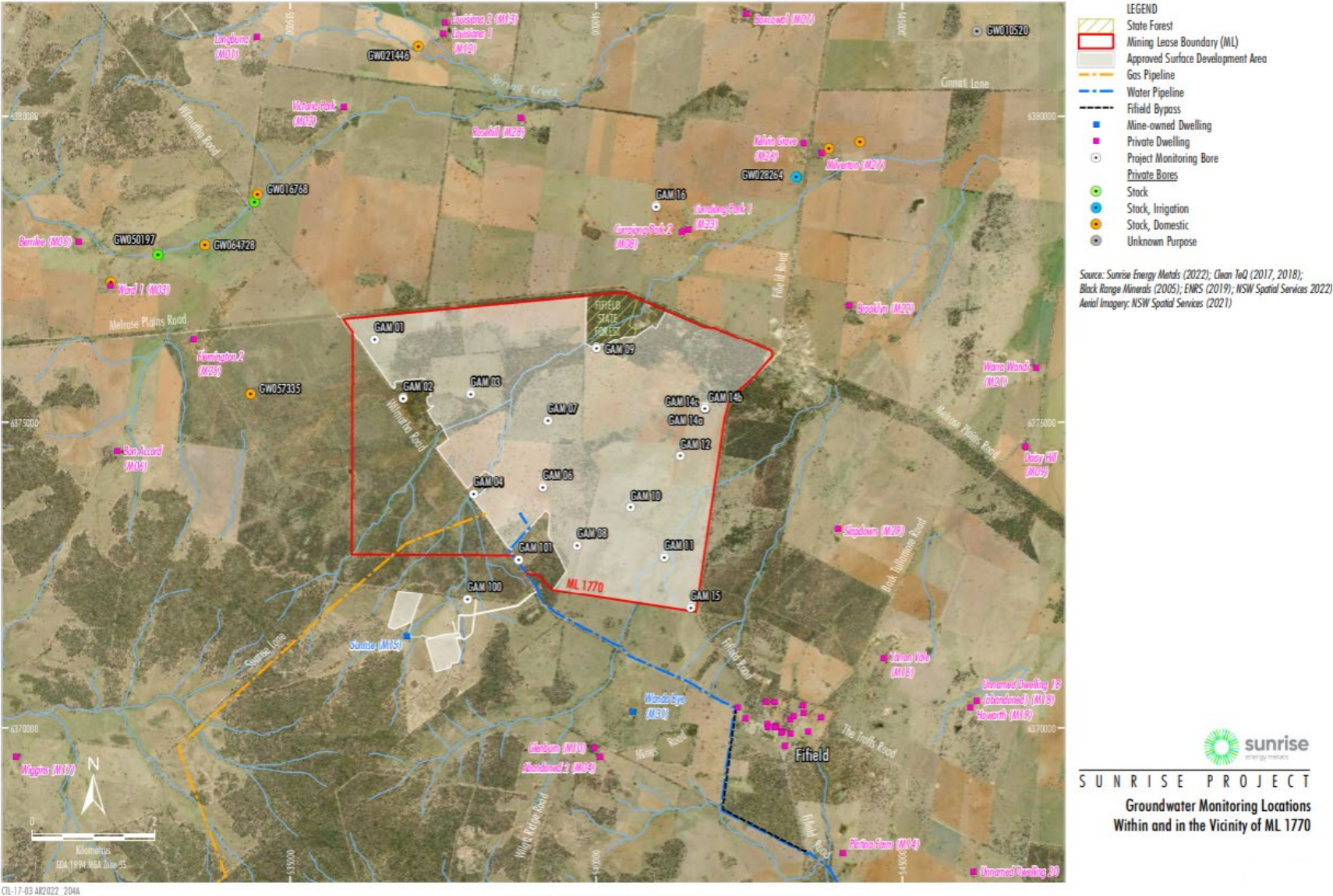


Figure 9 Groundwater monitoring locations within and in the vicinity of ML 1770

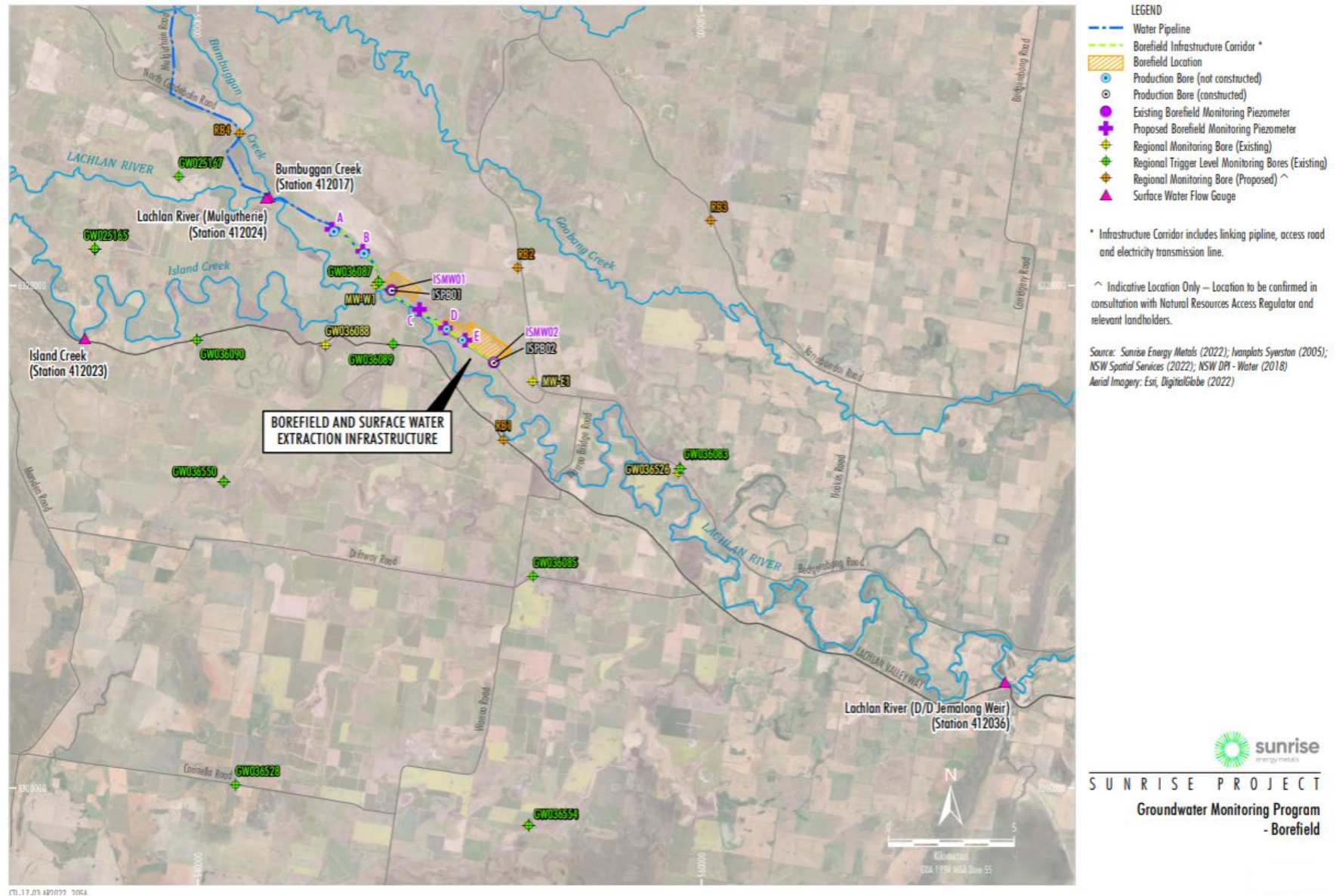


Figure 10 Groundwater monitoring program – borefield

8 REHABILITATION

The Development Consent (Schedule 3, Condition 57) requires the preparation of a Rehabilitation Strategy for the Project. Previously, a construction phase Rehabilitation Management Plan (required under the Mod 4 Development Consent) was prepared and approved by DPHI on 15 August 2019. Prior to any construction activities being undertaken, a Rehabilitation Strategy for the Project will be prepared and approved by DPHI. Changes to the Mining Regulations during 2022 imposed a new requirement for a Rehabilitation Management Plan for the Mining Leases once the security bond increases above the minimum amount. SEM will prepare this Rehabilitation Management Plan and associated documents when required, during a future reporting period.

8.1 REHABILITATION OF DISTURBED LAND

No ground disturbing exploration activities occurred during the reporting period within ML 1770. Therefore no rehabilitation was required as a result.

8.2 REHABILITATION MONITORING

Visual monitoring of rehabilitation resulting from previous exploration activities was undertaken during the reporting period. No significant issues were observed.

8.3 PERFORMANCE INDICATORS

Performance indicators and completion/relinquishment criteria for each rehabilitation phase were described in Section 6 of the approved MOP. Exploration areas disturbed during the 2019 exploration drilling and the 2021 diamonding drilling areas reached the phase 6 performance indicator (land relinquishment phase) during the 2022 reporting period. An ESF2 form was submitted to the Resources Regulator which was subsequently signed off by the Resources Regulator and the bond for ML 1770 reduced to the minimum amount.

During the next reporting period, rehabilitation activities will continue in accordance with the ML conditions.

9 COMMUNITY RELATIONS

SEM communicates with respect and works hard to listen to our communities and achieve constructive dialogue. The company has a [Community Engagement Policy](#), available on its website, that defines the principles guiding the company's interactions with its communities. The policy outlines SEM's commitment to active engagement, clear communication, community investment, dispute resolution and how it works with its local indigenous communities.

SEM actively interacts with the community to leverage its combined capabilities and create mutually beneficial outcomes. The company's intention is to work together with communities to achieve long-term shared value.

SEM also engages with communities early and regularly, listens to their input and aims to communicate with respect and achieve constructive dialogue. Multiple, audience-appropriate communication channels are used to deliver consistent and timely information.

9.1 COMMUNITY COMPLAINTS

The Project Development Consent requires SEM to implement a procedure to receive, handle, respond to and record complaints, and resolve any disputes that may arise. SEM responds quickly to community dissatisfaction. It aims to resolve complaints at the lowest level, as quickly as possible and to deliver long-term resolutions.

SEM has a toll-free, 24-hour community complaint line (1800 952 277) in place to receive community concerns. The phone number is publicised on the SEM Sunrise website and in all community publications. Telephone calls are answered by an operator who records details (date and time of call, name, contact details, details of the complaint and whether an immediate response is required) and emails the record to SEM via community@sunriseem.com. Calls that require an immediate response outside business hours are sent to the Environment, Approvals & Community Lead for immediate response. SEM responds to calls within 24 hours or on the next business day. SEM investigates all complaints thoroughly, always working towards a mutually agreeable and long-lasting solution.

Complaints may also be submitted through stakeholder interactions that may occur between SEM personnel and community members from time to time. All employees and contractors receive information about the SEM Sunrise Complaints Management Process during the general induction process.

Zero community complaints were received during the reporting period.

9.2 COMMUNITY LIAISON

Community Consultative Committee

The Community Consultative Committee (CCC) was re-established in October 2017 and provides a forum for discussion between SEM and representatives of the local community, stakeholder groups and the local councils on issues directly relating to the Project.

During the reporting period, the annual meeting (held in June 2023) of the CCC was conducted in accordance with the Development Consent (Schedule 5, Condition 7). The meeting was offered online and in person.

The CCC met in the Project local government area (Condobolin township, Lachlan Shire). At the meeting, SEM provided a Project update, information relating to environmental management and community engagement activities and addressed questions and concerns raised by CCC members. Minutes were taken from the meeting and published on the SEM webpage (<https://www.sunriseem.com/sunrise-project/community-consultative-committee/>) along with a copy of the presentation.

Community Consultation

SEM has a detailed Community Engagement Plan in place, which supports the Community Engagement Policy and provides more detail around the company's commitment to proactive listening, consultation, and communication.

SEM engages through a range of consultation tools including individual stakeholder and public meetings, advertised community events, newsletters and the operation of shop fronts in Condobolin and Parkes as required. SEM policies and guidelines inform interactions with communities affected by SEM's activities.

During the reporting period, SEM managed to attend meetings with stakeholders, such as:

- Individual stakeholders;
- Landholders;
- Near neighbours; and
- Local Government and State agencies.

SEM also provided Project update presentations and or briefings to various groups during the reporting period, including:

- Lachlan, Parkes and Forbes Shire Councils; and
- Various State agencies.

Aboriginal Consultation

SEM acknowledges the Indigenous people on whose land the company operates. SEM is committed to working with organisations representing Indigenous people to form partnerships that build capacity and generate long-term value. This commitment is outlined in SEM's Community Engagement Policy.

Through membership on the CCC, the Wiradjuri Condobolin Corporation is provided with regular updates on the Project and SEM has contact with this organisation outside of the CCC meetings.

9.3 COMMUNITY INVESTMENT

SEM's guiding principle for community investment is to achieve meaningful outcomes that benefit as many people as possible in the community. For SEM, the definition of community investment includes financial and non-financial contributions.

The current pre-construction investment program includes small-scope direct financial contributions, complemented by important non-financial contributions such as time spent supporting schools and community organisations.

SEM provided financial support during the reporting period to primary schools, the Trundle Bush Tucker Day, the Trundle Back in Time event and the local agricultural shows. SEM attended a number of local agricultural shows in the region (Tullamore, Trundle, Bedgerabong, Parkes, Condobolin and Forbes) and had a lot of interest from attendees of these events.

10 INDEPENDENT ENVIRONMENTAL AUDIT

The Development Consent (Schedule 5, Condition 10) requires an Independent Environmental Audit (IEA) to be commissioned within one year of the commencement of the development after 6 May 2017.

Construction of three Project borefield production bores during the reporting period recommenced the Project (after 6 May 2017), triggering the IEA requirement. However, as the scope of installing the three productionbores is minimal compared to actual commencement of construction on site, SEM will request a deferral of the IEA as per Schedule 5, Condition 10 of the Development Consent until after the actual commencement of construction of the mine occurs.

11 INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

No reportable incidents or non-compliances occurred during the reporting period.

12 ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

12.1 EXPLORATION

Minimal exploration activities are expected to be undertaken within ML 1770 during the next reporting period.

12.2 PROJECT EARLY WORKS

The following activities are proposed during the next reporting period:

- Minor preparatory works, including installation of services and ancillary infrastructure; and
- Further works associated with the partial replacement of the ML 1770 boundary fence.

12.3 PROJECT DEVELOPMENT

SEM is proposing to commence initial Project construction activities subject to a final investment decision and completion of a financing package. Initial construction activities associated with ML 1770 include commencement of the following:

- Development of the mine, including:
 - Site establishment and earthworks;
 - Construction of site access roads and haul roads;
 - Processing facility earthworks;
 - Establishment of temporary facilities required for construction activities (e.g. offices, laydown areas, communications infrastructure);
 - Construction of the mine infrastructure area including the offices, workshops, warehouse, laboratory and amenities buildings, fuel storage areas, potable water treatment plant and car parking facilities;
 - Construction of the tailings storage facility and evaporation pond;
 - Construction of water management infrastructure including the raw water dam, water storage dam and sediment dams;
 - Construction and operation of the concrete batch plant;
 - Development of gravel and clay borrow pits (including blasting and crushing);
 - Installation of appropriate fencing and barriers for public safety and security for mining and construction; and
 - Other associated minor infrastructure, plant, equipment and activities.
- Development and operation of the accommodation camp;
- Installation of the borefields infrastructure;
- Installation and operation of the surface water extraction and associated infrastructure and water pipeline;
- Road upgrades; and
- Upgrades to the proposed oversized transport route.

A new RMP will be prepared and submitted to the Resources Regulator prior to construction activities commencing.

13 REFERENCES

- [1] NSW Government, “Annual Review Guideline – Post-approval Requirements for State Significant Mining Developments,” 2015.
- [2] NSW Resources Regulator, “Annual Rehabilitation Report and Forward Program for Large Mines,” 2021. [Online]. Available: <https://www.resourcesregulator.nsw.gov.au/sites/default/files/documents/form-and-way-annual-rehabilitation-report-and-forward-program-for-large-mines.pdf>
- [3] Corkery RW, “Fifth Annual Exploration Report for ML 1770 “Sunrise Project” - 16 February 2022 to 15 February 2023.,” 2023.
- [4] Area Environmental, “Weeds and Vertebrate Pests Baseline Survey Report ML1770 and Sunrise Accommodation Camp,” 2019.
- [5] Landskape, “Analysis of Aboriginal Lithic Assemblages Aboriginal Heritage Impact Permit C0003887,” 2019.
- [6] Landskape, “Analysis of Aboriginal Stone Quarry Aboriginal Heritage Impact Permit C0003049,” 2020.
- [7] NSW Department of Planning and Environment, Division of Resources and Geoscience, “Exploration Code of Practice: Rehabilitation,” 2015.

GLOSSARY OF TERMS

AQMP	Air Quality Management Plan
AR	Annual Review
AWS	Automatic Weather Station
BCD	NSW Biodiversity & Conservation Division (formerly OEH)
BCS	NSW Biodiversity, Conservation and Science Directorate (formerly BCD)
BMP-RS	Biodiversity Management Plan and Revegetation Strategy
CCC	Community Consultative Committee
DPHI	Department of Planning, Housing and Industry
DRG	Division of Resources and Geoscience
EMP	Environmental Management Plan
EPA	NSW Environment Protection Agency
FCNSW	Forestry Corporation of New South Wales
GWMP	Groundwater Management Plan
HMP	Heritage Management Plan
IEA	Independent Environmental Audit
LEP	Local Environmental Plan
ML	Mining Lease
MOP	Mining Operations Plan
NHVR:	National Heavy Vehicle Regulator
NMP	Noise Management Plan
NRAR	NSW Natural Resources Access Regulator
PIRMP	Pollution Incident Response Management Plan
OEH	NSW Office of Environment and Heritage
RAP	Registered Aboriginal Party
RMP	Rehabilitation Management Plan
RR	NSW Resources Regulator
SWL	Standing Water Level
SWMP	Surface Water Management Plan
VCP	Vegetation Clearance Protocol
WMP	Water Management Plan

APPENDIX 1: AIR QUALITY MONITORING RESULTS

1A – Depositional Dust Results

1B – PM_{2.5} Daily Average Results

1C – PM₁₀ Daily Average Results

1A – Depositional Dust Results

Table A-1. Summary of depositional dust (insoluble solids) monitoring results 2023

Month			Insoluble Solids (g/m ² /month)			
	Start	End	DG1	DG2	DG3	DG4
JAN	1/01/2023	1/02/2023	0.5	6.9	0.5	0.4
FEB	1/02/2023	28/02/2023	1.1	1.3	1.0	4.1
MAR	28/02/2023	31/03/2023	0.5	2.5	0.6	0.7
APR	31/03/2023	1/05/2023	1.2	1.9	0.6	0.8
MAY	1/05/2023	31/05/2023	1.0	1.3	0.6	6.1
JUN	31/05/2023	1/07/2023	0.4	1.2	0.3	0.2
JUL	1/07/2023	1/08/2023	1.0	1.5	0.9	0.4
AUG	1/08/2023	1/09/2023	0.3	2.5	0.3	0.3
SEP	1/09/2023	3/10/2023	1.4	3.6	1.0	0.7
OCT	3/10/2023	1/11/2023	6.8	3.6	1.0	0.8
NOV	1/11/2023	1/12/2023	1.5	4.9	1.7	1.0
DEC	1/12/2023	1/01/2024	1.4	4.8	1.8	0.6
ANNUAL AVERAGE (Mean)			1.4	2.9	0.8	1.4
MEDIAN			1.1	2.5	0.6	0.7
MAXIMUM			6.8	6.9	1.8	6.1
MINIMUM			0.3	1.2	0.3	0.2

1B – PM2.5 Daily Average Results

Table A-2. Annual Summary - Daily AVG For PM2.5 STP (µg/m³) - Site PM2



Excluded - Equipment Failure



Agricultural activities by neighbours

Jan 2023 to Dec 2023

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1	7.06	3.74	4.72	3.15	3.36	4.99	0.77	3.79	2.47	5.85	4.98	1.86	
2	5.73	3.56	6.39	3.45	2.12	5.01	1.53	6.83	3.52	5.97	7.72	2.34	
3	4.80	4.26	6.43	3.34	3.13	4.16	3.46	7.54	3.70	7.49	12.28	2.17	
4	5.15	2.92	6.61	3.16	5.08	5.11	2.23	5.44	4.96	5.39	9.47	2.76	
5	3.80	2.97	5.70	14.76	3.47	3.70	1.04	10.03	4.15	2.25	5.00	5.90	
6	2.29	4.56	6.75	6.33	4.08	2.88	1.32	4.23	3.86	1.79	4.58	5.13	
7	2.99	5.46	4.61	3.98	2.09	2.99	1.39	4.32	7.40	2.78	5.19	4.98	
8	3.89	6.81	4.88	5.19	2.48	1.96	2.62	4.85	3.36	3.54	5.68	7.88	
9	4.47	5.87	4.41	3.42	2.89	1.60	4.64	4.22	4.14	3.37	4.35	18.04	
10	5.03	4.05	4.46	2.69	4.32	2.96	2.30	4.12	2.33	3.43	8.80	17.82	
11	5.22	4.70	6.37	2.08	4.43	2.91	2.03	4.24	2.84	4.97	6.62	24.08	
12	6.76	5.80	6.15	4.32	6.97	3.25	2.63	4.49	3.15	5.64	7.72	24.78	
13	5.48	7.49	4.06	2.86	7.26	2.01	3.71	4.89	3.80	3.26	4.05	11.43	
14	6.91	6.61	5.73	2.01	7.18	2.49	4.46	2.94	5.39	3.21	4.68	5.87	
15	6.12	5.00	5.62	2.71	5.72	2.91	3.72	2.70	6.92	4.50	5.76	3.71	
16	6.76	4.41	4.56	1.76	6.55	2.15	2.26	3.38	6.81	2.72	4.74	3.76	
17	5.84	5.97	3.60	2.05	5.78	2.75	4.89	3.33	6.49	3.29	3.74	3.28	
18	5.45	5.74	4.24	4.78	4.53	2.28	5.18	3.15	8.59	11.08	4.46	5.64	
19	4.42	4.33	4.92	13.95	5.04	1.60	3.84	2.49	10.22	7.11	7.17	6.79	
20	3.11	6.82	6.48	6.27	2.49	0.97	3.76	1.90	7.24	10.36	6.04	4.35	
21	4.21	8.04	5.45	7.02	2.07	1.67	3.50	2.68	4.47	11.75	5.33	1.81	
22	3.40	2.48	4.80	7.76	6.25	3.93	2.88	3.66	3.68	3.84	4.84	4.35	
23	2.87	3.69	3.99	4.36	17.04	1.31	2.72	1.26	4.45	3.33	5.30	4.44	
24	3.59	5.15	4.67	4.11	11.39	0.58	3.31	2.96	5.15	4.60	2.58	1.61	
25	3.42	5.03	5.24	5.05	8.12	0.99	3.75	2.83	4.40	4.96	3.86	4.12	
26	4.65	4.04	4.23	6.05	3.15	1.75	4.05	3.36	5.96	2.43	3.63	2.72	
27	5.13	4.26	5.19	6.28	1.98	2.84	4.26	5.41	5.01	3.07	3.44	1.61	
28	5.28	7.51	4.36	6.49	1.37	0.86	3.62	5.66	7.99	2.84	5.26	2.93	
29	4.52		4.31	3.66	1.73	1.54	2.42	6.99	7.68	4.60	3.05	3.57	
30	4.65		3.43	3.46	2.14	0.84	2.46	5.70	5.51	9.11	2.66	2.73	
31	2.84		2.43		3.46		2.90	2.16		4.17		4.36	
AVG	4.70	5.04	4.99	4.88	4.76	2.50	3.02	4.24	5.19	4.93	5.43	6.35	4.67

Table A-3. Annual Summary - Daily AVG For PM2.5 STP (µg/m³) - Site PM4



Excluded - Equipment Failure



Agricultural activities by neighbours

Jan 2023 to Dec 2023

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1	7.08	3.87	5.10	3.99	3.60	3.10	0.94	4.71	2.35	5.88	4.96	1.89	
2	5.83	3.61	7.22	3.85	2.20	3.66	1.84	6.44	3.58	5.95	6.97	2.47	
3	4.98	4.30	6.71	3.23	3.55	4.33	3.98	7.51	3.68	7.47	11.92	2.07	
4	5.27	3.28	7.12	3.78	5.37	5.77	2.31	5.64	5.04	5.46	9.78	2.43	
5	4.00	3.27	6.31	5.84	3.35	4.27	1.30	12.33	4.14	2.42	5.25	5.77	
6	2.62	4.96	6.76	5.35	4.00	3.15	1.63	4.18	3.93	1.99	4.73	5.18	
7	3.21	4.96	4.93	4.34	2.41	3.36	1.56	4.46	7.02	2.98	4.33	5.04	
8	4.07	7.58	5.34	5.50	2.90	2.18	3.07	5.01	3.41	3.65	4.24	8.04	
9	4.52	6.00	4.75	3.67	3.07	2.00	5.08	4.34	4.06	2.99	4.30	18.02	
10	5.24	4.34	4.78	2.90	5.02	3.31	2.51	4.24	2.52	3.24	9.32	19.48	
11	5.20	5.06	5.52	2.22	5.67	3.71	2.36	4.33	3.00	5.37	6.88	24.29	
12	7.14	6.23	7.01	4.52	7.39	3.51	2.77	4.56	3.20	5.23	7.81	27.48	
13	5.52	9.92	4.32	3.45	7.02	1.87	3.38	4.76	3.39	3.41	4.12	10.95	
14	7.13	7.16	6.18	2.12	8.37	2.55	4.46	2.90	4.67	3.32	4.54	5.90	
15	5.71	5.27	6.37	3.36	6.24	3.04	3.85	3.05	5.32	4.56	5.68	3.89	
16	7.39	4.60	4.93	2.11	7.68	2.36	2.51	3.48	6.26	2.74	4.60	3.87	
17	6.15	6.11	3.80	2.50	6.31	2.94	5.24	3.69	6.05	3.39	4.09	3.66	
18	5.47	6.34	4.06	5.42	4.69	1.53	5.40	3.12	7.93	10.95	4.88	6.29	
19	4.83	4.44	4.77	15.61	5.54	1.57	4.15	2.28	8.81	7.21	6.68	6.09	
20	3.59	7.35	6.84	7.14	2.62	1.04	3.72	1.86	7.45	9.48	4.91	4.32	
21	4.41	10.85	5.45	9.36	2.37	2.25	3.45	2.44	4.60	10.11	5.36	1.80	
22	3.60	3.59	5.11	8.24	6.91	4.74	3.24	3.40	3.57	3.98	4.81	4.30	
23	3.03	3.79	4.24	4.44	20.82	1.57	2.86	1.28	4.17	3.54	5.34	4.37	
24	3.64	5.13	5.16	4.60	9.58	0.69	3.39	2.85	5.10	4.19	2.71	1.61	
25	3.51	4.11	5.65	5.06	7.00	1.07	3.99	2.66	3.87	5.26	3.90	4.42	
26	4.67	4.23	4.64	5.85	3.49	2.45	4.50	3.62	5.12	2.88	3.70	2.63	
27	5.52	4.79	5.63	5.51	2.28	2.97	4.10	5.54	5.10	3.30	3.47	1.79	
28	5.67	6.32	4.80	6.43	1.19	0.93	3.76	5.63	8.00	2.80	7.21	3.01	
29	4.79		4.77	4.18	1.61	1.83	2.55	5.73	7.51	4.17	3.13	3.76	
30	4.76		3.59	3.98	2.83	0.97	2.33	5.44	5.71	8.47	2.71	2.91	
31	2.88		2.87		3.06		2.30	2.30		4.30		4.65	
AVG	4.88	5.41	5.31	4.95	5.10	2.62	3.18	4.32	4.95	4.86	5.41	6.53	4.79

1C – PM10 Daily Average Results

Table A-4. Annual Summary - Daily AVG For PM10 STP (µg/m³) - Site PM2



Excluded - Equipment Failure



Agricultural activities by neighbours

Jan 2023 to Dec 2023

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1	14.88	12.11	20.24	8.34	7.40	16.61	1.43	9.53	7.26	19.65	18.97	5.90	
2	14.16	12.83	21.77	9.27	5.53	21.58	2.53	14.94	9.86	19.51	24.58	7.51	
3	11.23	12.71	20.70	10.17	9.26	12.88	6.84	15.59	9.74	26.10	30.12	6.85	
4	17.66	9.51	17.38	8.87	13.80	12.66	4.13	12.31	15.49	15.11	18.69	11.16	
5	13.88	9.46	15.79	24.08	9.73	9.51	2.61	15.63	12.34	6.65	10.28	18.11	
6	8.24	14.03	21.57	16.06	11.29	7.49	2.75	7.69	11.86	4.62	11.37	17.18	
7	8.59	20.32	15.49	12.00	6.31	8.02	3.54	8.65	24.05	7.18	17.28	18.59	
8	10.25	18.94	16.70	12.91	7.12	6.26	6.43	9.41	10.14	9.83	23.19	21.04	
9	15.56	18.58	16.74	9.98	7.44	4.15	11.00	8.97	11.03	11.27	9.53	32.76	
10	16.99	10.78	17.10	8.20	9.91	6.95	5.68	11.16	6.59	10.68	13.34	30.05	
11	17.69	15.90	21.79	7.05	11.13	6.35	4.59	11.46	7.59	12.33	15.63	43.10	
12	20.57	18.53	18.98	13.80	16.05	6.42	5.36	11.67	9.08	21.09	21.35	45.35	
13	16.56	25.18	9.75	6.18	17.74	3.98	7.89	12.90	12.49	10.27	16.41	29.32	
14	17.00	19.40	10.93	6.07	13.13	6.47	10.90	6.04	17.66	9.34	22.88	13.54	
15	17.16	12.30	11.21	9.22	11.19	7.77	8.92	5.52	24.18	12.36	22.58	11.23	
16	17.19	14.47	13.92	4.94	14.03	5.95	4.82	7.68	19.31	11.78	17.03	13.52	
17	14.50	19.66	13.81	6.72	13.63	7.27	8.10	5.89	15.59	10.82	16.14	13.36	
18	15.82	17.30	15.17	13.39	12.46	7.07	9.41	9.01	22.21	21.53	14.65	15.97	
19	12.05	11.33	17.30	22.32	14.01	6.23	9.39	6.42	32.78	16.35	23.90	27.07	
20	7.60	18.67	24.87	15.14	8.31	2.16	8.94	4.19	18.33	26.15	17.67	10.17	
21	10.25	17.52	15.81	15.18	7.21	4.23	7.79	6.79	13.94	35.60	17.11	5.69	
22	6.92	6.80	12.53	15.38	16.04	8.93	6.56	11.53	12.83	13.32	12.76	11.97	
23	7.09	10.33	10.60	10.77	40.52	2.92	6.00	3.20	14.50	11.20	11.12	12.73	
24	9.56	14.92	11.19	10.74	36.64	1.73	6.69	6.38	14.23	19.92	5.14	4.31	
25	9.67	17.79	9.86	13.21	33.15	3.31	8.00	7.76	16.25	19.04	8.56	11.54	
26	14.43	13.63	8.70	17.05	8.98	4.92	9.11	8.11	22.37	10.74	7.70	8.83	
27	14.90	15.07	11.07	20.33	4.84	6.49	9.67	10.44	15.82	12.11	9.30	4.80	
28	14.86	25.69	10.39	24.39	3.62	1.93	9.35	12.88	19.93	10.73	13.15	7.95	
29	12.07		8.66	8.88	5.45	3.37	5.81	19.66	18.78	16.71	6.58	9.12	
30	9.39		8.60	7.75	6.17	2.00	4.22	14.90	15.18	31.62	5.61	7.03	
31	8.67		6.86		12.30		6.24	7.21		16.46		10.42	
AVG	13.08	15.49	14.69	12.28	12.72	6.85	6.60	9.79	15.38	15.49	15.42	15.68	12.79

Table A-5. Annual Summary - Daily AVG For PM10 STP (µg/m³) - Site PM4



Excluded - Equipment Failure



Agricultural activities by neighbours

Jan 2023 to Dec 2023

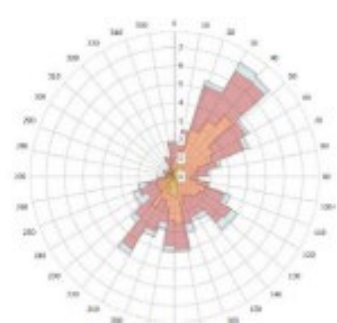
Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1	15.40	12.24	23.41	10.05	7.83	8.79	1.81	11.24	6.64	22.61	20.26	5.52	
2	14.86	12.93	25.98	10.14	5.31	13.76	3.21	13.30	9.48	20.42	24.26	8.24	
3	11.99	13.22	22.85	9.01	12.02	14.94	8.28	16.07	10.17	28.65	31.46	6.66	
4	18.51	11.45	18.11	10.72	15.09	14.16	4.47	12.38	17.23	16.05	18.84	9.24	
5	14.96	10.72	17.57	13.46	8.57	10.96	3.49	18.05	12.72	7.28	11.16	18.27	
6	10.01	17.26	20.05	18.16	10.78	8.18	3.91	7.52	13.79	6.24	13.60	18.24	
7	9.36	20.11	17.63	13.07	7.55	9.26	3.97	8.71	21.60	7.95	11.54	21.21	
8	11.07	21.42	20.08	13.38	8.26	7.49	7.31	9.41	10.29	10.06	13.67	23.20	
9	17.26	19.45	19.01	10.82	7.82	5.37	12.30	9.10	10.58	8.66	9.40	32.73	
10	18.80	11.81	19.70	9.14	11.38	7.93	6.39	10.89	7.19	10.00	14.29	33.60	
11	18.11	17.85	19.09	8.19	12.61	8.21	5.49	10.96	8.11	21.99	16.96	40.74	
12	22.91	20.53	21.35	13.80	15.98	7.03	6.11	11.43	9.42	21.34	22.89	50.71	
13	16.22	32.04	10.51	7.65	15.05	3.87	6.57	12.12	9.97	11.87	17.82	27.19	
14	17.37	22.47	12.55	5.97	15.14	6.54	10.04	6.18	18.58	10.60	22.84	14.04	
15	16.94	13.06	12.34	10.16	12.18	8.10	8.60	6.11	16.86	13.28	22.26	11.91	
16	21.35	16.93	16.23	6.07	15.24	6.32	5.35	6.13	16.04	13.34	16.21	14.80	
17	14.98	20.91	14.60	8.00	15.17	7.25	8.55	6.80	15.44	11.79	19.44	17.10	
18	15.54	19.42	14.85	14.62	12.74	3.74	9.70	8.04	19.35	21.35	19.14	21.52	
19	14.10	12.48	17.09	25.57	14.77	4.96	9.89	5.64	23.62	17.69	22.42	25.25	
20	9.06	18.74	28.82	17.21	8.27	2.37	8.97	4.18	19.90	24.13	10.70	10.44	
21	11.17	22.36	17.74	19.22	9.25	5.46	7.77	6.22	15.12	29.48	17.59	5.76	
22	7.84	9.63	13.90	17.08	18.05	11.06	7.73	9.36	12.35	15.06	12.23	12.18	
23	6.88	11.50	11.75	10.69	37.22	3.89	6.52	3.08	14.74	14.24	10.67	12.15	
24	9.38	13.49	11.87	12.37	23.75	2.22	6.60	6.01	14.11	19.13	7.03	4.03	
25	10.31	13.06	10.59	13.17	24.44	3.65	7.85	6.06	14.48	22.27	8.73	12.62	
26	14.23	15.78	10.38	19.20	10.50	6.37	9.39	10.22	16.86	15.25	8.75	8.63	
27	15.45	17.21	12.47	17.86	5.42	7.28	11.01	11.78	15.28	14.88	9.97	5.63	
28	16.19	21.30	12.18	21.36	3.45	2.28	9.94	12.21	19.71	11.88	13.47	8.13	
29	12.46		9.78	10.66	4.82	4.27	6.27	12.65	20.80	15.04	6.84	10.00	
30	10.15		8.51	9.35	7.65	2.30	3.87	12.80	18.76	27.80	5.95	7.83	
31	8.33		7.30		9.15		5.19	7.20		18.31		11.44	
AVG	13.91	16.76	16.07	12.87	12.43	6.93	6.99	9.41	14.64	16.41	15.35	16.42	13.18

APPENDIX 2: METEOROLOGICAL MONITORING RESULTS

2A – Wind Roses - Monthly

2B – Temperature - Monthly

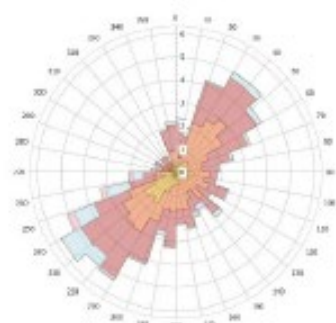
2A – Wind Roses - Monthly



January



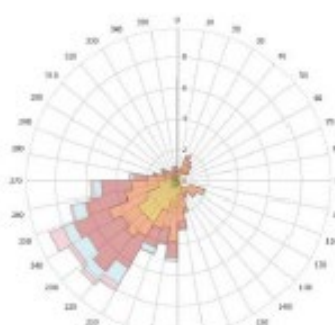
February



March



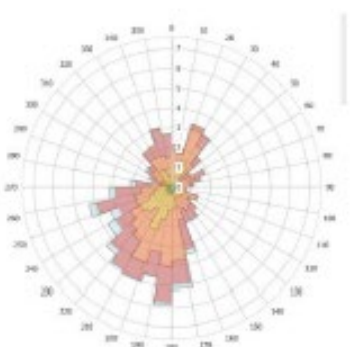
April



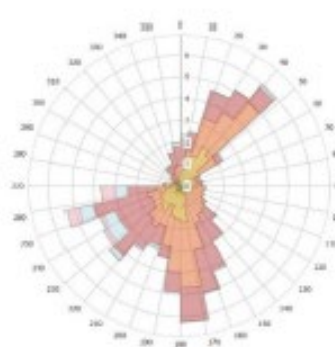
May



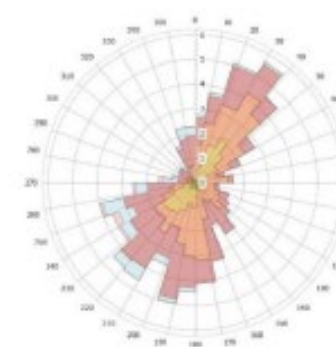
June



July



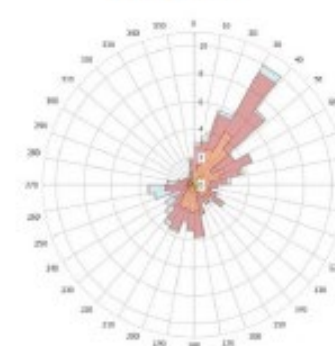
August



September



October



November



December



2B – Temperature - Monthly

Table A-6 Summary of Mean Daily Temperatures

Month	Mean Daily Temperature									
	EIS (Station #50052)		AWS 2020		AWS 2021		AWS 2022		AWS 2023	
	Maximum (°C)	Minimum (°C)	Maximum (°C)	Minimum (°C)	Minimum (°C)	Minimum (°C)	Maximum (°C)	Minimum (°C)	Maximum (°C)	Minimum (°C)
January	33.4	17.6	36.7	22.2	31.4	17.0	35.9	12.8	38.3	11.9
February	32.5	17.8	29.3	19.3	29.9	16.1	35.4	11.7	39.2	5.7
March	29.3	14.8	26.5	15.7	26.4	13.4	33.9	9	40.4	6.8
April	24.3	9.7	21.3	10.3	22.9	7.1	27.9	5.3	27.8	3.1
May	19.4	6.8	17.2	6.6	18.8	5.2	23.7	1.5	23.2	-1.7
June	15.6	3.8	15.1	4.2	15.1	3.5	18.7	-1.1	24.5	-3.9
July	14.9	2.6	14.1	4.4	13.8	2.8	19.9	-2.6	22.1	-4.4
August	16.8	3.4	14.4	3.5	16.8	3.4	22.1	-0.6	24.8	-2.2
September	19.7	5.4	20.8	6.91	20.0	4.9	21.3	1.2	34.2	-1.7
October	24.5	9.2	25.4	10.2	22.3	7.7	25.5	3.7	35.3	2.2
November	28.2	12.6	30.7	14.3	24.4	12.8	31.3	4.1	36.5	5.1
December	31.7	15.5	29.9	14.8	29.5	14.3	35.4	4.8	41.2	11.4

APPENDIX 3: NOISE MONITORING RESULTS

No noise monitoring undertaken in 2023

APPENDIX 4: SURFACE WATER MONITORING RESULTS

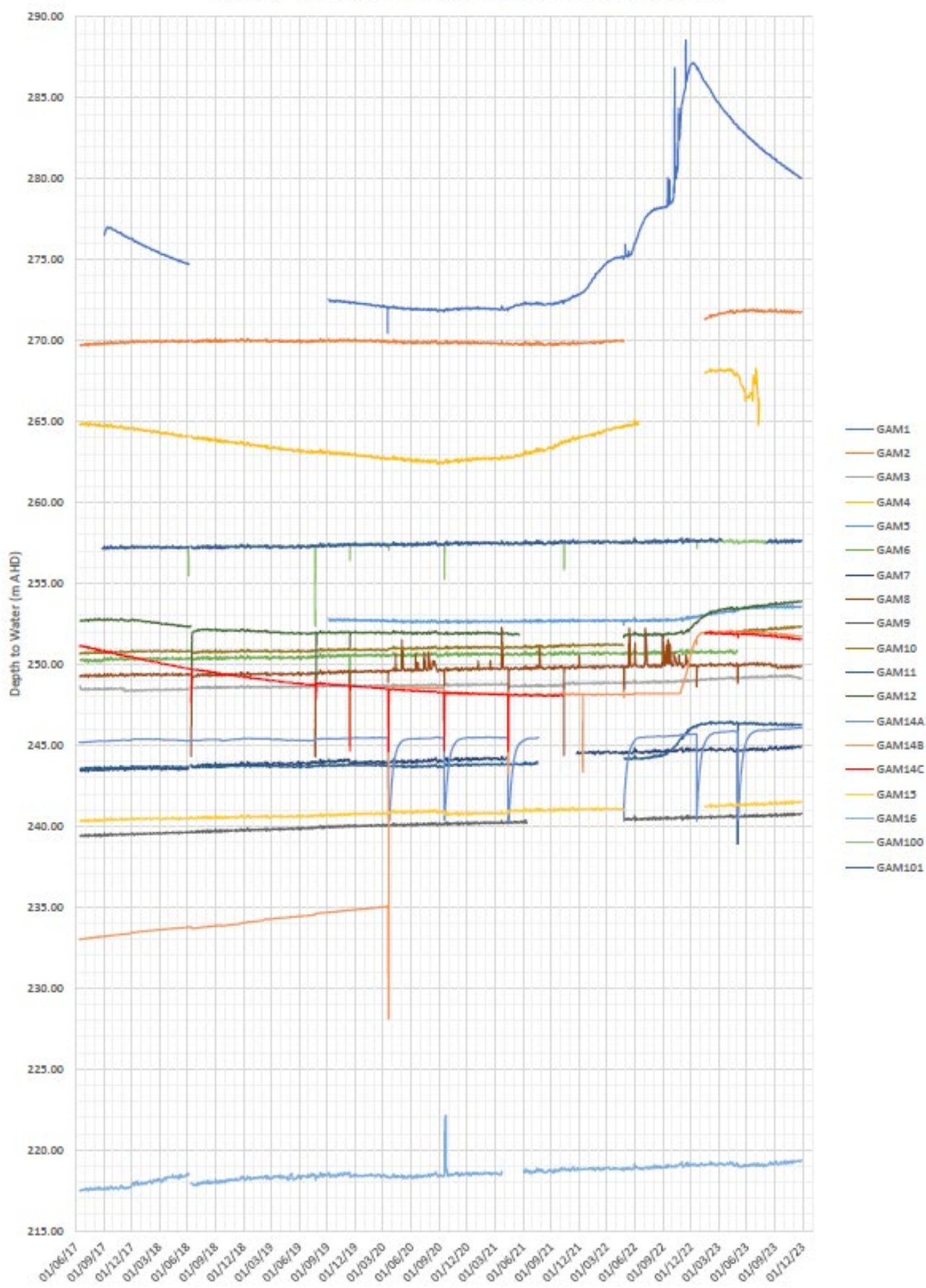
*No surface water monitoring undertaken in 2023
(creeks did not flow)*

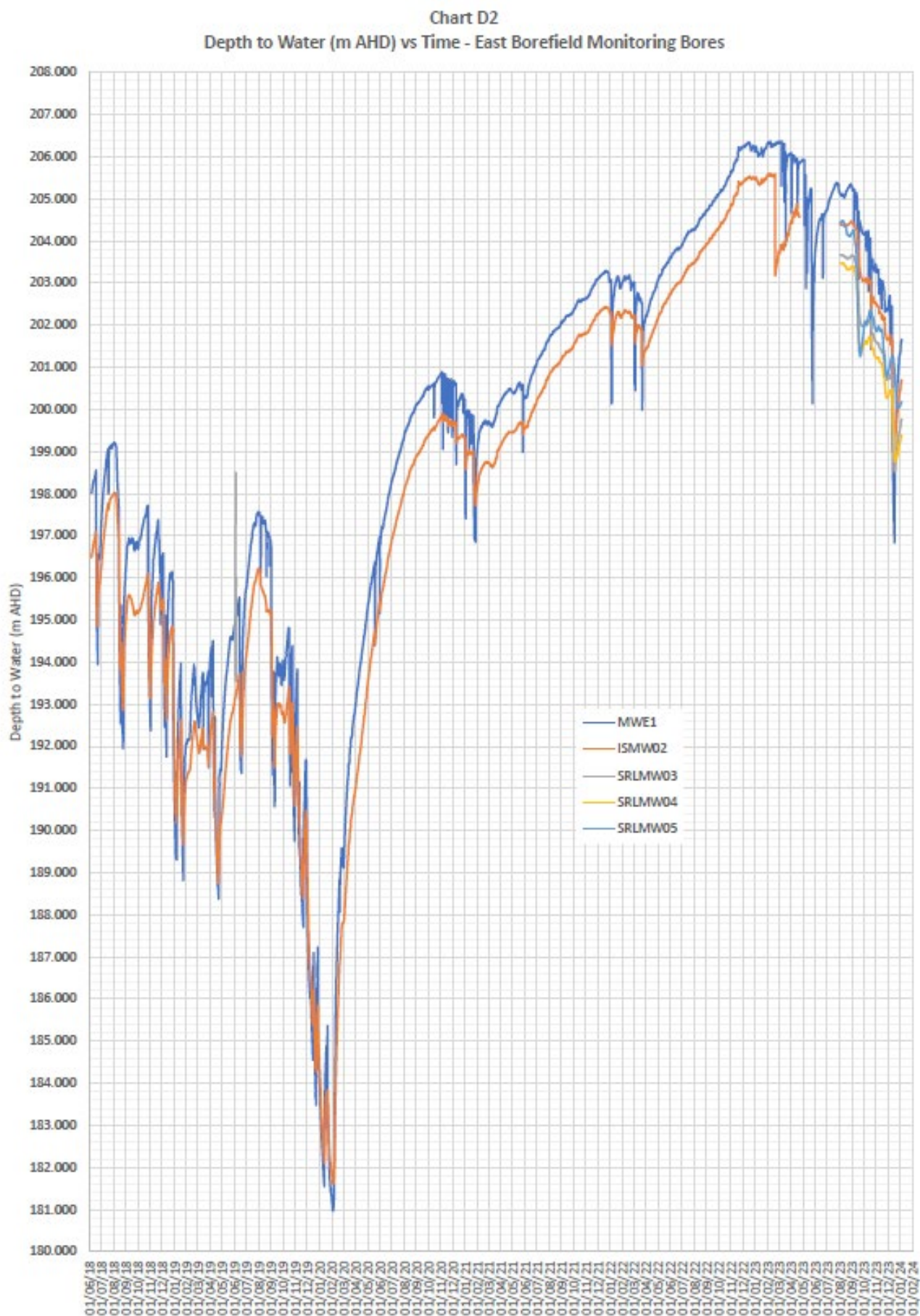
APPENDIX 5: GROUNDWATER MONITORING RESULTS

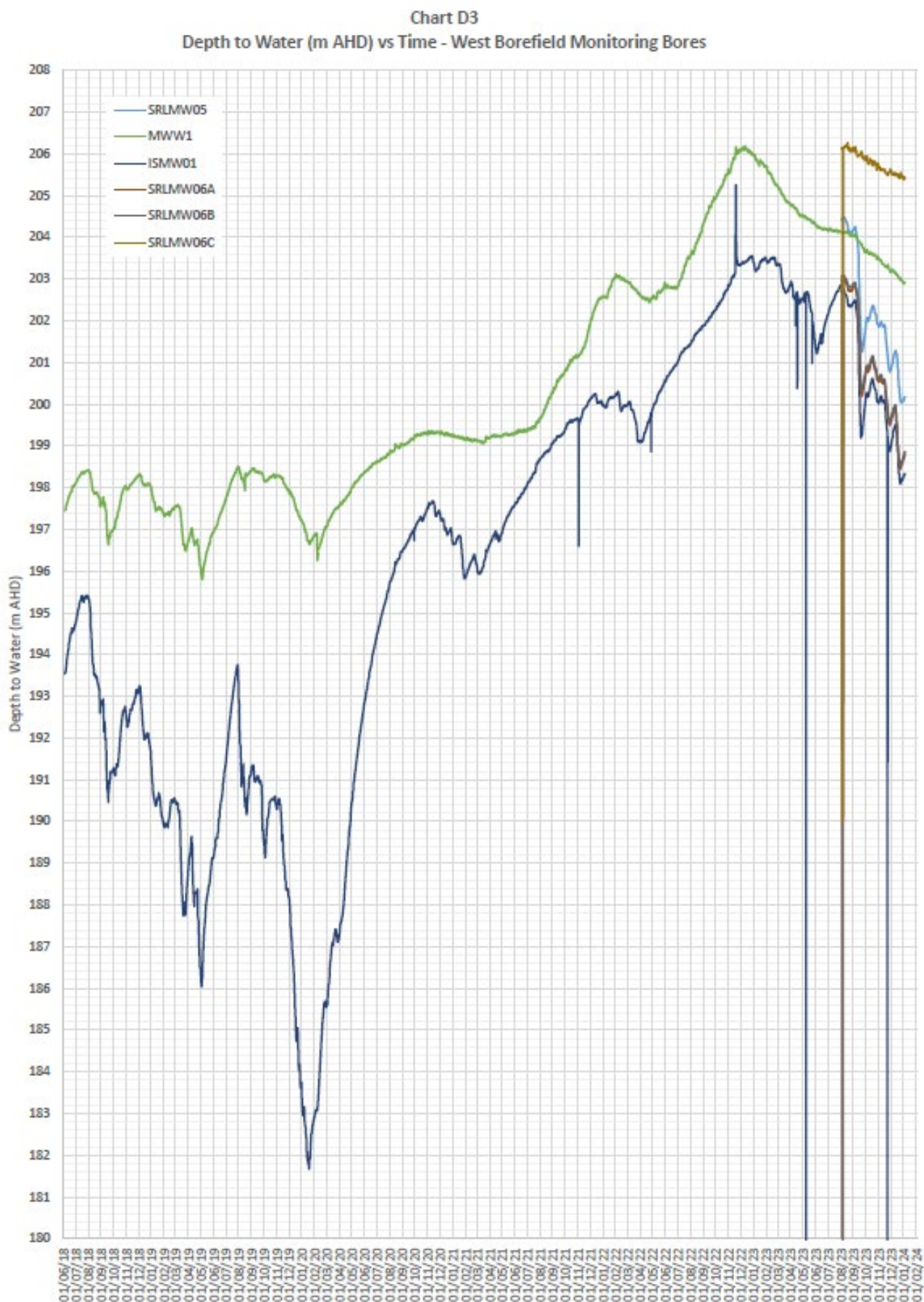
5A - Groundwater Bores – Standing Water Level

5B - Groundwater Monitoring - Water Chemistry

Chart C1
Depth to Water (m AHD) vs Time - Mine Site Monitoring Bores







5B - GROUNDWATER MONITORING – WATER CHEMISTRY

Table A-9 Groundwater Water Monitoring – Minesite Bores - Analytical Results 2023

Bore ID	Analytes	Units	LOR	GAM01	GAM01	GAM02	GAM02	GAM03	GAM03	GAM04	GAM04	GAM05	GAM05	GAM06	GAM06	GAM07	GAM07
Date				27/11/2023	02/05/2023	27/11/2023	02/05/2023	27/11/2023	02/05/2023	27/11/2023	02/05/2023	27/11/2023	03/05/2023	27/11/2023	02/05/2023	27/11/2023	02/05/2023
Major Cations (mg/L)	Calcium	mg/L	0.5	32	38	59	57	28	27	70	67	59	57	320	310	2	2
	Magnesium	mg/L	0.5	3	4	59	57	220	200	85	81	110	110	460	430	63	61
	Sodium	mg/L	0.5	69	62	39	33	42	36	82	72	33	27	480	470	210	170
	Potassium	mg/L	0.5	2	2	2	2	2	2	3	3	1	1	12	12	5	5
Major Anions (mg/L)	Sulphate	mg/L	5	23	34	12	15	10	12	29	31	19	17	530	570	19	19
	Chloride	mg/L	1	17	18	62	57	45	48	110	120	130	97	1900	2000	250	230
	Bicarbonate Alkalinity (as CaCO ₃)	mg/L	20	180	200	430	440	990	980	530	520	550	540	740	750	320	310
	Carbonate Alkalinity (as CaCO ₃)	mg/L	10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	49	43
	Hydroxide Alkalinity (as CaCO ₃)	mg/L	20	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	Total Alkalinity (as CaCO ₃)	mg/L	20	180	200	430	440	990	980	530	520	550	540	740	750	370	360
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	0.05	<0.01	0.010	<0.01	0.010	<0.01	<0.01	<0.01	<0.01	0.010	<0.01	<0.01	<0.01	<0.01	<0.01
	Arsenic	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Boron	mg/L	0.05	0.040	0.060	0.080	0.090	0.100	0.100	0.100	0.100	0.070	0.080	0.200	0.200	0.040	0.050
	Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium	mg/L	0.001	<0.001	<0.001	0.019	0.018	0.023	0.024	0.011	0.012	0.067	0.072	0.008	0.008	<0.001	0.001
	Cobalt	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Copper	mg/L	0.001	0.003	0.004	<0.001	<0.001	0.002	0.002	0.005	0.005	0.004	<0.001	0.006	0.008	<0.001	0.001
	Iron	mg/L	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.010	<0.01	<0.01	0.010	<0.01	<0.01
	Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	mg/L	0.005	0.010	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Mercury	mg/L	0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0003	0.0001	<0.00005	<0.00005
	Nickel	mg/L	0.001	0.002	0.001	0.002	<0.001	0.013	0.013	0.004	0.003	0.013	0.007	0.052	0.028	0.002	0.001
	Silver	mg/L	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	mg/L	0.005	0.004	0.005	0.028	0.033	0.002	0.002	0.023	0.027	0.008	0.009	0.017	0.017	<0.001	<0.001
	Zinc	mg/L	0.005	0.011	0.001	0.009	0.002	0.009	0.006	0.016	0.007	0.027	0.005	0.021	0.018	0.007	0.001
Nutrients (mg/L)	Nitrate (as N)	mg/L	0.02	7.600	8.200	0.480	0.470	0.670	0.690	4.100	4.300	1.800	1.900	0.200	0.190	0.060	0.067
	Nitrite (as N)	mg/L	0.02	0.360	0.066	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Ammonia (as N)	mg/L	0.01	<0.005	<0.005	<0.005	<0.005	<0.005	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Total Kjeldahl Nitrogen (as N)*	mg/L	0.2	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	0.7	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1
	Total Nitrogen (as N)	mg/L	0.2	8.56	8.266	0.48	0.470	0.67	0.697	4.80	4.300	2.10	1.900	0.20	0.190	0.06	0.067
	Phosphate total (as P)	mg/L	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Others	TDS	mg/L	10	310	350	520	500	790	980	770	760	810	780	5400	4200	720	670
	Electrical Conductivity (Lab)	uS/cm	10	490	510	890	850	1600	1600	1300	1200	1300	1200	6800	6500	1300	1200
Field	Temperature	°C		20.6	19.9	21.4	20.6	21.8	20.9	20.7	19.8	21.7	19.5	23.0	20.6	21.6	20.6
	pH	pH units		7.73	7.76	7.39	7.31	7.30	7.40	7.01	6.94	7.16	7.14	6.74	6.66	8.83	8.77
	Electrical Conductivity	uS/cm		439	475	829	817	1558	1518	1178	1159	1228	1085	6613	6265	1293	1220
	Dissolved Oxygen	Mg/L		0.14	0.09	5.16	4.58	3.82	5.12	3.85	4.01	5.71	5.27	3.02	1.92	0.66	0.63

Table A-9 Groundwater Water Monitoring – Minesite Bores - Analytical Results 2023 (cont.)

Bore ID	Analytes	Units	LOR	GAM08	GAM08	GAM09	GAM09	GAM10	GAM10	GAM11	GAM11	GAM12	GAM12	GAM14A	GAM14A	GAM14B	GAM14B
Date				27/11/2023	02/05/2023	29/11/2023	03/05/2023	29/11/2023	03/05/2023	29/11/2023	03/05/2023	29/11/2023	03/05/2023	29/11/2023	03/05/2023	29/11/2023	03/05/2023
Major Cations (mg/L)	Calcium	mg/L	0.5	80	30	1	2	160	200	290	360	53	53	56	59	71	70
	Magnesium	mg/L	0.5	150	58	130	130	320	350	460	490	8.9	8.7	29	30	100	100
	Sodium	mg/L	0.5	1200	580	70	67	710	760	2300	2100	230	210	220	200	180	170
	Potassium	mg/L	0.5	17	9.1	3	3	14	16	21	25	5.8	5.9	4	4	6.2	6.2
Major Anions (mg/L)	Sulphate	mg/L	5	1300	600	34	38	590	600	1600	1800	320	350	130	140	72	81
	Chloride	mg/L	1	1300	590	78	90	1800	2000	4200	4800	180	200	320	360	330	360
	Bicarbonate Alkalinity (as CaCO ₃)	mg/L	20	710	480	640	590	830	820	840	800	100	89	190	180	510	480
	Carbonate Alkalinity (as CaCO ₃)	mg/L	10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	Hydroxide Alkalinity (as CaCO ₃)	mg/L	20	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	Total Alkalinity (as CaCO ₃)	mg/L	20	710	480	640	590	830	820	840	800	100	89	190	180	510	480
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	0.05	<0.01	0.020	0.010	<0.01	0.010	<0.01	<0.01	<0.01	0.010	0.010	0.010	<0.01	<0.01	<0.01
	Arsenic	mg/L	0.001	0.002	0.003	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.004	0.005	0.002	0.002	0.001	0.001
	Boron	mg/L	0.05	0.100	0.100	0.090	0.100	0.100	0.100	0.100	0.200	0.230	0.290	0.400	0.450	0.200	0.220
	Cadmium	mg/L	0.0002	0.0008	0.0003	<0.0001	<0.0001	0.0001	0.0001	0.0005	0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium	mg/L	0.001	<0.001	<0.001	0.050	0.061	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Cobalt	mg/L	0.001	0.005	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Copper	mg/L	0.001	0.041	0.130	<0.001	<0.001	0.002	0.006	0.021	0.007	0.002	0.003	<0.001	<0.001	0.012	0.015
	Iron	mg/L	0.05	0.140	0.030	<0.01	<0.01	0.020	0.020	<0.01	<0.01	0.080	0.100	<0.01	0.020	<0.01	<0.01
	Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	mg/L	0.005	0.320	0.130	<0.005	0.010	<0.005	<0.005	0.010	<0.005	0.069	0.081	0.180	0.200	0.910	0.800
	Mercury	mg/L	0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Nickel	mg/L	0.001	0.017	0.019	0.003	0.005	0.015	0.053	0.057	0.052	0.002	0.006	0.003	0.004	0.007	0.007
	Silver	mg/L	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	mg/L	0.005	0.011	0.022	<0.001	<0.001	0.002	0.002	0.001	0.002	0.003	0.004	<0.001	<0.001	0.021	0.023
	Zinc	mg/L	0.005	0.018	0.035	0.006	0.001	0.022	0.014	0.043	0.015	0.004	0.002	0.007	0.003	0.012	0.011
Nutrients (mg/L)	Nitrate (as N)	mg/L	0.02	0.130	0.280	0.080	0.072	0.130	0.110	2.700	2.700	0.085	0.170	<0.005	<0.005	7.900	8.200
	Nitrite (as N)	mg/L	0.02	0.012	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	1.000	0.450
	Ammonia (as N)	mg/L	0.01	0.027	<0.005	<0.005	<0.005	<0.005	<0.005	0.021	<0.005	0.140	0.140	0.084	0.086	<0.005	<0.005
	Total Kjeldahl Nitrogen (as N)*	mg/L	0.2	0.2	0.6	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.1	<0.1	0.1	0.2	1	<0.1
	Total Nitrogen (as N)	mg/L	0.2	0.37	0.885	0.08	0.072	0.13	0.110	2.92	2.700	0.33	0.310	0.18	0.286	9.90	8.650
	Phosphate total (as P)	mg/L	0.01	0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Others	TDS	mg/L	10	4200	2200	720	720	4200	4600	11000	11000	880	880	920	970	1100	1300
	Electrical Conductivity (Lab)	uS/cm	10	6600	3300	1300	1200	7100	6700	15000	14000	1400	1300	1600	1500	2000	1900
Field	Temperature	°C		21.9	20.7	21.1	20.4	21.0	20.9	20.7	20.2	21.1	20.8	20.7	20.0	20.7	20.3
	pH	pH units		6.97	7.03	7.81	7.65	6.73	6.67	6.68	6.54	7.86	7.73	7.71	7.61	7.56	7.50
	Electrical Conductivity	uS/cm		6424	3152	1175	1133	6532	6500	13320	13454	1289	1298	1440	1433	1819	1775
	Dissolved Oxygen	Mg/L		0.48	0.74	8.25	2.06	2.48	2.01	2.08	2.52	0.20	0.19	0.28	0.45	0.26	0.48

Table A-9 Groundwater Water Monitoring – Minesite Bores - Analytical Results 2023 (cont.)

Bore ID	Analytes	Units	LOR	GAM14C	GAM14C	GAM15	GAM15	GAM16	GAM16	GAM100	GAM100	GAM101	GAM101	Berillee	Berillee	Victoria Park
Date				29/11/2023	03/05/2023	29/11/2023	03/05/2023	29/11/2023	04/05/2023	29/11/2023	04/05/2023	27/11/2023	02/05/2023	29/11/2023	04/05/2023	29/11/2023
Major Cations (mg/L)	Calcium	mg/L	0.5	51	52	100	120	190	210	13	14	42	41	100	120	48
	Magnesium	mg/L	0.5	140	130	170	170	480	450	77	79	110	110	200	200	63
	Sodium	mg/L	0.5	170	150	480	510	430	450	1500	1400	1600	1500	230	210	120
	Potassium	mg/L	0.5	5	5	8.3	8.3	17	17	25	29	19	20	8.4	8.2	4
Major Anions (mg/L)	Sulphate	mg/L	5	43	51	580	620	220	240	480	480	660	660	94	100	45
	Chloride	mg/L	1	290	300	500	540	2200	2100	1300	1400	1600	1700	740	850	140
	Bicarbonate Alkalinity (as CaCO3)	mg/L	20	640	610	1000	930	620	610	1600	1600	1700	1800	480	460	450
	Carbonate Alkalinity (as CaCO3)	mg/L	10	<5	<5	<5	<5	<5	<5	130	<5	<5	<5	<5	<5	<5
	Hydroxide Alkalinity (as CaCO3)	mg/L	20	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	Total Alkalinity (as CaCO3)	mg/L	20	640	610	1000	930	620	610	1700	1600	1700	1800	480	460	450
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	0.05	<0.01	<0.01	<0.01	0.010	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Arsenic	mg/L	0.001	0.002	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.002	<0.001	<0.001	0.001
	Boron	mg/L	0.05	0.200	0.210	0.100	0.200	0.200	0.200	0.080	0.100	0.100	0.100	0.200	0.200	0.100
	Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium	mg/L	0.001	0.004	0.003	<0.001	<0.001	0.003	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
	Cobalt	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005	0.006	<0.001	<0.001	<0.001	<0.001	<0.001
	Copper	mg/L	0.001	0.007	0.007	<0.001	<0.001	0.003	0.005	<0.001	0.002	<0.001	0.002	<0.001	0.003	0.005
	Iron	mg/L	0.05	<0.01	<0.01	1.200	1.200	<0.01	<0.01	0.190	0.250	0.040	0.010	<0.01	<0.01	<0.01
	Lead	mg/L	0.001	0.004	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	mg/L	0.005	<0.005	<0.005	0.140	0.140	<0.005	<0.005	0.450	0.500	0.160	0.180	<0.005	<0.005	<0.005
	Mercury	mg/L	0.0001	<0.00005	<0.00005	<0.00005	<0.00005	0.0001	0.0001	<0.00005	<0.00005	<0.00005	<0.00005	0.0001	<0.00005	<0.00005
	Nickel	mg/L	0.001	0.003	0.006	0.016	0.022	0.042	0.018	0.025	0.020	0.032	0.028	<0.001	<0.001	0.001
	Silver	mg/L	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	mg/L	0.005	0.024	0.027	<0.001	<0.001	0.005	0.006	0.001	0.002	0.011	0.015	0.043	0.045	0.040
	Zinc	mg/L	0.005	0.018	0.015	0.043	0.025	0.054	0.050	0.033	0.020	0.030	0.012	0.002	0.024	0.004
Nutrients (mg/L)	Nitrate (as N)	mg/L	0.02	8.700	9.300	<0.005	<0.005	0.330	0.390	<0.005	<0.005	<0.005	0.010	0.810	1.000	2.100
	Nitrite (as N)	mg/L	0.02	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Ammonia (as N)	mg/L	0.01	0.016	<0.005	0.009	0.013	<0.005	<0.005	0.006	0.024	<0.005	<0.005	<0.005	<0.005	<0.005
	Total Kjeldahl Nitrogen (as N)*	mg/L	0.2	1.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1
	Total Nitrogen (as N)	mg/L	0.2	10.02	9.300	0.01	0.013	0.330	0.390	0.006	0.124	<0.1	0.010	0.810	1.000	2.200
	Phosphate total (as P)	mg/L	0.01	<0.05	<0.05	0.06	0.1	0.1	0.08	0.06	<0.05	0.2	0.2	<0.05	<0.05	<0.05
Others	TDS	mg/L	10	1200	1300	2400	2400	4500	5600	4300	4200	4600	4900	1900	2500	730
	Electrical Conductivity (Lab)	uS/cm	10	2000	1900	3800	3600	7200	6400	7200	6700	7700	7400	3100	3000	1300
Field	Temperature	°C		20.8	20.9	21.3	20.6	21.7	18.6	20.5	20.4	22.8	20.5	21.8	21.0	20.1
	pH	pH units		7.14	7.11	6.78	6.69	6.65	6.63	7.05	7.02	7.03	7.00	7.24	7.01	7.47
	Electrical Conductivity	uS/cm		1812	1827	3538	3473	6870	6020	6423	6490	7513	7116	3165	2956	1112
	Dissolved Oxygen	Mg/L		4.23	6.35	0.6	1.64	4.77	10.26	0.42	0.60	0.74	0.45	4.44	3.41	7.3

Table A-10 Groundwater Water Monitoring – Borefield Bores - Analytical Results 2023

Bore ID	Analytes	Units	LOR	ISMW01	ISMW01	ISMW02	ISMW02	ISPB01	MWE1	MWE1	MWW1	MWW1
Date				22/11/2023	09/05/2023	21/11/2023	09/05/2023	09/05/2023	21/11/2023	09/05/2023	22/11/2023	09/05/2023
Major Cations (mg/L)	Calcium	mg/L	0.5	15	18	29	29	18	11	12	31	29
	Magnesium	mg/L	0.5	15	17	24	23	14	11	12	24	22
	Sodium	mg/L	0.5	120	160	230	240	110	30	27	77	80
	Potassium	mg/L	0.5	3	3	3	3	5.1	2	2	2	2
Major Anions (mg/L)	Sulphate	mg/L	5	46	64	80	79	44	10	11	56	56
	Chloride	mg/L	1	140	180	300	280	130	32	31	120	110
	Bicarbonate Alkalinity (as CaCO3)	mg/L	20	140	160	190	180	130	110	100	150	140
	Carbonate Alkalinity (as CaCO3)	mg/L	10	<5	<5	<5	<5	<5	<5	<5	<5	<5
	Hydroxide Alkalinity (as CaCO3)	mg/L	20	<5	<5	<5	<5	<5	<5	<5	<5	<5
	Total Alkalinity (as CaCO3)	mg/L	20	140	160	190	180	130	110	100	150	140
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Arsenic	mg/L	0.001	0.002	0.001	<0.001	<0.001	0.009	<0.001	<0.001	0.003	0.004
	Boron	mg/L	0.05	0.050	0.070	0.070	0.090	0.060	0.030	0.040	0.020	0.030
	Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Cobalt	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.012	<0.001	<0.001	0.006	0.005
	Copper	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
	Iron	mg/L	0.05	0.500	0.590	0.580	0.640	1.000	<0.01	<0.01	4.200	4.100
	Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	mg/L	0.005	0.030	0.040	0.055	0.054	0.040	<0.005	<0.005	0.950	0.680
	Mercury	mg/L	0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Nickel	mg/L	0.001	0.002	0.002	0.002	0.004	0.025	0.004	0.005	0.006	0.006
	Silver	mg/L	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	mg/L	0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Zinc	mg/L	0.005	0.003	0.002	0.008	0.004	<0.001	0.025	0.011	0.029	0.021
Nutrients (mg/L)	Nitrate (as N)	mg/L	0.02	<0.005	<0.005	<0.005	<0.005	<0.005	0.040	<0.025	<0.005	<0.005
	Nitrite (as N)	mg/L	0.02	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.005	0.034
	Ammonia (as N)	mg/L	0.01	0.050	0.041	0.032	0.046	0.080	<0.005	0.007	0.044	0.050
	Total Kjeldahl Nitrogen (as N)*	mg/L	0.2	0.3	0.1	1.8	<0.1	0.3	<0.1	<0.1	0.4	<0.1
	Total Nitrogen (as N)	mg/L	0.2	0.30	0.141	1.80	0.046	0.080	0.04	0.007	0.40	0.084
	Phosphate total (as P)	mg/L	0.01	0.08	0.08	0.08	0.08	0.1	<0.05	<0.05	1.6	1.9
Others	TDS	mg/L	10	450	480	760	720	370	240	210	480	390
	Electrical Conductivity (Lab)	uS/cm	10	780	940	1400	1300	710	310	300	740	690
Field	Temperature	°C		19.8	18.3	21.5	19.6	21.3	21.1	18.8	20.0	18.1
	pH	pH units		6.79	6.87	6.77	6.68	6.87	5.94	6.15	5.77	6.15
	Electrical Conductivity	uS/cm		699	861	1282	1202	691	288	275	667	626
	Dissolved Oxygen	Mg/L		0.34	0.16	0.26	0.13	1.44	0.8	0.35	1.35	0.3

Table A-11 Groundwater Water Monitoring – Borefield Bores - Analytical Results 2023 (cont.)

Bore ID	Analytes	Units	LOR	SRLMW03	SRLMW04	SRLMW06A	SRLMW06B	SRLMW06C
Date				21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023
Major Cations (mg/L)	Calcium	mg/L	0.5	36	33	28	12	73
	Magnesium	mg/L	0.5	30	28	24	11	61
	Sodium	mg/L	0.5	280	270	220	97	88
	Potassium	mg/L	0.5	4	4	3	2	2
Major Anions (mg/L)	Sulphate	mg/L	5	97	96	80	30	69
	Chloride	mg/L	1	380	370	290	97	360
	Bicarbonate Alkalinity (as CaCO3)	mg/L	20	200	200	190	140	160
	Carbonate Alkalinity (as CaCO3)	mg/L	10	<5	<5	<5	<5	<5
	Hydroxide Alkalinity (as CaCO3)	mg/L	20	<5	<5	<5	<5	<5
	Total Alkalinity (as CaCO3)	mg/L	20	200	200	190	140	160
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	0.05	<0.01	<0.01	<0.01	<0.01	<0.01
	Arsenic	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.010
	Boron	mg/L	0.05	0.060	0.060	0.060	0.050	<0.02
	Cadmium	mg/L	0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Chromium	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Cobalt	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	0.012
	Copper	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Iron	mg/L	0.05	1.100	0.890	0.490	0.020	3.200
	Lead	mg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Manganese	mg/L	0.005	0.094	0.080	0.059	0.010	5.000
	Mercury	mg/L	0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Nickel	mg/L	0.001	0.004	0.003	0.002	0.010	0.024
	Silver	mg/L	0.005	<0.001	<0.001	<0.001	<0.001	<0.001
	Vanadium	mg/L	0.005	<0.001	<0.001	<0.001	<0.001	<0.001
	Zinc	mg/L	0.005	0.021	0.004	0.013	0.020	0.067
Nutrients (mg/L)	Nitrate (as N)	mg/L	0.02	<0.005	<0.005	<0.005	0.030	<0.005
	Nitrite (as N)	mg/L	0.02	<0.005	<0.005	<0.005	<0.005	<0.005
	Ammonia (as N)	mg/L	0.01	0.045	0.032	0.022	<0.005	0.037
	Total Kjeldahl Nitrogen (as N)*	mg/L	0.2	0.4	0.5	0.2	0.4	0.2
	Total Nitrogen (as N)	mg/L	0.2	0.40	0.50	0.20	0.40	0.20
	Phosphate total (as P)	mg/L	0.01	0.1	0.1	0.05	<0.05	<0.05
Others	TDS	mg/L	10	900	910	740	390	1200
	Electrical Conductivity (Lab)	uS/cm	10	1700	1600	1400	610	1400
Field	Temperature	°C		22.7	21.4	22.1	21.9	21.3
	pH	pH units		5.87	6.65	6.21	6.03	6.00
	Electrical Conductivity	uS/cm		1616	1518	1271	573	1345
	Dissolved Oxygen	Mg/L		1.08	0.36	0.68	1.2	0.88