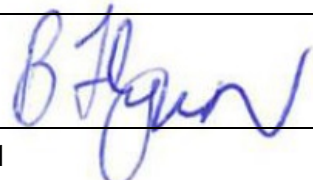


Clean TeQ Sunrise Project
2020 Annual Review
31 March 2021

CLEAN TEQ SUNRISE PROJECT

2020 Annual Review

Name of Operation/Mine	<i>Clean TeQ Sunrise Project</i>
Name of Operator	<i>Clean TeQ Sunrise Pty Ltd</i>
Development Consent	<i>DA 374-11-00 (as modified)</i>
Name of Holder of Development Consent	<i>Clean TeQ Sunrise Pty Ltd</i>
Mining Leases	<i>ML1770, ML1769</i>
Name of Holder of Mining Lease	<i>Clean TeQ Sunrise Pty Ltd</i>
Environmental Protection Licence (EPL)	<i>21146</i>
Name of Holder of EPL	<i>Clean TeQ Sunrise Pty Ltd</i>
Water Licences	<i>WALs 32068, 39837, 28681, 42370, 1798, 6679</i>
Name of Holder of Water Licences	<i>Clean TeQ Sunrise Pty Ltd</i>
Mining Operations Plan (MOP) Commencement Date	<i>08 August 2020</i>
MOP Completion Date	<i>30 June 2021</i>
Annual Review Start Date	<i>01 January 2020</i>
Annual Review End Date	<i>31 December 2020</i>
<i>I, Bronwyn Flynn, certify that this audit report is a true and accurate record of the compliance status of the Clean TeQ Sunrise Project for the period 01 January 2020 – 31 December 2020 and that I am authorised to make this statement on behalf of Clean TeQ Sunrise Pty Ltd.</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 2021

Please note, as at the date of writing, Clean TeQ Holdings had changed the company name to Sunrise Energy Metals. Clean TeQ Sunrise had also changed its name to SRL Ops.

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1 STATEMENT OF COMPLIANCE

The compliance status of the Clean TeQ Sunrise Project (the Project) with its relevant approval conditions as at the end of the reporting period (31 December 2020) 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 of 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 Clean TeQ Sunrise Pty Ltd (Clean TeQ) for the Clean TeQ Sunrise Project (the Project) for the 2020 calendar year from the 1st January 2020 through to 31st December 2020 (the reporting period).

This AR is generally consistent with the *Annual Review Guideline – Post-approval Requirements for State Significant Mining Developments* [1], *AEMR Guidelines for MOPs prepared to EDG03 Requirements* [2] and also meets:

- the Annual Review requirements of the Department of Planning Industry & Environment (DPIE) (Schedule 5, Condition 5 of the Development Consent DA 374-11-00 granted on 23rd May 2001);
- the Annual Rehabilitation Report (ARR) requirements of the NSW Resources Regulator (NSW RR) under the standard Mining Lease conditions (Condition 3(f)); and
- the routine reporting expectations of the NSW Natural Resources Access Regulator (NRAR).

2.1 Conditions Compliance Table

Table 2 below lists the information requirements in 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 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

Table 3 below lists the information requirements in the Mining Lease Conditions and the corresponding section of this AR where the requirement is addressed.

Table 3 Mining Lease Conditions Information Requirements

Mining Lease Conditions Schedule 2 Condition 3 (f)	Section in this AR document
<i>The lease holder must prepare a Rehabilitation Report to the satisfaction of the Minister. The report must:</i>	This document
provide a detailed review of the progress of rehabilitation against the performance measures and criteria established in the approved MOP;	Section 8
be submitted annually on the grant anniversary date (or at such other times as agreed by the Minister); and,	This section
be prepared in accordance with any relevant annual reporting guidelines published on the Department's website at www.resourcesandenergy.nsw.gov.au/miners-and-explorers/rules-and-forms/pgf/environmental-guidelines .	This document

Exemption from the ARR commitment for ML 1769 was granted by the Resources Regulator (letter dated 5 July 2019). The Resources Regulator was satisfied that the ARR commitment for ML 1769 is not required until an approved Mining Operations Plan (MOP) is in place. There have been no mining activities undertaken by Clean TeQ within ML 1769 since grant of title and therefore a MOP is currently not in place nor required.

In addition, a request by Clean TeQ 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 Clean TeQ Sunrise Background

Clean TeQ owns the rights to develop the Project and is a wholly owned subsidiary of Clean TeQ Holdings Limited.

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

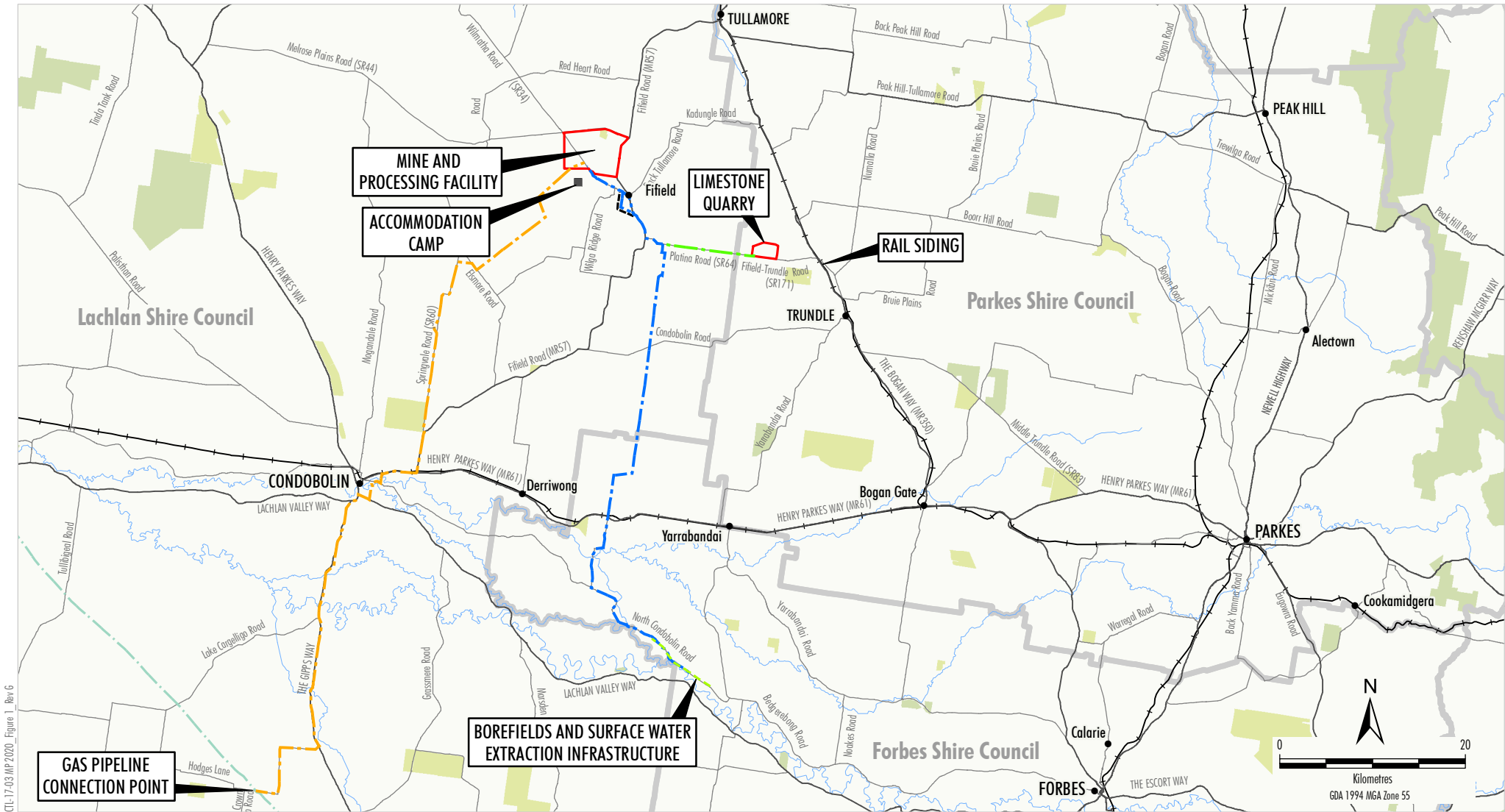
- mine (including the processing facility) on ML 1770;
- limestone quarry on ML 1769;
- rail siding;
- gas pipeline;
- borefields, surface water extraction infrastructure and water pipeline;
- accommodation camp; and
- associated transport activities and transport infrastructure (e.g. the Fifield Bypass,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

Development Consent DA 374-11-00 (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. Six 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; and
- 2018 – to implement opportunities to improve the overall 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), however recommencement of 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.



CLT-17-03 MP 2020 Figure 1 Rev G



- LEGEND**
- National Park/Conservation Area
 - State Forest
 - Local Government Boundary
 - Railway
 - Existing Gas Pipeline
 - Mining Lease Boundary (ML)
 - Fiffeld Bypass
 - Gas Pipeline
 - Water Pipeline
 - Limestone Quarry Water Pipeline
 - Borefield Infrastructure Corridor

Source: Black Range Minerals (2000); Clean TeQ (2017, 2018); NSW Department of Industry (2020); NSW Land & Property Information (2017); Office of Environment and Heritage NSW (2017)

CLEAN TEQ
Powering innovation
CLEAN TEQ SUNRISE PROJECT
Regional Location

Figure 1

2.3 Mine Contacts

Contact details for key Clean TeQ personnel responsible for the environmental management of the Project are provided below in Table 4:

Table 4 Key mine contacts

Position	Name	Telephone	Email
Mine (Technical) Manager	Luke Cox	0490 527 293	lcx@sunriseem.com
Environment, Approvals and Community Lead	Bronwyn Flynn	0429 066 086	bflynn@sunriseem.com

The postal address for the Clean TeQ Project is provided below:

Postal Address

PO Box 227

Mulgrave, Victoria, 3170

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 5 below. Any applicable changes to these approvals during the reporting period are also described in Table 5.

Table 5 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	DPIE	23/05/2001	21 years (from commencement of mining operations)	No change
Mining Leases (ML)					
ML 1769	Mining Lease (389.7 ha)	DRG	15/2/2018	21 years	No change
ML 1770	Mining Lease (2676 ha)	DRG	16/2/2018	21 years	Instrument of variation issued (25/10/2019) to substitute Condition 7 with amended security deposit as assessed by the Secretary (to take effect 16/01/2020)
Mining Operations Plan					
MOP	Mining Operations Plan 2020-2021	DRG	04/08/2020	30/06/2021	A new MOP was submitted for a phase of "care and maintenance" of ML 1770. During this term, the MOP was amended (MOP Amendment A) to allow up to six exploration drill holes within the proposed pit extents
Environment Protection Licence					
EPL21146	Environment Protection Licence (EPL)	NSW EPA	09/01/2019	Until surrendered	Licence Variation notice 1593020 issued on the 23 April 2020
Exploration Licences (EL)					
EL8928	Exploration Lease (57.5 km ²)	NSW RR	06/01/2020	3 years	EL granted 06/01/2020
EL4573	Exploration Lease (22.7 km ²)	NSW RR	17/08/2018	3 years	No change
EL8833	Exploration Lease (112.5 km ²)	NSW RR	18/04/2019	3 years	No change
EL8882	Exploration Lease (80.9 km ²)	NSW RR	14/08/2019	3 years	No change

Table 5 (Cont.) Key Consents, Leases, Licences and Permits

Instrument	Description	Relevant Authority	Date of Grant	Expiry Date or Duration	Changes During AR Period
Exploration Licences (EL) (Cont.)					
EL8883	Exploration Lease (138.4 km ²)	NSW RR	14/08/2019	3 years	No change
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
119039 v2	Class 2 - Heavy Vehicle Authorisation Permit	NHVR	02/05/2018	30/01/2021	No change
LN 603648	Crown Lands Licence	DPIE- Crown Lands	06/08/2019	-	No change
Agreement	Mining Lease Compensation Agreement	DPIE- Lands and Central West LLS	20/03/2020	Until land becomes freehold or relinquishment of ML (and certificate to say rehab completed etc.)	Compensation agreement signed between Clean TeQ, Crown Lands and LLS for compensation for use and access to crown land on ML 1770
5099691	Radiation Management License	NSW EPA	01/10/2020	01/10/2021	Licence issued
5099494	Radiation Management License	NSW EPA	25/09/2020	25/09/2021	Licence issued
Water Licences					
WAL32068	Water Access Licence	NRAR	18/09/2018	Continuing	Water Sharing Plan replaced by the <i>Water Sharing Plan for the Lachlan Alluvial Groundwater Sources 2020</i> which commenced 1 July 2020.
WAL28681	Water Access Licence	NRAR	18/09/2018	Continuing	No change
WAL39837	Water Access Licence	NRAR	25/10/2018	Continuing	Water Sharing Plan replaced by the <i>Water Sharing Plan for the Lachlan Alluvial Groundwater Sources 2020</i> which commenced 1 July 2020.
WAL6679	Water Access Licence	NRAR	13/03/2019	Continuing	Temporary assignment of 16 ML to Lachlan Shire Council to assist with filling of Gum Bend Lake.
WAL42370	Water Access Licence	NRAR	24/05/2019	Continuing	No change

Instrument	Description	Relevant Authority	Date of Grant	Expiry Date or Duration	Changes During AR Period
WAL1798	Water Access Licence	NRAR	03/06/2019	Continuing	Temporary assignment of 84 ML to Lachlan Shire Council to assist with filling of Gum Bend Lake.
Water Supply Works Approvals (WSWAs)					
70CA614098	WSWA Amendment Application	NRAR	14/09/2012	12/03/2026	No change; awaiting decision on amendment application submitted to NRAR (2 August 2019)
70WA617095	WSWA	NRAR	13/07/2020	09/07/2030	Statement of Approval issued.

DPiE: NSW Department of Planning, Industry and Environment.

EPA: NSW Environment Protection Agency – within the Department of Planning, Industry and Environment

NRAR: NSW Natural Resources Access Regulator – within the Department of Planning, Industry and Environment

DRG: Division of Resources and Geoscience – within the Department of Planning, Industry and Environment

BCS: NSW Biodiversity, Conservation and Science Directorate – within the Department of Planning, Industry and Environment

FCNSW: Forestry Corporation of New South Wales

NHVR: National Heavy Vehicle Regulator

NSW RR: NSW Resources Regulator - within the Department of Planning, Industry and Environment

4 OPERATIONS SUMMARY

4.1 Mining

As mining (or construction) has not commenced, Clean TeQ 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 6 below.

Table 6 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

During the reporting period, exploration activities included a bulk density revision and commencement of a diamond drilling program targeting platinum lodes within identified structures from interpreted magnetic survey data beneath the existing lateritic deposit. All exploration drilling results have been reported in the *Third Annual Exploration Report for ML 1770 “Clean TeQ Sunrise Project” – 16 February 2020 to 15 February 2021* [3].

Bulk Density Revision

A total of seventy-seven (77) historic reverse circulation (RC) holes from closely drilled areas within the deposit were selected, re-entered and surveyed downhole using truck mounted Gamma-Gamma – BMR survey. The aim was to compare the dry bulk density and moisture content in the Goethite Zone to historic drilling testwork and update the mineral resource and reserves accordingly. The results are shown below in the revised Global Mineral Resource Estimate and Ore Reserve Estimate (Tables 7 and 8).

Table 7 Sunrise Global Mineral Resource Estimate (June 2020)

Classification Category	Quantity (Mt)	Nickel Equivalent Grade (%)	Nickel Grade (%)	Cobalt Grade (%)	Scandium (ppm)	Platinum (g/t)	Nickel Equivalent Metal (t)	Nickel Metal (t)	Cobalt Metal (t)	Scandium Metal (t)	Scandium Oxide (t)	Platinum (oz)
Measured	69	1.04	0.65	0.11	61	0.23	720,000	450,000	73,000	4,200	6,400	500,000
Indicated	89	0.81	0.49	0.09	79	0.19	720,000	440,000	76,000	7,000	11,000	540,000
Measured & Indicated	160	0.91	0.56	0.09	71	0.21	1,400,000	890,000	150,000	11,000	17,000	1,000,000
Inferred	17	0.64	0.26	0.10	289	0.15	110,000	45,000	18,000	5,000	7,700	84,000
Total	180	0.88	0.53	0.10	92	0.20	1,600,000	940,000	170,000	16,000	25,000	1,100,000

Table 8 Sunrise Ore Reserve Estimate (June 2020)

Category	Tonnage (Mt)	Grade Nickel (%)	Grade Cobalt (%)	Grade Scandium (ppm)
Proven	65.4	0.67	0.11	55
<i>Probable</i>	<i>77.9</i>	<i>0.52</i>	<i>0.09</i>	<i>41</i>
Total	143.2	0.59	0.10	47

Platinum Diamond Drilling Program

The first three (3) boreholes of a six (6) borehole program were drilled in late 2020, however, at the end of the reporting period, Clean TeQ were awaiting final assay results. Borehole depths ranged from 393.3m to 529.8m for a total of 1,353 m during the reporting period. Logging of core indicated the occurrence of numerous faults, breccias and chromite veining as well as minor sulphides and magnetite blebs and veins. Chromite is known to associated with platinum mineralisation based on historic Ivanplats RC drilling that intersected platinum in fresh dunite below the laterite deposit.

The locations of the completed boreholes to date as well as remaining planned boreholes are shown in Figure 2 along with Southern Geoscience Consulting's 2017 interpretation of the re-processed magnetic survey data.

4.3 Other Activities

Environmental Protection Works

As reported in the 2019 Annual Review, in early August 2019, landscaping activities were undertaken with the planting of approximately 9,650 native tree and shrub species on Clean TeQ owned land (including ML 1770). Due to drought conditions during 2019, a survival rate of 47% was achieved. In June 2020, in fill planting of 5,000 native tree and shrub species was undertaken (Figure 3) to replace the trees that did not survive. Given the higher rainfall received during 2020, the replacement seedlings have a much higher survival rate than those planted in 2019.

The native tree and shrub species planted are listed below in Table 9.

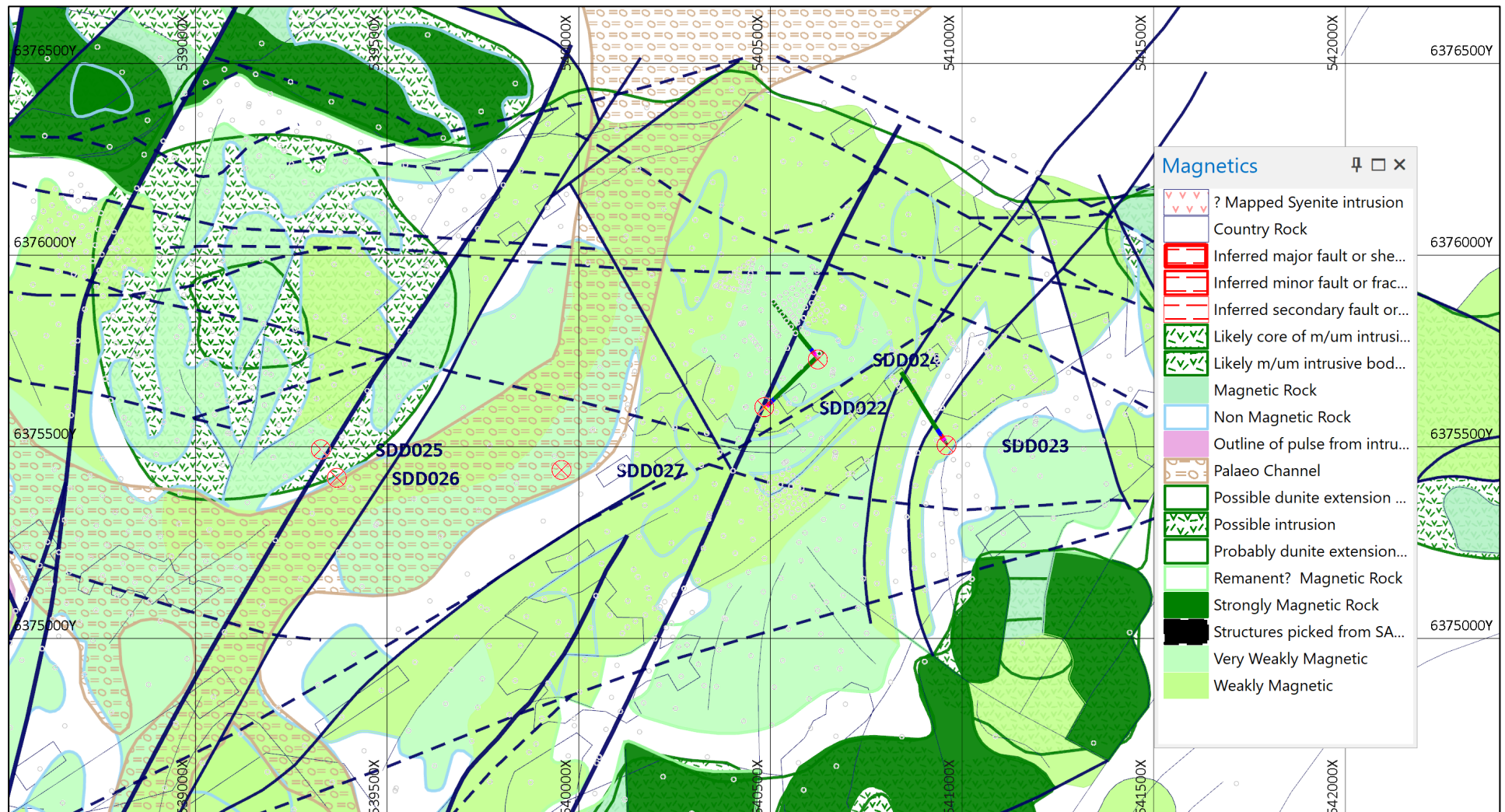


Figure 2 Location of Diamond Drillholes targeting Platinum within the dunite complex superimposed over SGC magnetics – re-interpretation

Table 9 Native tree and shrub seedling species

Scientific Name	Common Name
<i>Acacia Hakeoides</i>	Hakea Wattle
<i>Bursaria Spinosa</i>	Blackthorn
<i>Dodonaea Viscosa Cuneata</i>	Wedge-leaf hop-bush, Sticky hopbush
<i>Hardenbergia Violacea Blue</i>	Purple Coral Pea, False Sarsaparilla, Waraburra
<i>Indigofera Australis</i>	Australian indigo
<i>Allocasuarina Luehmannii</i>	Bulloak, Buloke
<i>Brachychiton Populneus</i>	Kurrajong
<i>Callitris Glaucohylla</i>	White Cypress Pine
<i>Callitris Endlicheri</i>	Black Cypress Pine
<i>Casuarina Cristata</i>	Belah
<i>Eucalyptus Albens</i>	White Box
<i>Eucalyptus Camaldulensis</i>	River Red Gum
<i>Eucalyptus Largiflorens</i>	Black Box
<i>Eucalyptus Melliodora</i>	Yellow Box
<i>Eucalyptus Microcarpa</i>	Grey Box
<i>Pittosporum angustifolium</i>	Weeping Pittosporum, Butterbush



Figure 3 Landscaping activities – infill planting 2020

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 as described in the current MOP are expected to continue throughout 2021. A new MOP will be prepared to replace the existing MOP, due to expire on 30 June 2021.

5 ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

The previous annual review (2019 Annual Review for the period 1 January 2019 to 31 December 2019) was submitted to the DPIE (the Department) on the 1st of April 2020. The Department responded to the 2019 Annual Review submission (letter dated 16/04/2020) advising they had reviewed the Annual Review and considered that it satisfied the reporting requirements of the approval (the Development Consent) and the Department's *Annual Review Guideline* (October 2015). The Department also requested that a copy of the 2019 Annual Review be made publicly available on the company website (Table 10).

Actions required to be undertaken as an outcome of the previous Annual Review and actions that have been undertaken and when they were completed are identified below in Table 10.

Table 10 Actions from the previous Annual Review

Action required from previous Annual Review	Requested by	Action taken by Clean TeQ	Where discussed in Annual Review
Make a copy of the 2019 Annual Review publicly available on the Clean TeQ website	DPIE	A copy of the 2019 Annual Review was made publicly available on the Clean TeQ website in April 2020.	This section (Section 5)
No requirement	DRE	N/A	N/A
No requirement	DPI - Water	N/A	N/A

6 ENVIRONMENTAL PERFORMANCE

Environmental management at the Project during the reporting period was conducted under the guidance of the approved Mining Operations Plan (MOP) and approved Environmental Management Plans (EMPs). Risks associated with the proposed exploration activities are summarised in section 3.1 of the MOP as follows:

- Adverse noise impacts on surrounding residents;
- Unacceptable dust-related impacts;
- Surface water impacts associated with discharge of produced or other water; and
- Groundwater impacts associated with contamination of aquifers.

EMPs and strategies required under the Development Consent prepared (by Clean TeQ) and approved by the DPIE are shown below in Table 11.

Table 11 Environmental management plans and strategies

Description	Current Status		DPIE Approval Date
	Revision	Dated	
Air Quality Management Plan	2	21/08/2019	29/08/2019
Blast Management Plan	1	29/03/2019	12/04/2019
Biodiversity Management Plan and Revegetation Strategy	2	22/07/2019	15/08/2019
Environmental Management Strategy	1	17/09/2019	27/09/2019
Heritage Management Plan	2	12/06/2019	13/06/2019
Noise Management Plan	3	29/05/2020	15/06/2020
Rehabilitation Management Plan	2	11/07/2019	15/08/2019
Road Upgrade and Maintenance Strategy	1	27/03/2019	13/05/2019
Traffic Management Plan	1	8/07/2019	15/08/2019
Water Management Plan	1	3/09/2019	21/01/2020
- Appendix A Water Balance	1	3/09/2019	21/01/2020
- Appendix B Surface Water Management Plan	1	28/10/2019	21/01/2020
- Appendix C Groundwater Management Plan	1	11/12/2019	21/01/2020

Future planned exploration and construction activities will be undertaken in accordance with the commitments outlined in the approved MOP and relevant approved EMP's. All approved EMPs can be found on the Clean TeQ website at <https://www.cleanteq.com/sunrise-project/management-plans/>.

6.1 Air Quality

The Development Consent (Schedule 3, Condition 23) requires the preparation of an Air Quality Management Plan (AQMP) for the Project. As stated above, a construction phase AQMP was submitted to the DPIE for approval and subsequently approved on the 29 August 2019. The management plan outlines the control strategies for managing air quality, and the monitoring program to measure performance.

6.1.1 Environmental Management

6.1.1.1 Control Strategies

Dust from exploration activities on ML 1770 and vehicle movements on unsealed roads was identified in the MOP as a potential impact to sensitive receivers surrounding the mine site. Therefore, Clean TeQ implemented the following air quality management measures to minimise and mitigate these impacts:

- All drill rigs were fitted with an effective dust suppression and collection system and rigs only operated when that dust suppression system was functional;
- Drilling ceased immediately if dust emissions were visible from more than 250m from the drill rig; and
- Vehicle speeds on-site were limited to 40km/h on formed tracks and 20km/h on unformed tracks.

6.1.1.2 Effectiveness of Control Strategies

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

6.1.1.3 Variations from Proposed Control Strategies

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

6.1.1.4 Monitoring Programme

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

- PM10 (particulate matter with an aerodynamic diameter less than or equal to 10 µm)
- PM2.5 (particulate matter with an aerodynamic diameter less than or equal to 2.5 µm)
- Depositional dust (insoluble solids).

The location of the monitoring stations are shown in Figure 4.

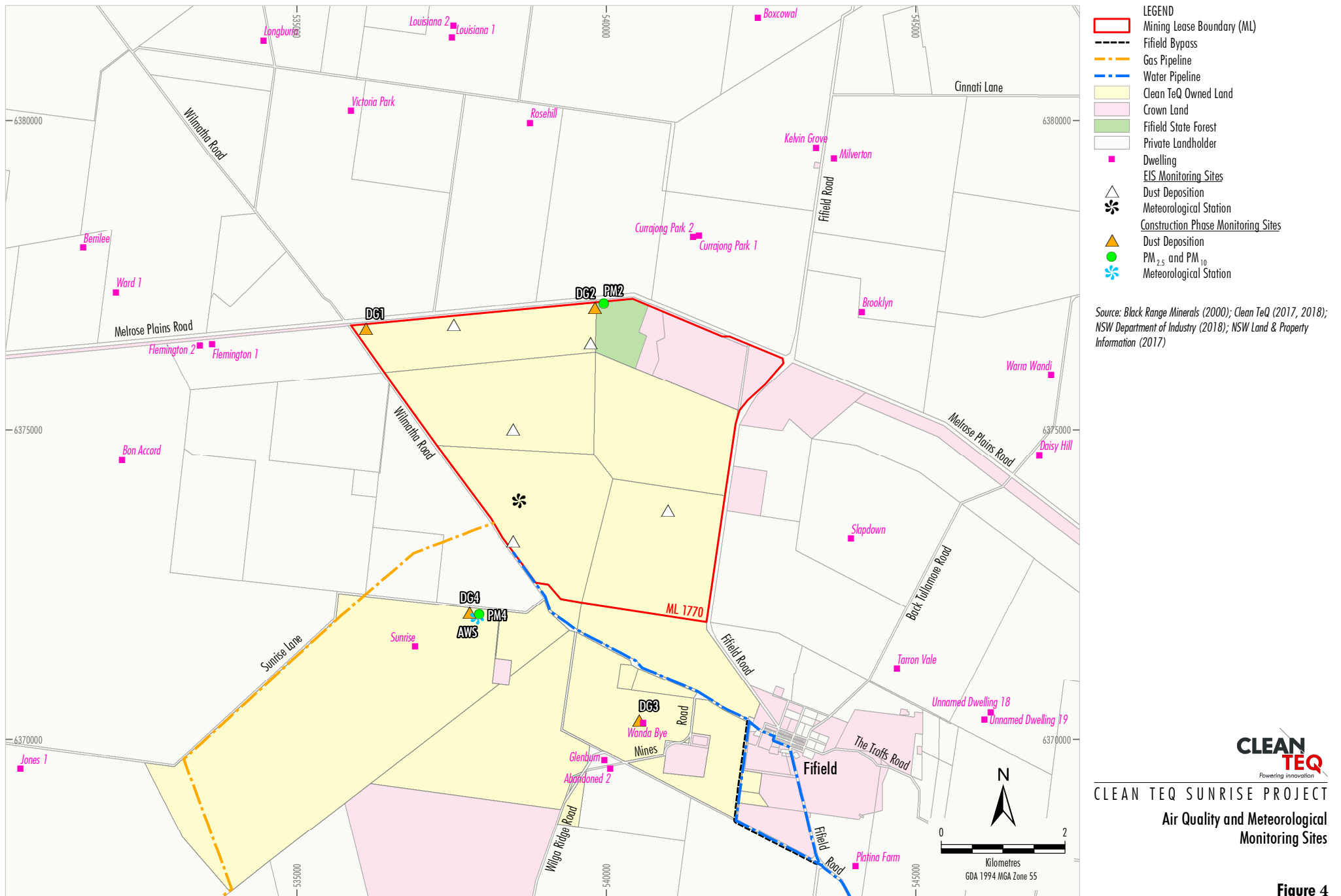


Figure 4

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 during December 2019. One was installed adjacent to the Automatic Weather Station (AWS) and accommodation camp and the other on the northern boundary of the mine site (Figure 3). Both monitors have been operating during the reporting period. 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 AQMP, four dust deposition gauges were installed in January 2019 (Figure 3), prior to exploration or construction activities being undertaken. Monitoring was undertaken monthly from the four locations during the reporting period.

6.1.2 Environmental Performance

6.1.2.6 Depositional Dust Monitoring

Several significant dust storms were recorded in the region during January and February 2020, which resulted in extremely high deposition results, particularly in January. In November and December 2020, the harvesting activities on neighbouring properties has contributed to some high dust deposition rates. Results for each month have been published on the Clean TeQ website at <https://www.cleanteq.com/sunrise-project/reports/> and are presented below in Figure 5.

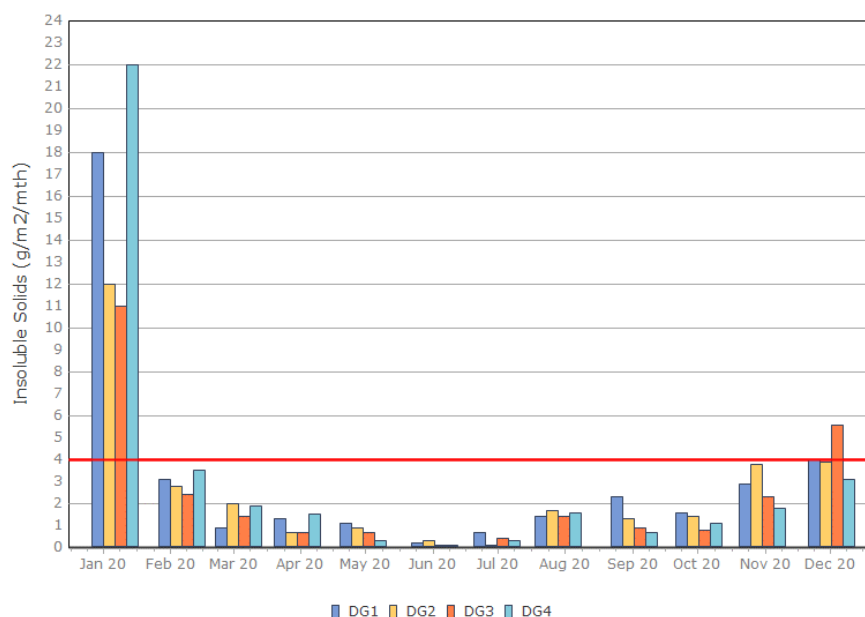


Figure 5 Dust Deposition (insoluble solids) 2020

Table 8, Condition 21, Schedule 3 of Development Consent DA 374-11-00 sets the long-term criteria for deposited dust (insoluble solids). The maximum total deposited dust level averaged over a year is 4 g/m²/month, while the maximum increase (incremental increase due to the development on its own) is 2 g/m²/month. Table 12 shows the 2020 reporting period annual average, along with the previous year's data (2019). The baseline monitoring data collected for the EIS (September 1997 – August 2000) is also shown as a comparison.

Table 12. Maximum Total Deposited Dust Level - Annual Average

Year	DG1	DG2	DG3	DG4	ALL
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

6.1.2.7 Particulate Matter Monitors

Monitoring results have been reviewed (as per Section 11.1 of the approved AQMP) and a summary is presented below. Daily data for PM₁₀ and PM_{2.5} is shown in Appendix 1B, 1C and 1D.

Table 6, Condition 21, Schedule 3 of Development Consent DA 374-11-00 sets the long-term criteria for particulate matter (excluding extraordinary events such as bushfires, dust storms etc.). Table 13 shows the 2020 results against the criterion. TSP is derived from PM₁₀ data, calculated based on an assumption that 40% of TSP is PM₁₀ (NSW Minerals Council (2000)).

Table 13. Long term impact assessment criterion for particulate matter - 2020 results

Pollutant	Averaging Period	Criterion	PM2	PM4
TSP Matter	Annual	90 µg/m ³	25.93	32.17
PM ₁₀	Annual	30 µg/m ³	10.37	12.87
PM _{2.5}	Annual	8 µg/m ³	3.60	4.25

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, however there were days where the 24 hour average for PM₁₀ and PM_{2.5} did exceed the criteria. Upon investigation these exceedances were found to be caused by bushfires and were therefore excluded from the dataset (these records are highlighted in the data tables presented in Appendix 1B and 1C).

Furthermore, no community complaints were received regarding air quality from nearby sensitive receivers at any time during the reporting period, including during the exploration activities.

6.1.4 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

6.2.1.1 Monitoring Programme

The AWS [meteorological station] (Figure 4), located on the Sunrise Property (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 10m), temperature (at 2m and 10m), barometric pressure, humidity, solar radiation and rainfall.

In January 2020, the weather station was struck by lightning and the sensor arrays damaged. The weather station was inoperable for 10 days between 19/1/2020 4:45pm to 28/1/2020 4:15pm, and no data was recorded for the following parameters: wind speed at 10m, wind direction at 10m, sigma theta, rainfall, humidity, temperature at 2m, and temperature at 10m.

On 28 January 2020, Sentinel installed replacement sensors that measured all parameters, except for temperature at 10m. No data was recorded for temperature at 10m for 102 days. This sensor wasn't able to be replaced until 6/5/2020 at 2:30pm.

Real time meteorological data from the AWS can be accessed remotely. The data has been used to assess noise monitoring compliance conditions 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.

6.2.1.2 Effectiveness of Monitoring Programme

The strategies implemented during the reporting period were considered to be effective. However, equipment failure of the weather station sensors (due to a lightning strike) resulted in missing results (see 6.2.1.1).

6.2.1.3 Variations from Proposed Control Strategies

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

6.2.2 Environmental Performance

6.2.2.1 Temperature

Maximum and minimum temperatures from data recorded (temperature at 2m) by the AWS are shown below in Figure 6. The highest maximum temperature of 44 °C was recorded in January and the lowest minimum temperature in August of -2.3 °C.

The highest average monthly maximum temperature (36.7°C) occurred in January and the lowest average monthly minimum temperature (3.5°C) occurred in August. 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) and shown in Table 20 (Appendix 2). Spring temperatures were above average, but the maximum daily temperatures for the rest of the year were generally lower than average.

Compared to last year, January 2020 was much hotter than January 2019. Regionally January 2020 was characterised by above average temperatures and a significant number of bushfires in eastern and south eastern Australia. The rest of the year was on average much cooler than 2019.

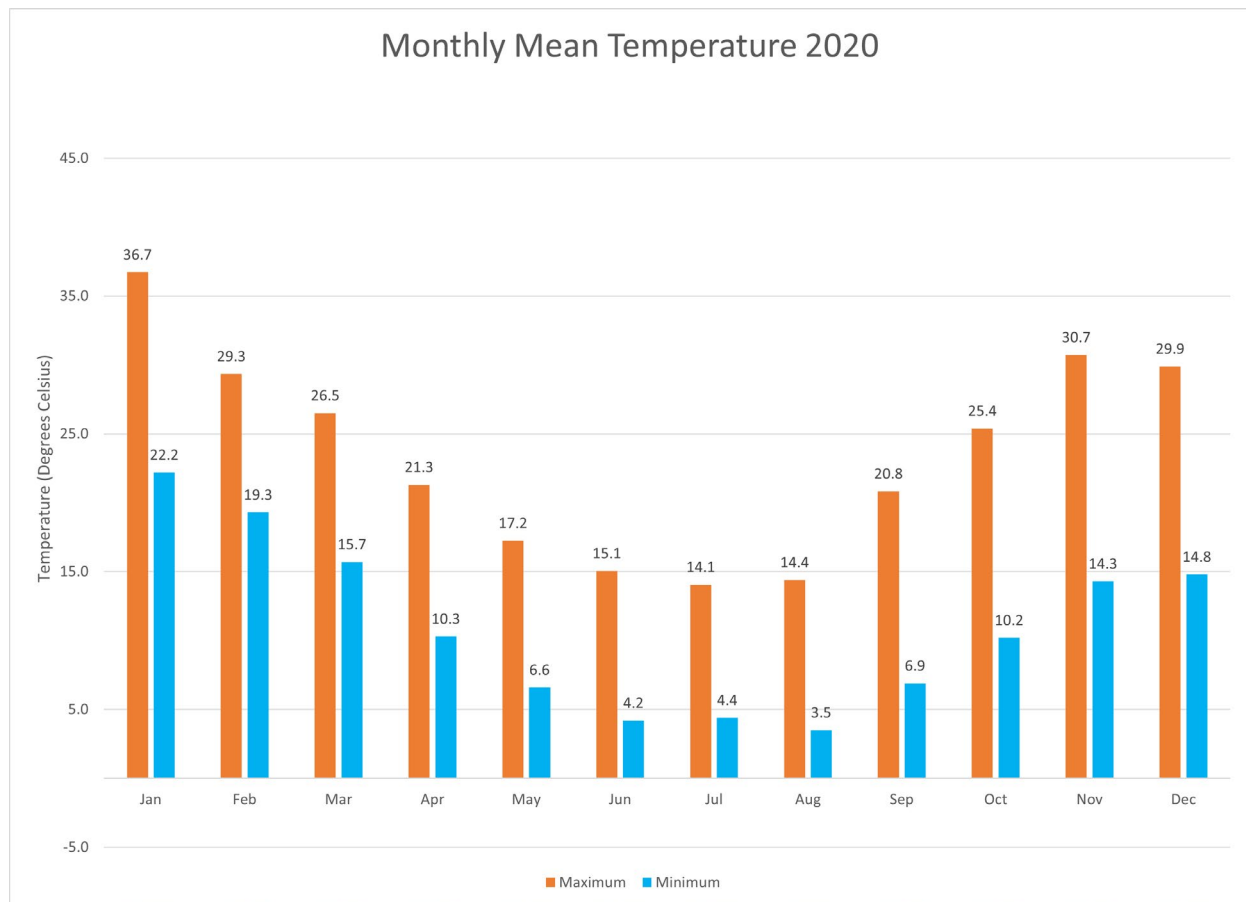


Figure 6 Monthly temperature records for 2020 at the Sunrise AWS

6.2.2.2 Rainfall

Total rainfall of 795.2 mm was recorded by the AWS during the 2020 reporting period as shown below, along with monthly totals, in Figure 7. This total is well above the mean annual rainfall described in the EIS of 480 mm recorded at the Murrumbogie Station at Trundle. Murrumbogie station (#50028) is the nearest long-record daily rainfall station located approximately 30 km south east of the mine site. The 2020 rainfall is in the 90th percentile of records at the Murrumbogie Station, and the last time the annual total was within the 90th percentile was 1998.

Compared to 2019, the annual rainfall was significantly higher in 2020. January and February were much drier than in 2019, because the regional drought had not broken. Rainfall was greater in every other month, except for May.

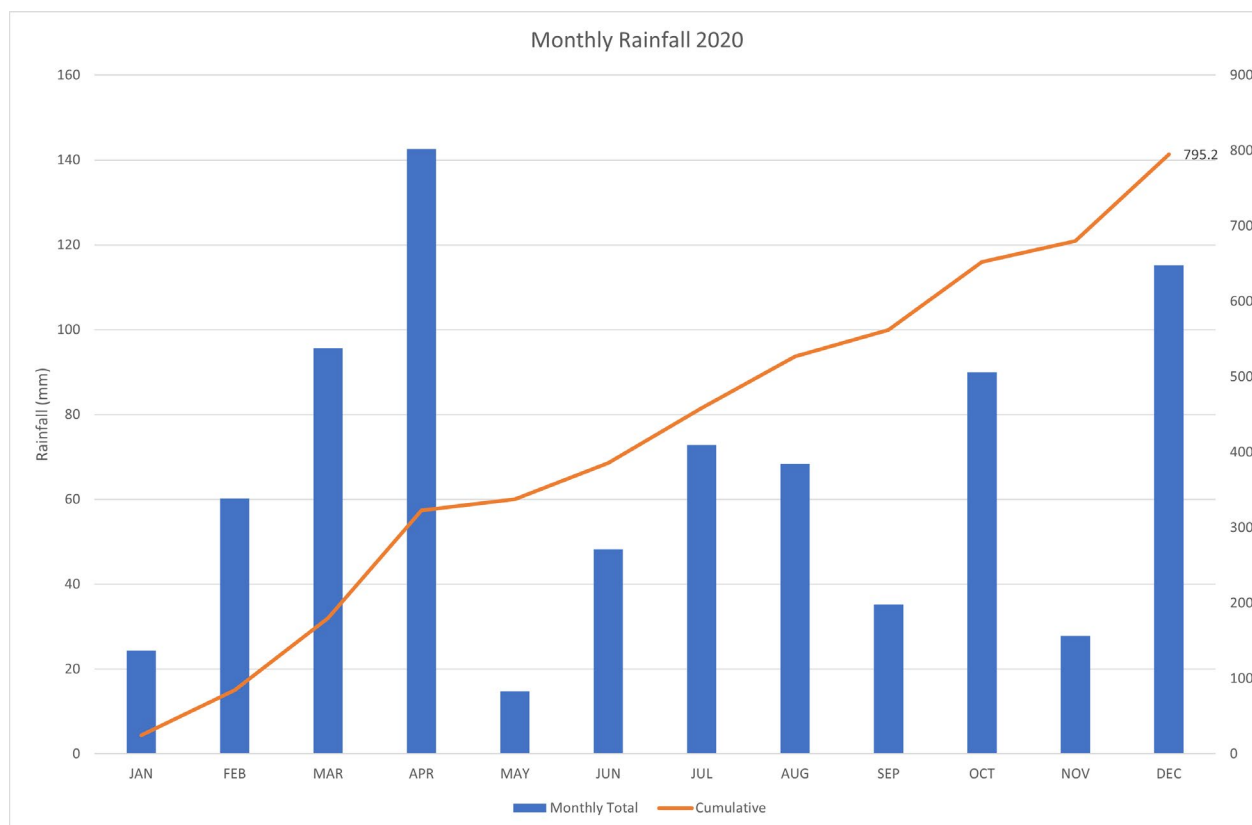


Figure 7 Monthly rainfall records for 2020 at the Sunrise AWS

6.2.2.3 Wind

Wind speed and direction (blowing from) data for the 2020 reporting period are presented in the wind rose in Figure 8. Wind speed values are displayed as metres per second (m/s). Monthly wind roses are presented in Appendix 2A.

Analysis of data reveals that winds during the 2020 reporting period were predominantly from the south west (30%). An average wind speed of 3.1 m/s was calculated for the period. Calms (wind speed <0.5m/s) were experienced 6% of the time.

The annual wind rose graph from 2020 is a bit different compared to 2019, and also compared to the wind roses from the EIS. The typical prevailing NNE winds were less common in 2020, and more wind came from the NE and ESE. The EIS noted that wind speeds in summer tended to increase up to and between 5 and 8.3 m/s (18 and 30 km/hr) in the afternoons, but this occurred half as often in 2020 compared to 2019. There was a higher percentage of wind speeds between 1.5-3 m/s in 2020 (34% compared to 28%). From May to August winds are predominantly from the West, but September to November is predominantly Easterly. January to March was predominantly NE.

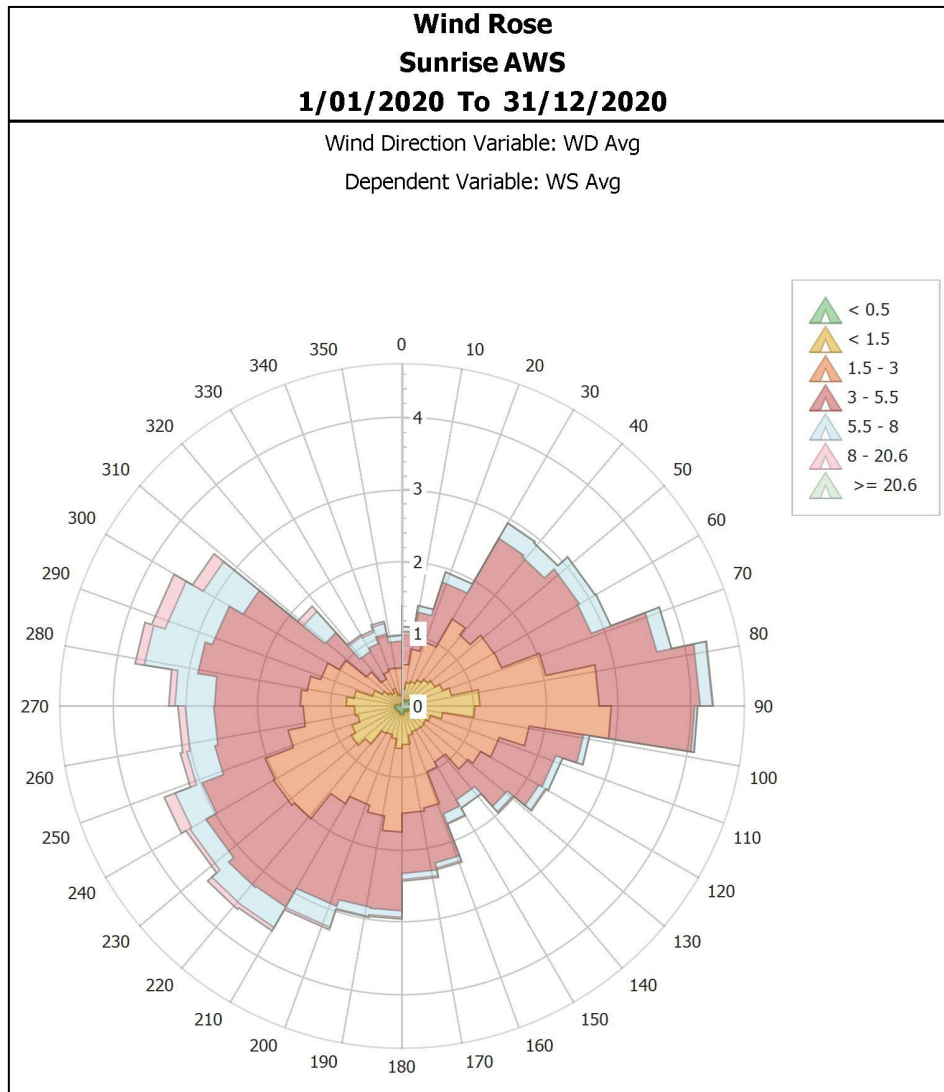


Figure 8 Annual wind rose 2020

6.2.3 Reportable Incidents

There were no reportable incidents during the reporting period, however the period of time that the monitors were not operable were reported as a technical non-compliance to the EPA under the EPL.

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 (Revision 3) was approved by the DPIE on the 15 June 2020.

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

6.3.1.1 Control Strategies

Noise from the drilling program was identified in the MOP as a potential impact to sensitive receivers surrounding the mine site. Clean TeQ informed surrounding residents of the potential noise emissions and was prepared to implement the following noise-management measures during exploration activities to minimise and mitigate these impacts:

- Limit the number, type and location of drill rigs operating concurrently;
- Install noise barriers at the drill site; and/or
- Modify the hours and/or days of operation.

6.3.1.2 Effectiveness of Control Strategies

None of the control strategies listed above were required to be implemented during the reporting period. No noise complaints were received during the reporting period.

6.3.1.3 Variations from Proposed Strategies

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

6.3.2 Monitoring Programme

The Noise Monitoring Plan (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 AS 1055-1997 Acoustics – Description and measurement of environmental noise General procedures, the Noise Policy for Industry and the requirements (including applicable meteorological conditions) of Appendix 4 of Development Consent DA 374-11-00.

Quarterly attended noise monitoring was commenced in Q1 in 2019. During 2020, the quarterly monitoring was carried out in Quarter 1 at four nearby sensitive receivers.

6.3.2.6 Variations from Proposed Monitoring Programme

The attended noise monitoring during 2020 concluded after the Q1 monitoring round. No construction activities were planned for 2020, 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.

The Noise Management Plan was updated to reflect this change, and subsequently approved by the DPIE in June 2020.

6.3.3 Environmental Performance

6.3.3.1 Monitoring Results

Monitoring results have been published on the Clean TeQ website at <https://www.cleanteq.com/sunrise-project/reports/> and reported in this AR.

The noise monitoring results are presented in Appendix 3. The Project was deemed inaudible, as no construction activities occurred during the reporting period. As there was no construction activity noise from the mine, there was no requirement for the assessment of potential sleep disturbance impacts.

6.3.4 Reportable Incidents

There were no reportable incidents during the reporting period.

6.3.5 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 for the Project was submitted to the DPIE for approval and subsequently approved on the 21 January 2020.

During the exploration activities described in Section 4.2, it was noted that no surface water run on or runoff occurred from the drill pad sites due to the flat nature of the surrounding landforms. No sediment or erosion control measures were required to be implemented during the exploration program and follow up inspections did not identify any erosion or sedimentation issues.

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). However, no vegetation clearing was undertaken during the reporting period, therefore no control strategies or monitoring of flora was required.

6.5.1 Environmental Management

6.5.1.1 Control Strategies

Vegetation clearance activities associated with construction of the Project will commence during the next reporting period and will be implemented 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;
- Rehabilitation following construction of the water pipeline; and
- Reporting.

The outcomes of the VCP process will be reported in the next AR.

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).

6.5.1.2 Effectiveness of Control Strategies

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

6.5.1.3 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 Biodiversity Management Plan and Revegetation Strategy (BMP-RS). However, no vegetation clearing was undertaken during the reporting period, therefore no control strategies or monitoring of fauna was required.

6.7 Weeds and Pests

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

6.7.1 Environmental Management

6.7.1.1 Control Strategies

In accordance with the BMP-RS, control strategies for weed management on Clean TeQ-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;
- where practicable, prevention of the establishment of new weeds on Clean TeQ-owned land by minimising seed transport of weed species to and from the Project through the use of a vehicle inspection process (primarily for use on agricultural and earthmoving equipment that are likely to carry weed seeds); and
- pest control activities.

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 Clean TeQ 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.

6.7.1.2 Effectiveness of Control Strategies

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

Significant rainfall events during 2020 provided opportunity for weed seeds, which lay dormant during drought conditions, to flourish with outbreaks of Bathurst Burr, Applebox Thorn and Saffron thistle in some areas. Several weed spraying events occurred from February to May and another campaign during November-December following rain. A total of 242-man hours of weed spraying was expended during the year. This significantly reduced populations of Bathurst Burr, Applebox Thorn and Bridal Creeper species. It is estimated the extent of these weed infestations was reduced by approximately 80%.

In addition, a coordinated fox control program was conducted with surrounding landholders in May 2020. Following the baiting program, visual assessments indicated the fox population had reduced significantly on Clean TeQ owned land.

6.7.1.3 Variations from Proposed Control Strategies

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

6.7.2 Environmental Performance

6.7.2.1 Monitoring

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

6.7.3 Performance Outcomes

6.7.3.1 Weed Management

The performance indicator 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 as described in the further improvement section below.

6.7.3.2 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 as described in the further improvement section below.

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 a “secondary” baseline survey in 2021/2022 as the 2019 “drought” baseline survey 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 was submitted to the DPIE for approval and subsequently approved on the 13 June 2019.

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). 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.

6.8.1 Environmental Management

6.8.1.1 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”.

6.8.1.2 Effectiveness of Control Strategies

The control strategies implemented during the reporting period were considered to be effective as demonstrated by the environmental performance indicators.

6.8.1.3 Variations from Proposed Control Strategies

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

6.8.2 Environmental Performance

6.8.2.1 Monitoring

No activities were undertaken during the reporting period, except for circulation of copies of the following report which was surveyed and prepared in 2019.

Site Recording and Survey of Syerston Stone Quarry 1

In accordance with Condition 13 and Schedule B4 of AHIP #C0003049, the Syerston Stone Quarry 1 (site 35-4-0026) was surveyed, mapped and collected in 2019. Copies of this report [7] were provided to the Project RAPs and the Biodiversity and Conservation Division (BCD) (now the Biodiversity, Conservation and Science Directorate) in accordance with Condition 33 of AHIP #C0003049 during this reporting period. The program was completed by Matt Cupper (Landscape) in consultation with representatives of the RAPs who participated in the field recording and collection completed on the 25 September 2019.

The report was subsequently sent to the BCD in February 2020.

6.8.3 Performance Outcomes

The mitigation measures detailed in AHIP #C0003049 and the HMP were effective in minimising impacts to Aboriginal cultural heritage in the Project area. No non-compliance issues were reported.

6.8.4 Reportable Incidents

There were no reportable incidents during the reporting period.

6.8.5 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 Heritage Management Plan (HMP) for the Project. The HMP was submitted to the DPIE for approval and subsequently approved on the 13 June 2019.

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

Clean TeQ did not extract any water for the Project during the reporting period (1 January 2020 – 31 December 2020). A summary of the Water Access Licences (WALs) held by Clean TeQ is shown in Table 14 below.

Table 14 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, Clean TeQ 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 14 above.

Clean TeQ temporarily assigned (donated) 100 ML of general security surface water (WAL6679 and WAL1798) to Lachlan Shire Council to assist in filling Gum Bend Lake. This contribution will allow an additional three weeks usage of the lake over the 2020/2021 summer period.

7.1.2 Groundwater

No groundwater was extracted from the Project borefields during the previous water year (Table 14). As shown in section 7.1 above, Clean TeQ 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 2012;
- 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 2012 (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 2011.

For the first half of the reporting period, the Upper Lachlan Alluvial Groundwater source was managed by the rules in *the Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources 2012*. It was replaced by the *Water Sharing Plan for the Lachlan Alluvial Groundwater Sources 2020* which commenced 1 July 2020.

7.2 Surface Water

The Development Consent (Schedule 3, Condition 30) requires the development of a Water Management Plan (WMP) which must include a Surface Water Management Plan for the Project. The construction phase WMP, including the construction phase Surface Water Management Plan, was approved by DPIE on 21 January 2020.

Minor water requirements for drilling operations were sourced from harvestable rights entitlements from dams located on ML 1770 (those located on first or second order streams).

7.2.1 Environmental Management

7.2.1.1 Monitoring Programme

Eight rainfall events during the year generated enough surface water flow to enable surface water monitoring to take place, however not all sites were able to be monitored in each event due to insufficient flow. Water quality results from the sampling events are shown in Appendix 4.

Surface water monitoring locations within and surrounding ML 1770 are shown in Figure 9.

These surface water samples have provided important baseline water quality information for the site and will be used to generate site specific trigger levels for water quality.

7.2.2 Reportable Incidents

On the 5th March 2020, the pH was outside the range of pH limits defined by the EPL at monitoring point SW4. The NATA lab sampling result of pH was 6.4, and the pH limits are 6.5-8.5. This was reported to the EPA. No field test of pH was taken on the day due to a faulty probe. The NATA lab results for pH have usually tested lower than the results taken on-site (assumed to be due to the travel time to the laboratory). Water in the stream was not deemed to have been impacted by site activities because construction activities have not yet commenced.

7.2.3 Further Improvements

No further improvements were implemented during the reporting period.

7.3 Groundwater

The Development Consent (Schedule 3, Condition 30) requires the development of a Water Management Plan (WMP) which must include a Groundwater Management Plan for the Project. The construction phase WMP, including the construction phase Groundwater Management Plan, was approved by DPIE on 21 January 2020.

7.3.1 Environmental Performance

7.3.1.1 Monitoring – Mining Lease

Two groundwater monitoring events occurred during the reporting period, with water samples collected for analysis and standing water levels (SWLs) measured in March and September 2020. Groundwater monitoring locations within and surrounding ML 1770 are shown on Figure 10. Manually gauged and recorded standing water level results are presented in Appendix 5A (Table 26) while results of continuous measurements recorded by automatic SWL dataloggers are plotted in Figure 12. Groundwater quality results from the sampling events is shown in Appendix 5B (Table 28).

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

7.3.1.2 Monitoring – Borefields

Two groundwater monitoring events at the borefields occurred during the reporting period, with water samples collected for analysis and SWLs measured in March and September 2020. Manually gauged and recorded SWL results are shown in Appendix 5A (Table 27) while results of continuous measurements recorded by automatic SWL dataloggers are plotted in Figure 13, Appendix 5A. Groundwater monitoring locations within the borefields are shown in Figure 11. Groundwater quality results from both monitoring events are shown in Appendix 5B (Table 29).

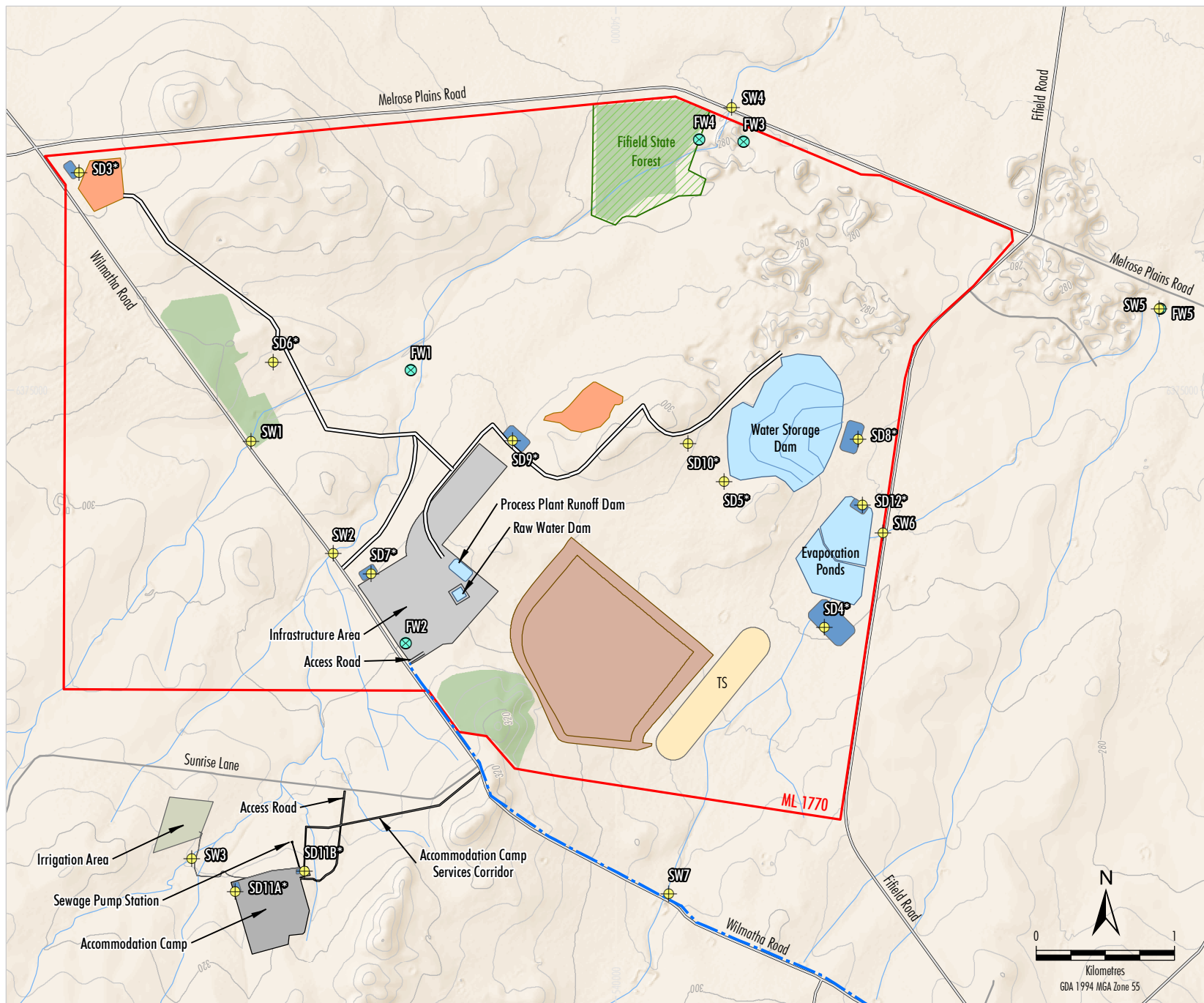
The groundwater standing water level measurements and water quality results have provided important baseline information for the site.

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.



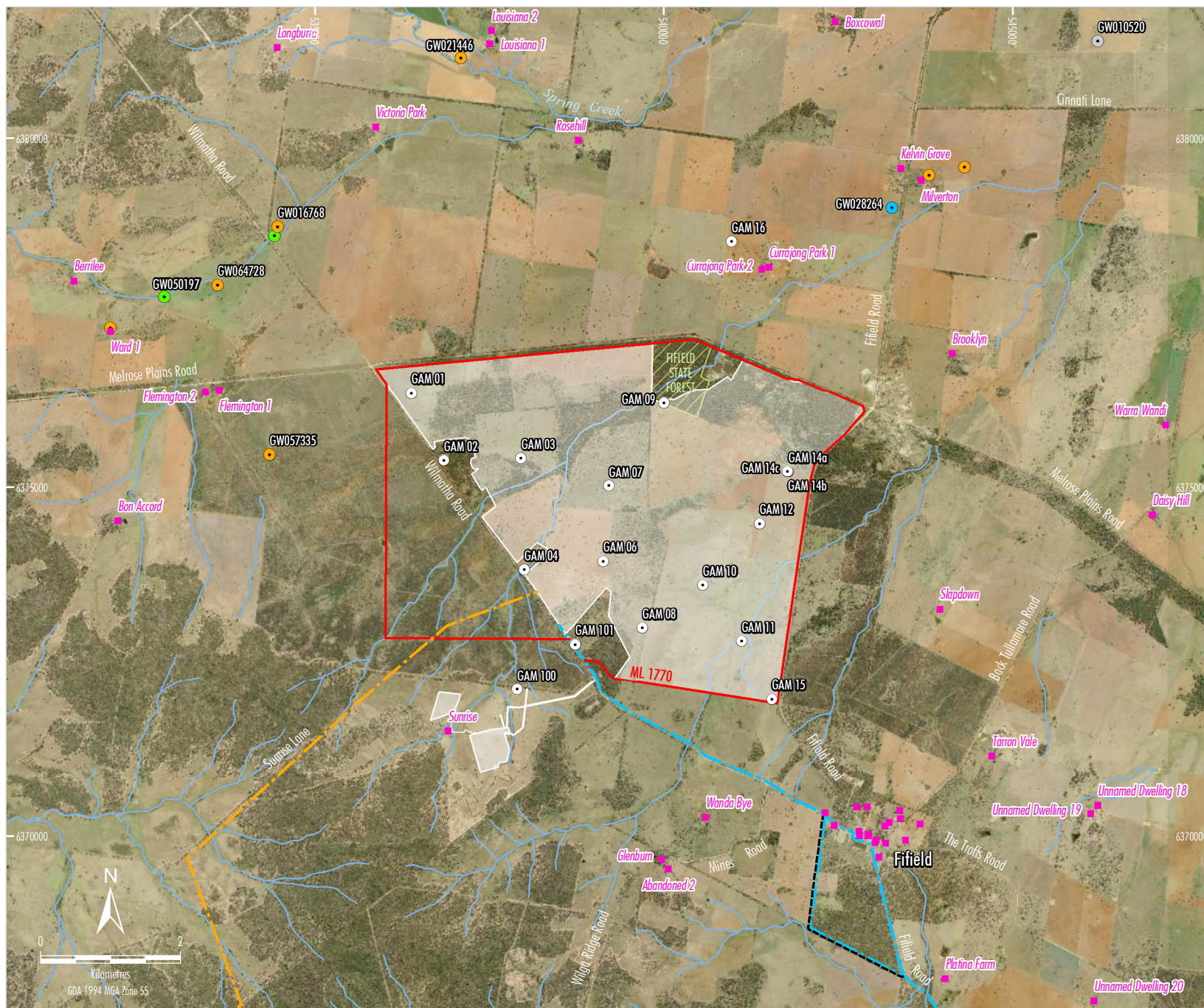
- LEGEND**
- State Forest
 - Mining Lease Boundary (ML)
 - Tailings Storage Facility
 - Borrow Pit
 - TS Topsoil Stockpile
 - Infrastructure Area
 - Water Storage
 - Sediment Dam
 - Existing Open Woodland to be Maintained
 - Water Pipeline
 - + Proposed Surface Water Quality Monitoring Location
 - + Baseline Surface Water Quality Monitoring Location

NOTE
 * Monitoring to commence once Sediment Dam has been constructed.

Source: Black Range Minerals (2000); Clean Teq (2017, 2019); NSW Department of Industry (2020); NSW Land & Property Information (2017)

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Surface Water Monitoring Locations
Within and in the Vicinity of ML 1770

Figure 9



LEGEND

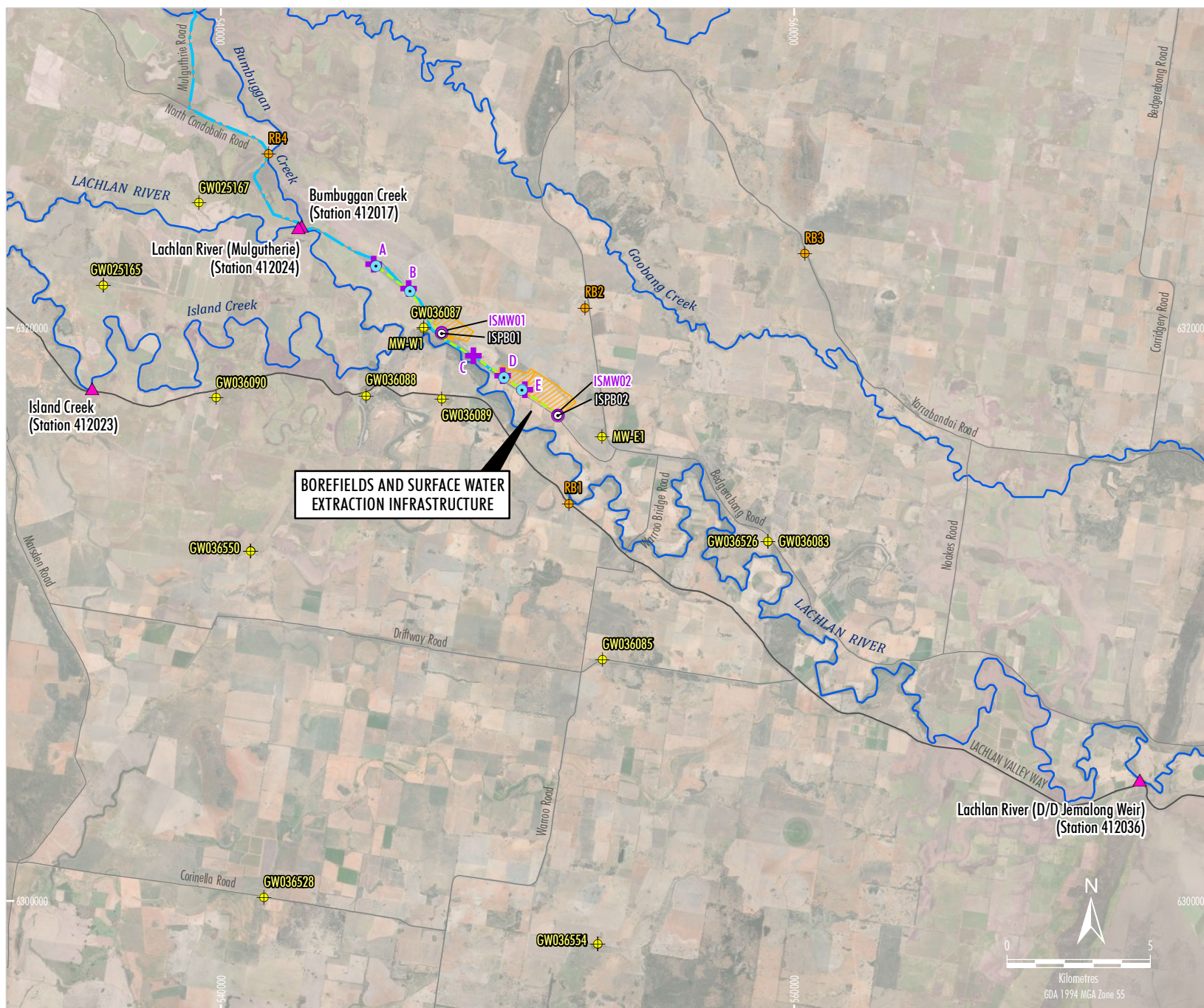
- State Forest
- Mining Lease Boundary (ML)
- Approved Surface Development Area
- Fife Field Bypass
- Gas Pipeline
- Water Pipeline
- Dwelling
- Project Monitoring Bore
- Private Bores
- Stock
- Stock, Irrigation
- Stock, Domestic
- Unknown Purpose

Source: Black Range Minerals (2005); Clean TeQ (2017, 2018); ENRS (2019); NSW Department of Industry (2020); NSW Land and Property Information (2017); Office of Environment and Heritage NSW (2017)
NSW Imagery: © Department of Finance, Services & Innovation (2018)

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Groundwater Monitoring Locations
Within and in the Vicinity of ML 1770

Figure 10



LEGEND

- Water Pipeline
- Borefield Infrastructure Corridor *
- Borefield Location
- Production Bore (not constructed)
- Production Bore (constructed)
- Existing Borefield Monitoring Piezometer
- Proposed Borefield Monitoring Piezometer
- Regional Monitoring Bore (Existing)
- Regional Monitoring Bore (Proposed) ^
- Surface Water Flow Gauge

* Infrastructure Corridor includes linking pipeline, access road and electricity transmission line.

^ Indicative Location Only — Location to be confirmed in consultation with Natural Resources Access Regulator and relevant landholders.

Source: Ivanplats Syerston (2005); NSW Land & Property Information (2017); NSW DPI - Water (2018)
NSW Imagery: Esri, DigitalGlobe (2017)

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CLEAN TEQ SUNRISE PROJECT

**Groundwater Monitoring Program
- Borefields**

Figure 11

8 REHABILITATION

The Development Consent (Schedule 3, Condition 57) requires the preparation of a Rehabilitation Management Plan (RMP) for the Project. As stated above, the construction phase RMP was submitted to the DPIE for approval and subsequently approved on the 15 August 2019.

8.1 Rehabilitation of Disturbed Land

Exploration drilling operations were undertaken in accordance with the *Exploration Code of Practice: Rehabilitation* [8] and the approved MOP, to ensure that areas disturbed by drilling and other exploration activities are returned to a condition that is safe, stable, secure and non-polluting, and allows the proposed final land uses (secondary domains) to be sustained.

As described in section 4.2, three boreholes were drilled during the reporting period (via diamond drilling methods). Rehabilitation activities during the reporting period included:

- Natural regeneration of the 2019 exploration drilling and test pitting areas; and
- Capping of the 2020 diamond drill holes in preparation for future down-hole geophysical surveys. All drilling and other equipment was also removed from the site.

8.2 Rehabilitation Monitoring

Visual monitoring of rehabilitation resulting from previous exploration activities and the 2020 exploration drilling was undertaken during the reporting period. Due to the higher than average rainfall recorded during the year, significant natural regeneration was observed, particularly within the 2019 disturbance (exploration drilling and test pit) areas.

8.3 Performance Indicators

Performance indicators and completion/relinquishment criteria for each rehabilitation phase are described in Section 6 of the approved MOP. Exploration areas disturbed during the 2019 exploration drilling and test pitting programs reached the phase 3 performance indicator (growth medium development) during the reporting period. Higher than average rainfall during 2020 assisted in achieving natural regeneration of native grasses in these disturbance areas.

The 2020 diamond drilling areas achieved phase 1 (decommissioning) with all equipment removed from site and the boreholes capped for further downhole survey work scheduled for 2021.

No further rehabilitation took place on ML 1770 during the reporting period.

During the next reporting period, rehabilitation activities will continue in accordance with the approved MOP, RMP and Mining Lease conditions.

9 COMMUNITY RELATIONS

Clean TeQ 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 Clean TeQ's commitment to active engagement, clear communication, community investment, dispute resolution and how it works with its local indigenous communities.

Clean TeQ 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.

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

Clean TeQ 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 Clean TeQ 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 Clean TeQ via community@cleanteq.com. Calls that require an immediate response outside business hours are sent to the Environment, Approvals & Community Lead for immediate response. Clean TeQ responds to calls within 24 hours or on the next business day. Clean TeQ 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 Clean TeQ personnel and community members from time to time. All employees and contractors receive information about the Clean TeQ Sunrise Complaints Management Process during the general induction process.

Zero community complaints were received during the reporting period.

9.2 Community Liaison

9.2.1 Community Consultative Committee

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

During the reporting period, biannual meetings (held in June and November 2020) of the CCC were conducted in accordance with the Development Consent (Schedule 5, Condition 7). Due to COVID-19, the meetings were held a little differently this year. The June meeting was held remotely (via Microsoft Teams) in addition to in person, and the November meeting was held in person.

The CCC met in the Project local government areas of Lachlan and Parkes (Condobolin and Parkes townships). At the meetings, Clean TeQ provided Project updates, information relating to environmental management and community engagement activities and addressed questions and concerns raised by CCC members. Minutes were taken from each meeting and published on the Clean TeQ webpage (www.cleanteq.com/sunrise-project/community-consultative-committee/), along with copies of all presentations.

9.2.2 Community Consultation

Clean TeQ 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.

Clean TeQ engages through a range of consultation tools including individual stakeholder and public meetings, advertised community events, newsletters and the operation of a shop front in Condobolin as required. Clean TeQ also has an office set up in Parkes. Clean TeQ policies and guidelines guide interactions with communities affected by Clean TeQ's activities.

Unfortunately, due to COVID-19, the number of community meetings during the year were restricted and Clean TeQ activities were modified in line with NSW state government guidance.

Notwithstanding, during the reporting period, Clean TeQ managed to attend meetings with many stakeholders, such as:

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

Clean TeQ 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.

9.2.3 **Aboriginal Consultation**

Clean TeQ acknowledges the Indigenous people on whose land the company operates. Clean TeQ 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 Clean TeQ's Community Engagement Policy.

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

9.2.4 **Community Investment**

In December 2018, Clean TeQ Sunrise signed its Voluntary Planning Agreement (VPA) with the Shire Councils of Lachlan, Forbes and Parkes. The VPA represents an important financial commitment to the region that ensures the benefits of Clean TeQ will be shared across the local communities. The first payment of \$200,000 to Lachlan Shire Council, \$100,000 to Parkes Shire Council and \$100,000 to Forbes Shire Council were made in 2019 with further payments to be made once Clean TeQ reaches the financial investment decision for the Project.

During 2020, Lachlan Shire Council completed upgrades and maintenance works at the Fifield Town Hall. Various parks across the shire, including Fifield, benefited from the construction/upgrades of shade sails. A new electric BBQ facility was also installed at Hannah

Mahon Park in Fifield. The remainder of the \$200,000 assisted Lachlan Council with the installation of soft-fall at the Gum Bend Lake playground in Condobolin.

Parkes Shire Council directed the funding to Trundle for the Trundle Main Street Vibrancy Project and associated works. In Forbes, residents will benefit from a shire-wide sports strategy that was commissioned by Forbes Shire Council – the outcome of this study is expected during 2021.

Clean TeQ's guiding principle for community investment is to achieve meaningful outcomes that benefit as many people as possible in the community. For Clean TeQ, 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.

Financial and/or non-financial support during the reporting period was limited to primary schools. Unfortunately, the local agricultural shows in the region were cancelled during 2020 due to COVID-19, along with the 2020 Trundle Bush Tucker Day. Clean TeQ would normally sponsor these events, however, is now planning to provide support in 2021.

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 6th May 2017. As the Project has not yet recommenced development, the requirement for an IEA has not been triggered.

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

The following exploration activities are proposed during the next reporting period:

- Continuation and completion of the platinum drilling program.

Other non-exploration activities proposed during the next reporting period include the following:

- Geotechnical, soil and other test work to further refine the design parameters for the approved mine infrastructure and mine-related purposes;
- Minor preparatory works, including installation of services and ancillary infrastructure; and
- Works associated with the partial replacement of the ML 1770 boundary fence.

12.2 Project Development

Clean TeQ is proposing to commence initial Project construction activities during the second half of 2021 subject to a final investment decision and completion of a financing package by that time.

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;
- Installation and operation of the surface water extraction and extraction infrastructure and water pipeline;
- Road upgrades; and
- Upgrades to the proposed oversized transport route.

The above project development activities are not described in the currently approved MOP. However, a new MOP 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 Department of Primary Industries, “The Annual Environmental Management Report (AEMR),” 2006. [Online]. Available: https://www.resourcesandgeoscience.nsw.gov.au/__data/assets/pdf_file/0003/478461/AEMR-Guidelines-for-MOPs-prepared-to-EDG03-requirements.pdf.
- [3] Corkery RW, “Third Annual Exploration Report for ML 1770 “Clean TeQ Sunrise Project” - 16 February 2020 to 15 February 2021.” 2021.
- [4] Area Environmental, “Weeds and Vertebrate Pests Baseline Survey Report ML1770 and Sunrise Accommodation Camp,” 2019.
- [5] Landscape, “Analysis of Aboriginal Lithic Assemblages Aboriginal Heritage Impact Permit C0003887,” 2019.
- [6] Landscape , “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.
- [8] Corkery RW, “Second Annual Exploration Report for ML 1769 “Westella Limestone Project” – 15 February 2019 to 14 February 2020).,” 2020.

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
DPIE	Department of Planning, Industry and Environment
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
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

1D – Particulate Matter Results (Graphs) 24hr Average

1A – Depositional Dust Results

Table 15. Summary of depositional dust (insoluble solids) monitoring results 2020

Month			Insoluble Solids (g/m ² /month)			
	Start	End	DG1	DG2	DG3	DG4
FEB	06/01/20	06/02/20	18	12	11	22
MAR	06/02/20	03/03/20	3.1	2.8	2.4	3.5
APR	03/03/20	30/03/20	0.9	2	1.4	1.9
MAY	30/03/20	29/04/20	1.3	0.7	0.7	1.5
JUN	29/04/20	01/06/20	1.1	0.9	0.7	0.3
JUL	1/6/20	30/6/20	0.2	0.3	0.1	0
AUG	30/6/20	28/7/20	0.7	0.1	0.4	0.3
SEP	28/7/20	1/9/20	1.4	1.7	1.4	1.6
OCT	1/9/20	1/10/20	2.3	1.3	0.9	0.7
NOV	1/10/20	30/10/20	1.6	1.4	0.8	1.1
DEC	30/10/20	1/12/20	2.9	3.8	2.3	1.8
ANNUAL AVERAGE (Mean)			3.1	2.6	2.3	3.2
MEDIAN			1.5	1.55	1.15	1.55
MAXIMUM			18	12	11	22
MINIMUM			0.2	0.1	0.1	0

1B – PM2.5 Daily Average Results

Table 16. Annual Summary - Daily AVG For PM2.5 STP (µg/m³) - Site PM2



Excluded - dust storm



Excluded - harvesting by neighbours

Jan 2020 to Dec 2020

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Day
1	22.39	16.4	4.1	3.36	2.39	1.85	3.36	4.98	4.94	3.87	1.39	9.54	1
2	87.7	23.28	3.69	2.29	1.07	1.9	4.45	3.77	6.95	4.71	2.92	6.01	2
3	63.26	8.54	5.4	1.41	2.47	1.05	3.24	3.76	8.76	5.65	5.23	7.39	3
4	18.59	28.25	4.61	1.47	3.53	2.88	2.52	3.23	4.72	7.58	5.38	4.81	4
5	148.79	26	1.95	-	1.75	2.72	1.38	5.09	4.1	6.96	3.98	6.64	5
6	115.35	4.07	2.54	1.05	3.52	2.21	2.17	3.2	2.71	6.78	3.71	6.17	6
7	27.73	1.49	2.53	1.51	3.13	3.01	3.81	3.13	5.96	8.44	3.93	4.31	7
8	23.04	1.06	2.31	2.88	1.85	6.4	3.52	0.69	4.89	1.64	5.84	3.05	8
9	30.61	1.4	2.92	2.34	2.61	3.01	4.16	0.61	4.25	1.5	5.35	4.56	9
10	79.18	1.54	2.11	1.73	2.29	1.52	3.44	3.35	2.34	2.13	5.23	6.37	10
11	12.06	1.79	3.12	6.32	2.19	1.64	2.32	1.73	2.95	2.43	11.27	6	11
12	25.82	3.15	2.57	2.95	1.06	2.64	1.21	2.56	2.68	3.66	8.37	4.09	12
13	27.62	1.86	1.98	1.4	0.99	3.64	2.04	1.12	2.81	4.01	3.74	4.28	13
14	14.75	2.9	4.03	1.27	2.06	1.81	1.05	1.69	1.99	5.39	2.92	3.75	14
15	17.05	3.77	2.15	2.55	2.94	1.4	0.87	0.79	2.76	7.36	5.24	3.34	15
16	14.05	4.33	1.06	3.54	1.52	1.56	2.33	1.31	3.6	4.96	7.95	3.31	16
17	7.2	6.26	1.59	3.68	1.23	2.34	2.26	0.86	4.78	5.34	6.9	4.18	17
18	12.89	24.75	2.62	2.81	1.53	3.13	1.44	0.84	6.62	4.47	8.41	4.01	18
19	9.14	8.83	3.49	2.67	2.65	2.88	1.82	13.73	6.41	4.53	9.41	2.61	19
20	10.52	3.17	3.76	2.05	2.14	-	4.74	2.6	2.46	4.57	10.74	2.42	20
21	6.72	3.62	3.76	2.55	1.94	-	3.54	1.89	3.48	5.13	11.04	3.21	21
22	7.29	5.87	3.23	3.77	1.87	-	3.35	2.35	3.84	5.71	15.09	2.18	22
23	32.7	2.8	2.78	3.69	2.68	0.94	3.36	2.87	3.02	6.05	4.87	3.65	23
24	8.88	2.47	6.25	4.08	1.86	2.02	3.6	1.68	1.77	5.1	4.46	3.56	24
25	5.74	1.77	4.79	4.92	0.85	1.83	3.65	1.18	1.48	3.16	5.9	3.03	25
26	8.67	4.59	2.46	3.04	1.84	2.07	3.33	1.71	1.92	1.87	5.94	6.03	26
27	8.37	3.82	3.8	1.82	2.13	4.32	6.9	1.55	1.81	1.36	6.13	3.95	27
28	4.74	3.66	3.42	3.8	1.86	5.08	2.48	5.62	1.12	2.5	8.64	4	28
29	4	4.07	3.01	2.95	1.9	4.03	3.35	4.98	3.87	1.54	4.1	4.16	29
30	11.31	-	1.47	0.56	1.84	5.2	3.94	5.89	4.8	2.69	6.87	3.74	30
31	8.16	-	2.58	-	1.57	-	4.94	4.12	-	2.41	-	3.55	31
AVG	28.2	7.09	3.1	2.71	2.04	2.71	3.05	3	3.79	4.31	6.37	4.45	

Table 17. Annual Summary - Daily AVG For PM2.5 STP (µg/m³) - Site PM4



Excluded - dust storm



Excluded - harvesting by neighbours

Jan 2020 to Dec 2020

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Day
1	25.07	35.95	5.76	4.64	3.65	2.99	-	4.78	5.21	4.22	1.47	9.69	1
2	120.11	28.87	4.58	3.63	1.9	3.11	-	3.94	7.46	4.85	3.38	6.04	2
3	80.69	11.09	7.87	2.21	4.21	2.12	-	4.05	8.38	5.58	5.4	7.86	3
4	19.52	26.96	6.76	2.98	5.74	4.65	-	3.32	4.57	7.97	5.4	5.13	4
5	167.51	23.82	3.35	3.34	3.43	4.53	-	3.72	4.39	7.14	4.06	7.49	5
6	141.5	5.22	4.27	1.8	6.31	3.29	-	3.07	3.19	7.05	2.82	6.35	6
7	34.4	2.15	4.24	2.49	4.64	5.79	-	3.12	5.27	8.36	3.87	4.25	7
8	27.34	1.58	4	4.61	3.33	10.86	-	0.63	5.1	1.59	5.78	3.06	8
9	37.09	2.27	4.42	3.75	3.74	4.56	-	0.66	4.46	1.55	5.75	4.67	9
10	133.72	2.45	3.44	3.2	3.53	2.64	2.42	3.44	3.13	2.04	5.98	5	10
11	13.06	2.8	3.7	8.74	3.61	2.53	2.28	1.83	3.37	2.55	7.24	5.12	11
12	31.57	4	2.74	4.72	2.01	4.8	1.22	2.67	3.31	3.6	7	4.04	12
13	34.31	3.1	3.13	2.86	1.79	5.1	1.99	1.13	2.75	4	3.82	4.32	13
14	19.11	4.18	6	2.25	3.76	3.3	1.07	1.68	2.2	5.06	3.01	3.54	14
15	21.54	5.15	3.41	3.83	5.09	3.22	0.8	0.8	2.34	7.77	5.35	2.88	15
16	19.89	6.01	1.94	4.82	2.77	1.99	2.25	1.38	4.36	5.78	8.09	2.81	16
17	8.94	8.19	2.29	5.34	2.67	2.69	2.4	0.9	4.68	5.43	6.82	3.86	17
18	16.81	31.65	4.06	4.56	2.76	3.31	1.84	0.76	6.77	4.49	9.05	3.92	18
19	10.58	10.45	3.94	4.38	4.12	1.97	2.15	12.94	6.39	3.13	12.27	2.68	19
20	12.76	4.35	4.6	3.11	3.27	1.94	4.92	2.55	2.41	6.44	10.94	2.43	20
21	7.94	4.72	4.8	3.13	3.1	2.13	3.58	1.83	3.34	5.56	8.79	3.01	21
22	8.35	8.1	4.5	5.91	3.57	1.19	3.38	2.33	3.89	5.92	8.59	2.15	22
23	34.11	4.36	3.69	5.48	4.18	1.81	3.62	2.83	3.36	5.38	4.97	3.82	23
24	10.35	3.9	6.79	5.04	3.11	-	3.8	1.69	1.69	4.86	4.76	3.71	24
25	6.8	2.81	6.19	5.86	1.33	-	4.36	1.38	1.54	3.18	6.56	2.93	25
26	9.8	5.82	4.11	4.42	2.95	-	3.16	1.18	1.91	1.89	5.95	5.93	26
27	10.01	5.13	4.92	3.29	3.84	-	6.82	2.82	1.86	1.53	7.23	3.86	27
28	4.93	4.9	4.74	6.45	3	-	2.36	5.84	1.22	2.62	8.76	4.02	28
29	4.81	6.13	4.08	4.82	3.4	-	3.36	5.58	4.14	1.8	4.42	4.28	29
30	14.22	-	2.41	0.97	3.38	-	4.37	6.46	4.58	2.71	6.82	3.69	30
31	9.97	-	4.04	-	2.81	-	5.3	4.19	-	2.68	-	3.4	31
AVG	35.38	9.18	4.35	4.09	3.45	3.5	3.07	3.02	3.91	4.41	6.15	4.38	

1C – PM10 Daily Average Results

Table 18. Annual Summary - Daily AVG For PM10 STP (µg/m³) - Site PM2



Excluded - dust storm



Excluded - harvesting by neighbours

Jan 2020 to Dec 2020

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Day
1	51.45	63.05	12.62	7.57	5.55	4.94	7.67	8.93	12.78	9.51	8.57	37.33	1
2	123.61	91.16	14.98	4.88	2.4	4.59	16.98	7.27	16.78	14.27	8.83	27.59	2
3	117.83	39.66	18.07	3.54	5.27	2.67	8.25	6.29	23.83	16.18	15.16	28.38	3
4	66.66	110.77	7.97	3.89	7.4	5.96	6.1	7.92	14.49	21.07	19.98	20.02	4
5	426.71	110.8	4.09	-	3.45	7	2.86	10.68	11.22	20.66	20.03	20.19	5
6	512	10.84	4.71	4.78	5.45	5.97	3.91	8	7.02	18.92	17.43	20.01	6
7	85.92	5.17	5.36	3.63	6.49	5.93	6.07	6.93	19.51	17.67	14.74	14.59	7
8	64.4	3.31	5.14	7.22	5.7	9.84	7.35	1.51	13.52	6.72	19.1	11.62	8
9	71.83	3.14	6.04	5.05	8.06	5.93	8.37	1.22	10.46	5.91	15.9	15.06	9
10	401.68	3.63	5.24	3.24	6.39	3.31	5.92	6.68	5.87	7.93	18.2	25.64	10
11	54.4	4.58	10.09	20.66	5.49	3.63	3.82	3.74	8.73	8.51	59.26	22.96	11
12	68.32	9.94	9.87	6.79	3.39	4.77	2.25	4.85	7.68	12.38	33.98	13.16	12
13	62.42	4.49	7.01	3.03	3.56	7.25	2.47	3.71	8.1	13.85	13.72	13.08	13
14	34.08	6.07	13.24	3.62	5.24	4	1.98	4.4	6.24	18.83	11.84	10.99	14
15	36.48	13.72	6.75	7.21	7.09	3.43	1.99	1.9	9.43	22.07	18.98	9.87	15
16	38.83	9.69	4.55	10.79	4.35	4.01	3.65	3.06	11.19	19.64	35.25	10.8	16
17	17.76	17.95	6.66	10	3.67	5.61	3.81	2.21	15.53	16.56	27.64	12.31	17
18	19.47	116.86	7.71	7.41	4.26	7.85	3.25	3.09	16.89	13.63	29.07	14.31	18
19	22.14	41.9	13.07	6.42	6.48	10.12	3.83	66	14.99	18.84	32.49	13.14	19
20	35.66	11	14.83	6.51	6.11	-	12.4	6.81	6.09	14.62	40.65	11.29	20
21	17.23	13.07	12.7	8.26	4.78	-	8.6	5.58	10.2	16.69	48.56	9.91	21
22	26.66	19.81	11.83	9.87	3.75	-	7.71	6.43	15.22	15.71	76.06	6.63	22
23	167.61	5.94	10.78	10.24	4.75	2.02	7.6	7.44	9.63	21.07	10.16	8.53	23
24	41.95	6.33	18.89	13.06	3.25	2.83	7.54	4.37	6.39	14.56	12.05	10.33	24
25	24.46	5.51	15.48	14.67	2.62	3.29	6.16	3.15	6.58	9.24	15.46	9.78	25
26	43.05	20.3	6.38	8.65	3.75	4.54	4.47	6.41	5.18	5.87	18.9	13.03	26
27	32.81	13.56	9.14	3.47	4.54	7.87	11.41	4.14	4.81	5.53	20.25	10.71	27
28	23.02	13.33	9.61	9.53	5.15	8.59	4.98	13.46	4.01	6.56	26.21	14.93	28
29	15.06	12.49	8.55	7.01	5.03	7.11	6.69	12.54	11.21	5.38	14.81	14.63	29
30	25.8	-	3.48	1.27	4.54	9.14	8.22	13.3	14.28	12.79	23.59	7.81	30
31	28.17	-	7.18	-	4.84	-	8.56	10.46	-	6.42	-	8.27	31
AVG	88.95	27.18	9.42	7.32	4.93	5.64	6.29	8.14	10.93	13.47	24.23	15.06	

Table 19. Annual Summary - Daily AVG For PM10 STP (µg/m³) - Site PM4



Excluded - dust storm

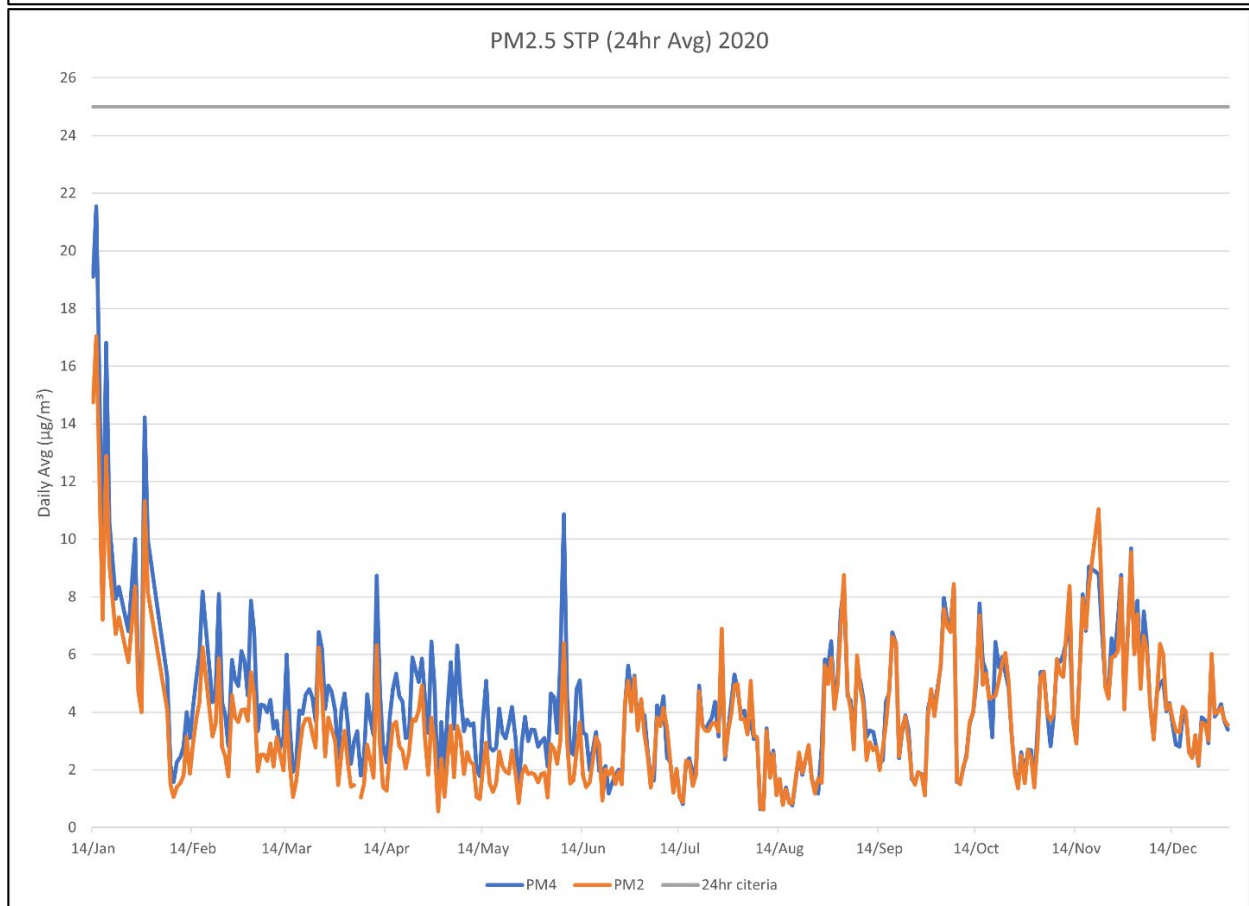
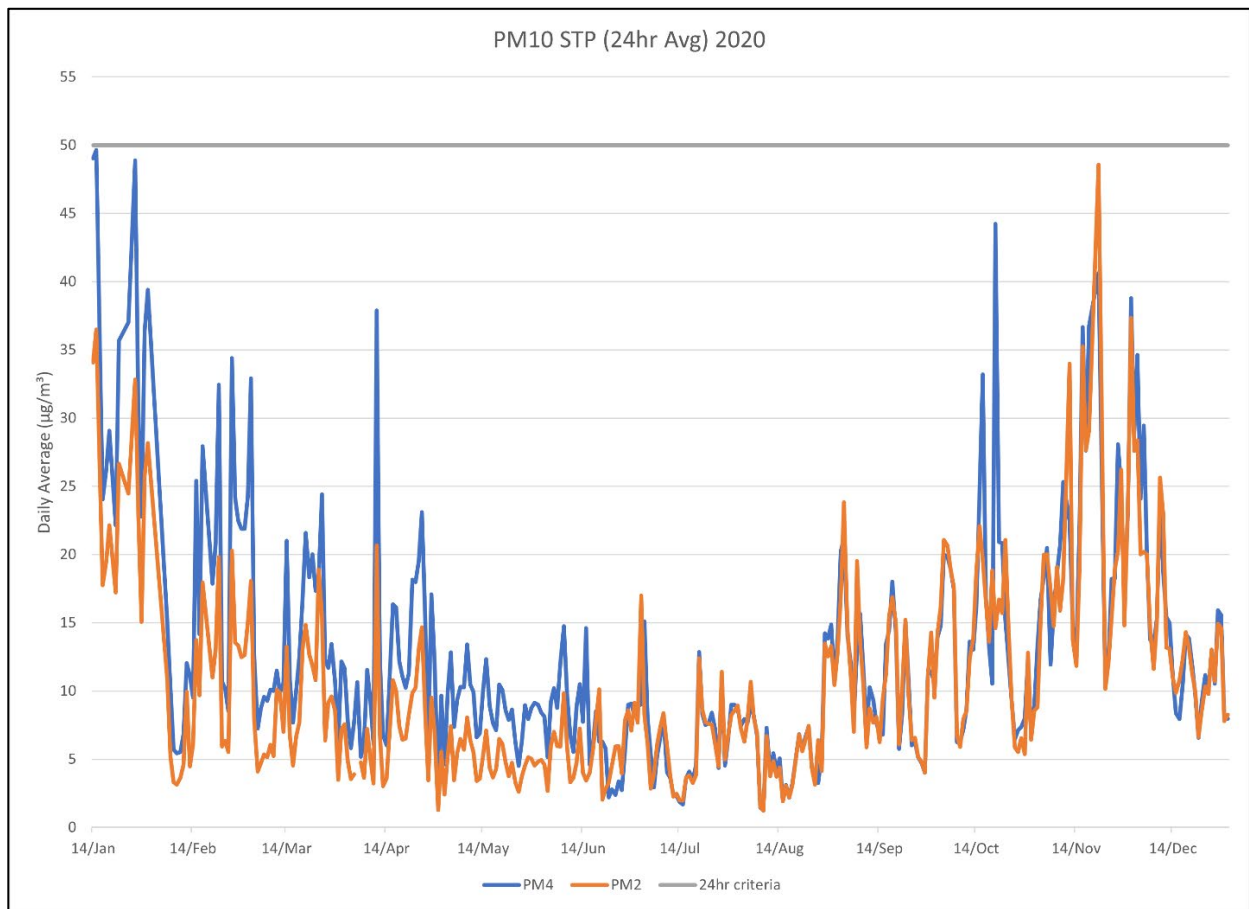


Excluded - harvesting by neighbours

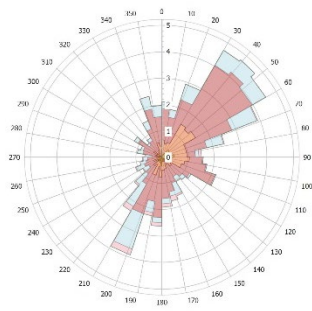
Jan 2020 to Dec 2020

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Day
1	61.44	179.71	21.87	11.66	9.66	8.39	-	8.72	13.73	10.6	8.92	38.78	1
2	173.09	159.1	24.23	7.82	4.63	8.12	-	7.45	20.22	13.95	13.26	28.95	2
3	163.79	73.2	32.91	5.82	9.9	5.15	-	7.93	21.24	14.78	16.74	34.62	3
4	81.67	127.42	12.61	7.71	12.82	9.21	-	7.67	14.06	19.98	18.32	24.08	4
5	460.08	139.37	7.24	10.65	7.36	10.21	-	8.93	12.11	19.87	20.48	29.46	5
6	700.86	15.05	8.72	5.18	9.36	8.76	-	8.15	7.97	18.91	11.93	19.99	6
7	104.44	10.22	9.56	6.34	10.31	12.05	-	6.73	13.01	17.46	16	13.75	7
8	86.36	5.7	9.29	11.54	10.28	14.76	-	1.45	15.65	6.25	18.62	13.4	8
9	92.45	5.42	10.08	9.28	13.42	9.74	-	1.27	11.6	6.29	20.69	15.31	9
10	918.81	5.52	10.01	6.14	10.46	6.79	4.05	7.3	7.3	7.16	25.32	23.93	10
11	73.14	6.84	11.49	37.89	9.93	5.51	3.65	4.04	10.28	8.66	27.77	18.69	11
12	82.09	12.04	9.86	12.24	6.61	8.88	2.38	5.44	9.32	13.63	22.43	15.43	12
13	85.49	11.12	10.62	6.74	6.9	10.5	2.3	4.18	7.65	13.03	14.68	14.99	13
14	49.05	9.51	21.01	6.03	9.99	7.74	1.87	5.05	6.8	16.26	12.92	11.16	14
15	49.65	25.41	10.85	11.23	12.33	14.6	1.69	2.02	6.8	24.59	22.19	8.37	15
16	75.64	14.17	7.67	16.36	8.87	4.58	3.59	3.12	13.44	33.21	36.66	7.94	16
17	24.05	27.95	9.99	16.11	7.65	6.02	4.1	2.17	14.45	16.83	27.62	10.42	17
18	26.19	200.62	12.52	12.17	7.13	8.53	3.46	3.22	18.01	13.21	36.75	14.14	18
19	29.08	67.6	16.69	11.05	10.47	6.28	4.56	65.31	14.25	10.52	53.32	13.84	19
20	51.2	17.87	21.6	10.24	10.07	6.28	12.86	6.84	5.77	44.23	50.83	11.94	20
21	22.14	20.86	18.33	11.27	8.59	5.77	8.32	5.69	8.39	20.92	40.62	9.69	21
22	35.67	32.45	20.01	18.16	7.88	2.21	7.51	6.62	15.1	20.83	31	6.58	22
23	229.23	10.7	17.33	17.98	8.63	3.21	7.64	7.4	10.76	15.2	10.24	9.21	23
24	61.71	10.14	18.64	19.52	6.17	-	8.42	4.42	6.02	12.23	12.39	11.18	24
25	37.01	8.53	24.4	23.11	4.5	-	7.23	3.31	6.31	9.21	18.2	9.93	25
26	61.11	34.4	12.3	15.57	6.32	-	4.36	3.27	5.15	6.45	18.24	12.96	26
27	48.88	24.19	11.7	6.44	8.97	-	11.22	5.33	4.72	7.12	28.09	10.53	27
28	30.57	22.48	13.44	17.08	7.95	-	4.53	14.24	4.01	7.37	24.91	15.91	28
29	22.79	21.88	10.7	12.07	8.76	-	6.46	13.84	11.52	8.01	16.73	15.56	29
30	36.42	-	6.05	2.68	9.13	-	8.98	14.88	11.4	12.39	23.14	8.14	30
31	39.39	-	12.17	-	8.98	-	9	10.65	-	6.78	-	7.98	31
AVG	129.47	44.81	14.32	12.2	8.84	7.97	5.83	8.28	10.9	14.71	23.3	15.71	

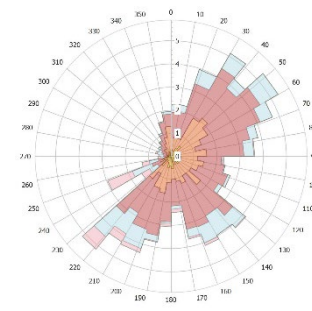
1D – Particulate Matter Results (Graphs) 24hr Average



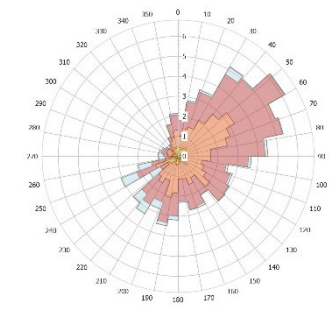
2A – Wind Roses- Monthly



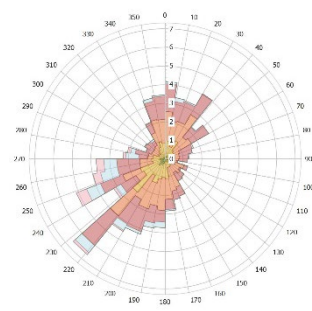
January



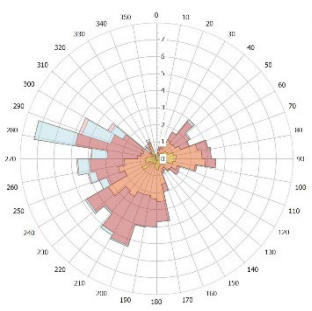
February



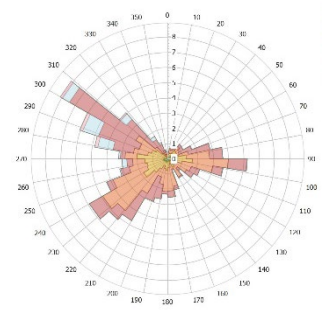
March



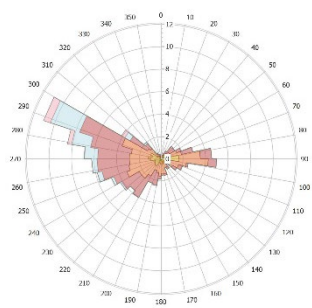
April



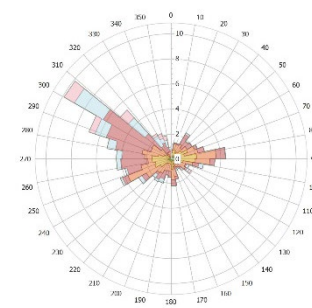
May



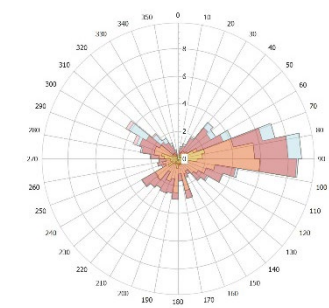
June



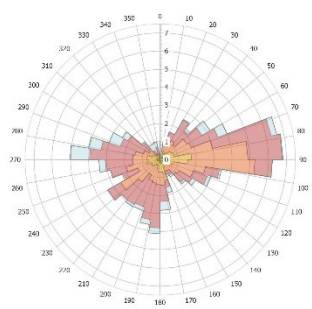
July



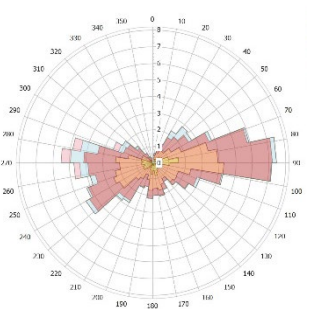
August



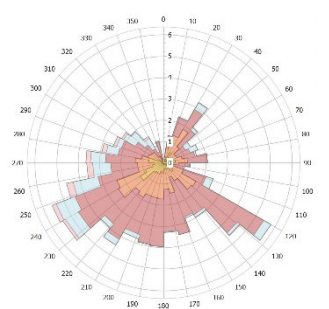
September



October



November



December

Wind Speed



2B – Temperature - Monthly

Table 20 Summary of Mean Daily Temperatures

Month	Mean Daily Temperature			
	EIS (Station #50052)		AWS 2020	
	Maximum (°C)	Minimum (°C)	Maximum (°C)	Minimum (°C)
January	33.4	17.6	36.7	22.2
February	32.5	17.8	29.3	19.3
March	29.3	14.8	26.5	15.7
April	24.3	9.7	21.3	10.3
May	19.4	6.8	17.2	6.6
June	15.6	3.8	15.1	4.2
July	14.9	2.6	14.1	4.4
August	16.8	3.4	14.4	3.5
September	19.7	5.4	20.8	6.91
October	24.5	9.2	25.4	10.2
November	28.2	12.6	30.7	14.3
December	31.7	15.5	29.9	14.8

APPENDIX 3: NOISE MONITORING RESULTS

Table 21 Day Mine Operating Intrusive Noise Levels LAeq (15 minute)

Location	Date	Time	Measured Noise dB(A) ¹	Construction Criterion dB(A) ²	Wind speed (m/s) ³ /dir°	Comments	Noise criteria Applies ⁴ ?	Exceedance
AN1	17/03/20	3:50 pm	27	40	2.6 / 216	Birds & insects (27), CLQ Sunrise inaudible	Yes	No
AN2	17/03/20	4:38 pm	28	40	2.4 / 187	Birds & insects (28), CLQ Sunrise inaudible	Yes	No
AN3	17/03/20	5:05 pm	26	40	1.0 / 110	Birds & insects (26), CLQ Sunrise inaudible	Yes	No
AN4	17/03/20	4:12 pm	38	40	4.1 / 279	Birds & insects (38), CLQ Sunrise inaudible	Yes	No

Table 22 Evening Mine Operating Intrusive Noise Levels LAeq (15 minute)

Location	Date	Time	Measured Noise dB(A) ¹	Construction Criterion dB(A) ²	Inversion °C/100m, Wind speed (m/s) ³ /dir°	Comments	Noise criteria Applies ⁴ ?	Exceedance
AN1	17/03/20	8:05 pm	23	35	2.4 / 169	Insects (23), CLQ Sunrise inaudible	No	No
AN2	17/03/20	9:41 pm	19	35	2.5 / 163	Insects (19), CLQ Sunrise inaudible	No	No
AN3	17/03/20	8:20 pm	28	35	2.3 / 175	Insects (26), traffic (22), CLQ Sunrise inaudible	No	No
AN4	17/03/20	9:16 pm	18	35	2.6 / 172	Insects (18), CLQ Sunrise inaudible	No	No

Table 23 Night Mine Operating Intrusive Noise Levels LAeq (15 minute)

Location	Date	Time	Measured Noise dB(A) ¹	Construction Criterion dB(A) ²	Wind speed (m/s) ³ /dir°	Comments	Noise criteria Applies ⁴ ?	Exceedance
AN1	17/03/20	10:35 pm	22	35	2.3 / 184	Insects (22), Sunrise inaudible	No	No
AN2	17/03/20	11:41 pm	18	35	2.8 / 66	Insects (18), Sunrise inaudible	No	No
AN3	17/03/20	10:05 pm	22	35	1.9 / 159	Insects (22), Sunrise inaudible	No	No
AN4	17/03/20	11:12 pm	17	35	1.6 / 138	Insects (17), Sunrise inaudible	Yes	No

Table 24 Night Mine Operating Intrusive Noise Levels LA1 (1 minute)

Location	Date	Time	Measured Noise dB(A), L1 (1 min) ⁵	Sleep Disturbance Criterion dB(A), L1 (1 min)	Inversion °C/100m, Wind speed (m/s) ⁷ /dir°	L1 (1 min) source	Identified Mine Sources L1 (1 min)	Noise criteria Applies ⁸ ?	Exceedance
AN1	17/03/20	10:35 pm	25	45	2.3 / 184	Insects	n/a	No	No
AN2	17/03/20	11:41 pm	22	45	2.8 / 66	Insects	n/a	No	No
AN3	17/03/20	10:05 pm	26	45	1.9 / 159	Insects	n/a	No	No
AN4	17/03/20	11:12 pm	20	45	1.6 / 138	Insects	n/a	Yes	No

¹ Noise generated by the development is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy (EPA,1999), as per Schedule 3, Section 6 of DA 347-11-00.

² The construction noise criteria are defined in section L4 of the Environment Protection Licence for the project (EPL 21146).

³ Wind speed recorded at 10 metres above ground level; all meteorological data used as recorded by the meteorological station at EPA Licence Point 19.

⁴ Appendix 4 of DA 347-11-00 sets out the meteorological conditions under which the criteria apply, and the requirements for evaluating compliance with these criteria. The noise criteria in conditions 3-5 of Schedule 3 apply under all meteorological conditions except the following: wind speeds greater than 3 m/s at 10 metres above ground level; or stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or Pascall stability classes G temperature inversion conditions (as per Section L4.3 of EPL 21146).

APPENDIX 4: SURFACE WATER MONITORING RESULTS

Table 25 Surface Water Monitoring – Analytical Results 2020

Site ID	Analytes	Units	LOR	SW1	SW1	SW1	SW1	SW1	SW1	SW2	SW2	SW2	SW2	SW2	SW2	SW2	SW2	SW2
Sampling Date				15-Aug-20	08-Aug-20	26-Jul-20	10-Apr-20	05-Mar-20	09-Feb-20	01-Nov-20	15-Aug-20	08-Aug-20	26-Jul-20	13-Jul-20	14-Jun-20	10-Apr-20	05-Mar-20	09-Feb-20
Major Cations (mg/L)	Calcium	mg/L	0.5	5.8	2.6	2.4	1	1.6	0.9	5	4.4	2.9	2.5	2.7	1.9	1.5	1.2	0.5
	Magnesium	mg/L	0.5	1.9	1.1	0.9	1	0.9	1.7	2.3	2.2	1.4	1.6	2	1.2	0.9	0.9	0.7
	Sodium	mg/L	0.5	3.4	4.4	1.9	4.4	2.5	0.9	12	12	7.4	6.9	8.5	4.6	3.8	2.9	2.5
	Potassium	mg/L	0.5	5.9	6	6.7	3.1	5.4	7.5	19	7.4	6.3	6.5	5.8	7.4	3.6	4.2	4.9
Major Anions (mg/L)	Sulphate	mg/L	5	< 2	< 2	4.9	4.3	< 2	< 2	2.3	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
	Chloride	mg/L	1	2.7	5.8	6.3	7.6	4	31	23	16	8.5	7.1	11	6.5	3.5	2	53
	Bicarbonate Alkalinity (as CaCO3)	mg/L	20	38	0	26	< 20	< 20	< 20	21	33	< 20	23	24	28	< 20	< 20	< 20
	Carbonate Alkalinity (as CaCO3)	mg/L	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
	Hydroxide Alkalinity (as CaCO3)	mg/L	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Total Alkalinity (as CaCO3)	mg/L	20	38	< 20	26	< 20	< 20	< 20	21	33	< 20	23	24	28	< 20	< 20	< 20
Heavy Metals (TOTAL) (mg/L)	Aluminium	mg/L	0.05	1.4	1.4	1	0.65	1.1	7	2	2.8	2	2.9	4.6	2.3	0.63	2.4	9.5
	Arsenic	mg/L	0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	0.005	0.002	0.001	0.001	0.002	0.002	0.002	< 0.001	0.002	0.005
	Cadmium	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Chromium	mg/L	0.001	0.009	0.003	0.008	0.002	0.002	0.063	0.003	0.004	0.003	0.004	0.006	0.004	0.002	0.004	0.014
	Cobalt	mg/L	0.001	0.004	< 0.001	0.002	< 0.001	0.001	0.008	0.001	< 0.001	< 0.001	0.001	0.002	0.001	< 0.001	0.001	0.004
	Copper	mg/L	0.001	0.008	0.003	0.007	0.002		0.02	0.004	0.004	0.003	0.004	0.004	0.003	0.002		0.007
	Iron	mg/L	0.05	1.4	1.8	2	0.83	1.6	16	2.8	3.3	2.4	3.8	5.8	3.4	0.77	3.1	12
	Lead	mg/L	0.001	< 0.001	< 0.001	0.001	< 0.001	0.001	0.013	0.001	0.001	0.001	0.002	0.002	< 0.001	< 0.001	0.002	0.006
	Manganese	mg/L	0.005	0.17	0.022	0.046	0.011	0.081	0.2	0.027	0.017	0.015	0.022	0.026	0.02	0.007	0.024	0.12
	Nickel	mg/L	0.001	0.004	0.002	0.003	0.001	0.002	0.015	0.003	0.003	0.002	0.003	0.005	0.003	0.001	0.003	0.009
	Zinc	mg/L	0.005	0.006	0.067	0.015	0.009	0.008	0.026	0.01	0.008	0.006	0.008	0.012	0.007	0.006	0.012	0.021
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	0.05	0.73	1	0.17	0.18	0.36	0.13	0.11	2.9	1.9	0.6	0.57	0.08	0.25	0.38	0.54
	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	< 0.001
	Cadmium	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Chromium	mg/L	0.001	0.002	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	Cobalt	mg/L	0.001	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	< 0.001	< 0.001
	Copper	mg/L	0.001	0.004	0.002	0.003	< 0.001		0.002	0.002	0.003	0.002	0.002	< 0.001	0.001	< 0.001		< 0.001
	Iron	mg/L	0.05	0.55	0.6	0.12	0.15	0.33	0.13	0.46	1.4	1	0.44	0.38	0.12	0.21	0.32	0.72
	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
	Manganese	mg/L	0.005	0.12	0.008	< 0.005	< 0.005	0.029	0.063	0.008	0.008	0.006	< 0.005	< 0.005	0.007	< 0.005	0.03	0.006
	Nickel	mg/L	0.001	0.002	< 0.001	0.001	< 0.001	0.001	< 0.001	0.002	0.002	0.002	0.001	0.001	0.001	< 0.001	0.001	< 0.001
	Zinc	mg/L	0.005	< 0.005	< 0.005	0.012	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.005
Others	pH (Lab)	pH units	0.1	6.8	6.6	6.5	6.4	7.1	6.1	7.2	6.9	6.7	6.6	6.6	6.7	6.6	6.7	7.3
	TDS	mg/L	10	52	44	19	92	56	22	160	86	85	42	100	100	94	72	18
	Total Suspended Solids	mg/L	5	13	31	26	73	64	110	38	25	22	40	46	56	26	49	380
	Hardness mg equivalent CaCO3/L	mg/L	1	23	11	9.4	6.5	7.7	9.3	22	20	13	13	15	9.7	7.4	6.6	0
Field	Turbidity (Field)	NTU		23.7	80.7	72.3	88.9	124	713	75.8	64.9	78.3	97.1	140	130	71.8	130	561
	pH (Field)	pH units		6.7	7.5	7.88	7.09		7.68	7.32	7.3	7.29	7.44	8.08	7.14	6.9		7.49

Table 25. Surface Water Monitoring – Analytical Results 2020 cont.

Site ID	Analytes	Units	LOR	SW2	SW3	SW3	SW3	SW3	SW3	SW3	SW3	SW3	SW3	SW4	SW4	SW4	SW4	SW4
Sampling Date				09-Feb-20	01-Nov-20	14-Aug-20	08-Aug-20	26-Jul-20	13-Jul-20	14-Jun-20	10-Apr-20	05-Mar-20	09-Feb-20	15-Aug-20	10-Aug-20	29-Jul-20	10-Apr-20	05-Mar-20
Major Cations (mg/L)	Calcium	mg/L	0.5	0.5	1.8	2	1.2	1.1	1.4	0.9	1.6	1.3	0.6	7.3	6	5.6	2.9	2.3
	Magnesium	mg/L	0.5	0.7	1.8	1.9	1.3	1.2	1.4	1	0.7	1.4	0.8	3.3	2.6	2.6	1.2	1.6
	Sodium	mg/L	0.5	2.5	10	16	7.7	6	5.6	4.4	2.8	5.1	2.3	6.8	6.3	6.7	2.9	2.2
	Potassium	mg/L	0.5	4.9	8.7	4.8	3.6	3.8	3.5	3.5	4	4.6	4.7	8.1	7.4	7.7	4.9	9.8
Major Anions (mg/L)	Sulphate	mg/L	5	< 2	5.8	2.2	< 2	< 2	4.2	< 2	< 2	2.2	< 2	< 2	< 2	3.9	< 2	< 2
	Chloride	mg/L	1	53	29	21	11	6.7	14	4.1	2.5	5.6	27	8.5	7.6	18	2.3	2
	Bicarbonate Alkalinity (as CaCO3)	mg/L	20	< 20	< 20	< 20	< 20	< 20	31	23	< 20	< 20	< 20	43	21	32	21	29
	Carbonate Alkalinity (as CaCO3)	mg/L	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
	Hydroxide Alkalinity (as CaCO3)	mg/L	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Total Alkalinity (as CaCO3)	mg/L	20	< 20	< 20	< 20	< 20	< 20	31	23	< 20	< 20	< 20	43	21	32	21	29
Heavy Metals (TOTAL) (mg/L)	Aluminium	mg/L	0.05	9.5	1.3	1	2.2	1.8	0.81	2	0.38	0.8	5.5	0.49	1.4	2.5	1	0.33
	Arsenic	mg/L	0.001	0.005	0.002	0.001	0.002	0.002	0.001	0.002	< 0.001	0.002	0.004	< 0.001	< 0.001	0.001	< 0.001	< 0.001
	Cadmium	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Chromium	mg/L	0.001	0.014	0.002	0.002	0.003	0.002	0.001	0.003	0.033	0.001	0.007	0.002	0.004	0.005	0.002	0.001
	Cobalt	mg/L	0.001	0.004	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003	< 0.001	< 0.001	< 0.001	< 0.001	0.001
	Copper	mg/L	0.001	0.007	0.002	0.003	0.002	0.002	0.002	0.002	0.002		0.004	0.002	0.003	0.004	0.002	
	Iron	mg/L	0.05	12	2.4	1.1	2.6	2.5	1.5	2.9	1.1	1.3	6.8	0.68	1.9	3.3	1.3	0.53
	Lead	mg/L	0.001	0.006	< 0.001	< 0.001	0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	0.004	< 0.001	< 0.001	0.001	< 0.001	< 0.001
	Manganese	mg/L	0.005	0.12	0.032	0.013	0.016	0.019	0.029	0.025	0.033	0.04	0.1	0.021	0.024	0.026	0.026	0.086
	Nickel	mg/L	0.001	0.009	0.002	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.005	0.003	0.004	0.004	0.004	0.006
	Zinc	mg/L	0.005	0.021	0.014	0.008	0.006	< 0.005	< 0.005	0.008	0.028	0.006	0.011	< 0.005	0.008	0.007	0.006	0.011
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	0.05	0.54	0.1	0.29	2.5	0.35	0.26	0.43	0.27	0.38	0.43	0.73	1.9	0.5	0.2	0.1
	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	< 0.001
	Cadmium	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Chromium	mg/L	0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.003	< 0.001	< 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	< 0.001
	Copper	mg/L	0.001	< 0.001	0.001	0.002	0.002	0.001	< 0.001	0.002	0.001		< 0.001	0.002	0.002	0.002	0.001	
	Iron	mg/L	0.05	0.72	0.4	0.22	1.3	0.34	0.36	0.36	0.31	0.38	0.43	0.47	1.1	0.39	0.19	0.12
	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
	Manganese	mg/L	0.005	0.006	< 0.005	0.006	0.008	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.005	0.008	0.012	< 0.005	< 0.005	< 0.005
	Nickel	mg/L	0.001	< 0.001	0.001	0.002	0.002	< 0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.002	0.003	0.002	0.001	0.002
	Zinc	mg/L	0.005	< 0.005	< 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	0.008
Others	pH (Lab)	pH units	0.1	7.3	6.9	6.7	6.5	6.5	6.7	6.5	6.4	6.6	6.3	7.2	7.1	7	6.6	6.4
	TDS	mg/L	10	18	110	60	92	29	46	67	34	58	20	84	110	42	41	40
	Total Suspended Solids	mg/L	5	380	31	21	21	23	40	47	24	85	580	0	5.4	14	49	13
	Hardness mg equivalent CaCO3/L	mg/L	1	0	12	13	8.4	7.9	9.2	6.4	7	9.3	0	32	26	25	12	12
Field	Turbidity (Field)	NTU		561	51.3	35.2	81.2	63	35.1	101	61.7	180	531	9.82	34.6	59.6	87.3	16.29
	pH (Field)	pH units		7.49	7.3	7.21	7.29	7.35	7.54	7.46	6.96		6.82	7.4	7.56	7.76	7.01	

Table 25. Surface Water Monitoring – Analytical Results 2020 cont.

Site ID	Analytes	Units	LOR	SW5	SW5	SW5	SW5	SW6	SW6	SW6	SW6	SW7	SW7	Lachlan R.	Lachlan R.
Sampling Date				15-Aug-20	08-Aug-20	28-Jul-20	10-Apr-20	14-Aug-20	10-Aug-20	28-Jul-20	10-Apr-20	14-Aug-20	10-Aug-20	30-Sep-20	17-Mar-20
Major Cations (mg/L)	Calcium	mg/L	0.5	3.5	3	3.9	1.9	6.3	3.9	2.5	1.2	6.3	5.9	47	30
	Magnesium	mg/L	0.5	3.2	2.8	4	2.1	3.9	2.3	1.7	0.9	3.4	2.8	29	20
	Sodium	mg/L	0.5	5.6	4.8	5.2	4.4	5.9	4.6	2.3	1.3	5.7	4.4	61	36
	Potassium	mg/L	0.5	5.2	5.6	6.5	4.7	10	13	6.1	6.9	10	12	4.5	9.6
Major Anions (mg/L)	Sulphate	mg/L	5	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	72	38
	Chloride	mg/L	1	3.4	3.4	2.8	1.5	4.8	5.3	1.9	1.5	5.1	4.6	190	80
	Bicarbonate Alkalinity (as CaCO3)	mg/L	20	37	23	51	27	47	26	< 20	< 20	53	27	140	99
	Carbonate Alkalinity (as CaCO3)	mg/L	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
	Hydroxide Alkalinity (as CaCO3)	mg/L	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Total Alkalinity (as CaCO3)	mg/L	20	37	23	51	27	47	26	< 20	< 20	53	27	140	99
Heavy Metals (TOTAL) (mg/L)	Aluminium	mg/L	0.05	0.82	1.1	1	1.3	2.1	0.63	2	0.35	1.6	0.94		
	Arsenic	mg/L	0.001	< 0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	0.002	0.001		
	Cadmium	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002		
	Chromium	mg/L	0.001	0.002	0.003	0.002	0.003	0.01	0.002	0.005	< 0.001	0.006	0.003		
	Cobalt	mg/L	0.001	< 0.001	< 0.001	< 0.001	0.002	0.003	< 0.001	< 0.001	< 0.001	0.001	< 0.001		
	Copper	mg/L	0.001	0.003	0.004	0.004	0.004	0.013	0.004	0.005	0.002	0.007	0.006		
	Iron	mg/L	0.05	2.3	3.3	5.2	2.1	4	0.94	3	0.51	2.9	2.5		
	Lead	mg/L	0.001	< 0.001	< 0.001	< 0.001	0.001	0.001	< 0.001	0.001	< 0.001	0.003	0.001		
	Manganese	mg/L	0.005	0.019	0.041	0.041	0.077	0.094	0.013	0.034	0.015	0.028	0.013		
	Nickel	mg/L	0.001	0.002	0.002	0.003	0.003	0.009	0.002	0.003	0.001	0.004	0.004		
	Zinc	mg/L	0.005	< 0.005	0.007	0.009	0.009	0.016	0.006	0.008	0.005	0.007	0.009		
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	0.05	0.93	1.2	0.11	0.25	0.19	0.79	0.85	0.06	0.95	0.96	< 0.05	< 0.05
	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	0.002
	Cadmium	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Chromium	mg/L	0.001	0.001	0.001	0.001	< 0.001	< 0.001	0.001	0.002	< 0.001	0.002	0.002	< 0.001	< 0.001
	Cobalt	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	Copper	mg/L	0.001	0.003	0.003	0.002	0.002	0.007	0.003	0.003	0.001	0.004	0.004	0.002	0.002
	Iron	mg/L	0.05	1.5	2.1	1.4	0.36	0.29	0.53	0.58	0.07	0.88	1.6	< 0.05	0.10
	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
	Manganese	mg/L	0.005	0.007	0.02	< 0.005	< 0.005	0.074	0.006	< 0.005	< 0.005	0.012	0.006	0.009	0.013
	Nickel	mg/L	0.001	0.002	0.002	0.002	0.002	0.005	0.002	0.002	< 0.001	0.003	0.003	0.001	0.002
	Zinc	mg/L	0.005	< 0.005	0.006	< 0.005	< 0.005	0.007	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Others	pH (Lab)	pH units	0.1	7.3	6.9	7	6.8	7	7	6.6	6.8	7.3	6.9		
	TDS	mg/L	10	60	60	56	91	150	95	37	0	70	98	400	430
	Total Suspended Solids	mg/L	5	8.2	22	28	71	21	0	14	14	46	5		
	Hardness mg equivalent CaCO3/L	mg/L	1	22	19	27	13	32	19	14	6.7	30	26		
Field	Turbidity (Field)	NTU		18.25	47.6	36.9	99.2	79.7	17.83	62.5	43.2	119	25.2		
	pH (Field)	pH units		7.6	7.85	7.46	7.1	7.11	7.45	7.04	7.34	7.29	7.34		

APPENDIX 5: GROUNDWATER MONITORING RESULTS

5A - Groundwater Bores – Standing Water Level

5B - Groundwater Monitoring - Water Chemistry

5A - Groundwater Bores – Standing Water Level

Table 26 Minesite Groundwater monitoring – Standing Water Levels

Monitoring Bore ID	Standing Water Level (m AHD)			
	July 2019	Nov 2019	March 2020	September 2020
GAM01	272.63	272.34	272.04	271.87
GAM02	269.96	269.98	269.88	269.82
GAM03	248.63	248.67	248.64	248.65
GAM04	263.14	263.07	262.67	262.46
GAM05	252.67	252.76	252.65	252.59
GAM06	250.45	250.63	250.49	250.55
GAM07	243.69	243.93	243.87	244.00
GAM08	249.47	249.64	249.53	249.67
GAM09	239.92	240.03	240.02	240.13
GAM10	250.84	250.90	250.84	250.90
GAM11	243.70	243.75	243.69	243.74
GAM12	252.00	251.98	251.89	251.86
GAM14A	245.37	245.45	245.44	245.44
GAM14B	234.58	234.81	235.01	248.39
GAM14C	248.79	248.65	248.42	248.26
GAM15	240.64	240.71	240.71	239.28
GAM16	218.24	218.45	218.29	218.46
GAM100	257.37	257.40	257.39	257.45
GAM101	257.27	257.48	257.32	257.39

Table 27 Borefields Groundwater monitoring – Standing Water Levels

Monitoring Bore ID	Standing Water Level (m AHD)			
	July 2019	Nov 2019	March 2020	September 2020
Borefields Monitoring Bores - West				
ISMW01	193.58	189.86	185.35	197.02
MWW1	198.39	198.22	188.78	199.18
Borefields Monitoring Bores - East				
ISMW02	196.01	189.79	189.86	199.40
MWE1	197.39	188.99	200.31	200.57

Figure 12 Groundwater Monitoring - Minesite Bores - Continuous logger data (Depth to water mAHd)

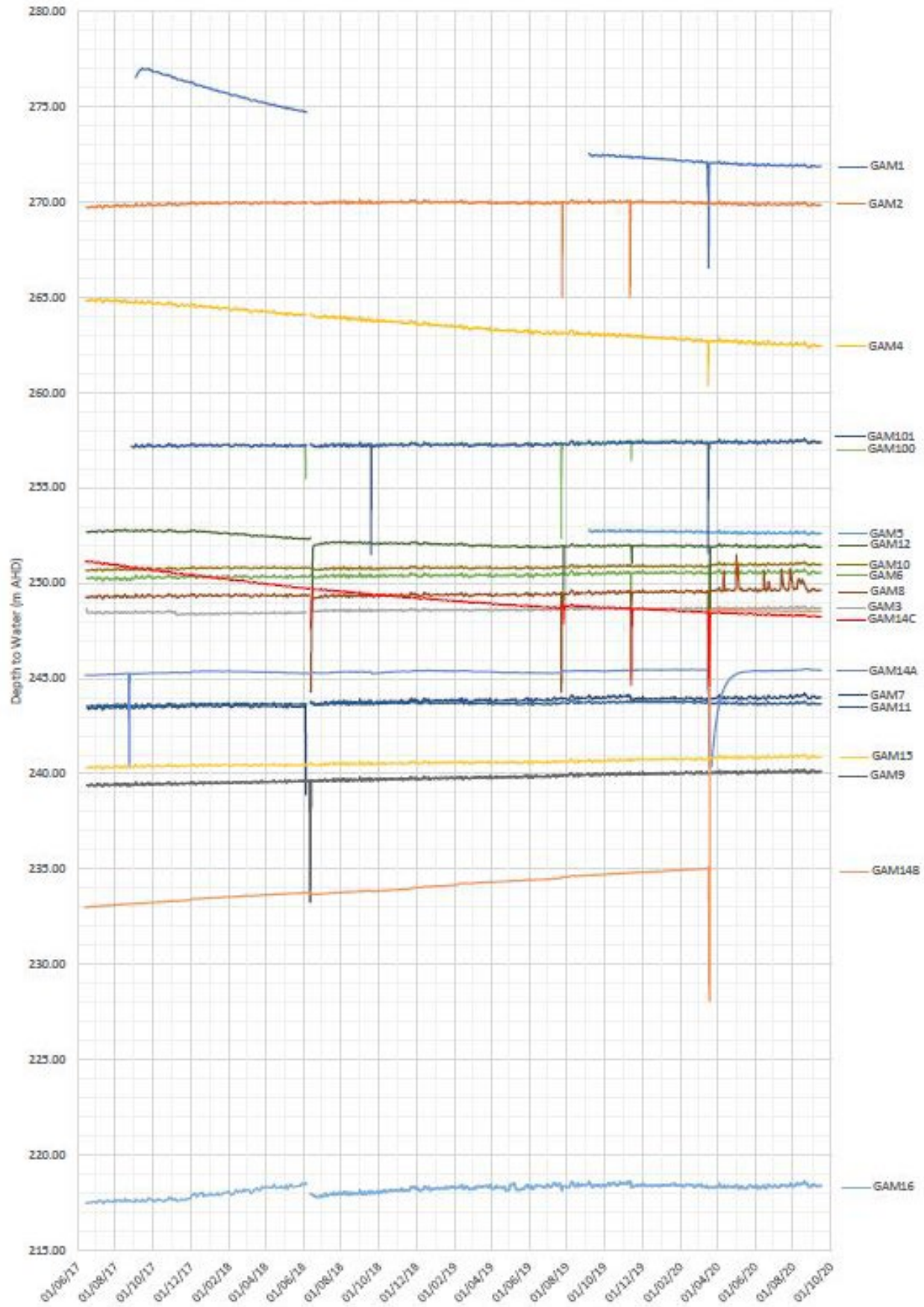
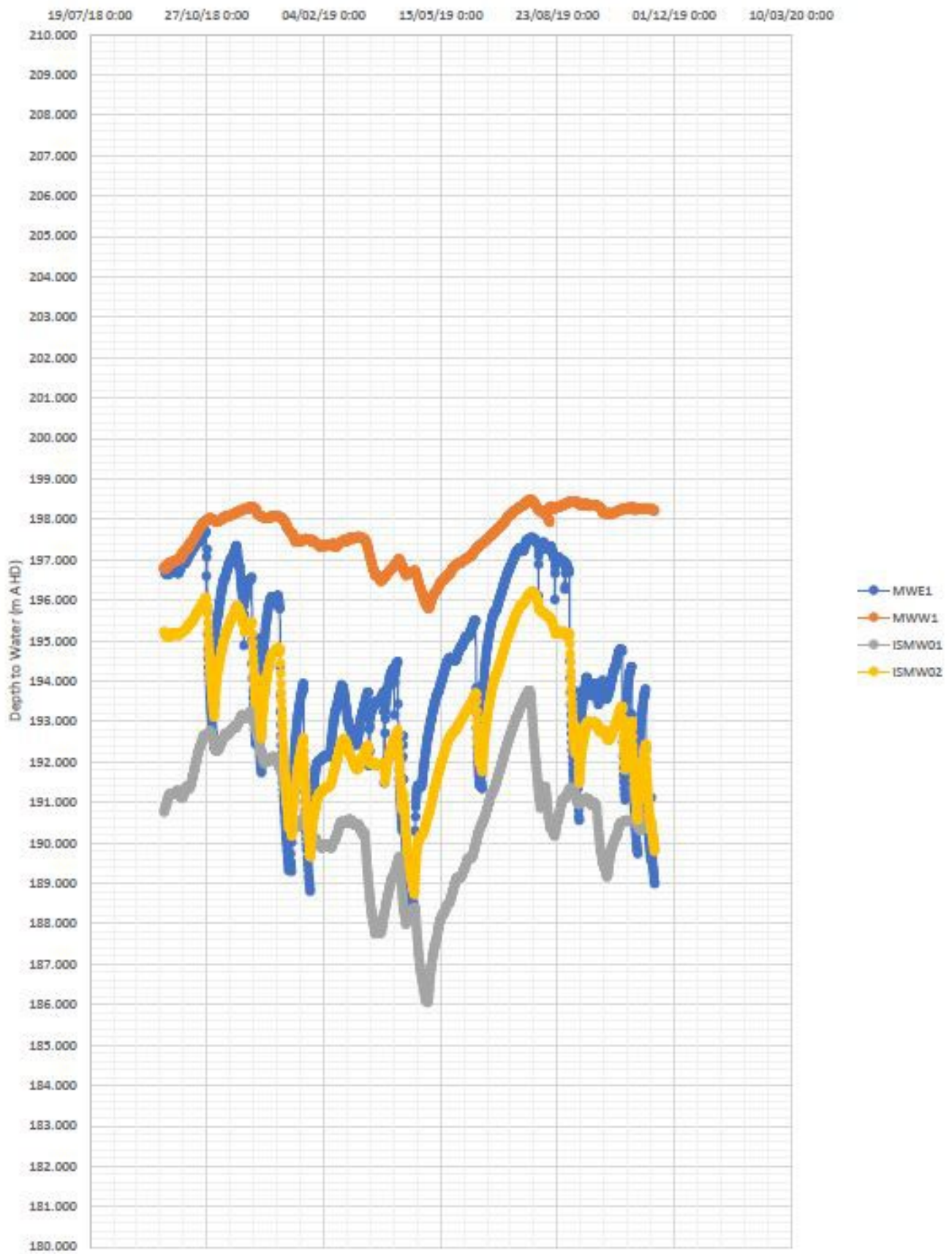


Figure 13 Groundwater Monitoring - Borefield Bores - Continuous logger data (Depth to water mAHd)



5B - Groundwater Monitoring – Water Chemistry

Table 28 Groundwater Water Monitoring – Minesite Bores - Analytical Results 2020

Bore ID	Analytes	Units	LOR	GAM01	GAM01	GAM02	GAM02	GAM03	GAM03	GAM04	GAM04	GAM05	GAM05	GAM06	GAM06	GAM07	GAM07
Sampling Date				15-Sep-20	17-Mar-20	15-Sep-20	17-Mar-20	15-Sep-20	16-Mar-20	15-Sep-20	16-Mar-20	15-Sep-20	17-Mar-20	15-Sep-20	16-Mar-20	15-Sep-20	16-Mar-20
Major Cations (mg/L)	Calcium	mg/L	0.5	13	12	63	60	30	29	85	85	60	52	340	320	2.6	0.9
	Magnesium	mg/L	0.5	< 0.5	< 0.5	66	62	230	220	110	100	120	120	520	490	64	58
	Sodium	mg/L	0.5	63	59	48	43	53	47	94	90	37	32	600	530	230	170
	Potassium	mg/L	0.5	1.9	1.9	1.5	1.5	1.7	1.7	2.8	3.0	1.2	1.3	11	11	4.9	4.3
Major Anions (mg/L)	Sulphate	mg/L	5	41	37	13	12	14	13	34	34	17	15	660	620	30	16
	Chloride	mg/L	1	31	37	43	39	56	46	170	170	97	81	2400	2400	380	230
	Bicarbonate Alkalinity (as CaCO3)	mg/L	20	78	76	360	310	1000	710	580	380	500	400	760	500	280	200
	Carbonate Alkalinity (as CaCO3)	mg/L	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	23	< 10	< 10	< 10	59	42
	Hydroxide Alkalinity (as CaCO3)	mg/L	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	<20
	Total Alkalinity (as CaCO3)	mg/L	20	78	76	370	310	1000	710	580	380	520	400	760	500	340	240
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	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	< 0.05
	Arsenic	mg/L	0.001	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	0.002	0.001	0.001
	Boron	mg/L	0.05	< 0.05	< 0.05	0.07	< 0.05	0.11	< 0.05	0.11	< 0.05	0.06	< 0.05	0.17	0.06	< 0.05	< 0.05
	Cadmium	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Chromium	mg/L	0.001	< 0.001	< 0.001	0.019	0.024	0.015	0.013	0.012	0.014	0.058	0.065	0.007	0.007	< 0.001	0.002
	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	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.001	< 0.001	< 0.001	< 0.001	0.006	0.005	0.001	< 0.001
	Iron	mg/L	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	< 0.05
	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	0.002	< 0.001	< 0.001
	Manganese	mg/L	0.005	< 0.005	< 0.005	< 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	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.0002	0.0001	< 0.0001	< 0.0001
	Nickel	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.011	0.013	0.002	0.003	0.008	0.011	0.009	0.019	< 0.001	< 0.001
	Silver	mg/L	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
	Vanadium	mg/L	0.005	0.008	0.009	0.026	0.030	< 0.005	< 0.005	0.023	0.023	0.01	0.008	0.016	0.015	< 0.005	< 0.005
	Zinc	mg/L	0.005	< 0.005	< 0.005	0.006	0.006	0.012	0.006	0.1	0.014	0.011	0.006	0.028	0.009	< 0.005	< 0.005
Nutrients (mg/L)	Nitrate (as N)	mg/L	0.02	1.5	1.6	0.51	0.51	0.61	0.57	3.9	4.7	1.6	1.4	0.19	0.18	0.04	0.05
	Nitrite (as N)	mg/L	0.02	0.02	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
	Ammonia (as N)	mg/L	0.01	0.02	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.01	0.02	< 0.01	0.01	0.02	< 0.01
	Total Kjeldahl Nitrogen (as N)*	mg/L	0.2	< 0.2	0.4	0.5	< 0.2	0.6	< 0.2	< 0.2	0.2	< 0.2	0.4	< 0.2	< 0.2	0.2	< 0.2
	Total Nitrogen (as N)	mg/L	0.2	1.5	2.1	1.02	0.5	1.21	0.6	3.9	4.9	1.6	1.8	0.2	< 0.2	0.2	< 0.2
	Phosphate total (as P)	mg/L	0.01	< 0.05	< 0.05	< 0.05	< 0.05	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Others	TDS	mg/L	10	180	170	490	440	1100	1700	860	810	700	630	4600	5300	800	610
	Electrical Conductivity (Lab)	uS/cm	10	300	350	740	900	1400	1700	1200	1500	980	7000	6000	7000	1200	1200
Field	Temperature	°C		20	21.1	20.6	21.6	21.6	21.9	19.3	20.6	20.9	22.4	21	22.3	19.8	21.8
	pH	pH units		7.88	8.25	6.71	7.25	6.71	7.25	6.47	6.86	6.62	7.08	6.42	6.69	8.53	8.68
	Electrical Conductivity	uS/cm		302	311	782	789	1545	1526	1228	1251	1039	1061	6147	6189	1342	1084
	Dissolved Oxygen	Mg/L		0.08	0.12	4.45	4.87	2.23	2.54	4.28	4.06	1.75	0.49	1.89	1.54	0.25	0.68

Table 28 Groundwater Water Monitoring – Minesite Bores - Analytical Results 2020 (cont.)

Bore ID	Analytes	Units	LOR	GAM08	GAM08	GAM09	GAM09	GAM10	GAM10	GAM11	GAM11	GAM12	GAM12	GAM14A	GAM14A	GAM14B	GAM14B
Sampling Date				16-Sep-20	16-Mar-20	17-Sep-20	17-Mar-20	17-Sep-20	19-Mar-20	16-Sep-20	17-Mar-20	16-Sep-20	19-Mar-20	16-Sep-20	19-Mar-20	16-Sep-20	19-Mar-20
Major Cations (mg/L)	Calcium	mg/L	0.5	56	120	1.6	0.9	200	190	430	420	62	50	77	59	65	35
	Magnesium	mg/L	0.5	120	320	150	140	410	330	650	650	8.1	8.4	40	28	91	48
	Sodium	mg/L	0.5	1100	2200	85	78	980	770	2600	2600	240	210	260	200	180	120
	Potassium	mg/L	0.5	14	24	2.7	2.7	15	14	24	24	6.2	4.1	4.3	3.4	5.6	3.6
Major Anions (mg/L)	Sulphate	mg/L	5	1000	2400	53	40	740	490	2200	1900	350	300	190	140	94	42
	Chloride	mg/L	1	1100	2300	110	89	2400	1800	6200	5400	230	190	460	390	430	230
	Bicarbonate Alkalinity (as CaCO3)	mg/L	20	520	670	570	430	760	630	810	540	110	130	220	170	320	210
	Carbonate Alkalinity (as CaCO3)	mg/L	10	< 10	< 10	31	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	18	< 10
	Hydroxide Alkalinity (as CaCO3)	mg/L	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Total Alkalinity (as CaCO3)	mg/L	20	520	670	600	430	760	630	810	540	110	130	220	170	340	210
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	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	< 0.05
	Arsenic	mg/L	0.001	0.003	0.002	< 0.001	< 0.001	0.002	< 0.001	0.002	0.001	0.009	0.008	0.003	0.002	0.002	< 0.001
	Boron	mg/L	0.05	0.13	< 0.05	0.09	< 0.05	0.12	0.16	0.14	< 0.05	0.25	0.34	0.32	0.37	0.19	0.19
	Cadmium	mg/L	0.0002	0.0004	0.001	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0004	0.0004	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Chromium	mg/L	0.001	< 0.001	< 0.001	0.049	0.056	< 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	0.003	0.004	< 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	0.027	0.021	0.004	0.002	0.005	0.003	0.011	0.015	0.002	< 0.001	0.001	< 0.001	0.007	< 0.001
	Iron	mg/L	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.21	0.37	0.07	< 0.05	< 0.05	< 0.05
	Lead	mg/L	0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001
	Manganese	mg/L	0.005	0.23	0.09	< 0.005	< 0.005	< 0.005	< 0.005	0.008	0.009	0.12	0.140	0.16	0.18	0.52	0.6
	Mercury	mg/L	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	< 0.0001
	Nickel	mg/L	0.001	0.004	0.024	0.002	0.003	0.003	0.012	0.006	0.017	0.002	0.004	0.002	0.001	0.012	0.19
	Silver	mg/L	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
	Vanadium	mg/L	0.005	0.019	0.012	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.018	< 0.005
	Zinc	mg/L	0.005	0.009	0.012	0.006	0.007	0.021	0.012	0.029	0.014	< 0.005	< 0.005	0.006	0.007	0.035	0.008
Nutrients (mg/L)	Nitrate (as N)	mg/L	0.02	5.7	< 0.02	0.07	0.08	0.16	0.11	2.4	2.5	< 0.02	< 0.02	< 0.02	< 0.02	4.7	3.5
	Nitrite (as N)	mg/L	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	1.1	< 0.02
	Ammonia (as N)	mg/L	0.01	< 0.01	0.02	< 0.01	0.01	< 0.02	< 0.01	0.03	0.01	0.41	0.23	0.09	0.09	< 0.01	0.12
	Total Kjeldahl Nitrogen (as N)*	mg/L	0.2	0.7	< 0.2	< 0.2	< 0.2	< 0.2	0.8	< 0.2	< 0.2	0.41	1.2	< 0.2	0.3	< 0.2	1.7
	Total Nitrogen (as N)	mg/L	0.2	6.4	< 0.2	< 0.2	< 0.2	< 0.2	0.8	2.4	2.5	0.41	1.2	< 0.2	0.3	5.8	5.2
	Phosphate total (as P)	mg/L	0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.02	< 0.05	0.05	< 0.05	0.02	0.05	0.08	< 0.05	0.03
Others	TDS	mg/L	10	3500	6300	730	690	4100	3800	8900	2100	920	790	970	1000	960	740
	Electrical Conductivity (Lab)	uS/cm	10	4400	10000	1100	1300	5900	6600	13000	15000	1200	1300	1500	1600	1500	1200
Field	Temperature	°C		21.2	21.9	21.3	22.8	21	21.9	19.1	21.2	21	22.3	20.3	21.9	20.9	21.5
	pH	pH units		6.66	6.89	7.28	7.52	6.4	7.59	6.3	6.53	7.05	7.43	7.11	7.59	7.05	7.51
	Electrical Conductivity	uS/cm		4680	9057	1142	1168	6182	1584	13085	13409	1328	1271	1523	1584	1575	1124
	Dissolved Oxygen	Mg/L		3.04	0.2	2.25	2.69	2.6	0.24	1.23	1.29	0.09	0.15	0.21	0.24	0.24	1

Table 28 Groundwater Water Monitoring – Minesite Bores - Analytical Results 2020 (cont.)

Bore ID	Analytes	Units	LOR	GAM14C	GAM14C	GAM15	GAM15	GAM16	GAM16	GAM100	GAM100	GAM101	GAM101	Berrilee	Berrilee	Victoria Park	Victoria Park
Sampling Date				16-Sep-20	18-Mar-20	16-Sep-20	17-Mar-20	17-Sep-20	19-Mar-20	17-Sep-20	19-Mar-20	15-Sep-20	16-Mar-20	22-Sep-20	18-Mar-20	22-Sep-20	18-Mar-20
Major Cations (mg/L)	Calcium	mg/L	0.5	55	49	120	110	210	180	19	13	51	51	110	92	40	54
	Magnesium	mg/L	0.5	140	120	190	180	550	410	130	67	130	130	200	170	47	64
	Sodium	mg/L	0.5	170	150	600	550	590	430	1800	1300	2100	1800	220	190	120	120
	Potassium	mg/L	0.5	4.5	3.6	8.3	8.2	18	15	52	19	22	20	8.1	6.8	3.6	3.4
Major Anions (mg/L)	Sulphate	mg/L	5	50	40	630	600	300	190	580	470	750	660	140	88	46	48
	Chloride	mg/L	1	340	440	640	520	2800	2100	1600	1400	1900	1600	1100	670	130	210
	Bicarbonate Alkalinity (as CaCO3)	mg/L	20	660	580	960	660	620	580	1400	1100	1200	1100	470	490	400	340
	Carbonate Alkalinity (as CaCO3)	mg/L	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	51	< 10	< 10	< 10	< 10	< 10
	Hydroxide Alkalinity (as CaCO3)	mg/L	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Total Alkalinity (as CaCO3)	mg/L	20	660	580	960	660	620	580	1400	1100	1300	1100	470	490	410	340
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	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	< 0.05
	Arsenic	mg/L	0.001	0.002	0.002	< 0.001	< 0.001	0.001	< 0.001	0.002	< 0.001	0.003	0.001	< 0.001	< 0.001	0.002	0.001
	Boron	mg/L	0.05	0.17	0.22	0.13	< 0.05	0.16	0.22	0.12	0.15	0.14	< 0.05	0.19	0.21	0.18	0.19
	Cadmium	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Chromium	mg/L	0.001	0.002	< 0.001	< 0.001	< 0.001	0.003	0.001	0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	0.002	< 0.001
	Cobalt	mg/L	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.007	0.007	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	Copper	mg/L	0.001	0.003	0.008	0.001	< 0.001	0.004	0.005	0.003	< 0.001	< 0.001	< 0.001	0.002	< 0.001	0.006	0.002
	Iron	mg/L	0.05	< 0.05	< 0.05	0.98	0.8	< 0.05	< 0.05	0.06	0.10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Lead	mg/L	0.001	< 0.001	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
	Manganese	mg/L	0.005	< 0.005	0.008	0.11	0.10	0.007	< 0.005	0.54	0.63	0.25	0.037	< 0.005	< 0.005	< 0.005	< 0.005
	Mercury	mg/L	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	< 0.0001
	Nickel	mg/L	0.001	0.003	0.840	0.003	0.004	0.047	0.027	0.014	0.005	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001
	Silver	mg/L	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
	Vanadium	mg/L	0.005	0.017	0.018	< 0.005	< 0.005	0.007	< 0.005	0.011	< 0.005	0.008	< 0.005	0.04	0.04	0.042	0.036
	Zinc	mg/L	0.005	0.015	0.042	0.014	0.010	0.023	0.029	0.02	0.008	0.007	< 0.005	0.01	< 0.005	0.006	< 0.005
Nutrients (mg/L)	Nitrate (as N)	mg/L	0.02	4.8	6.7	< 0.02	< 0.02	0.25	0.26	< 0.02	< 0.02	< 0.02	< 0.02	0.93	1	1.7	2.1
	Nitrite (as N)	mg/L	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
	Ammonia (as N)	mg/L	0.01	< 0.01	0.02	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	< 0.01	0.31	< 0.01	0.04	< 0.01	< 0.01
	Total Kjeldahl Nitrogen (as N)*	mg/L	0.2	< 0.2	1.2	< 0.2	< 0.2	< 0.2	< 0.2	0.3	< 0.2	< 0.2	< 0.2	< 0.2	0.9	< 0.2	1.5
	Total Nitrogen (as N)	mg/L	0.2	4.8	8	< 0.2	< 0.2	0.25	0.3	0.3	< 0.2	< 0.2	< 0.2	0.93	1.9	1.7	3.6
	Phosphate total (as P)	mg/L	0.01	< 0.05	0.02	0.13	< 0.05	0.03	< 0.05	0.02	0.19	0.22	< 0.05	0.02	< 0.05	0.02	0.02
Others	TDS	mg/L	10	1000	1100	2200	2500	4000	4700	4600	4800	4600	2200	1800	1800	630	850
	Electrical Conductivity (Lab)	uS/cm	10	1600	1800	3300	3900	5800	6000	6300	6700	6900	8100	2700	2700	920	1400
Field	Temperature	°C		21.9	21.6	21.3	21.9	22.7	22.9	21.2	22.6	20.8	22.2	21.6	22	20.3	20.4
	pH	pH units		6.55	7.03	6.26	6.68	6.34	6.63	6.85	6.94	6.85	7.12	6.48	7.31	6.42	7.27
	Electrical Conductivity	uS/cm		1754	1740	3495	3452	6490	6067	6386	6440	7054	7056	2639	2656	902	1257
	Dissolved Oxygen	Mg/L		0.7	2.15	0.69	0.38	4.52	4.59	1.07	0.32	0.42	1.14	4.74	5.2	7.08	7.8

Table 29 Groundwater Water Monitoring – Borefield Bores - Analytical Results 2020

Bore ID	Analytes	Units	LOR	ISMW01	ISMW01	ISMW02	ISMW02	MWE1	MWE1	MWW1	MWW1	ISPB01	ISPB01
Sampling Date				30-Sep-20	10-Feb-20	30-Sep-20	10-Feb-20	30-Sep-20	10-Feb-20	30-Sep-20	10-Feb-20	30-Sep-20	17-Mar-20
Major Cations (mg/L)	Calcium	mg/L	0.5	30	25	28	26	14	12	38	28	25	24
	Magnesium	mg/L	0.5	28	23	23	22	14	11	27	23	22	24
	Sodium	mg/L	0.5	230	180	190	170	36	31	87	69	190	200
	Potassium	mg/L	0.5	3.2	< 5	3	2	1.7	0.7	2.2	1.1	2.9	2.9
Major Anions (mg/L)	Sulphate	mg/L	5	130	63	100	57	18	6.8	51	41	95	71
	Chloride	mg/L	1	400	290	380	370	61	25	130	100	320	260
	Bicarbonate Alkalinity (as CaCO3)	mg/L	20	190	240	190	170	100	140	150	170	180	150
	Carbonate Alkalinity (as CaCO3)	mg/L	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
	Hydroxide Alkalinity (as CaCO3)	mg/L	20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	Total Alkalinity (as CaCO3)	mg/L	20	190	240	190	170	100	140	150	170	180	150
Heavy Metals (Dissolved) (mg/L)	Aluminium	mg/L	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Arsenic	mg/L	0.001	< 0.001	< 0.001	0.001	0.002	< 0.001	< 0.001	0.003	0.002	< 0.001	0.001
	Boron	mg/L	0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	Cadmium	mg/L	0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
	Chromium	mg/L	0.001	< 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	< 0.001	< 0.001	0.005	0.003	< 0.001	< 0.001
	Copper	mg/L	0.001	< 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	0.56	0.97	0.49	0.48	< 0.05	< 0.05	4	2.6	0.66	0.76
	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
	Manganese	mg/L	0.005	0.046	0.048	0.037	0.036	< 0.005	< 0.005	0.55	0.33	0.045	0.048
	Mercury	mg/L	0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
	Nickel	mg/L	0.001	0.004	0.001	0.004	0.002	0.007	0.006	0.008	0.004	< 0.001	< 0.001
	Silver	mg/L	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
	Vanadium	mg/L	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
	Zinc	mg/L	0.005	0.014	< 0.005	0.012	< 0.005	0.019	< 0.005	0.024	0.016	< 0.005	0.006
Nutrients (mg/L)	Nitrate (as N)	mg/L	0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.05	< 0.2	< 0.02	< 0.02	< 0.02	< 0.02
	Nitrite (as N)	mg/L	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.2	< 0.02	0.02	< 0.02	< 0.02
	Ammonia (as N)	mg/L	0.01	0.04	0.01	0.03	0.01	< 0.01	0.02	0.06	0.05	0.04	0.04
	Total Kjeldahl Nitrogen (as N)*	mg/L	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.5	< 0.2
	Total Nitrogen (as N)	mg/L	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	0.5	< 0.2
	Phosphate total (as P)	mg/L	0.01	< 0.05	0.03	< 0.05	0.05	< 0.05	0.03	8.8	< 0.01	< 0.05	< 0.05
Others	TDS	mg/L	10	810	690	570	620	170	250	N/a	370	610	750
	Electrical Conductivity (Lab)	uS/cm	10	1200	1200	1000	1000	270	290	770	650	1000	1300
Field	Temperature	°C		19	22.4	20.4	23.3	19.2	22.3	19.2	22.9	21.7	21.8
	pH	pH units		6.47	6.81	6.23	6.93	5.71	6.35	5.79	6.25	6.5	7.39
	Electrical Conductivity	uS/cm		1226	1096	1100	1099	289	272	698	635	1130	1120
	Dissolved Oxygen	Mg/L		0.49	0.26	3.74	0.41	1.42	0.4	0.34	0.34	1.55	0.45