

DEVELOP

Woodlawn Mine Copper Zinc Project

SML 20

Annual Environmental Management Review (AEMR)

1 July 2022 – 30 June 2023

Table 1-1. Annual Review Title Block

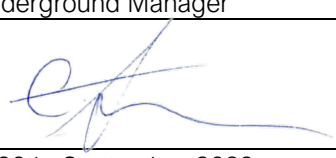
Name of Operation	Woodlawn Mine Project
Name of Operator	Tarago Operations Pty Ltd
Development Consent / Project Approval #	01_0143 MOD 2
Name of Holder of development consent / project approval	TriAusMin Limited
Mining Lease #	SML20
Name of holder of mining lease	Tarago Operations Pty Ltd
Water Licence #	WAL28983 WAL42034
Name of holder of water Licence	WAL28983- held by Veolia Environmental Services WALWAL2034 held by Tarago Operations
MOP/RMP start date	1 July 2022
MOP/RMP end date	N/A
Annual Review start date	1 July 2022
Annual Review end date	30 June 2023
I, Christopher Taylor, certify that this audit report is a true and accurate record of the compliance status of Woodlawn Mine for the period 1 July 2022 to 30 June 2023 and that I am authorised to make this statement on behalf of Tarago Operations. Note. a) The Annual Review is an 'environmental audit' for the purposes of section 122B(2) of the Environmental Planning and Assessment Act 1979. Section 122E provides that a person must not include false or misleading information (or provide information for inclusion in) an audit report produced to the Minister in connection with an environmental audit if the person knows that the information is false or misleading in a material respect. The maximum penalty is, in the case of a corporation, \$1 million and for an individual, \$250,000. b) The Crimes Act 1900 contains other offences relating to false and misleading information: section 192G (Intention to defraud by false or misleading statement—maximum penalty 5 years imprisonment); sections 307A, 307B and 307C (False or misleading applications/information/documents—maximum penalty 2 years imprisonment or \$22,000, or both).	
Name of authorised reporting officer	Christopher Taylor
Title of authorised reporting officer	Underground Manager
Signature of authorized reporting officer	
Date	28th September 2023

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1. STATEMENT OF COMPLIANCE

Table 1-1 summarises the compliance status of the Woodlawn Mine Project. One breach, relating to the schedule of the repair to seepage from tailings dam south occurred during the reporting period. Two matters from the 2021/2022 reporting period remain outstanding and will be included in a request for modification of the consent to be submitted on completion of the New Woodlawn Mine Plan (MOD3).

There have been no environmental incidents during the 2022/23 reporting period.

Table 1-1. Statement of Compliance

Were all conditions of the relevant approval(s) complied with?	
Project Approval 07_0143MOD2	No
WAL42034	Yes
SML20	Yes
EL7257	Yes
EPL 20821	No

A summary of the non-compliances in relation to PA07_0143, EPL 20821 and Resources Regulator Section 240 Notice NTCE0009097 is provided in Table 1-3. No environmental incidents were recorded during the 2022/23 reporting period. Outcomes and progress regarding the 2021 Independent Environmental Audit are discussed in Sections 10 and 11.

Table 1-2. Project Approval Compliance Summary

Condition	Description	Non-compliance risk level	Comment	Where addressed
PA Schedule 3, Condition 1(g)	Source of seepage from Tailings Dam South is identified and repaired within 3 years of commencing tailings reprocessing operations on the site	Administrative non-compliance	No risk of environmental harm. This matter is subject of a Resources Regulator Section 240 Notice investigation.	Sections 11 and 12
PA Appendix 2	Breach in relation to the location of the waste rock storage area	Administrative non-compliance	No risk of environmental harm and better environmental outcome	Section 10
PA Schedule 4, Condition 3	Passive treatment system for Waste Rock Dump drainage	Administrative non-compliance	No risk of environmental harm	Section 10

Compliance status categories used to classify non compliances in this report are in accordance with the status key contained in the Annual Review Guideline October 2015 (Table 1-3).

Table 1-3. Compliance status key for Table 1.2

Risk Level	Colour Code	Description
High	Non-compliant	Non-compliance with potential for significant environmental consequences regardless of the likelihood of occurrence
Medium	Non compliant	Non-compliance with: Potential for serious environmental consequences, but is unlikely to occur; or Potential for moderate environmental consequences but is likely to occur
Low	Non-compliant	Non-compliance with: Potential for moderate environmental consequences, but is unlikely to occur; or Potential for low environmental consequences but is likely to occur
Administrative non-compliance	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

2. INTRODUCTION

The 2023 Woodlawn Mine Annual Report has been prepared in accordance with Condition 4 Schedule 6 of the Woodlawn Project Approval and also satisfies the Annual Environmental Management Report (AEMR) requirements for SML20. The report covers the operations at Woodlawn Mine for the period 1 July 2021 to 30 June 2022 and reports against the Project Approval 07_0143 MOD2. The report provides details of the environmental management and performance of the operations in accordance with the *Post-approval requirements for State significant mining developments – Annual Review Guideline – October 2015*.

2.1. Brief introduction to the mine

Develop Global purchased the Woodlawn Mine in May 2022. Develop has completed 3.2 km of underground capital development and 34,000m of exploration and resource drilling during the reporting period. The successful drilling program has revealed significant high grade copper-zinc-lead-silver massive sulphide intersections across multiple horizons including several new stacked lenses. The lenses intersected in the exploration drilling to the north of Woodlawn are interpreted to represent significant extensions to the deposit in an area not previously drill tested. DEVELOP is maintaining a flexible restart timeline to maximise financial leverage from the commodity price cycle. It is anticipated production will take six months to come on-line following a final investor decision to proceed. At this stage an investment decision is anticipated in the March 2024 quarter. Based on current exploration results a 7 year mine plan is envisaged with significant potential to grow with an average annual production of 10,000t of copper metal and 35,000t of zinc metal.

During the 2022/23 reporting period the process plant and other surface infrastructure has been retained in a state of care and maintenance, although significant improvements to water management and tailings dam rehabilitation have been achieved.

For background, following receipt of the Project Approval on 4th July 2013, Heron Resources, trading as Tarago Operations commenced the Woodlawn Project. The approval was modified in March 2016 to allow for relocation of the mine entry to the western side of the Bioreactor. A second modification was approved in July 2017 which included minor layout changes to the processing plant site as a result of detailed design. Heron commenced development of the Woodlawn Project in 2017, including construction of the underground infrastructure, mine services area, processing plant and administration buildings. Construction was completed in 2019 and commissioning of the processing plant followed. Tailings reclaim of Tailings Dam South commenced in 2019.

Heron Resources suspended operations at Woodlawn on 25 March 2020 due to the continued underperformance of operations, rapidly declining metals markets and the impacts of the COVID19 pandemic, and entered a period of Care and Maintenance (C&M). The decision to suspend operations was also made to safeguard the financial position of Heron.

Following suspension of operations and the transition to C&M, all staff and contractors were demobilised with the exception of a small number of personnel who remained on site to carry out maintenance of the plant and underground assets, and to ensure ongoing environmental and compliance requirements of the operation.

During the period 16 July 2021 until 19 May 2022 FTI Consulting were Administrators of Heron Resources and its subsidiaries. FTI undertook a strategic process to attract new financing or ownership of the Woodlawn Mine.

In addition to the Woodlawn Mine Project, the SML20 site is occupied by two other operators: Veolia Environmental Services (Veolia) and Iberdrola Australia (formerly Infigen Energy). Veolia has operated a Bioreactor within the original mine open cut void since 2004. The Bioreactor receives putrescible waste primarily from Sydney and captures landfill gas for the generation of electricity. Iberdrola Australia operates the Woodlawn Windfarm which comprises 23 wind turbines. Not all the wind turbines in the Woodlawn Windfarm precinct are located within SML20.

2.2. Maps of the operation

Plan 1 shows the location of the operation while Plan 2 shows the overall site layout and operating boundaries between Tarago Operations and Veolia. All plans are provided in Appendix A. There are various overlaps in responsibilities on site, including the respective Project Approvals and EPL boundaries. Within these boundaries there are also access agreements, shared services and water transfers. Plan 2 shows the respective EPL boundaries while Plan 5 shows the water transfers across the site.

2.3. Personnel responsible for environmental management of the operation

Since DEVELOP took over ownership of the Woodlawn Project on the 19 May 2022 the personnel listed in Table 2-1 have responsibility for the environmental management of the Woodlawn Mine Project.

Table 2-1. Key personnel responsible for Woodlawn Mine Environmental Management

Underground Mine Manager	Chris Taylor Chris.taylor@develop.com.au
Sustainability and Environment Superintendent	Zoe Read Zoe.read@develop.com.au
Address	507 Collector Road TARAGO NSW 2580
Enquiries and complaints email	Admin.woodlawn@develop.com.au
Website	http://develop.com.au

3. APPROVALS

3.1. Consents, Leases and Licences

Table 3-1 summarises the licences and consents relating to the Woodlawn Mine. There are other consents and approvals relating to the other operations on the Woodlawn site however the following represent only those applicable to the mining operation.

Table 3-1. Consents, Leases and Licences

Authority	Title	Critical date:
Department of Planning, Industry and Environment	Special (Crown and Private Lands) Lease 20 (known as SML20)	November 2029
Environment Protection Authority	Environment Protection Licence 20821	Issued May 2017 and reviewed every 3 years. Current EPL issued 17 Aug 2022
Department of Primary Industries - Water	WAL28983 WAL42034 Works Approval for new bore (Notice of Determination A7441)	15/1/2025 held by Veolia under agreement with TOP 17/8/18 held by TOP 12/04/16 ongoing
Dams Safety NSW	Surveillance Reports for Five Prescribed Dams Annual Dams Safety Standards Report	Annual reports: 31 March
Department of Planning, Industry and Environment	Tarago Operations Woodlawn Mine Project (MP 07 0143)	4 July 2013 for a period of 21 years
Department of Planning, Industry and Environment	Relocation of Mine Portal and Overland Haul modification (MP07-0143MOD1)	22 April 2016 for the period of the original consent
Department of Planning, Industry and Environment	Site Layout Update MP07-0143 MOD2)	6 July 2017 for the period of the original consent
Department of Planning, Industry and Environment – Resources Regulator	Approval to Extract within Woodlawn Notification Area Approval to Conduct Hydraulic Mining in Woodlawn South Tailings Dam	April 2017 April 2017

3.2. Future approvals

Heron drafted a third modification (MOD 3) to the Project Approval for lodgement. The modification included clarification of the timing of the passive treatment system required for seepage from the Rehabilitated Waste Rock Dump, relocation of the new Waste Rock Emplacement and corresponding reduction in its footprint along with minor updating of the approval. Heron had previously been advised by DPIE that as the approval was issued under the old Part 3A, it will need to be converted to a State Significant Development Approval. This may necessitate other administrative changes to the wording of the consent. Submission of the modification by Heron was deferred until a definitive outcome for the Woodlawn Project was determined.

DEVELOP plans to submit a MOD3 covering the above issues prior to resuming operations and following finalisation of the Mine Plan in consultation with the Department. MOD 3 will include the following additional proposals:

- Removal of Project Approval 07_0143 Condition 1g of Schedule 3 in regarding repair of the leak from TDS;
- Placement of waste rock emplacement; and
- Addressing recommendations of the 2021 Independent Environmental Audit (Section 10.1).

4. OPERATIONS SUMMARY

Operations during the reporting period have included:

- Underground development and a program of underground exploration drilling;
- Activities related to the care and maintenance of all surface infrastructure;
- Water management including stormwater management improvements to reduce stormwater inflows,, installation of evaporation infrastructure, transfers between storage facilities to manage surface water; and
- Tailings dam rehabilitation trial on tailings dam north (TDN).

4.1. Production statistics

Woodlawn Mine continued to be held under Care and Maintenance during the reporting period. As a result, there were no production activities carried out during the reporting period. Predicted production for the 2022/23 reporting period is shown in Table 4-1

Table 4-1. Production summary

Material	Approved (Project 07_0143)	limit Approval	Previous reporting period (actual)	This reporting period (actual)	Next reporting period (forecast)
Waste rock / overburden (dmt)	Not specified		0t	223,794t	300,000t
Ore	1,500,000		0	0	0
Coarse reject	N/A		0	0	0
Fine reject (tailings)	Not specified		0	0	0
Saleable product	150,000		0	0	0

4.2. Mining Operations

The underground exploration drilling program has necessitated the introduction onto site of a range of underground equipment including jumbo's, bogger, dump trucks and drill rig together with employment of suitably qualified and experienced personnel.

Develop has completed 3.2 km of underground capital development and 34,000m of exploration and resource drilling during the reporting period. The campaign and core analysis is being used to inform development of the Mine Plan. There has been no ore production during the period and the process plant has remained under care and maintenance.

During the reporting period a small surface team has carry out C&M activities on surface infrastructure, water management and safety and environmental management.

4.3. Exploration

Other than the 34,000m of underground exploration undertaken at Woodlawn, as mentioned in section 4.2, there has been no other exploration activity undertaken during the reporting period.

4.4. PAF and NAF stockpiles

Potential Acid Forming (PAF) materials and Non-Acid Forming (NAF) materials are identified in accordance with the Waste Rock Management Plan. In general, PAF material is mineralised and is the target of mining while NAF material represents the unmineralised rock which is incidentally mined in order to access the ore lenses. There are however some rock strata which are not mining targets but which contain high concentrations of iron which have the potential to release acid drainage when oxidised.

During the reporting period, PAF material continued to be stored in the designated Waste Rock Emplacement and a temporary staging emplacement above the box-cut. Veolia have relocated and utilised some of the material in their bioreactor operations. In accordance with the Waste Rock Management Plan, PAF material must be separated and either delivered to the ROM pad if economically viable to recover the metals or in a designated Waste Rock Emplacement located adjacent to TSF4. Due to the nature of the ore body, it is not practical to segregate NAF material from PAF. Consequently, NAF is presently not separated or stockpiled on Site.

4.5. Mineral processing

No processing operations have been undertaken during the reporting period.

4.6. Other Operations

Surface activities have been concentrated around surface water management following three above average years of rainfall, tailings dam south seepage management works in accordance with Resources Regulator S.240 notice requirements, tailings dam embankment maintenance and environmental rehabilitation.

Surface water activities have included:

- Dredging of the PCD to expand storm surge capacity,
- Installation of a stormwater diversion drain around TSF4 to minimise stormwater inflows (Project Approval Schedule 3, Condition 1(f)),
- Repair to and upgrade of existing stormwater diversion drains across site,

S.240 works (still underway) including:

- Installation of stormwater diversion drains behind TDS to reduce stormwater inflows into return dam.
- Installation of drains to capture and divert acid seepage into the return dam
- Upgrade to the seepage return dam, including installation of HDPE lining, overall footprint reduction, installation of flow meters and v-notch weirs and automation of pumping operation.
- These works fulfill Project Approval Schedule 3 Condition 1h.

Rehabilitation

- Significant progress to the ongoing tailings dam rehabilitation trial on Tailings Dam North (TDN) (section 8.3).

4.7. Next reporting period

DEVELOP intends to continue a significant underground exploration drilling programme from within the Woodlawn Mine. The exploration drilling is designed to extend several of the known mineralised lenses at depth, along with testing for new lenses, where geochemical and geophysical vectors identify a number of highly prospective targets down plunge and down dip. Several near-mine exploration targets are also planned to be tested with small geophysical and drilling programmes from surface locations in the coming years.

The underground exploration drilling program will require the introduction onto site of a jumbo, bogger, dumpy and drill rig together with a team of suitably qualified and experienced personnel.

No construction activities are forecast to be undertaken during the next reporting period.

5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REVIEW

DPIE Letter Woodlawn Copper (MP07_0143) Annual Review 2022 received 20 October 2022 required the follow-up actions listed in Table 5-1:

Table 5-1. Actions required from previous Annual Review

Action required from previous Annual Review	Request ed by	Action taken by the Operator	Where discussed in Annual Review
Biodiversity. The Department notes that the Annual review did not include discussion on threatened fauna, weeds or pests. This section should be expanded to include discussion on these matters, in a similar manner to that which was provided in the 2021 Annual Review	DPIE	Revision 1 to Annual Review submitted on 4 Nov 2022	Section 6.6.1, 6.6.3 and 6.6.4
Acid Mine Drainage. The annual review does not include discussion pertaining to the effectiveness of site strategies in managing materials prone to generating acid mine drainage. Whilst the department acknowledges that at the time of submitting the 2022 Annual Review, the project was still under Care and Maintenance, it considers that discussion on this matter should be provided.	DPIE	Revision 1 to Annual Review submitted on 4 Nov 2022	Section 6.7
Mine subsidence. The Annual Review does not include any discussion pertaining to mine subsidence associated with the project. The 2021 Annual Review notes that ongoing investigation and monitoring will be continued through Care and Maintenance, however discussion of this was not included in the 2022 Annual review.	DPIE	Revision 1 to Annual Review submitted on 4 Nov 2022	Section 6.9
Website. The department has reviewed the proponents website and identified that information required under Schedule 5 Condition 11 of the consent does not appear to be publicly available at https://develop.com.au/woodlawn/	DPIE	Website updated to provide access to all required documents	https://www.develop.com.au/woodlawn-sustainability/

Actions outstanding from a 2019 DPIE Audit (Report Compliance Audit Program: Woodlawn Mine, Tarago Operations Pty Ltd, Jan 2020 RR20/1163) are summarised in Table 5-2.

Table 5-2. Outstanding actions required from 2019 DPIE Audit

Action required from 2019 DPIE audit	Status	Section referred
Non-compliance 1. Relocation of waste rock emplacement	Amended location of waste rock emplacement to be submitted in MOD3 to PA07_0143	Section 10
Observation of concern 1. Monitoring and assessment of vegetation and ongoing LFA analysis for site rehabilitation	LFA for the WOO trial and analogue sites has been commenced and will be ongoing	Section 11.1
Observation of concern 2. Erosion and vegetation failure on the legacy rehabilitated waste rock dump	Develop a program for progressive rehabilitation of the legacy waste rock dump	Section 8.7
Observation of concern 3. Revised management of NAF and PAF material from waste rock emplacement above TSF4	Revision of waste rock management plan to include management of NAF and PAF material located on waste rock dump.	Section Error! Reference source not found.
Observation of concern 4. Rehabilitation of Domain 4 (Hickory's Paddock) – rehabilitation of TSF4 borrow area	Area has largely been revegetated. Area to be monitored and remediated as required.	Section 8.7 and 8.7
Observation of concern 5. Compliance and environmental incident reporting system.	DEVELOP utilise INX software for all incident reporting and recording, including environmental incidents.	Completed
Suggestion for improvement 1. Development of a formal compliance management system – recommendation to implement an environmental monitoring system utilising the framework outlined in AS/NZS ISO 14001:2016.	An INX integrated health safety environment and quality management system has been implemented by DEVELOP. The system will incorporate an environmental monitoring system.	Completed
Suggestion for improvement 2. Improvements required to recording and assigning actions in response to environmental monitoring reports	In addition to the INX incident reporting, Develop are introducing EQulS for environmental data management recording.	To be adopted in Q1 FY 23/24

6. ENVIRONMENTAL PERFORMANCE

6.1. Meteorological Summary

Meteorological information is recorded continuously by the onsite weather station, operated by Veolia, and approved for the purpose of monitoring by Develop vide EPL 20821 EPA Identification No 5. The weather station is operated by the Licensee of EPL11436. The station was upgraded during April and May 2023 resulting in some data gaps. The station provides hourly or daily site-specific data including:

- Wind speed and direction @ 10m
- Temperature @ 10m and 2m
- Rainfall (mm)
- Relative humidity (%)
- Evapotranspiration (mm)

Total rainfall recorded for the 2022/23 reporting period of 972.1 mm represents the third consecutive year of well above average rainfall (622.7mm) (Source BOM: Goulburn 1971-2020). Preceding years rainfall was 1100.8 (2021/22) and 1115.5 (2020/21). This contrasts with the drought conditions experienced during 2019/20 when only 529mm of rain was received. The total number of rain days ≤ 1.0 mm was 104 days compared to (121 rain days experienced during 2021/22). Evapotranspiration was similar in 2022/23 at 860.1 mm compared 2021/22 at 865.4mm compared with 2020/21 when evapotranspiration was 931.6mm (Table 6-1).

Table 6-1. Monthly weather statistics (2022-2023).

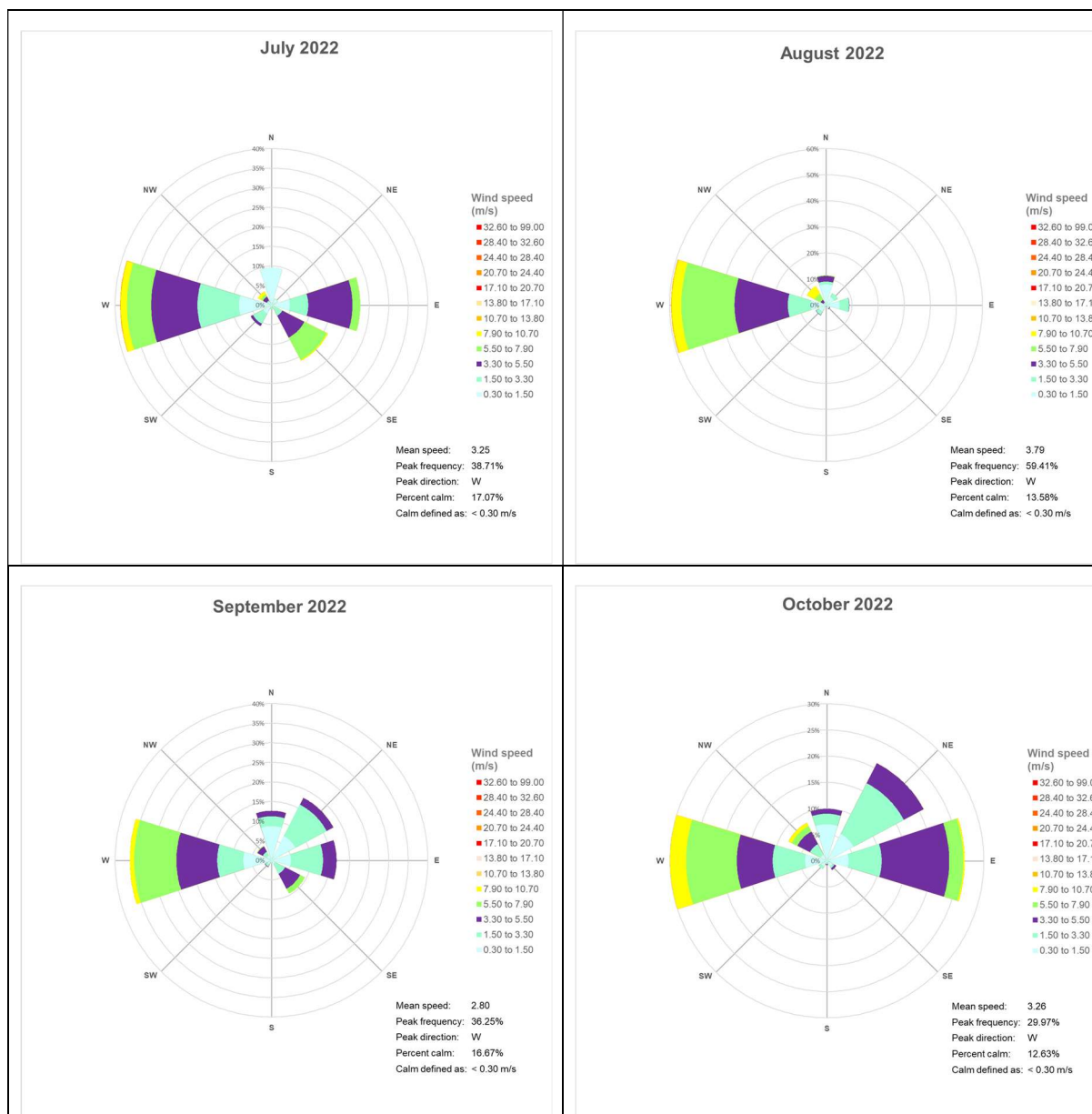
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Tot
Rainfall (mm)												
36	126.5	69.5	144	142.5	64.5	130.5	29	73	68.6	42.5	12.5	972.1
Number of rain days (≤ 1.0mm)												
6	13	11	13	12	7	10	7	9	7	2	7	104
Evapotranspiration												
31.2	45.1	56.5	73.1	109.3	132.4	113.7	103.1	78.8	48.7	39.0	29.9	860.1
Average wind speed (m/s)												
3.3	3.8	2.8	3.3	3.2	2.1	1.5	1.1	2.2 ¹	2.3 ¹	3.7	4.6	2.8 (average)

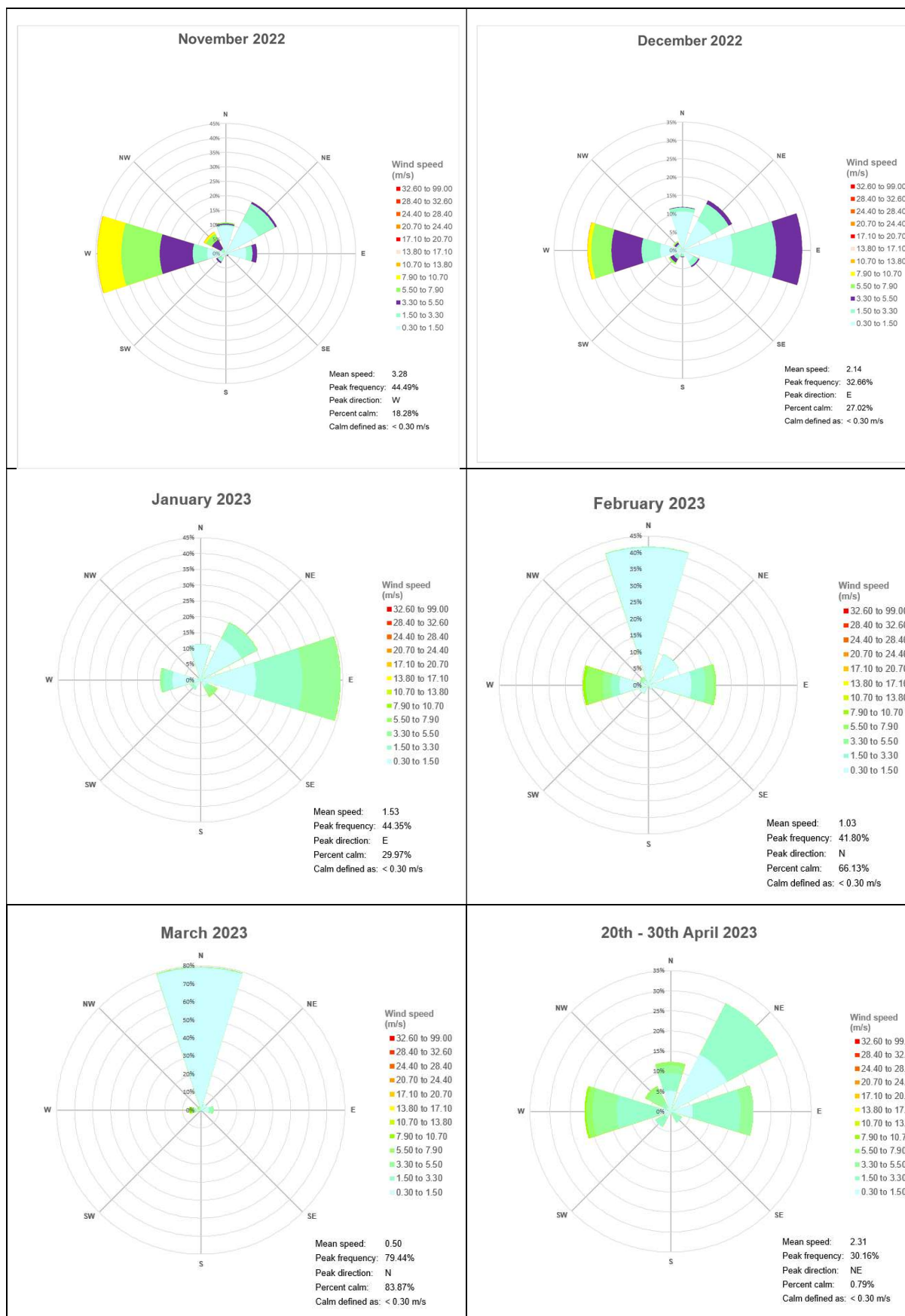
The highest monthly rainfall recorded during the 2022-2023 reporting period occurred in October 2022 with 144 mm. The lowest monthly rainfall during the reporting period was recorded in June 2023 with 12.5mm received. Overall, the region has experienced three consecutive years of above average rainfall with saturated ground conditions contributing to excessive runoff after relatively small rain events.

6.2. Wind roses for reporting period

Wind roses for each month during the current reporting period are shown in Figure 6-1. The mean annual wind speed for the reporting period was 2.8m/s. Winds are generally from a westerly direction although the warmer months have a strong easterly component. There was a similar pattern in the previous two reporting periods although northerly winds were recorded on the site during February and March 2023 which differs compared to previous reporting periods. Strong wind gusts can occur from the west, however easterly winds can be relatively strong from time to time. Only minor occurrences of southerly winds are experienced throughout the year. This data is useful in determining the component dust contribution to properties surrounding the Woodlawn mine.

¹ WIND SPEED AND DIRECTION WAS NOT AVAILABLE FROM THE METEOROLOGICAL STATION BETWEEN 8 MARCH AND 19 APRIL





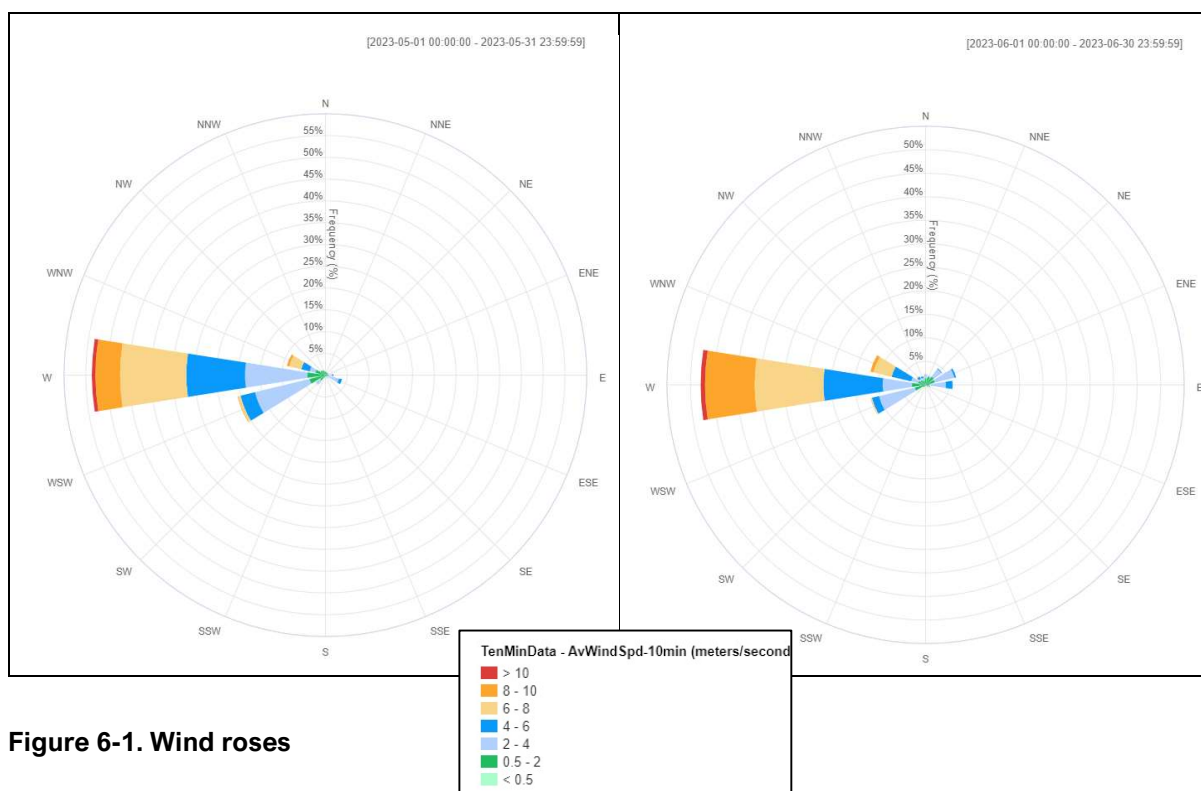


Figure 6-1. Wind roses

6.3. Noise

No noise monitoring was carried out during the reporting period as Woodlawn Mine continued to be managed in a state of C&M, with no surface based noise generating operational activities being undertaken.

In the reporting period there has been a gradual increase in activity directed towards preparation for transitioning the site into operations and continued underground exploration drilling. All surface infrastructure continues to be maintained in a state of C&M. It is anticipated that towards the end of the 2023 reporting period there may be a gradual increase in surface activity. However, at this time a schedule for resumption of processing operations has not been finalised.

When surface operations resume control measures aimed at minimising noise emissions from the Woodlawn Mine Project will include:

- Controlling noise at its source by implementing best management practices and utilising suitable technology;
- Managing the transmission of noise through the use of barriers to attenuate noise transmission;
- Training of the workforce to ensure best working practices to reduce noise;
- Purchasing equipment that meets relevant environmental noise standards;
- Maintaining equipment to optimum working order;
- Maintenance of ventilation fans; and
- Community consultation

6.4. Blasting

Development of the decline re-commenced during this reporting period using underground drill and blast methods. Underground blasting resumed on site on 10 August 2022. Monitoring has continued at on-site infrastructure locations with very low PPV readings obtained..

Vibration monitoring for the Bioreactor is part of an agreement between Veolia and Develop and will continue for the life of the project.

6.4.1. Blasting Criteria

Airblast overpressure and the ground vibration level are required to be monitored for all blasts undertaken during operations. EPL and Project Approval limits at any residence on privately owned land are detailed in Table 6-2.

Table 6-2 Blasting criteria

Time of blasting	Airblast overpressure (dB(Lin Peak))	Ground vibration (mm/s)	Allowable exceedance
Any time	120	10	0%
Day	115	5	5% of the total number of blasts over a period of 12 months
Evening	-	2	5% of the total number of blasts over a period of 12 months
Night, and all day on Sundays and public holidays	-	1	0%

6.4.2. Blasting Monitoring Results

Vibration monitoring was carried out onsite during the reporting period. The vibration levels experienced were below the blast criteria as summarized in Table 6-3. The vibration results demonstrate that the project remained in compliance with blasting criteria detailed in the Project Approval and EPL.

Table 6-3 On-site blast monitoring results

Date	No. of blast events	Reading PPV mm/sec
July 2022	0	No exceedance recorded
August 2022	17	No exceedance recorded
September 2022	39	No exceedance recorded
October 2022	44	No exceedance recorded
November 2022	36	No exceedance recorded
December 2022	45	No exceedance recorded
January 2023	41	No exceedance recorded
February 2023	40	No exceedance recorded
March 2023	51	No exceedance recorded
April 2023	46	No exceedance recorded
May 2023	42	No exceedance recorded
June 2023	45	No exceedance recorded

6.5. Air Quality

There was relatively very little atmospheric dust experienced across the region during the reporting period due to the excellent ground cover and above average rainfall. The good air quality is reflected in the very low PM₁₀ and TSP dust concentrations recorded by the high volume air sampler (HVAS) and dust deposition gauges located across site.

There was very little dust generated from the site due to there being limited surface operational activity undertaken during the reporting period.

6.5.1. Air Quality Criteria

The project approval assessment criteria for dust emissions is provided in Table 6-4, Table 6-5 and Table 6-6. An exceedance of any of these criteria constitutes an air quality incident.

Table 6-4. Long term criteria for particulate matter

Pollutant	Averaging period	^d Criterion
Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³
Particulate matter <10 µm (PM ₁₀)	Annual	^a 30 µg/m ³

Table 6-5. Short term criteria for particulate matter

Pollutant	Averaging period	^d Criterion
Particulate matter <10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³

Table 6-6. Long term criteria for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
^c Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month

Notes to Tables

^a Total impact (i.e. incremental increase in concentrations due to the Project plus background concentrations due to all other sources);

^b Incremental impact (i.e. incremental increase in concentrations due to the Project on its own);

^c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and

^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents or any other activity agreed by the Director-General.

6.5.2. Dust Deposition Monitoring

Dust monitoring has been undertaken at Woodlawn for several years. There are currently four dust deposition gauges associated with the mining operation on EPL20281; these are referred to as DG22 located to the eastern side of the void, DG34 on the western side of the void, DG28 located at Pylara and DG33 located on the south east side of the site adjacent to the Rehabilitated Waste Dump as shown on Plan 5.

Sampling and analysis of dust deposition is carried out in accordance with *Australian Standard AS2724.1 Ambient Air - Particulate Matter*. Monitoring is conducted monthly and results are recorded as total insoluble solids (g/m²/month) analysed according to *Australian Standard AS3580.10.1 – Methods for sampling and analysis of ambient air*. The monthly raw results are provided in Table 6-7. The assessment criteria for dust deposition is a rolling annual average, the results of which are presented in Table 6-8.

The annual average results for depositional dust were below the rolling average criteria of 4g/m²/month with the exception of DG34 which continued the Dec 21 – Jun 22 trend and recorded higher than average total insoluble solids up until Feb 23. Similar to the conclusions reached during the 21/22 report organic material such as pollen which is insoluble has contributed to the higher than average readings. The cause of the higher than average reading is consistent with the extremely high quantity of standing pasture in the grazing paddock where DG34 is located. This observation is substantiated with laboratory results which show a high monthly quantity of combustible matter and very low monthly residual ash content recorded for the gauge during the period. Due to the combustible nature of the material collected in DDG34 the result is not considered to represent a dust exceedance.

Table 6-7. Dust deposition monthly monitoring results (total insoluble solids g/m²/month)

Date	DG 22 East of Void	DG 28 Pylara Homestead	DG 33 Waste Rock Dam	DG34 West of Void	Comment
July 2022	0.7	0.6	0.3	8.8	DG34 see footnote
Aug 2022	0.3	0.8	0.4	3.8	Negligible impact on air quality
Sept 2022	1.0	5.3	3.8	8.4	DG34 see footnote
Oct 2022	0.9	1.1	1.5	3.5	Negligible impact on air quality
Nov 2022	1.3	12.5	2.2	2.2	Negligible impact on air quality
Dec 2022	1.8	3.1	0.9	9.8	DG34 see footnote
Jan 2023	3.4	NR	0.8	72.1	DG34 see footnote
Feb 2023	8.4	1.2	0.4	4.2	DG34 see footnote
Mar 2023	2.7	1.2	0.6	2.1	Negligible impact on air quality
Apr 2023	3.2	0.6	0.7	1.4	Negligible impact on air quality
May 2023	0.7	0.4	0.2	1.8	Negligible impact on air quality
June 2023	8.6	0.8	0.7	1.6	DG34 see footnote

Table 6-8. Dust deposition rolling annual average results for 2022/2023 (total insoluble solids g/m²/month)

Date	DG 22 East of Void	DG 28 Pylara Homestead	DG 33 Waste Rock Dam	DG34 West of Void	Comment
July 2022	1.5	0.9	0.9	7.9	Negligible impact on air quality
Aug 2022	1.5	0.9	0.9	7.9	Negligible impact on air quality
Sept 2022	1.77	1.5	1.16	9.82	Negligible impact on air quality.
Oct 2022	1.78	1.43	1.23	9.84	Negligible impact on air quality
Nov 2022	1.68	2.28	1.25	8.83	Negligible impact on air quality
Dec 2022	1.75	2.34	1.22	8.90	DG34 see footnote
Jan 2023	2.15	- ^b	1.08	16.79	DG34 see footnote
Feb 2023	2.15	2.69	0.94	11.62	DG34 see footnote
Mar 2023	1.99	2.43	0.95	11.42	DG34 see footnote
Apr 2023	2.15	2.43	0.98	10.78	DG34 see footnote
May 2023	2.08	2.39	0.96	10.25	DG34 see footnote
June 2023	2.58	2.41	0.99	10.04	DG34 see footnote

Notes to Table

^a DG34 has recorded higher rolling average than allowable for insoluble solids.

^b Not obtained - sample damaged

The long term dust criteria is set as an annual rolling average dust deposition rate. The results shown in Table 6-8 indicate continued wet regional conditions favour a decrease in atmospheric dust and improved air quality. It is unlikely that the combined operations of the Woodlawn Mine and Eco-precinct contributed to the elevated readings. The elevated readings in DDG34 represent biological matter rather than mineral dust.

The relationship between the dust deposition gauges is shown in Figure 6-2 and Figure 6-3. The data shows that on most individual months, the dust levels trend at Pylara (DG28) correlate generally with DG34. However, since December 2021, DG34 has recorded elevated insoluble solids most likely attributable to a high load of insoluble organic matter including pollens. Due to the above average rainfall received and the associated good ground cover, regional atmospheric dust has not been an issue throughout the reporting period. Further, due to there being no operations carried out at Woodlawn Mine there has been no operationally generated dust.

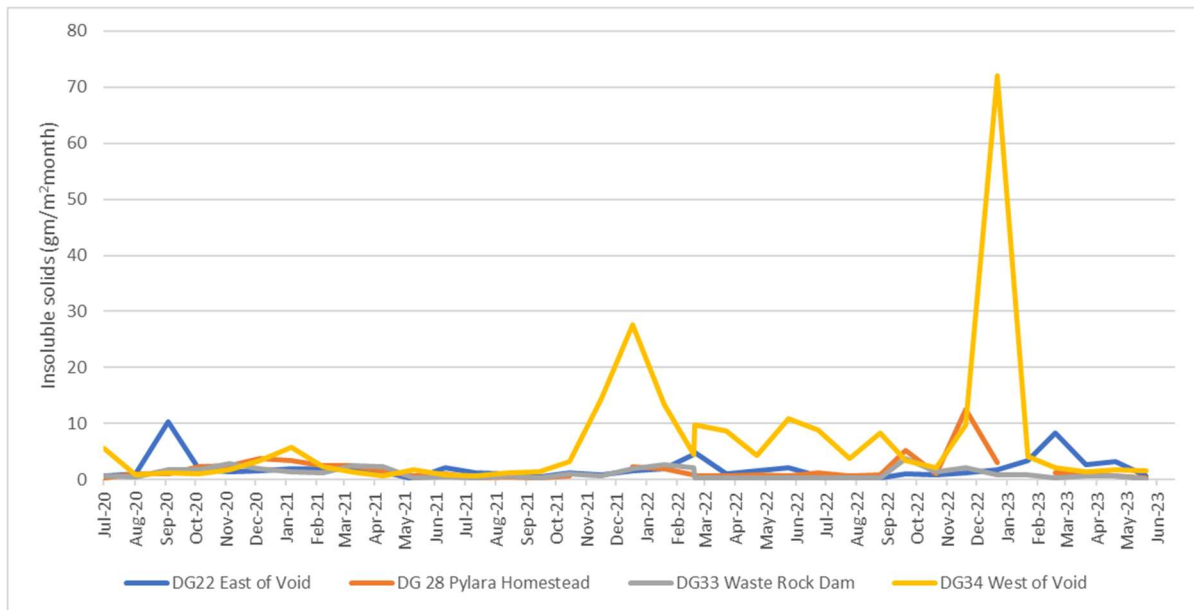


Figure 6-2. Raw monthly dust deposition results (g/m²/month)

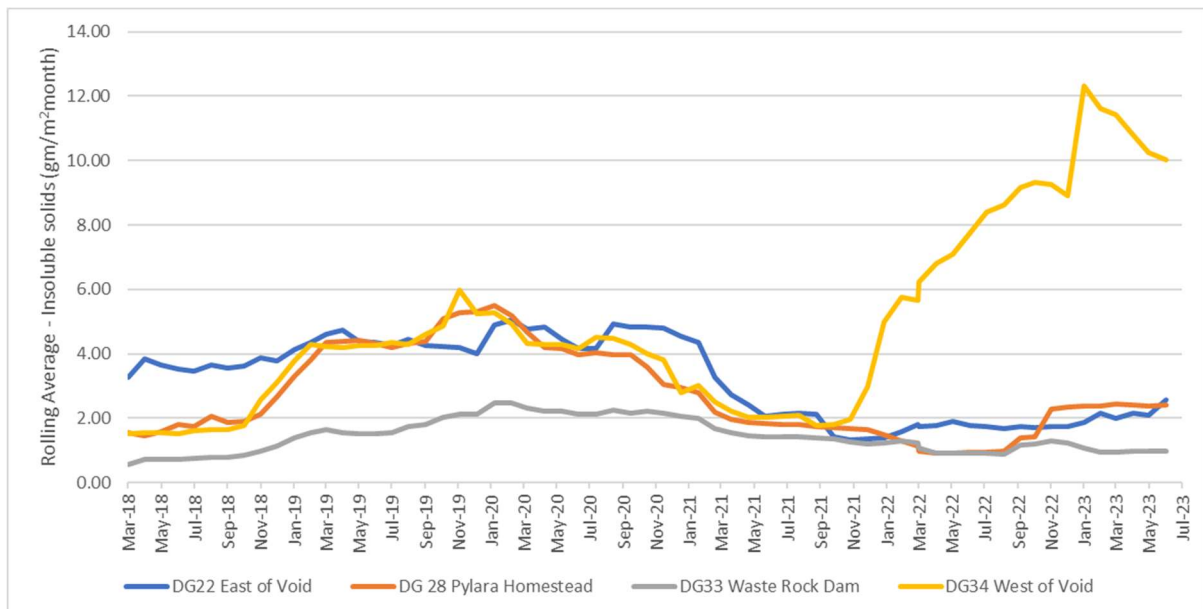


Figure 6-3. Rolling annual average DDG results (g/m²/month)

6.5.3. High Volume Air Sampler – PM10 and TSP

Two High Volume Air Samplers (HVAS) have been installed near the Pylara homestead since October 2017. HVAS results for PM10 are provided in

Figure 6-4. TSP results for the current reporting period are shown in Figure 6-5. The third consecutive year of above average rainfall experienced during this reporting period has contributed to relatively low atmospheric dust levels. No results were obtained on the 17 July 2022 due to a powerline fault.

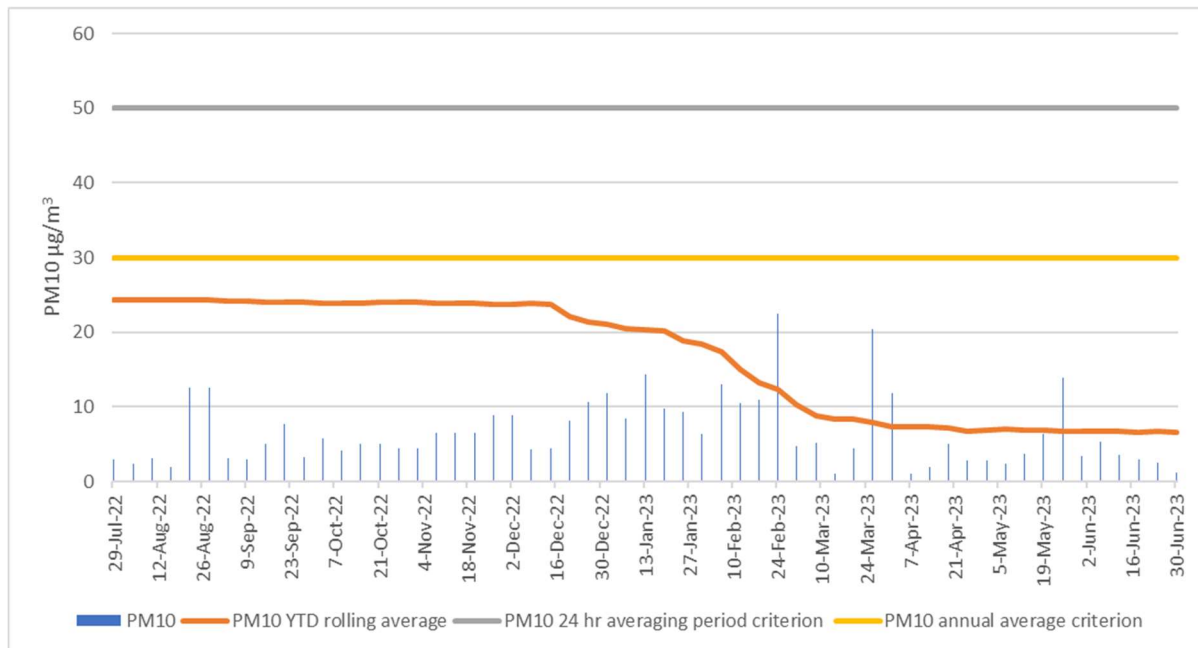


Figure 6-4. PM10 monitoring results (raw data and rolling average)

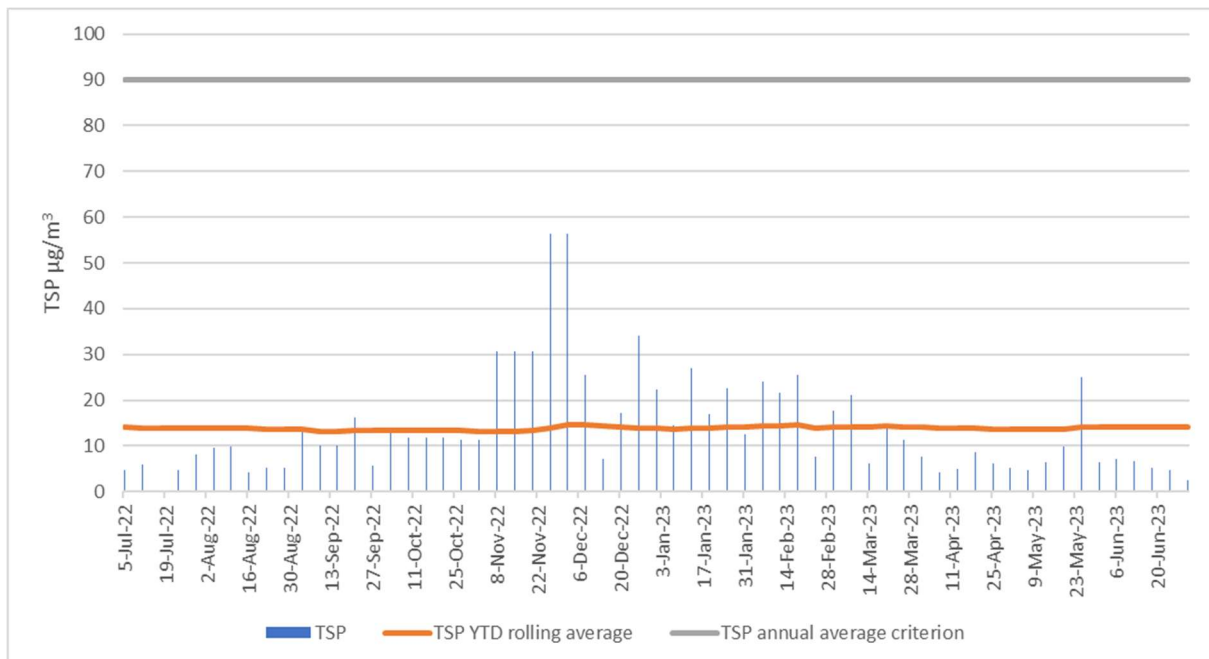


Figure 6-5. TSP monitoring results (raw data and rolling average)

6.5.4. Reportable incidents

There have been no reportable air quality incidents during the reporting period.

6.5.5. Effectiveness of environmental controls

Because of the extremely moist environmental and limited surface activity carried out only minimal dust mitigation controls were required during the reporting period. This was minor and was successfully achieved with water suppression as required on high traffic roads during dry windy periods.

6.5.6. Further improvements

An inert, environmentally safe polymer is now available on site to dilute into water carts to decrease the frequency of water suppression. This polymer can be used at varying dilution rates and can be applied to both high traffic areas, bare areas, and stockpiles. Although it is available on site the use of this has not been necessary during the reporting period.

6.6. Biodiversity

An ecological assessment was undertaken for the EIS for the Woodlawn Project (Parsons Brinckerhoff, November 2011). The assessment of impact to Threatened biodiversity found there were no threatened species of plant or endangered ecological communities located or considered to have potential habitat within the study area. The report also found that nine threatened species of animal have been recorded or were considered likely to potentially occur in the study area, however, none were found to be likely to be significantly affected by the project.

A discussion of the impact to fauna, flora, or by weeds and pest animals during the reporting period is below.

6.6.1. Fauna

The Woodlawn Site is located within the South Eastern Highlands Bioregion and is within an area that has experienced extensive clearing, disturbance due to previous agricultural land use and is fragmented. The EA identified no threatened ecological communities in the area disturbed by the mine.

The Project Approval requires Tarago Operations to establish at least 71 hectares of the Western Tablelands Dry Forest vegetation community within buffer land surrounding the project site. Planning in accordance with the approved the Vegetation and Rehabilitation Management Plan (VRMP) for the operation includes establishment of an onsite nursery, potting trials and seed harvesting.

DEVELOP has engaged a contractor to undertake environmental rehabilitation activities at Woodlawn. This will allow commencement of works as outlined in the VRMP for the biodiversity offset area and vegetation trials during the next reporting period.

6.6.1.1. Effectiveness of Site Strategies

With the exception of stormwater water management during the reporting period surface infrastructure at Woodlawn mine was maintained in a state of C&M. No disturbance or loss of threatened biodiversity habitat occurred during the reporting period.

The proposed biodiversity offset area is significant and by far exceeds current best practice. Seed from onsite vegetation has been collected and has been used to grow tubestock seedlings to be planted in the designated off-set area located to the east of the operational area during the next reporting period. The offset area will be implemented and reported in accordance with the guidelines provided in the OEH policy *NSW Biodiversity Offsets Policy for Major Projects, 2014*.

6.6.1.2. Further improvements

Following procurement of Woodlawn Mine by DEVELOP a program of work on the biodiversity offset area will be commenced during the next reporting period. The program will entail

- Seed harvesting from site;
- propagating plants from seed;
- establishing plots within the biodiversity offset area to establish plantings;
- Researching establishment and survivability of flora planted in the biodiversity off-set area; and.
- Management of weed invasion.

6.6.2. Threatened Fauna

A fauna survey undertaken for the Woodlawn Mine Project in 2012 found that no threatened species of animal were likely to be significantly affected by the Project. Minimal impact to existing native vegetation will ensure that impacts on fauna and fauna habitat will be negligible.

6.6.2.1. Effectiveness of Site Strategies

To minimise the impact on fauna, the Woodlawn Mine Project includes management measures to address:

- Delineation of development envelopes;
- Pre-clearing survey protocols;
- Implementation of sediment control measures;
- Vegetation clearing protocols, including salvage and relocation of suitable dead logs,
- Protection of waterways, aquatic and riparian habitats;
- Snake handling training to enable safe relocation of snakes away from operational areas; and
- Monitoring of the operation in relation to impacts on retained habitats, including water quality.

6.6.3. Weeds

The principle weed of concern at Woodlawn is Serrated Tussock is managed with an annual spraying program by local contractors. The prevalence of serrated tussock is presently well controlled across Site.

Small pockets of blackberry and scotch thistle appear from time to time and are managed as required.

During the reporting period, weeds of environmental concern have been outcompeted by high levels of vegetation growth in response to three years of high rainfall.

6.6.3.1. Effectiveness of Site Strategies

Weed control is an ongoing issue for all agricultural land across the district. Weed control undertaken at the Woodlawn mine is targeted at minimising the presence of exotic weeds and their seed burden and thus avoid the potential for weed seed to be spread off-site.

6.6.3.2. Further improvements

The site will continuously be monitored for the emergence of weed species in accordance with the Woodlawn Environmental Monitoring plan and species specific controls will be implemented should the need arise.

6.6.4. Pests

Pest species present on site include deer, rabbits, foxes and feral cats. When necessary, management of these species will be carried out as recommended in the NSW South East Local Land Services Regional Strategic Pest Animal Plan 2018-2023. Exclusion fencing has been installed around the TDN WOO trial instrumentation due to damage to wiring caused by unknown fauna species.

6.6.4.1. Effectiveness of site strategies

On site pest management strategies are generally effective. However, improved exclusion fencing may become necessary should grazing pressure by deer and eastern grey kangaroos cause stress to rehabilitation and biodiversity offset project areas.

6.6.4.2. Further improvements

Three consecutive years of extremely high rainfall has contributed to a rebound in vegetation. Due to the abundance of rainfall and grass growth there has been limited impact on vegetation by native or feral species. The impact of native and pest vertebrate species on vegetation abundance will be monitored during the next reporting period, with a view to install stock exclusion fencing at strategic rehabilitation locations should grazing stress on rehabilitation areas be observed.

6.6.5. Flora, groundcover and LFA monitoring

In accordance with the Woodlawn Vegetation Management Plan, and as later observed during a NSW Resources Regulator compliance audit dated Jan 2020 (RR20/1163), during the reporting period 21 Landscape Function Analysis (LFA) monitoring transects were established. The baseline monitoring program was undertaken in Summer 2022/23 and a follow-up monitoring campaign undertaken during Winter 2023.

Distribution of the LFA transects is as follows:

- Rehabilitated Waste rock dump – 9 transects.
- Revegetated, natural regen sites (as analogue sites) – 4 transects.
- Biodiversity offset area - 5 transects.
- WOO trial (3 transects).

When sufficient data has been obtained to show trends the results will be reported in future annual Reports.

6.7. Material prone to generating acid mine drainage

Management of material prone to generating acid mine drainage during the reporting period entailed surface and ground water monitoring of monitoring points in accordance with the EPL water monitoring program. Triggers for contamination of surface water are based on TARPS contained in the most up to date revision of the waste rock management plan. The relevant surface water monitoring points are Site 115, 105, 100, 109 (section 7.3). The relevant ground water monitoring points are MB3, MB8, MB13 and MB17 (section 7.5.3). No trigger levels were exceeded during the reporting period.

6.7.1. Effectiveness of Site Strategies

The management of waste rock is currently working satisfactorily. Future management of waste rock will be reviewed during development of DEVELOPs Mine Plan prior to resumption of operations at Woodlawn Mine.

6.7.2. Further improvements

The following improvements to management of AMD are forecast:

- Development of a plan for a passive treatment system for the rehabilitated waste rock dam to be prepared in consultation with the Resources Regulator.
- Development of a plan for the future management of tailings which may include use of tailings for paste fill underground.
- Continuous monitoring of seepage following modifications to the TDS seepage return dam and diversion drains.
- A review of the location of the existing waste rock dump and consideration of alternate locations.
- Review of the Waste Rock Management Plan.

6.8. Heritage

Based on previous Aboriginal and Heritage surveys undertaken during the EA, no areas of Aboriginal or European Heritage have been impacted by the Project or as a result of activities on the Site. A Heritage Management Plan has been prepared and approved by DPE in accordance with the Project Approval which provides appropriate management, conservation and protection of both Aboriginal and non-Aboriginal heritage items identified on the site and should any additional items of significance be discovered. No further improvements are considered necessary at this stage.

6.9. Mine Subsidence

The Woodlawn Extraction Plan will be amended, in accordance with DPIE requirements (August 2019) during preparation of the DEVELOP Woodlawn Mine Plan.

The current Extraction Plan outlines the requirements for a subsidence monitoring program covering the main dam structures across site and including the Bioreactor. Presently subsidence monitoring is undertaken as follows:

- Veolia presently monitor for subsidence at the locations around the void rim as shown in Plan 5. Quarterly subsidence monitoring by Develop for ED1, TDS and TSF4 embankments and around the boxcut during the reporting period.

Subsidence monitoring for TSF4 commenced in January 2022. Subsidence monitoring data for ED1, TDS and TSF4 are shown in Table 6-9, **Error! Reference source not found.** and **Error! Reference source not found.**.

Table 6-9. Subsidence monitoring ED1 May 2023

ID	Residuals to Previous Observations			Residuals to First Observations (25 Mar 2020)		
ED1M1	-0.013	-0.003	0.002	-0.021	0.000	0.012
ED1M2	0.009	0.004	0.003	-0.004	0.030	0.019
ED1M3	-0.018	-0.006	0.001	-0.033	0.014	0.006
ED1M4	-0.018	-0.002	-0.002	-0.034	0.022	0.026
ED1M5	0.010	-0.002	0.002	-0.009	0.023	0.011
ED1M6	0.015	0.003	0.002	-0.004	0.027	0.017
ED1M7	-0.009	-0.004	0.002	-0.024	0.015	0.010
ED1M8	-0.020	-0.002	0.003	-0.035	0.032	0.024
ED1M9	0.011	-0.001	0.000	-0.010	0.022	0.012
ED1M10	0.015	0.004	0.002	0.002	0.026	0.005
ED1M11	-0.011	0.002	-0.002	-0.002	0.053*	0.026*
ED1M12	-0.013	0.002	0.002	-0.023	0.025	0.016
ED1M13	0.009	0.002	0.002	-0.018	0.014	0.015
ED1M14	-0.014	-0.002	0.000	-0.046	0.008	0.003
ED1M15	-0.014	-0.003	-0.001	-0.039	0.001	0.008

•run over by dozer

Table 6-10. Subsidence monitoring Tailings Dam South - May 2023

	Residuals to Previous			Residuals to First Observations		
TDS4	0.002	-0.002	-0.002	-0.032	0.001	0.014
TDS5	0.007	0.006	0.006	-0.033	0.01	0.017
TDS6	-0.004	-0.004	-0.004	-0.037	-0.009	0.011
TDS7	0.008	0.008	0.006	-0.023	0.006	0.03
TDS8	0.006	-0.006	-0.006	-0.025	-0.01	0.024
TDS9	0.008	-0.002	0.008	-0.025	-0.012	0.024
TDS10	0.005	-0.005	-0.005	-0.03	-0.012	0.011
TDS11	0.024	0.004	0.004	-0.008	-0.003	0.004
TDS12	-0.003	-0.003	-0.003	-0.033	-0.007	0.000
TDS13	0.007	0.007	0.007	-0.021	0.005	0.019
TDS14	0.004	-0.004	-0.005	-0.024	-0.005	0.007
TDS15	0.009	0.009	0.009	-0.013	0.006	0.019
TDS16	0.002	-0.003	-0.004	-0.015	-0.006	0.000

Table 6-11. Subsidence Monitoring _ Tailings Storage Facility 4 - May 2023

	Residuals to Previous			Residuals to First Observations		
TSF4-04A	0.005	0.003	0.003	N/A	N/A	N/A*
TSF4-05	0.003	0.005	-0.002	0.031	0.004	0.014
TSF4-06A	0.007	0.004	-0.003	N/A	N/A	N/A*
TSF4-07A	0.002	0.002	0.002	N/A	N/A	N/A*
TSF4-08	0.005	0.005	-0.002	0.023	0.000	0.002
TSF4-09	0.002	0.002	-0.002	0.02	0.006	-0.005
TSF4-10	0.004	0.002	0.003	0.023	0.019	0.009

Damaged by dozer

6.9.1. Further improvements

As described in the Extraction Plan, the use of paste fill in the underground extraction areas will remove the potential for surface subsidence to occur. The plan also provides measures to assess compliance with a number of performance measures outlined in Schedule 3, Conditions 3 and 4 of the Project Approval as follows:

- There is no measurable subsidence caused by underground mining beneath the Woodlawn Landfill, tailings dams, and evaporation dams on the site;
- Apart from the access decline, no underground mining is undertaken within 200m of the perimeter of the Woodlawn Landfill;
- Remnant underground voids are long term stable to prevent subsidence; and
- Material used to backfill underground voids is physically and chemically stable and non-polluting.

Ongoing monitoring will continue and be reviewed to mitigate against potential underground mining impacts as necessary.

7. WATER MANAGEMENT

The Woodlawn Mine surface water management system allows collection and transfer of water from various locations within SML20 including evaporation dams as shown in **Plan 4**. In order to maintain the site as nil discharge, the water management system is extremely flexible allowing water to be transferred between multiple sources and storages. The main surface water storages in the system include:

- Raw Water Dam (RWD) which receives water from the Willeroo Borefield (covered by WAL 28983).
- At the time of this report Evaporation Dam 2 (ED2) contains water previously pumped by Heron to dewater the old underground mine. In addition, a small volume of water was transferred from ED3S during the previous reporting period.
- Waste Rock Dam (WRD) contains water leaching through the rehabilitated waste rock dump. During the reporting period water from the WRD to ED1. Following a request by Veolia arrangements are being made for future WRD transfers to go to the tailings dams.
- Tailings Dam North (TDN). The facility contains mainly tailings but also collects incidental rainfall and minor volumes of stormwater. Excess water is transferred to TDS on an as required basis to maintain low water volume.
- Tailings Dam South and Return Water Dam (TDS-RWD). TDS contains tailings, however, during C&M Heron utilised excess storage capacity within TDS to receive water pumped mainly from TDN, TSF4 and TDW. TDS-RWD captures a low volume of water seeping from the toe of the southern embankment. The water is effectively returned back into TDS. Following implementation of S240 Notice works to improve the TDS RWD system, it is anticipated the volume of water to be returned to TDS will be reduced.
- Tailings Dam West (TDW) contains tailings. Water in the dam originates primarily from incidental rainfall that falls on the dam surface. It is surrounded by a substantial stormwater diversion drain which diverts clean stormwater from the surrounding hills, offsite.
- Tailings Storage Facility 4 (TSF4) commissioned in 2018 mainly contains tailings derived from tailings reprocessed by Heron from TDS. Most stormwater is now diverted offsite via a stormwater sump with float activated pump which diverts the stormwater offsite. TSF4 receives waste water generated from underground drilling and development and the Process Plant Pollution Control Dam (PCD) with excess water pumped into TDS when required.
- The Process Plant PCD receives surface water runoff from the process plant and its catchment. To improve the stormwater surge capacity the PCD was dredged during the reporting period. Surplus water is pumped from the PCD into TSF4.
- Evaporation Dam 1 (ED1) which is owned and operated by Veolia only receives water from Veolia's activities. Water quality data for ED1 is not included in this report as the dam is owned, operated and monitored by Veolia.

ED3 and its component dams are operated by Veolia as part of the Bioreactor water management system. DEVELOP may however, reuse water from the Bioreactor system as a means of reducing make up water supplied from the Willeroo Borefield.

A second Water Access Licence (WAL) is available to DEVELOP from the Goulburn Fractured Rock Groundwater Source. This WAL is in addition to DEVELOP's existing WAL and license allocation within the Lachlan Fold Belt groundwater source.

The following section details surface water management within SML20 and provides results from monitoring undertaken during the reporting period.

7.1. Water take

Table 7-1 shows water taken by the operation, exclusive of Veolia's take, for the period 1 July 2022 until 30 June 2023. Water use was mainly associated with underground drilling. WAL28983 is held by Veolia, but Tarago Operations has an agreement in place to use up to 500ML with an option for a further 50ML if available or required.

Table 7-1. Water access licence usage

Water Licence	Source	Entitlement (ML)	Mine operation use (ML)	Mine (ML)	Dewatering
WAL28983	Lachlan Fold Belt	600	64.2	0	
WAL 42034	Goulburn Fractured Rock	400	0	0	

7.2. Mine dewatering

During Woodlawn's previous operational period, water contained in the open cut and underground workings was transferred to the various evaporation dams. This aspect of the mine's operation has not varied but has required additional licensing requirements to recommence dewatering. The approval to dewater the mine came in three stages to enable monitoring and assessment to be completed prior to proceeding to the next stage. A variation in the EPL was approved in May 2018 for the final Stage 3 which allows for ongoing dewatering of the old underground workings. This stage of dewatering commenced in December 2018 but was discontinued in May 2020 when the Woodlawn Mine was placed in C&M. However, the requirement to dewater the old workings will continue for the life of mine. The water previously pumped from the old workings is currently stored within six HDPE lined cells in ED2 where it is evaporated.

No dewatering was carried out during the reporting period.

7.3. Surface water monitoring - creeks

There are four ephemeral creek monitoring sites which were located to measure water quality within the natural environment surrounding the mine site. These are shown on Plan 5 and include:

- Site 100: ephemeral creek located on the western perimeter of SML20 downstream of the Waste Rock Dam
- Site 105: Crisps Creek, north of the site but on the downstream edge of SML20
- Site 109: southern edge of SML20 downstream of Tailings Dam South
- Site 115: Western boundary of SML20 downstream of ED2 in Allianoyonyiga Creek

SML requirements for surface water monitoring include pH and conductivity monitoring of surface water. Other general water quality parameters are also measured to determine overall health of the receiving waters. The sites are monitored quarterly with an attempt to complete the monitoring when the creeks are flowing. As the mine is located at the top of the catchment, on the catchment divide, the creeks have very limited catchment and only flow after heavy or prolonged rainfall. Water quality can also naturally fluctuate depending on the timing of sampling and natural conditions. Gaps also exist in the

historical dataset for some of these sites indicating drought or low rainfall periods when the ephemeral sites had no surface flow for extended periods.

Good rain during the reporting period allowed quarterly sampling to be undertaken at all of the creek monitoring points as summarised in **Table 7-2**.

Table 7-2. 2022-2023 SML 20 surface water quality - creeks

Site	Number of Samples	Laboratory pH			Laboratory conductivity (µS/cm)		
		Minimum	Average	Maximum	Minimum	Average	Maximum
100	4	6.85	7.25	7.49	398	581.25	728
105	4	7.66	7.77	7.97	1250	1885	3270
109	4	7.30	7.48	7.76	601	836	1130
115	4	7.89	8.00	8.02	1120	2210	2970

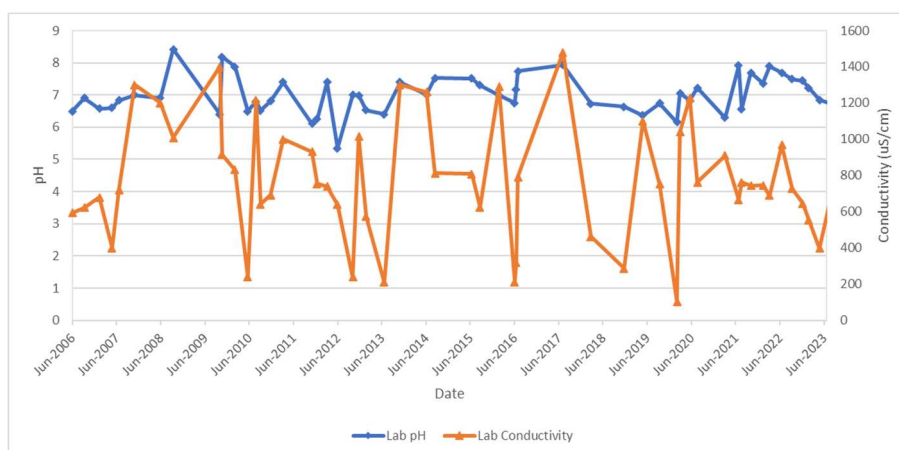


Figure 7-1 and Figure 7-2, show water quality laboratory results Site 100. The water has remained neutral at around pH 7 with low salts and metal content. Sulphate concentrations are well below safe stock drinking levels (ANZECC guideline = 1,000 mg/L) and Human Recreation Guideline of 400 mg/L. Metal concentrations are generally at trace levels and indicate that no detectable leakage has occurred from the south western portion of the site, and in particular from the Waste Rock Dam and Rehabilitated Waste Rock Dump. The spike in zinc observed in March 2020 is considered to be an anomaly and associated with the drought conditions at the time. The zinc concentration has since retreated.

Results for Site 105 are shown in Figure 7-3 and Figure 7-4. Water quality at Site 105 fluctuates in response to rainfall and can contain higher salt content particularly during low flow or following extended dry conditions. The water quality at Site 105 is generally very good, with spikes in EC typically associated with dry cycles. When flowing, conductivity levels typically are between 1,000 and 3,500 µS/cm while sulphate and metals concentrations are very low. The creek is consistently neutral to slightly alkaline with an average pH of 7.77 during the reporting period. Ongoing high rainfall during the reporting year has seen the conductivity remain at low concentrations. Elevated sulphate and zinc in were recorded in June 2014 and again in 2020; however, the actual values are low. The remaining metals are at trace levels. The peak of 600 mg/L sulphate occurred during very low flow but is still below ANZECC stock drinking guidelines.

Crips Creek flows through agricultural land and runs parallel to Collector Road. Therefore, any contamination leaving the site would be detected at Site 105. The results confirm that there are no measurable impacts to the water quality in Crips Creek associated with Woodlawn Mine site activities.

Figure 7-5 and Figure 7-6 show water quality laboratory results for Site 109. The results show the water quality at site 109 is relatively good and does not indicate that any offsite seepage is occurring from TDS. The pH tends to be neutral approximately pH 7 and conductivity fluctuation occur consistent with seasonal conditions with higher EC observed during dry cycles. In December 2021 and January 2022 the monitoring results indicated an influence from water discharged from TDW flowing through the

monitoring point. The water quality at Site 109 has subsequently returned to long-term water quality concentrations.

Water quality results for site 115 are shown in **Figure 7-7** and **Figure 7-8**. The results show the pH is typically slightly above neutral, whilst conductivity fluctuates considerably most likely due to seasonal wetting and drying cycles. Sulphate and metals concentrations at site 115 are relatively low in overall terms. Since the spike in lead concentration in 2020 the concentration has returned to background values. The cause of the spike is uncertain, but could be associated with either the wet conditions following years of drought or a sampling error.

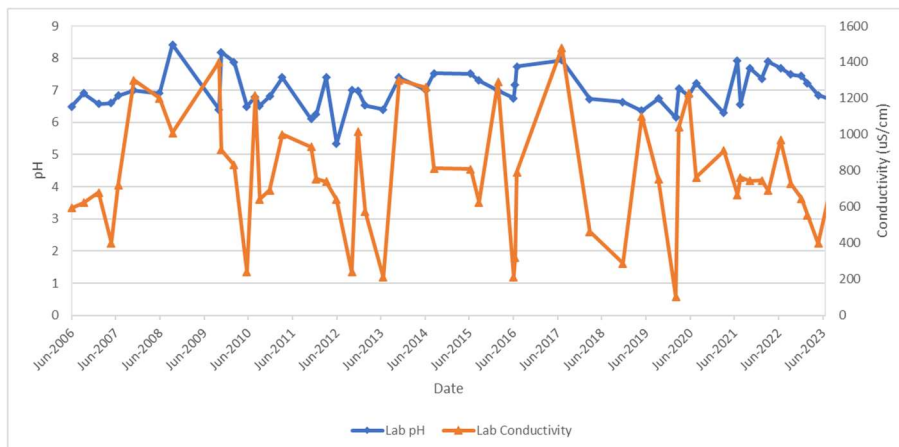


Figure 7-1. Water quality pH and electrical conductivity - Site 100

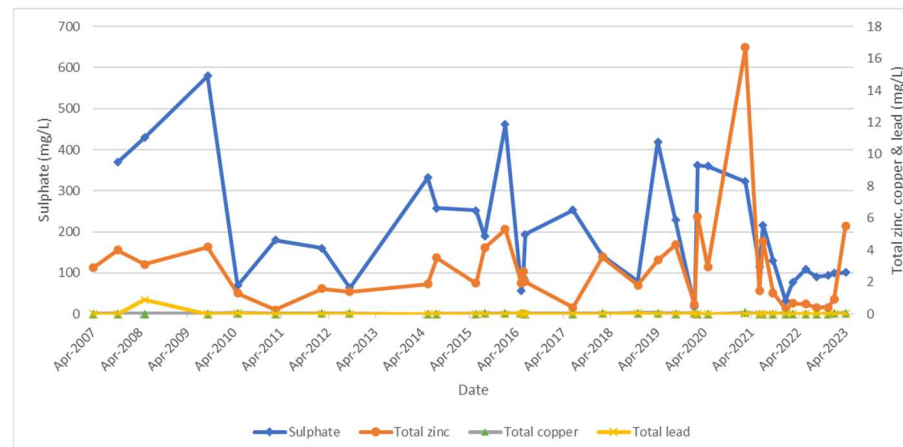


Figure 7-2. Water quality - sulphate and metals - Site 100

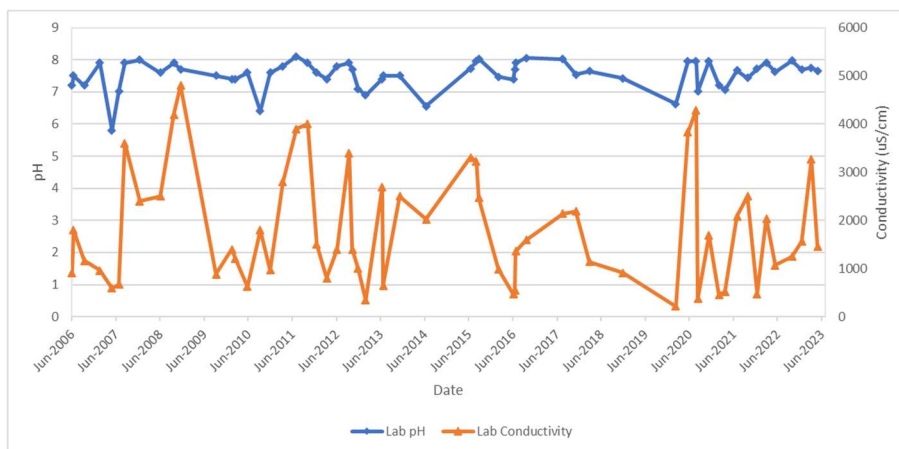


Figure 7-3. Water quality - pH and conductivity - Site 105

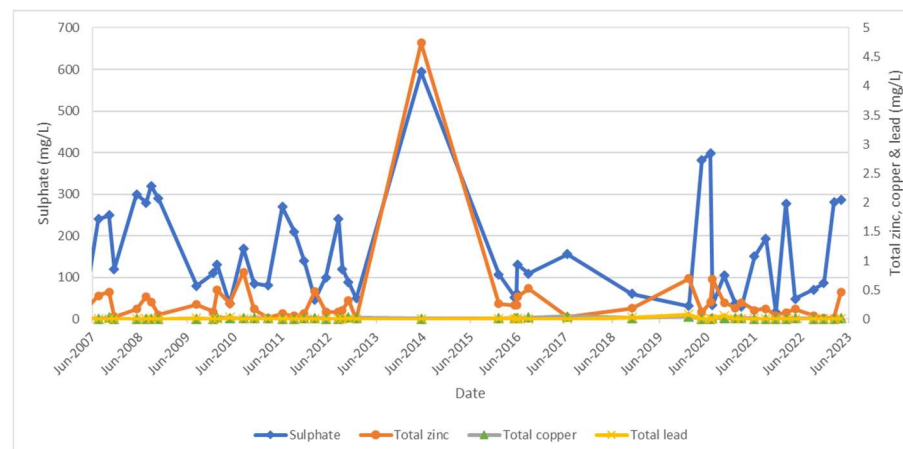


Figure 7-4. Water quality - Sulphate and metals - Site 105

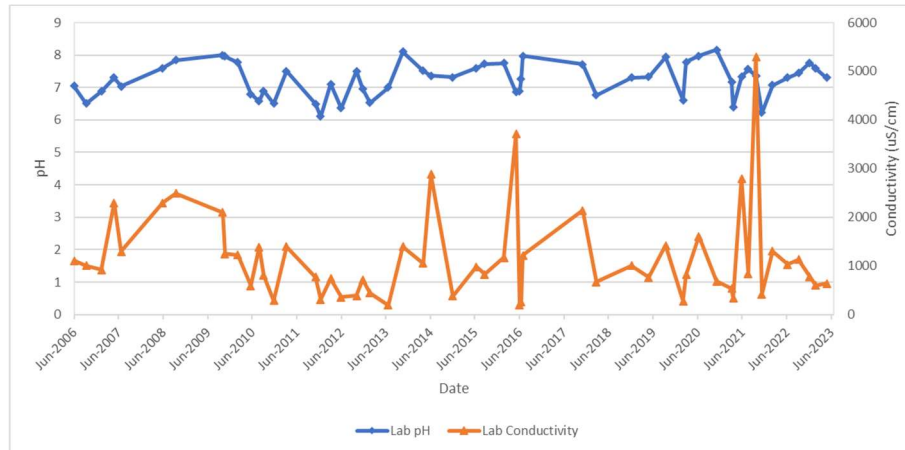


Figure 7-5. Water Quality - pH and Electrical Conductivity - Site 109

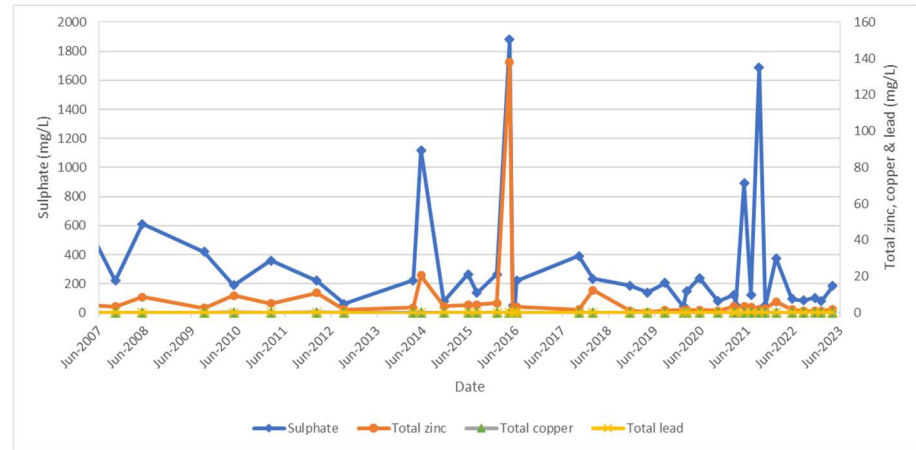


Figure 7-6. Water quality - Sulphate and metals - Site 109



Figure 7-7. Water quality - pH and conductivity - Site 115

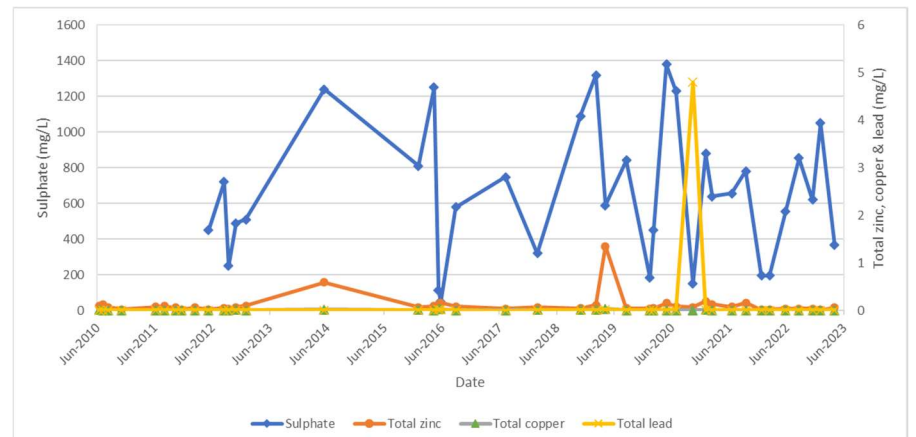


Figure 7-8. Water quality - sulphate and metals - Site 115

7.4. Surface Water Monitoring - Dams

Water quality within the tailings and evaporation dams on site is used as a reference to determine the potential impacts on receiving waters should discharge from the site occur. Although the site is designed as nil discharge, there is the potential for some dams to overflow under extreme rainfall events through purpose built spillways designed to ensure no damage occurs to dam embankments. Monitoring surface water quality also provides an indication of general water quality trends on site as well as the potential for impacts on groundwater systems. There are nine dams monitored including: ED2, TDS, TDN, TSF4, WRD, WM200 (Woodlawn Dam) and WM300 (Process Control Dam).

Apart from transferring water from the legacy waste rock dam, DEVELOP does not utilise ED1 for water storage as Veolia have the obligation under their Project Consent to dewater the acidic water from the dam. DEVELOP retains the right under its approvals to access ED1 in future. Should DEVELOP need to use ED1 in future, an arrangement will be made with Veolia to construct appropriately lined coffer dams within the bounds of the existing ED1 footprint. All management and monitoring for ED1 is currently undertaken by Veolia.

Table 7-3 provides the water quality results for the reporting period

Table 7-3. 2022-2023 SML20 Surface Water Quality - Dams

Site	Number of Samples	pH			Conductivity (µS/cm)		
		Minimum	Average	Maximum	Minimum	Average	Maximum
ED2 Cell 3	4	6.38	6.78	7.56	13485	16018	17747
TDS	4	2.45	2.62	2.83	5000	6400	7050
TDN	4	2.44	2.62	2.78	4720	6205	7160
TSF4	4	2.92	3.19	3.33	1940	2330	2640
WRD	4	2.86	3.02	3.31	11100	18100	28200
WM200	4	6.48	7.77	8.49	548	814	1062
WM300	5	2.74	3.10	3.42	1370	2008	2730

7.4.1. Evaporation Dam 2

Evaporation Dam 2 (ED2) is used to store water that has been pumped from the old underground workings. ED2 is subdivided into six separate cells and lined with HDPE lining in accordance with EPL licence. No water was pumped from the old underground mine during the reporting period, therefore, sampling at the EPL designated sampling point (ID24) – the discharge point into ED2 did not occur. The analysis result for ED2 at Table 7-3 is for water sampled from ED2 Cell 3 which contains water previously dewatered during Heron's tenure. At this time a schedule for resumption of pumping from the old underground workings into ED2 is still being developed but anticipated to resume during Q1 2023/24.

7.4.2. Tailings Dam South

Tailings Dam South (TDS) has historically had a seep from the southern embankment. The Project Approval requires that following tailings reclamation from TDS the source of the "leak" is to be identified and repaired. Following a Risk Assessment undertaken by Heron during Care and Maintenance for the Resources Regulator, Section 240 Notice was issued requiring an investigation into the cause of the seepage be undertaken. An independent expert consultant dam engineer has carried out an investigation and provided advice that TDS and the southern embankment is operating as designed and consequently repair of a leak is not required. Following the investigation, the engineer recommended some improvements to the return dam and diversion drains. During Q1 of reporting year 2023/24 the return dam will be lined with HDPE lining fulfilling Schedule 3 Condition 1(h) of the Consent. Instrumentation and v-notch weirs will be installed to allow accurate determination of the rate of

seepage. A modification to the consent will be submitted to remove Schedule 3 Condition1(g) of the consent.

The water level within TDS has stabilised due to lower monthly rainfall since February 2023 and installation of four Minetek 400/200 evaporators.

Water quality in TDS has been relatively unchanged with comparatively low EC (Figure 7-9) being recorded following three years of high rainfall since the drought ended in early 2020 and transfer of water with lower salinity levels into TDS during C&M at Woodlawn.

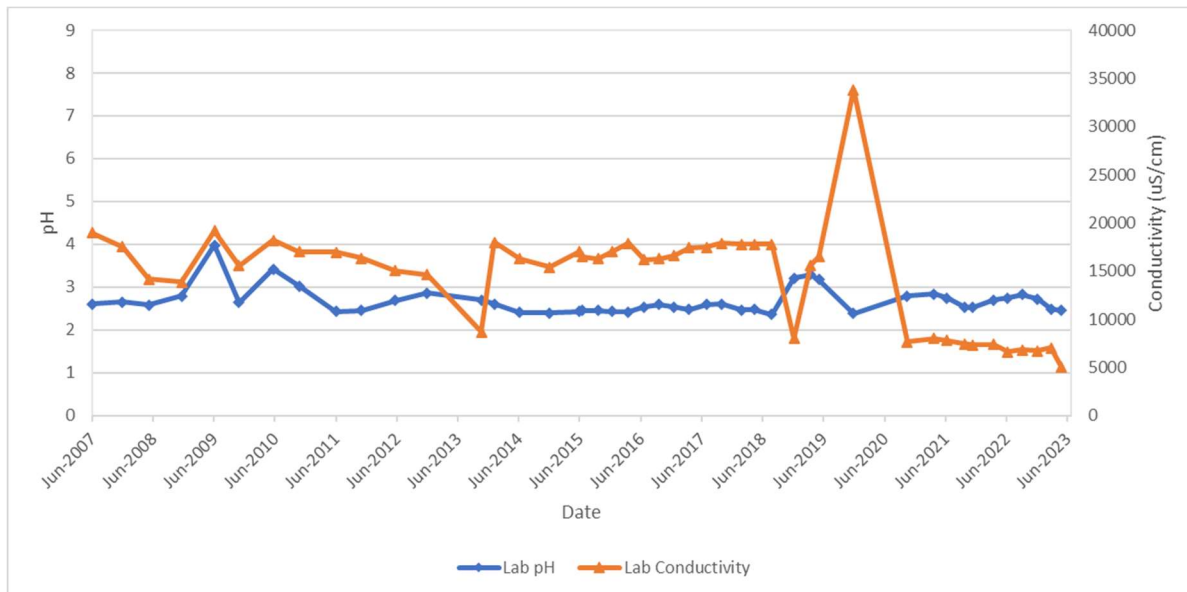


Figure 7-9. TDS pH and Electrical Conductivity Results

Figure 7-10 shows the water quality within the return water dam below TDS. Water quality fluctuates more significantly due to rainfall as there are inflows from surrounding surface areas between the TDS embankment and the return dam. The water in the return dam is pumped back into TDS.

The data shows no trend in water quality over several years, with the main contribution being seepage of water from TDS.

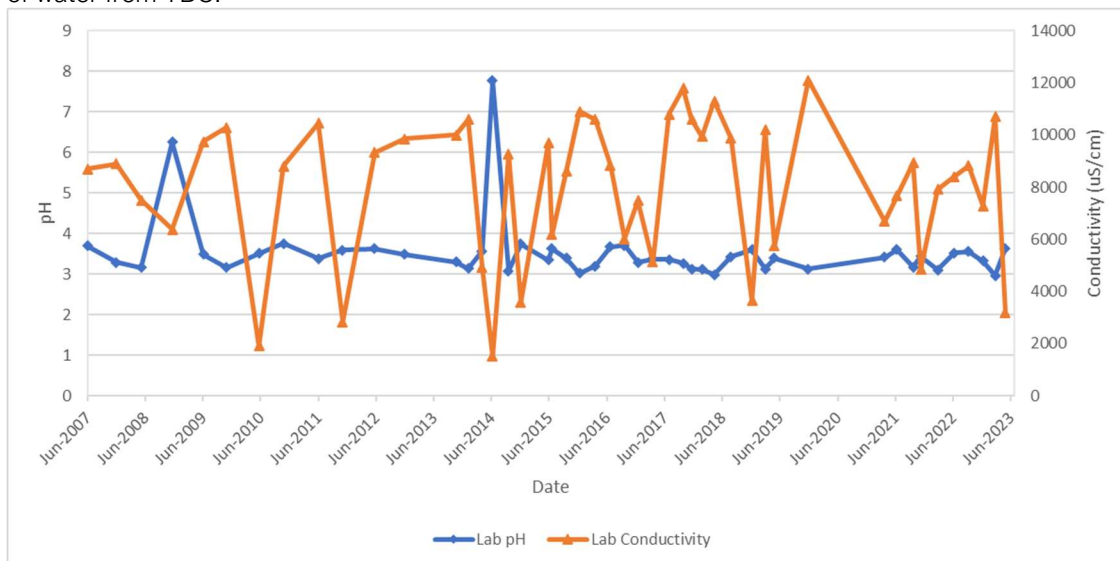


Figure 7-10. TDS Return Dam pH and Electrical Conductivity Results

7.4.3. Tailings Dam North

Figure 7-11 Shows pH and electrical conductivity results for TDN. pH and EC have responded to the increase in stormwater across site with EC in particular trending lower than the long-term average during the reporting period. The trend is likely to be a reflection of rainfall inflows diluting the water body.

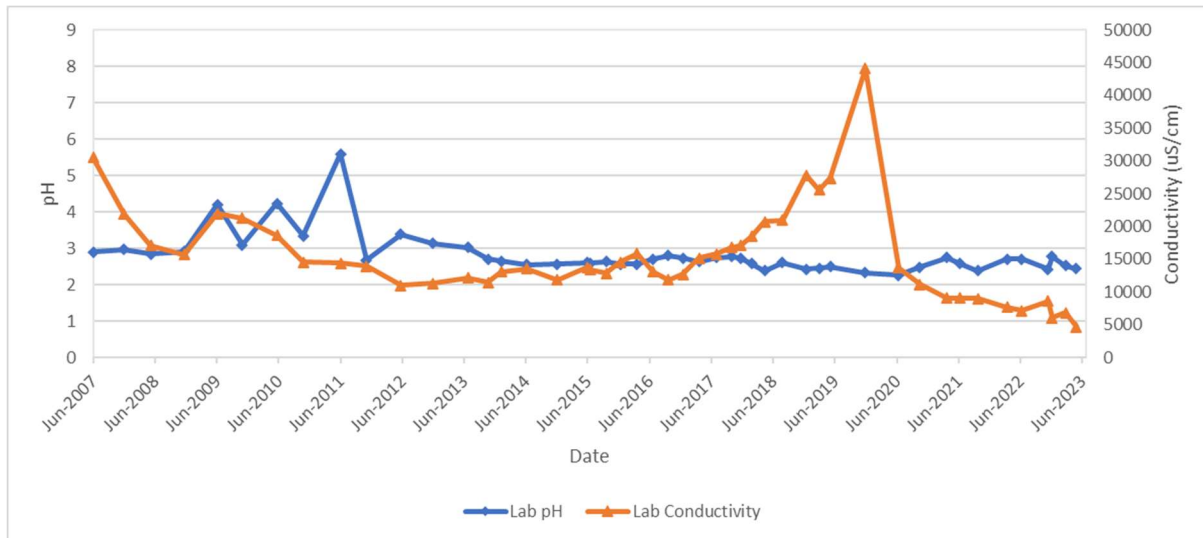


Figure 7-11. TDN pH and Electrical Conductivity Results

7.4.4. Rehabilitated waste rock dump dam

The legacy rehabilitated waste rock dump represents the out of pit overburden emplacement for the open cut mine and consists of waste rock which has been shaped and rehabilitated. Although vegetation cover is mature and healthy, the emplacement produces a small amount of subsurface leachate which is captured in a small catchment dam referred to as the waste rock dam (WRD) located on the south western corner of the SML. Leachate contained in the WRD is pumped into evaporation dams so the WRD does not discharge off site.

Long term water quality data is provided in **Figure 7-12** and shows the pH of the water remains consistent at around pH 3.0. Fluctuations in EC reflect drought and wet periods. Notably since March 2020 the region has experienced very much above average rainfall and the conductivity of the water in the dam is reflective of the stormwater influence.

Condition 3 of Schedule 4 of the Project Approval requires the development of a long term passive treatment system for the WRD. At present the water is pumped into the evaporation dams for evaporation or recycling as required. However, a passive treatment system is required to be installed to treat any overflows from the pond, in the event that the pumping and transfer system will not be available after mine closure. Preliminary investigation has commenced, in consultation with an environmental consultant to locate points of AMD ingress into the dam as a precursor to design of the passive treatment system. The Project Approval MOD3 will incorporate a proposal for early establishment of a trial passive treatment system.

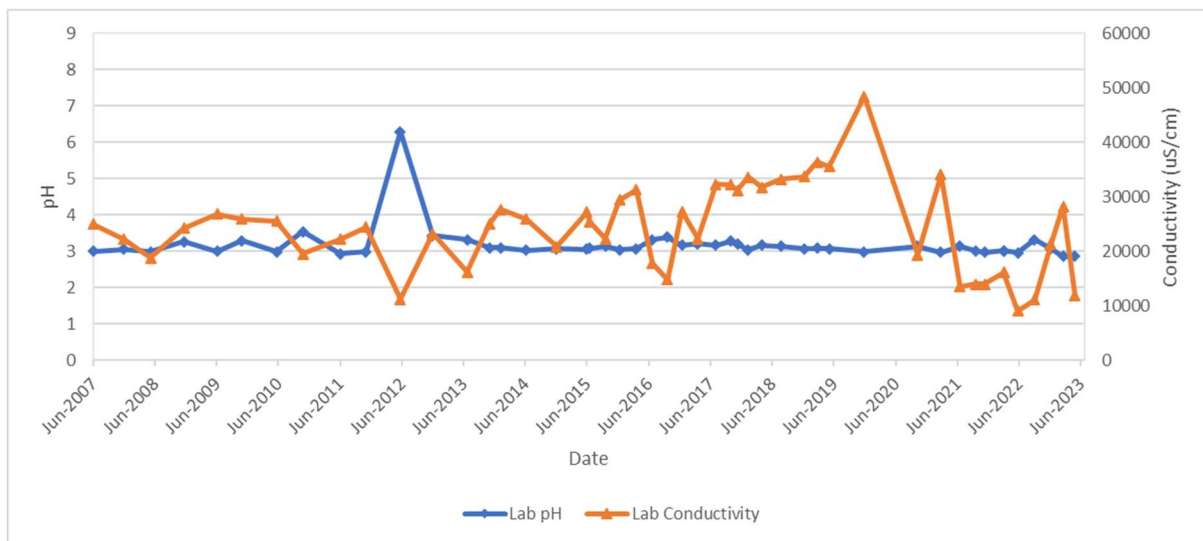


Figure 7-12. WRD pH and Electrical Conductivity Results

7.4.5. WM200 Raw water dam

Results for WM200, the site Raw Water Dam (RWD), are shown in **Figure 7-13**. The RWD (also referred to as Woodlawn Dam) contains water pumped from the Willeroo borefield and runoff from the western ridge of Rehabilitated Waste Rock Emplacement. This water is natural and can be used as an indication of background levels in the area. The pH is generally close to neutral although does fluctuate ± 1 pH unit while the conductivity long term average is around 1000 $\mu\text{S}/\text{cm}$. The conductivity has been around 750 $\mu\text{S}/\text{cm}$ reflecting a dilution of salts in the borefield and from surface flows during the recent wet cycle

Water from the RWD is transferred to a storage tank for raw water reuse at the site. Veolia and DEVELOP share the water allocation available under the water access licence but both maximise the recycling of water around the site. Water recycling is a key feature of the Woodlawn Mine and includes water contained in all on site dams including excess water from the Bioreactor operation.

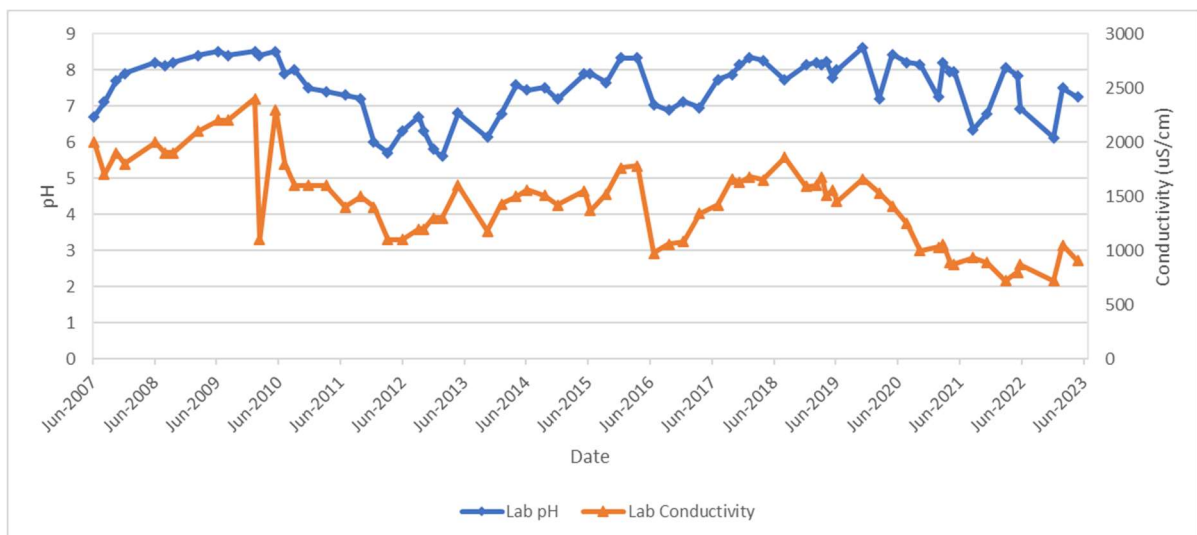


Figure 7-13. Raw Water Dam pH and Electrical Conductivity Results

7.4.6. WM300 Pollution Control Dam

The Woodlawn mine project pollution control dam was installed in 2017. A summary of the water monitoring results for the process plant pollution control dam (PCD) (WM300) is provided in **Figure 7-14**. During the reporting period the water level in the PCD was actively managed to prevent overflow by pumping as required to TDN. The PCD receives runoff from the ROM which is likely to reason for the low pH recorded since care and maintenance activities ceased.

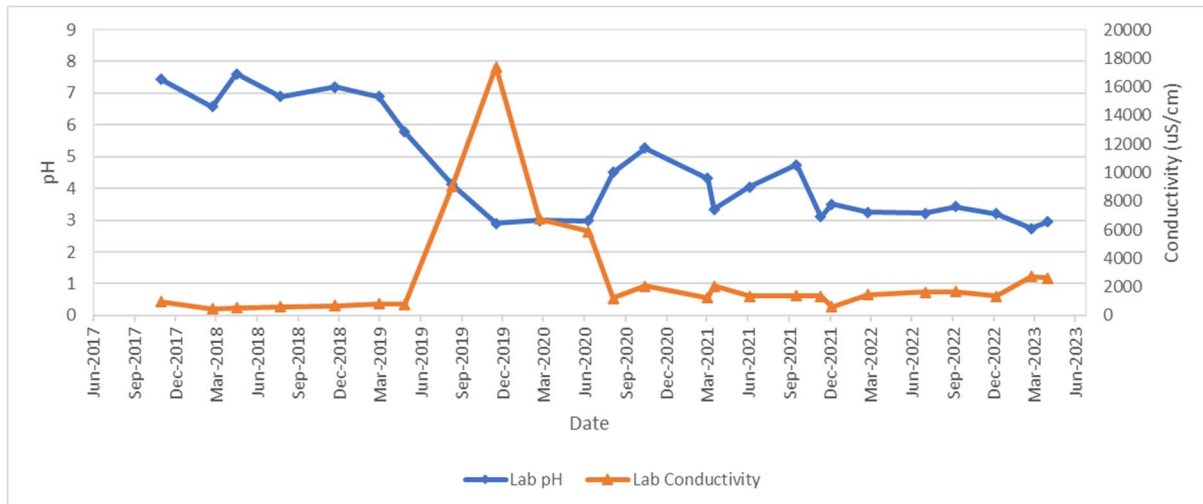


Figure 7-14. Pollution Control Dam pH and Electrical Conductivity Results

7.4.7. Tailings Storage Facility 4 (TSF4)

A summary of the water monitoring results for Tailings Storage Facility 4 (TSF4) is provided in **Figure 7-15**. Stage 1 of TSF4 was constructed during the Woodlawn Mine Project construction phase and commissioned in 2019. The facility contains approximately 280,000m³ of tailings and has capacity to hold up to 500,000m³. During the reporting period the water level in TSF4 was actively managed to keep decant water from the embankment. Nevertheless, due to the large stormwater catchment and extraordinarily high rainfall experienced on Site during the reporting period a high volume of storm water reported into TSF4. The water in TSF4 is managed by pumping excess into TDS for storage and evaporation.

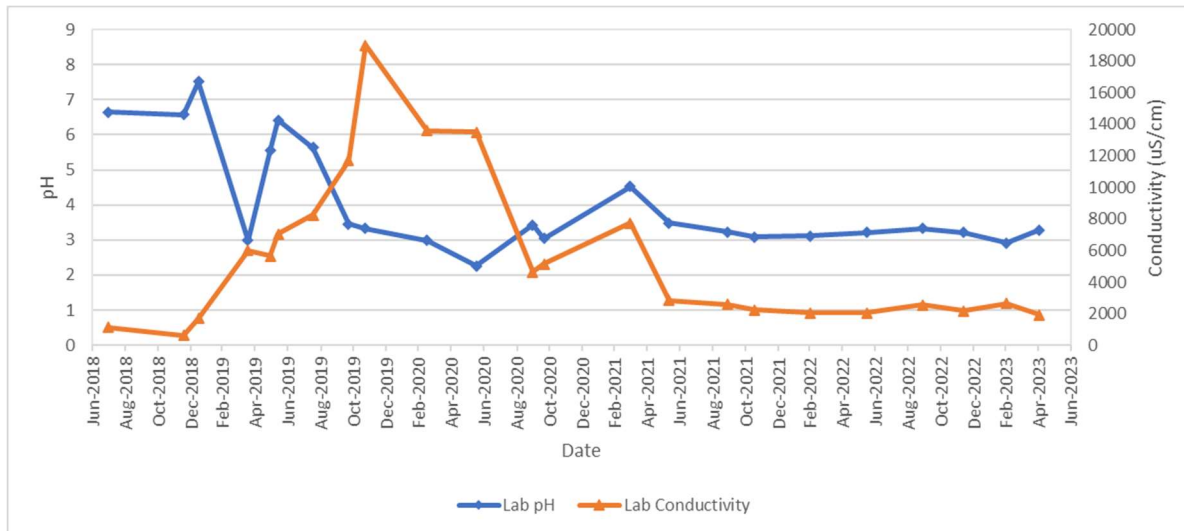


Figure 7-15. TSF4 pH and Electrical Conductivity Results

7.4.8. Surface Water Reportable incidents

There has been no reportable surface water incidents during the reporting period.

7.5. Ground Water Management

Groundwater is managed in accordance with the Woodlawn Water Management Plan. Groundwater quality monitoring analysis is completed for pH and conductivity under SML20 requirements. Analysis is also undertaken for zinc, copper, lead and sulphate annually for the tailings piezometers and monitoring bores to assist in the analysis of groundwater quality. A summary of groundwater results for this reporting period are provided in following sections.

7.5.1. Assessment Criteria

Monitoring of piezometric installations provides an indication of the hydraulic pressures associated with onsite dams. These readings, in conjunction with groundwater quality data, contribute to assessing the integrity and stability of the large storage dams and the potential for offsite impacts to be occurring. It is important to note that the environment prevailing at Woodlawn is heavily influenced by the sulphide ore body which has been the subject of mining for many years. The natural environment is therefore normally high in base metals and given the marine nature of the surround sedimentary strata, can also be naturally saline.

The groundwater quality monitoring program is designed to monitor groundwater in the vicinity of the mine for a wide range of analytical parameters indicative of mining operations. Comparison of background groundwater quality with surface water monitoring results (from tailings dams) and downstream groundwater quality can provide an indication of the management and containment of contaminated land and runoff. All groundwater monitoring locations are shown in Plan 5.

DPIE required establishment of a set of Site Specific Trigger Values based on ANZECC Guidelines to assist in assessing groundwater systems and to determine if there is any influence caused by the use of paste fill within the underground workings. Although the ANZECC Guidelines are not designed for groundwater systems, they do provide a methodology to develop site specific water quality trigger values using a large long term ambient water quality database. At Woodlawn, this database extends over a 20 year period. The development of trigger values is useful in determining compliance with Condition 3(d) of Schedule 3 of the Project Approval, that is, the material used to backfill underground voids is to be physically and chemically stable and non-polluting. The data comes from a series of groundwater monitoring bores spread across the site, as shown in Plan 5 **Error! Reference source not found.**

There are several limitations to the detection of impacts from the use of paste underground. There are four distinct host rock types within the site, sedimentary rock, metamorphic, sulphide volcanic and ore lens, and the groundwater quality naturally varies according to the host rock of the monitoring bore. Variability also occurs within the same bore over time due to climatic conditions linked with saturation levels of the surrounding strata. There are also no upstream sample points available for use as comparisons to the groundwater data.

Despite these limitations, ANZECC based Site Specific Trigger Values have been determined based on the 80th percentile water quality obtained from 24 consecutive samples from monitoring bores located within the four separate host rock types. The trigger values are detailed in **Table 7-4** and **Table 7-5**.

Table 7-4. 80th percentile trigger values derived for chloride, EC, dissolved major cations, pH and sulphate

Host Rock Type	Bore	Chloride	Conductivity	Calcium	Magnesium	Potassium	Sodium	pH	Sulphate
Ore body	MB16	270	3600	480.5	7465	5.65	244	3.3	633350
Sulphide Volcanics	MB19	1115	6870	740.0	591.0	1.85	284.5	6.9	3225
Metamorphic	MB7	3065	9660	335.5	676.5	11.65	632.5	7.3	207
Sedimentary	MB4	410	1680	7.5	88.4	1.7	173.0	5.5	210

Table 7-5. 80th percentile groundwater site specific trigger values for dissolved metals (mg/L)

Host Rock Type	Bore	Aluminium	Arsenic	Cadmium	Copper	Lead	Manganese	Zinc	Iron
Ore Body	MB16	2145	0.2	29.4	206.5	0.5354	550	8450	51.95
Sulphide Volcanics	MB19	0.07	0.005	0.044	0.01	0.0029	6.61	11.39	0.475
Metamorphic	MB7	0.04	0.02	0.008	0.07	0.0007	1.16	1.137	0.145
Sedimentary	MB4	0.26	0.005	0.0017	0.06	0.0068	0.04	0.849	0.820

There are other bores which provide data on sedimentary hosted groundwater such as MB3 discussed in Section 7.4.4. However as this bore is located approximately 2 km to the north of the mine workings it is not a useful bore to determine potential impacts from the underground mining a paste filling activity

A key consideration is Acid Mine Drainage (AMD) which is generally indicated by an acidic pH (less than 5) and is caused by the exposure of minerals to oxygen which, when saturated with water, causes chemical reactions that release hydrogen ions into solution. Zinc and sulphate are also used as an environmental indicator for AMD as they are prevalent in process waters associated with mining activities at Woodlawn. Copper and lead results are provided to indicate the presence of other minerals which may be naturally occurring or associated with previous mining operations.

7.5.2. Ground Water Management TARPs

DPIE-Water required a site Trigger Action Response Plan designed to identify changes in water quality which could indicate potential impacts offsite. These are generally set as a deterioration trend of 20% in the value of pH and conductivity of a 12 or 24 month period. Less than a 20% variation requires no action, greater than a 20% variation over 12 months requires further investigation while an increasing trend pattern of 20% over two consecutive 12 month periods would result in reporting to authorities and active engagement to identify causes and implement remedial measures if found appropriate. The TARPs are not set for all sites but rather specify external points to the mine site which may indicate off site impacts.

Although fluctuations greater than 20% regularly occur, there were no adverse trends in pH and conductivity. Favourable trends, that is, pH returning to neutral from acidic or reductions in conductivity are not included. The TARPs do not cover fluctuations in metal concentrations as this is usually reflected by pH and conductivity as being the main indicators. There were however some trends in zinc concentrations for MB17 and sulphate for MB16 which are commented on in the results. As these are internal monitoring sites, they have not triggered any additional measures however they will be closely reviewed in the coming reporting period.

7.5.3. Background Groundwater Quality

It is important to recognise that natural groundwater over the site has been heavily influenced by the local geology. The volcanogenic massive sulphide deposit forms part of a wider regional north-west plunging syncline which not only hosts metal rich ore lenses but also a range of metamorphosed sedimentary rocks of both marine and volcanic origin.

Marine deposits are naturally high in salt content. The ore body is naturally high in sulphides and the target ore lenses represent concentrations of metals including zinc, copper, lead, gold and silver. Together, it is referred to as the Woodlawn Volcanics.

The ore body is generally very hard and would normally be defined as an aquiclude, which is a geological formation that can neither store nor transmit water. However, the deposit is fractured which allows water to slowly penetrate and permeate through the strata. The rate of flow is small but the process creates a widely variable natural groundwater quality which is directly influenced by the immediately surrounding geology. This creates difficulties in determining the impact of the operation on the natural environment. Groundwater naturally passes through these volcanics and picks up elevated sulphate and metal concentrations. These levels appear “contaminated” but are natural and should be considered part of the background water quality.

Monitoring Bore MB3 provides an indication of background groundwater quality that is not influenced by naturally occurring volcanics but is also well away from the mine site. The site is located in the valley to the north of the Woodlawn Mine site near the Woodlawn Farm Homestead and is hosted in sedimentary strata.

Results for MB3 (**Figure 7-16**) indicate that long-term pH ranges between 6.0 – 8.0 and conductivity between 1,640 – 3,000 $\mu\text{S}/\text{cm}$. The spike in conductivity in August 2018 is most likely a sampling or analytical anomaly as results have since returned to normal long-term levels. There was a slight drop in conductivity in Apr 2021, which is most likely due to the saturated ground conditions and infiltration of rainwater causing dilution of salts.

MB3 site is located well away from the underground workings and therefore not included in the nominated ANZECC assessment bores discussed in Section 7.5.2. The site is considered to be a near surface groundwater table with the potential to form natural springs but is influenced by longer term rainfall patterns.

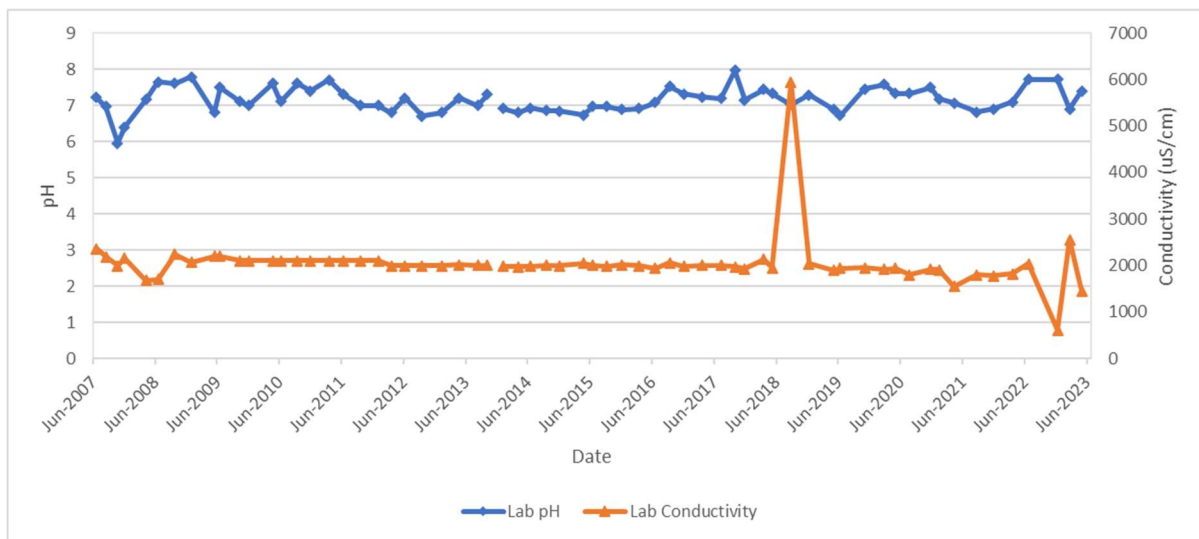


Figure 7-16. MB3 Conductivity and pH - Indicative of background groundwater quality

There have been some fluctuations in sulphate and zinc at MB3 during the reporting period (Figure 7-17), but this is considered to be natural variability influenced by parent rock and the influence of rainwater mobilising the metals. MB3 is located quite a distance from the mine operating area and this analogue site is unlikely to be affected by any mining activity.

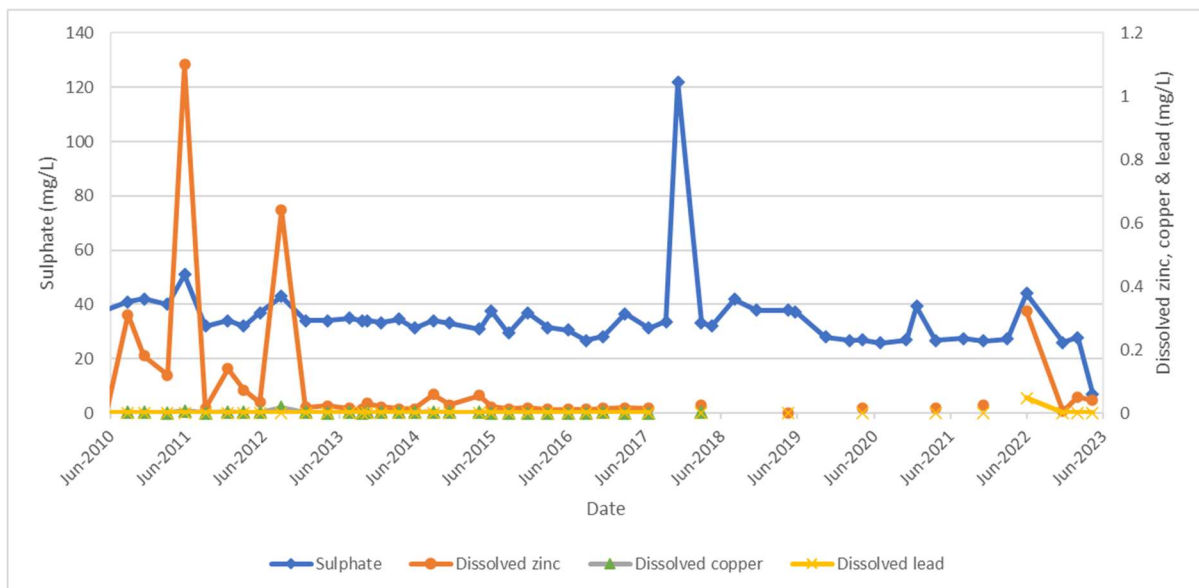


Figure 7-17. MB3 sulphate and metals - indicative of background groundwater quality

MB7 is considered to represent non-volcanic influence background groundwater; that is, the groundwater at this location is representative of metamorphic and marine based host rock. Figure 7-18 shows that conductivity is relatively high. Long term average results for MB7 are pH 7.2, conductivity 8,336 $\mu\text{S}/\text{cm}$, sulphate 173 mg/L, zinc 0.84 mg/L, copper 0.05 mg/L and lead 0.005 mg/L. Conversely, when groundwater is influenced by the sulphide ore body but not the metal rich lenses, such as with MB10, sulphate levels increase to 3,700 mg/L, conductivity remains high but zinc, copper and lead concentrations remain low.

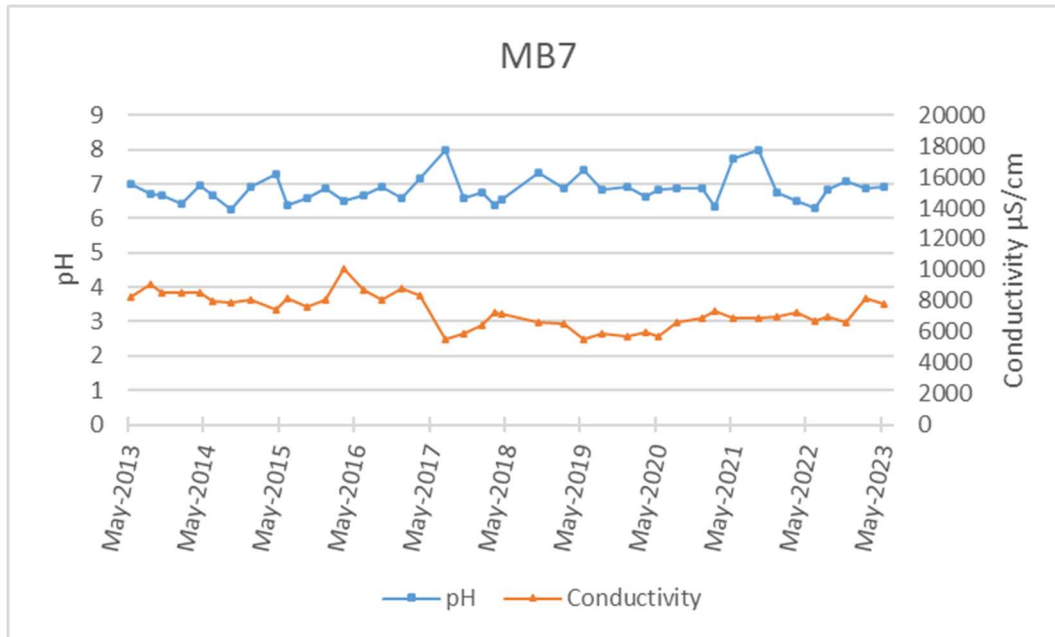


Figure 7-18. MB7 pH and conductivity

The sulphate levels of between 150 mg/L and 300 mg/L within the metamorphic strata of MB7 (Figure 7-19) are considered low. Sulphate levels progressively increase towards the volcanic strata with natural levels in excess of 10,000 mg/L. Metal concentration however varies depending on the location of ore lenses which occur within the sulphide ore body. Sulphate levels have risen slightly during the reporting period which could be an indication that the decline in rainfall is having less of an effect on mobilising or diluting the sulphate.

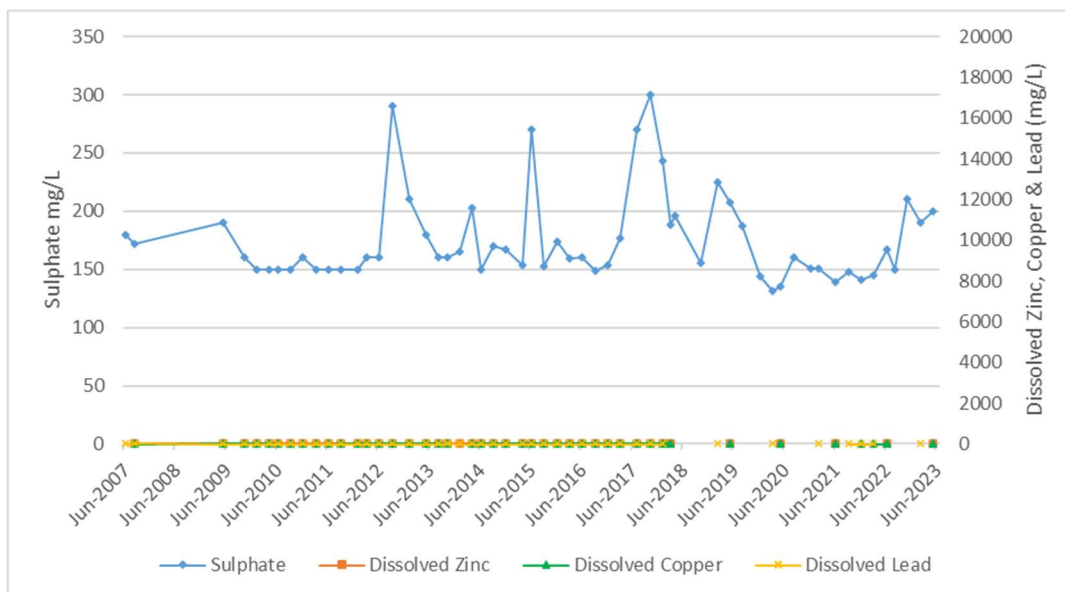


Figure 7-19. MB7 Sulphate and metals

7.5.4. Evaporation Dam 2 downstream monitoring

Monitoring Bores MB11 and MB12 are located at the base of the ED2 embankment and the results monitor for seepage from ED2. MB11 is a shallow bore with a depth of 5.85m and MB12 is deeper with a depth of 14.48m. Water quality recorded in these bores remains similar to the mine water stored in ED2 prior to its dewatering and installation of HDPE lining of the facility during 2019/20 (Figure 7-20 and Figure 7-21). The lower than average result for conductivity during the reporting period is most likely associated with the extremely high rainfall received across the region and on site, leading to saturation of the soil and causing salts to be leached from the groundwater. The pH over the year remains consistent with longer term averages.

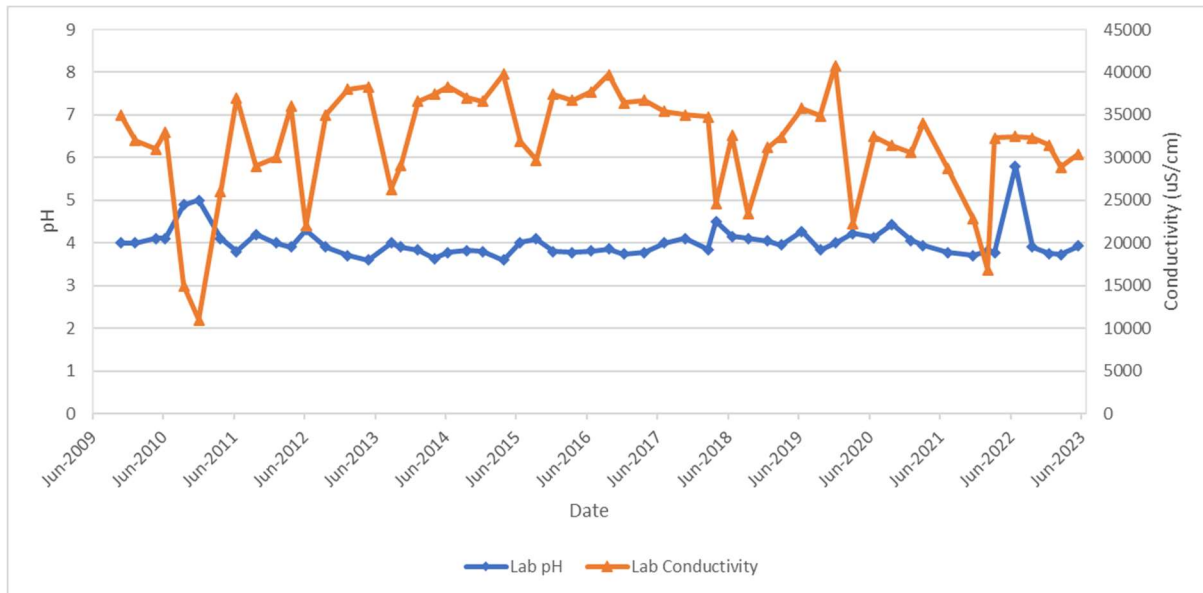


Figure 7-20. MB11. Water quality for pH and conductivity

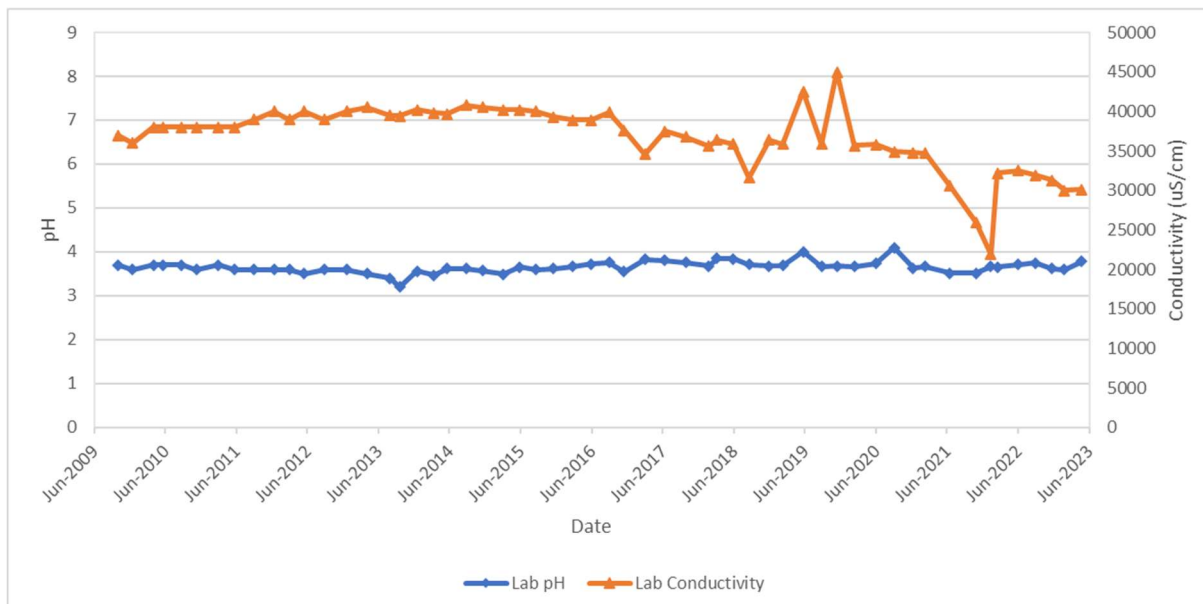


Figure 7-21. MB12. Water quality for pH and conductivity

Monitoring has commenced at 3 new bores installed by Veolia to monitor changes in groundwater quality as an indicator of potential seepage from ED2. The bores are labelled MB23, MB24 and MB25. Long term data is not available from these bores but results obtained since 2021 are statistically summarised in Table 7-6. When compared with the acidic water quality of ED2 before it was lined with HDPE lining in 2020, there is no indication that seepage from ED2 extended to these new bores.

Table 7-6. New downstream ED2 monitoring bores 23, 24 and 25 – water quality results

	MB23			MB24			MB25		
Attribute	Min	Average	Max	Min	Average	Max	Min	Average	Max
Lab pH	6.77	7.4	7.94	6.82	7.31	7.77	7.07	7.31	7.59
Lab conductivity	583	1070	1930	4110	4965	5390	4760	6056	7200
Sulphate (mg/L)	27.5	154	600	1290	2060	2820	2680	3388	3800
Dissolved Cu (mg/L)	<0.001	0.0016	0.004	<0.001	0.002	<0.005	<0.001	0.02	0.008
Dissolved Pb	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Dissolved Zn (mg/L)	0.008	0.012	0.02	0.037	0.31	0.739	0.017	0.178	0.471

Further downstream of ED2 at the head of Allianoyonyiga Ck is MB13 which measures any influence on groundwater quality at the western border of SML20. The results of this bore are provided in Figure 7-22 and Figure 7-23. MB13 has similar water quality to natural background with slightly low pH and conductivity levels generally below 4,000 $\mu\text{S}/\text{cm}$. The two small spikes in conductivity recorded in recent years are considered to be anomalies, associated with transfer of salts associated with the high rainfall and saturated soils experienced since 2020. Overall, the average conductivity concentration recorded during the reporting period was 3,682 $\mu\text{S}/\text{cm}$, which is only slightly more than the historical average level of 3,158 $\mu\text{S}/\text{cm}$ prior to the current wet period (2007 to 2019).

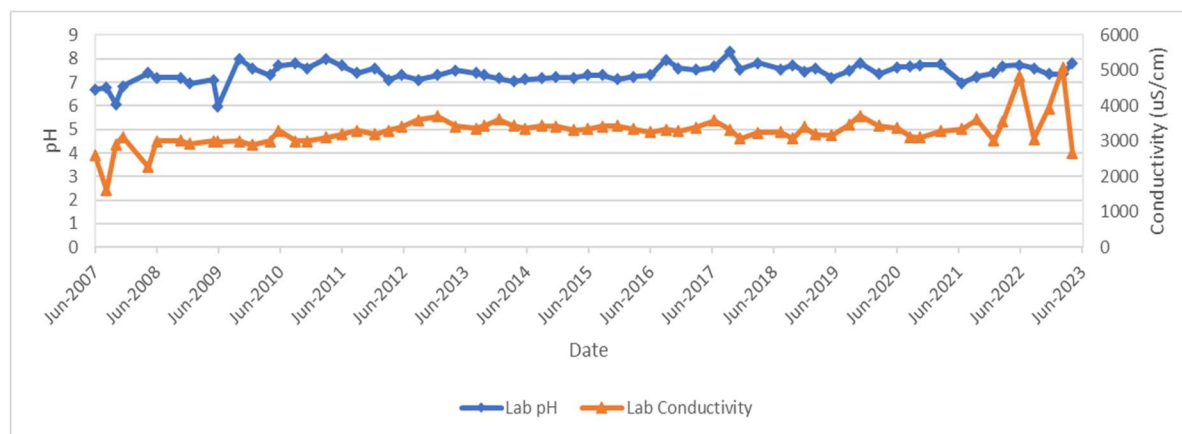


Figure 7-22. MB13 pH and Conductivity

The concentrations of sulphate and the dissolved metals including zinc, copper and lead in MB13 (Figure 7-23) generally are low and consistent with background levels. Sulphate levels tend to trend upwards during periods of drought. However, levels have remained lower than average, most notably during the current reporting period consistent with higher rainfall levels. Average zinc levels during the reporting period were measured at 0.002 mg/L, copper was 0.002 mg/L which are both lower averages compared to last year. Lead remains to be barely detectable. These results indicate that ED2 does not appear to be impacting downstream ground water quality.

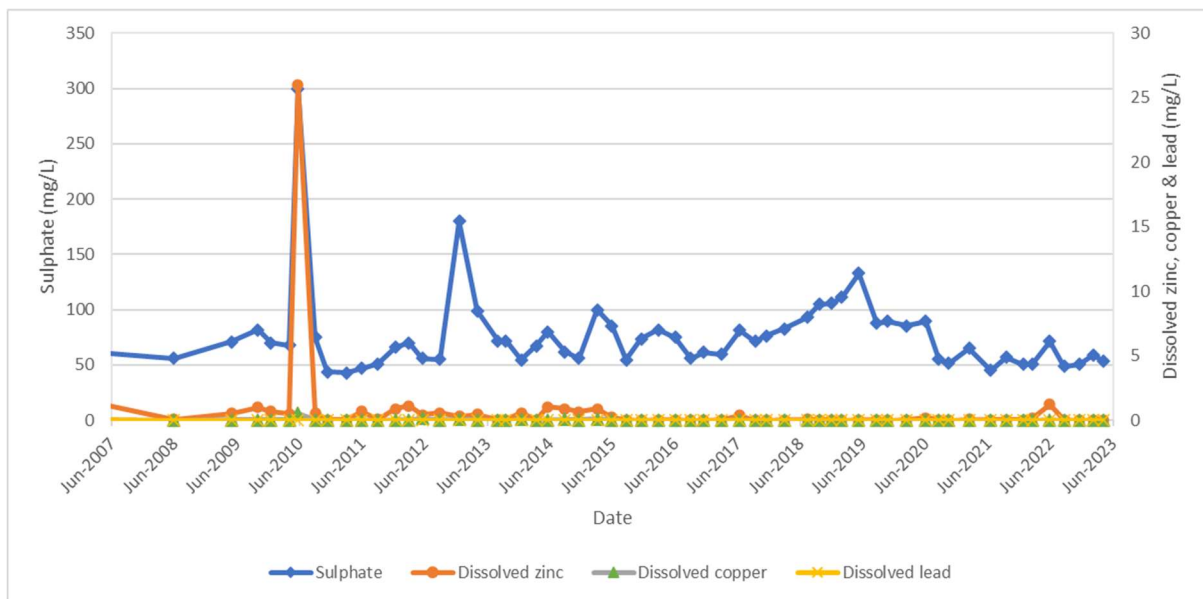


Figure 7-23. MB13 Sulphate and Metals

In previous Annual Reports data indicates that the dams are not having a detrimental impact on surface and groundwater systems immediately surrounding the evaporation dams. ED2 has subsequently been lined with HDPE lining to meet EPA requirements for dewatering of water from the old underground workings. To facilitate water management ED2 has been segregated into 6 operational cells. Further discussion on the mine dewatering program is provided in Section 7.2.

7.5.5. Rehabilitated Waste Rock Dump

Seepage at the western base of the Rehabilitated Waste Rock Dump is monitored by MB15, MB16 and MB17. MB5 monitors seepage on the southern face of the rehabilitated dump while the surface monitoring site WM100 is located at the downstream boundary of SML20. The original purpose for these bores is unknown however given their proximity to the Rehabilitated Waste Rock Dump they are considered suitable to determine groundwater quality. Seepage from the rehabilitated dump is collected in the Waste Rock Dam and pumped to ED1 when required. Data from these monitoring bores is provided in the following graphs.

Monitoring Bore 15 is located just upstream of the Waste Rock Dam and measures groundwater above the dam. Conductivity with an annual average of 8,000 μ S/cm is slightly elevated compared to normal background levels however the average pH remains at near neutral (Figure 7-24).

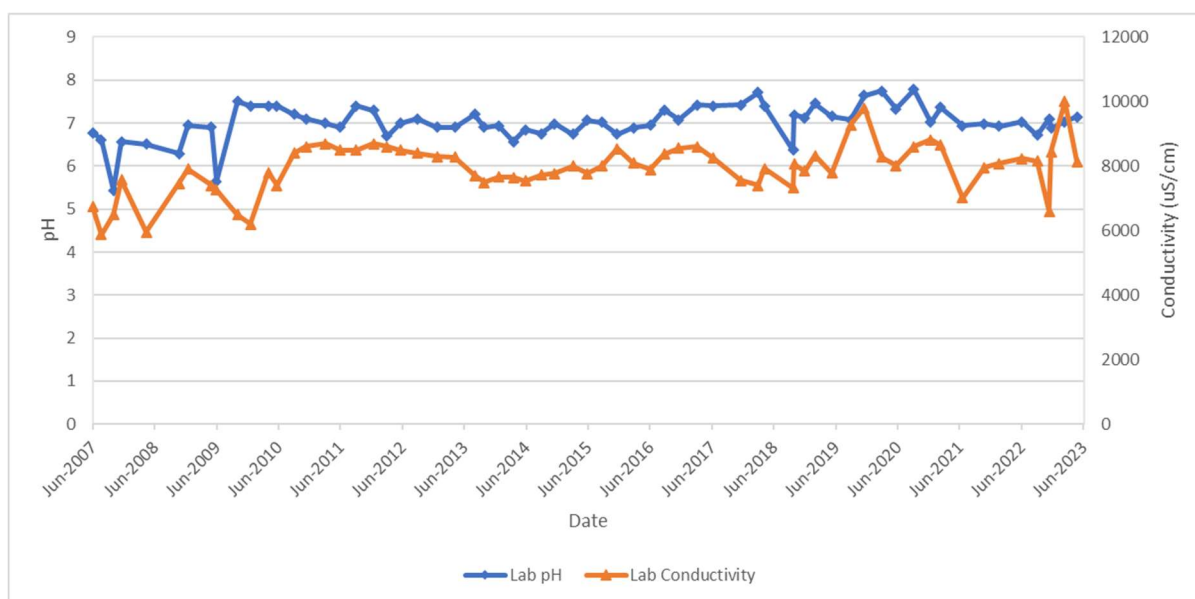


Figure 7-24. MB15 pH and conductivity

As seen in **Figure 7-25**, metal concentrations are generally low in MB15 with the exception of zinc which occasionally fluctuates, with a pronounced spike recorded in January 2021. However, that recording is considered to be an anomaly because the zinc concentration has since retreated to long-term average levels.

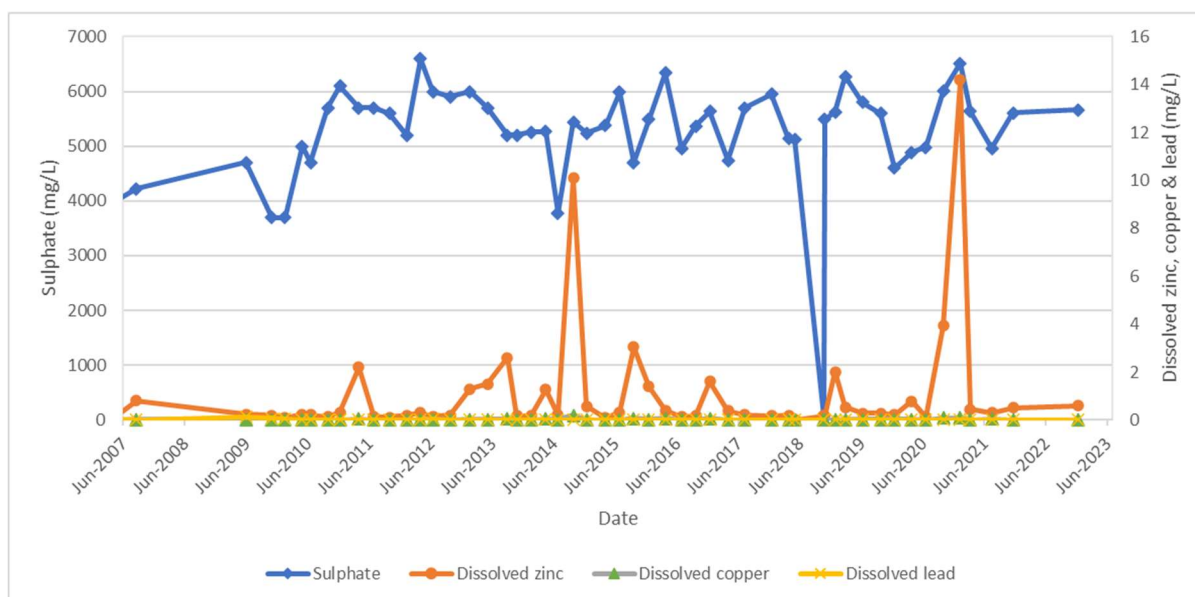


Figure 7-25. MB15 Sulphate and metals

MB16 appears to have intersected a mineralised zone when installed as the results do not correlate to the two adjacent bores. The drill database does not include any data on these bores, either drill date, lithology or assay data. It is however a shallow bore and may also be influenced by surface runoff.

Monitoring Bore 16 is a shallow well that may be influenced by surface runoff as well as shallow subsurface water flow entering the Waste Rock Dam. Over the past few years, water quality has been relatively consistent. Relative water levels, bore logs and groundwater chemistry suggest there is limited hydraulic connectivity between the deeper groundwater aquifer and the shallow aquifer.

MB 16 is an extremely saline bore and has significantly different water quality than either MB15 or MB17 (Figure 7-26). The reason for this can only be host rock with little if any connectivity of groundwater despite the bores being so close to each other (about 80 m apart). During the preceding reporting years the conductivity concentration has steadily declined likely due to the high rainfall leaching salts from the source. The past year has seen a slight increase although remains below historical averages.

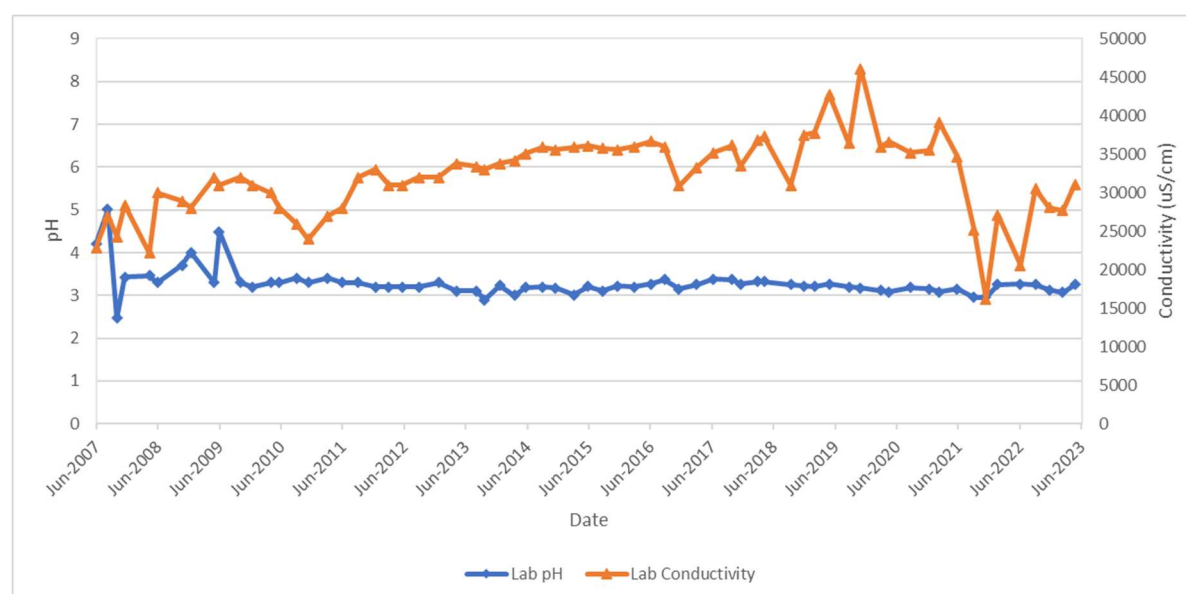


Figure 7-26. MB16 pH and conductivity

There was a distinct rising trend in sulphate concentration at MB16 between June 2011 and June 2014 and a spike in February 2019 which now appears to have stabilised (Figure 7-27). Both sulphate and zinc concentrations have shown a downward trend during the past three wet reporting periods.

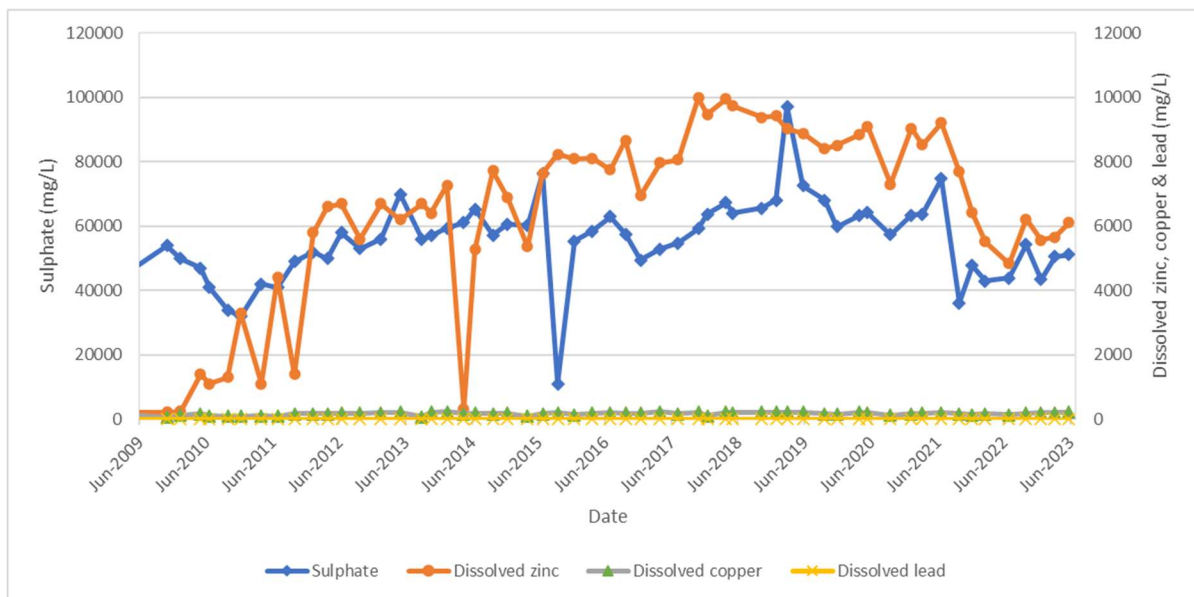


Figure 7-27. MB 16 Sulphate and metals

Monitoring Bore 17 is located between MB 15 and MB 16 but standing water level is the deepest in MB 17. Water quality measured during the reporting period was slightly acidic with an average pH of 6.2 and slightly elevated salt concentrations with an average of 16600 μ S/cm (Figure 7-28).

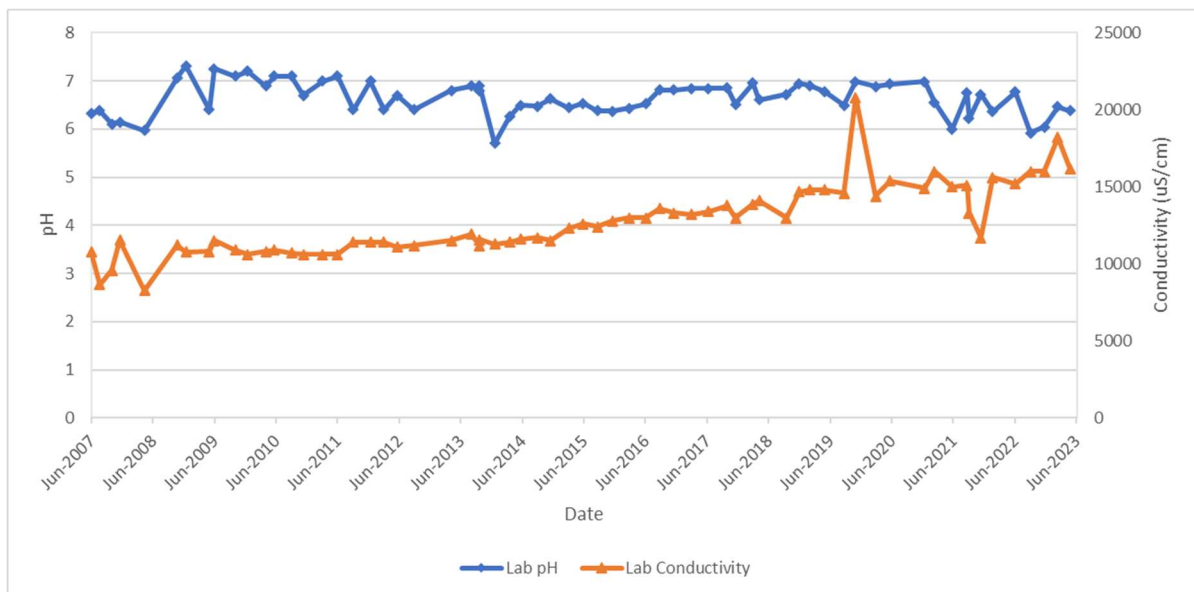


Figure 7-28. MB17 pH and conductivity

Zinc concentration in MB17 has developed an upward trend over the past several years but is still at relatively low levels as with other metals (Figure 7-29). Sulphate levels however are relatively high so there is evidence of some influence of the parent sulphide volcanics and perhaps leachate from the waste rock emplacement.

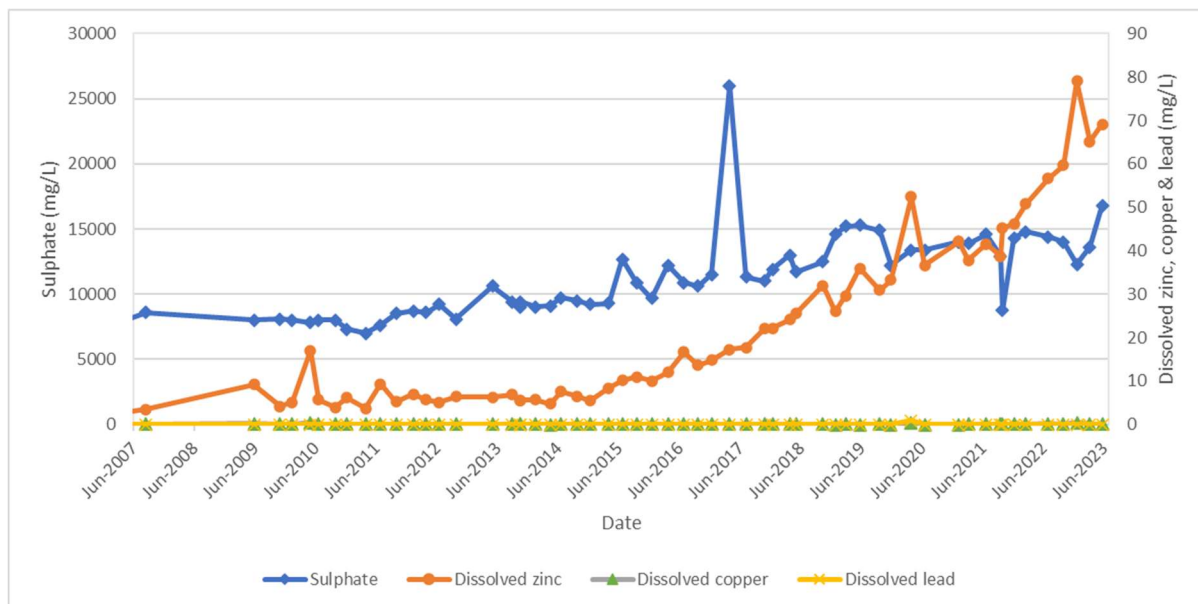


Figure 7-29. MB17 Sulphate and metals

MB5 is located on the southern side of the Rehabilitated Waste Dump and the monitoring results are provided in Figure 7-30 and Figure 7-31 below. The pH and conductivity results at MB5 have remained quite constant over several years, with average pH for the reporting period of 4.3 being equal to the longer term average (since 2007). Conductivity results show a slight drop to the lowest recorded concentration in June 2023. The result is most likely associated with the ongoing wet conditions experienced in the region causing salts to leach from the substrate.

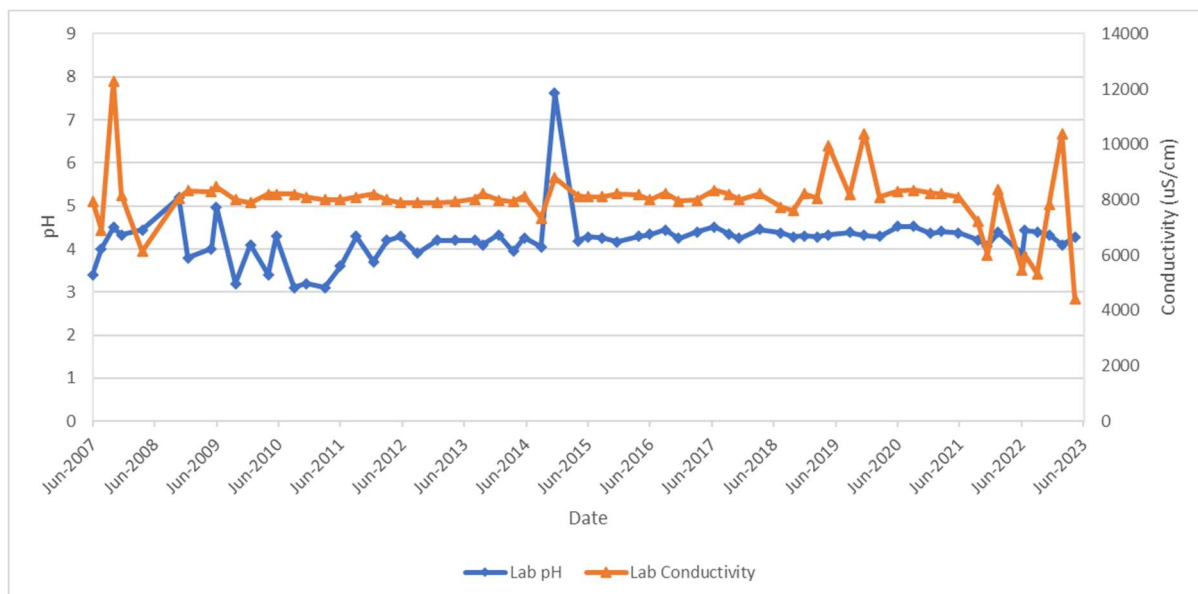


Figure 7-30. MB5 pH and conductivity

Figure 7-31 shows that MB5 has remained relatively high in sulphate but low in metal concentrations. Copper and lead remain at trace levels while zinc is considered moderate. The data indicates that there could be an influence on local groundwater from the Rehabilitated Waste Rock Dump. This was recognised in the EA for the reopening of the mine and the commitment made to increase the number of monitoring points along the southern side of the dump. Two new monitoring bores (HMB6 and HMB7)

were installed on the southern flank of the Rehabilitated Waste Rock Dump in February 2020. Results from these new bores are shown in Table 7-7.

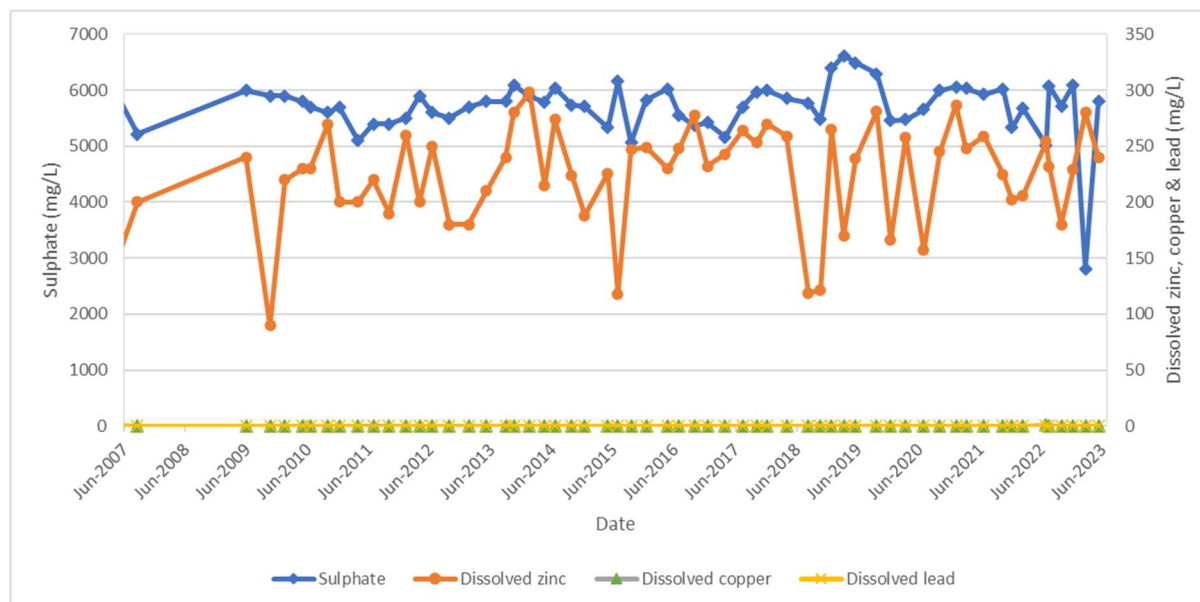


Figure 7-31. MB5 Sulphate and metals

The purpose of the two additional monitoring points (HMB6 and HMB7) is to determine if the results from MB5 are consistent along the southern flank of the Rehabilitated Waste Dump. To date, the results of HMB6 and HMB7 have not shown any trends. The water quality is also quite different to the seepage collected in the Waste Rock Dam which is significantly more saline (25,000 $\mu\text{S}/\text{cm}$), has higher sulphate levels (37,000 mg/L), and significantly higher metals (zinc at 4,500 mg/L; copper at 108 mg/L and lead at 0.23 mg/L). The results from MB5 appear to be more consistent with the natural sulphide ore body than leachate from the dump which is collected in the Waste Rock Dam. The relationship between sulphate, salt and metals reflect the underlying geology and has been used as a predictive tool to determine the location of metal rich ore lenses within the sulphide volcanic strata. It is also useful in determining the location of the sedimentary and metamorphic rock sequences as well as marine deposits within these sequences.

The results for HMB6 and HMB7 since their establishment in 2020 (Table 7-7) support the hypothesis because the key indicator attributes show pH is around neutral and conductivity has reached a peak of 4530 $\mu\text{S}/\text{cm}$ in HMB6 indicating there is little evidence that leachate from the WRD is contributing any contamination to groundwater quality to the south of the WRD.

Table 7-7. HMB6 and HMB7 monitoring results

Attribute	HMB6			HMB7		
	Min	Average	Max	Min	Average	Max
Lab pH	7.1	7.53	7.94	6.67	7.42	7.79
Lab conductivity	2880	3815	4530	1860	2253	3020
Sulphate (mg/L)	180	519.6	1590	99	215.4	369
Dissolved Cu (mg/L)	<0.001	0.023	0.1	0.009	0.014	<0.04
Dissolved Pb	<0.002	0.72	4.96	<0.0002	0.039	0.23
Dissolved Zn (mg/L)	0.09	0.44	1.89	0.046	0.08	0.14

7.5.6. Tailings Dam North – Downstream monitoring

Piezometers have been used to measure groundwater to the north of the northern embankment of Tailings Dam North (TDN) since 1984. To date, there has been no evidence of any seepage detected in the downstream piezometers. Tailings Storage Facility 4 (TSF4) was constructed downstream of the northern embankment of TDN in 2018. As a result, two of the four longstanding piezometers were removed to allow for the construction of TSF4. The two remaining piezometers are denoted as NPT2 and SP3C which are immediately adjacent to each other. Water quality results in NPT2 and SP3C are consistent with background groundwater quality in, for example, MB7 and do not indicate seepage in these areas. The results are consistent with historical monitoring results at these locations and do not correlate to water quality contained in the tailings dams.

Results for NPT2 are provided in Figure 7-32 and Figure 7-33. These results shown in the graphs do not indicate that there has been leakage from TDN as water quality is the same as normal background levels over the long term. Conductivity levels indicate lower salt concentrations than other background sites, while long-term pH values remain neutral.

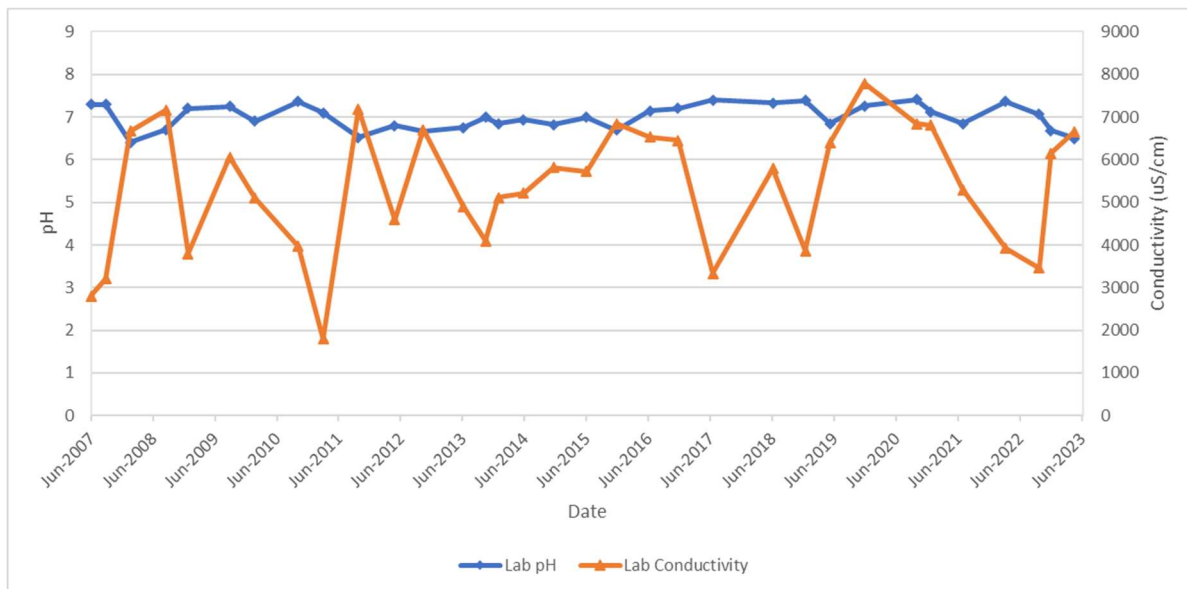


Figure 7-32. NTP2 pH and conductivity

There have been several spikes in sulphate and zinc concentrations recorded from NTP2 on several occasions (Figure 7-33), although the actual concentration is relatively minor and more reflective of background levels compared to concentrations recorded in TDN. TDN average concentrations of sulphate and zinc recorded during the last year were 5880 mg/L and 527 mg/L respectively. Monitoring bore NTP2 is located closest to Tailings Dam North wall and would be considered to be the first that would detect seepage from the dam. The spike in sulphate concentration is likely to be associated with mobilisation caused by excessive rainfall during the past three years and most recently shows a drop back towards longterm values.

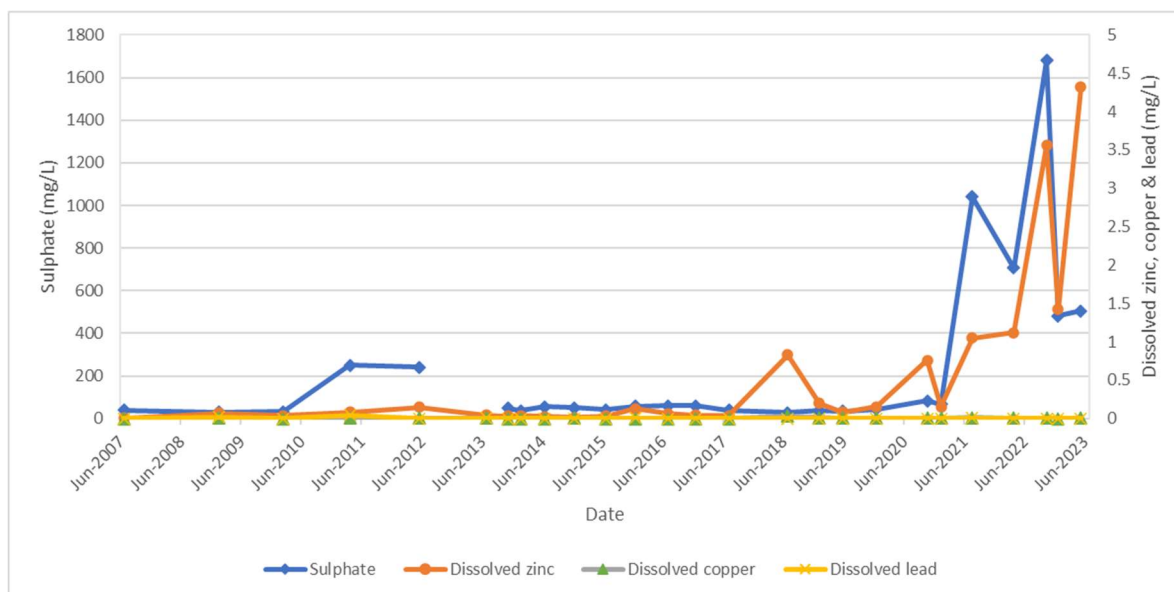


Figure 7-33. NTP2 Sulphate and metals

SP3C is approximately 100m further north from NTP2. Results show similar fluctuations in zinc concentrations to NTP2 but overall the concentration is very low and within background levels (Figure 7-34 and Figure 7-35). Sulphate concentrations are typically lower than that seen in NTP2. The results indicate that there is minimal impact from TDN downstream of the embankment. SP3C is potentially in the tailings footprint of TSF4 should the stage 3 lift proceed; overall, the potential for environmental impact from TDN northern embankment is negligible.

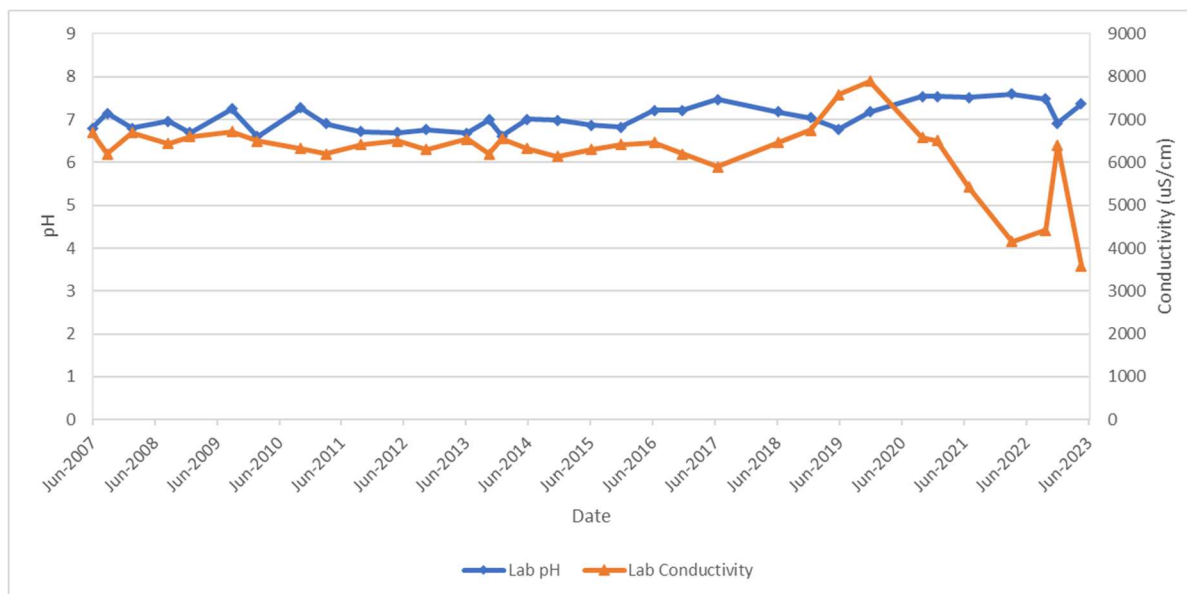


Figure 7-34. SP3C pH and Conductivity

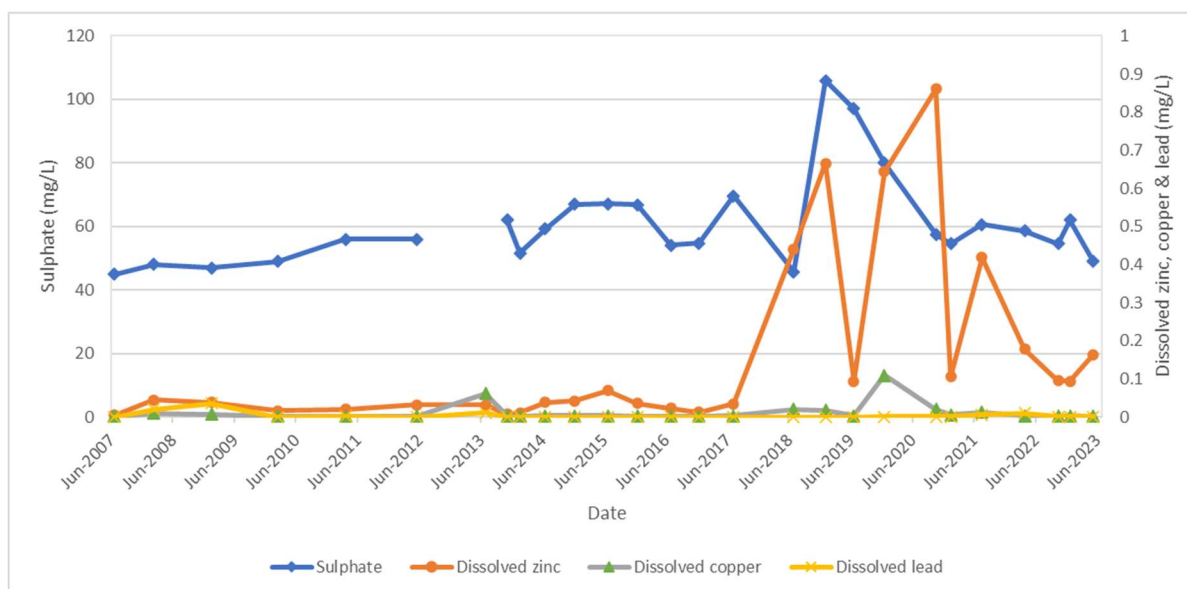


Figure 7-35. SP3C Sulphate and metals

Monitoring bores SP11B and ETP8 are located downstream of the eastern embankment of TDN.

Water quality results in SP11B (Figure 7-36 and Figure 7-37) are consistent with background groundwater quality. The pH levels remain slightly lower than neutral and the relatively low conductivity levels have been trending down indicating there is little seepage from the eastern embankment. In addition, metals results particularly sulphate and zinc are not of concern as the absolute values are low. The data confirms that there is no leakage from the eastern embankment of TDN.

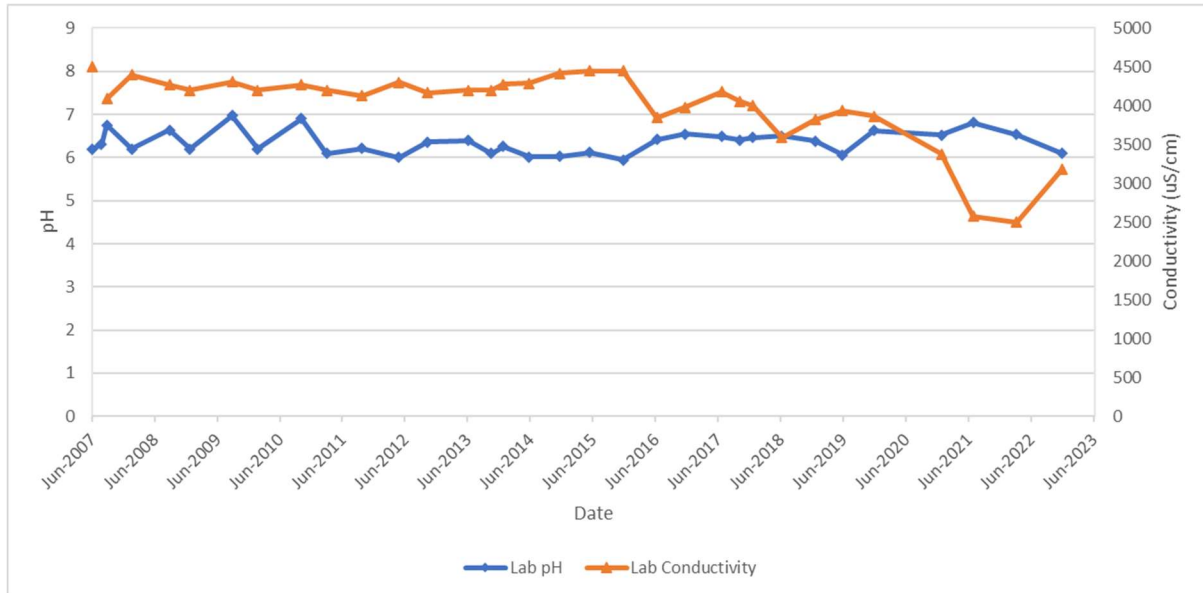


Figure 7-36. SP11B pH and conductivity

Metal results for SP11B, particularly sulphate and zinc is not of concern as the absolute values are low. The data confirms that there is no leakage from the eastern embankment of TDN.

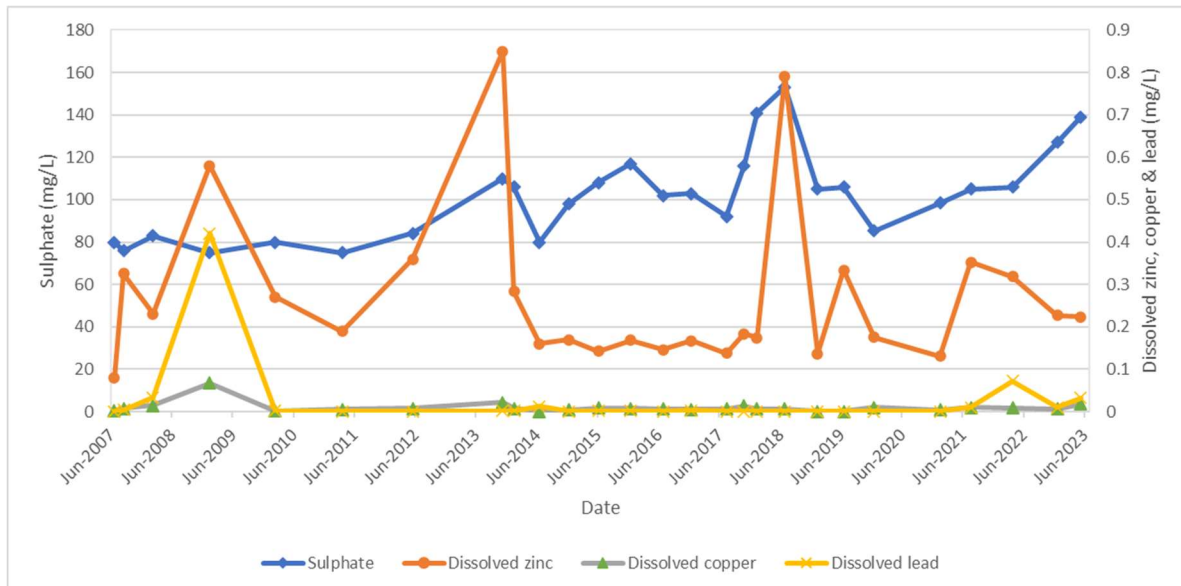


Figure 7-37. SP11B Sulphate and metals

Results for ETP8 (Figure 7-38 and Figure 7-39) show recent pH and conductivity levels were comparable with background levels. Sulphate fluctuates but the absolute concentration is well within background levels. The average zinc concentration for the last year was 0.6 mg/L, which is less than the long term average level of 5.1 mg/L, since 2007. Copper and lead were measured with trace levels detected at ETP8 indicating there is very little if any seepage impacting downstream water quality from the TDN eastern embankment.

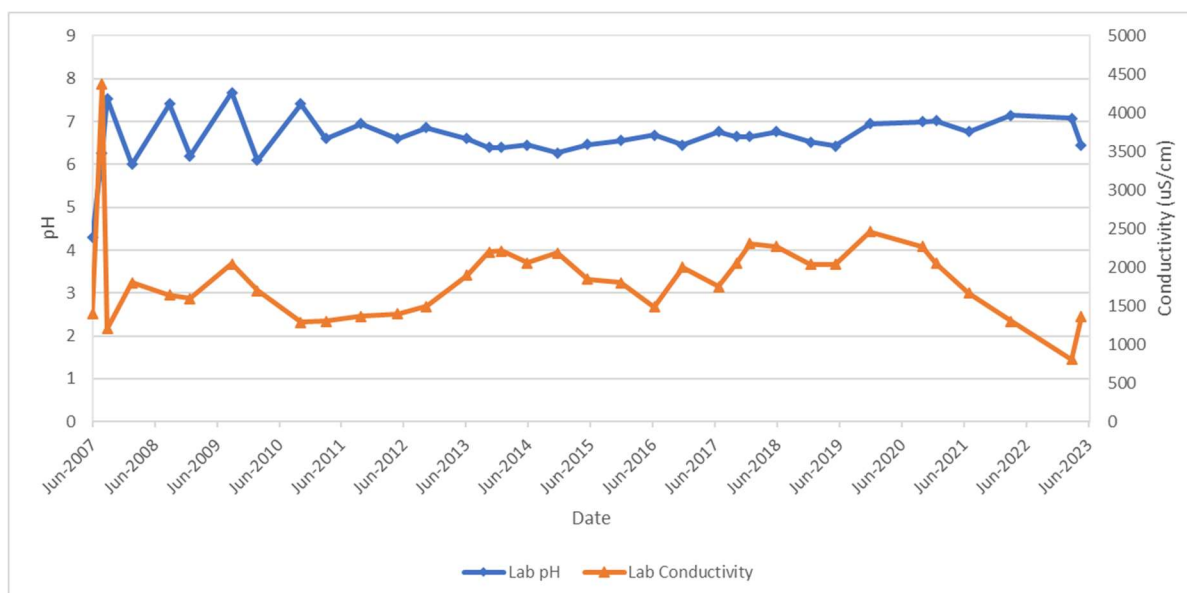


Figure 7-38. ETP8 pH and conductivity

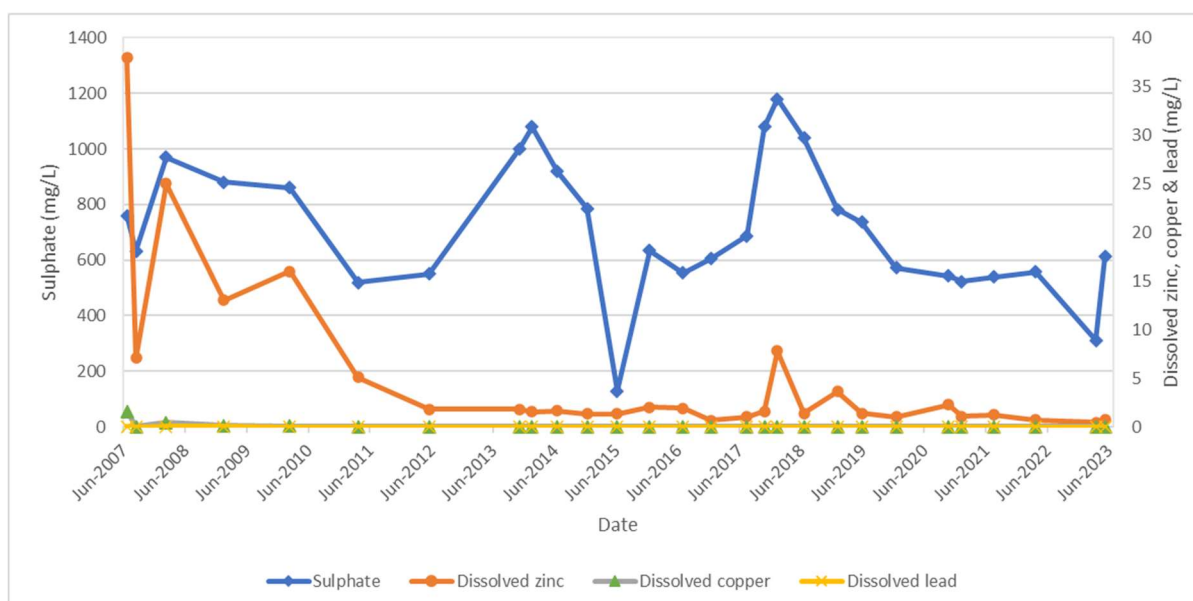


Figure 7-39. ETP8 Sulphate and metals

7.5.7. Tailings Dam South

Seven piezometers (E3, F1, F7, X1, X2, Y1 and Z1) and two monitoring bores (MB21 and MB22) are available to monitor groundwater quality at the TDS. Due to the Section 240 Notice works footprint it became necessary to decommission E3, F1, F7 and Z1 in May 2023. These bores will be replaced upon completion of these works to ensure groundwater quality downstream from TDS is sufficiently monitored.

Standing water levels in all bores fluctuate in response to rainfall but are all generally shallow with a depth to standing water between 1 and 3m. Tailings Dam South is known to be leaking and a collection dam and return pumping system has been installed.

With water in TDS having a long-term pH of around 2.5 and conductivity of 15,000 $\mu\text{S}/\text{cm}$, Sulphate levels of over 19,000 mg/L and very high metal concentrations, the subsurface water quality shown in the following graphs does not indicate that significant subsurface leakage is occurring. There has been a slight increase in sulphate levels over the past 7 years and some minor metal fluctuations recently, however concentrations remain extremely low and are more aligned to background levels compared to those recorded from TDS.

Monitoring bore E3 is located at the base of the Tailings Dam South wall and would detect any subsurface seepage from the dam. As seen in Figure 7-40, pH has is around neutral and within long-term average concentrations. Electrical conductivity has continued to decline since the peak of 7320 mg/L recorded in December 2019.

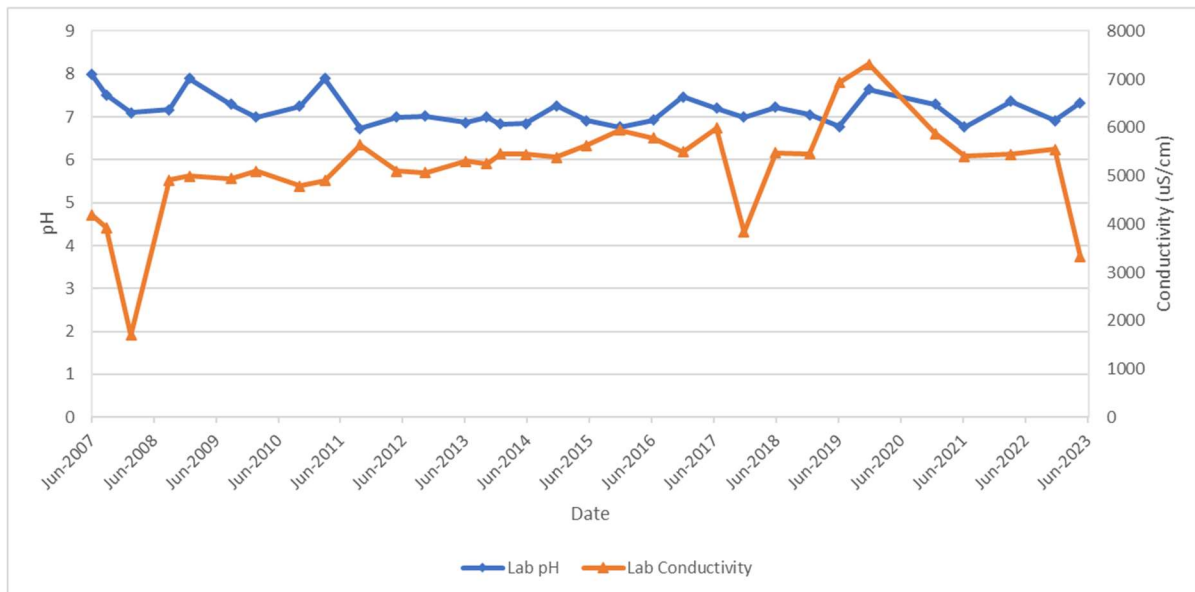


Figure 7-40. E3 pH and conductivity

Metal concentrations in E3 are low however sulphate levels are elevated, peaking at 3220 mg/L in May 2023 compared to the longer-term average of 2422 since 2007. The results indicate the potential for some influence on groundwater quality but overall, the indications suggest this is minimal (Figure 7-41).

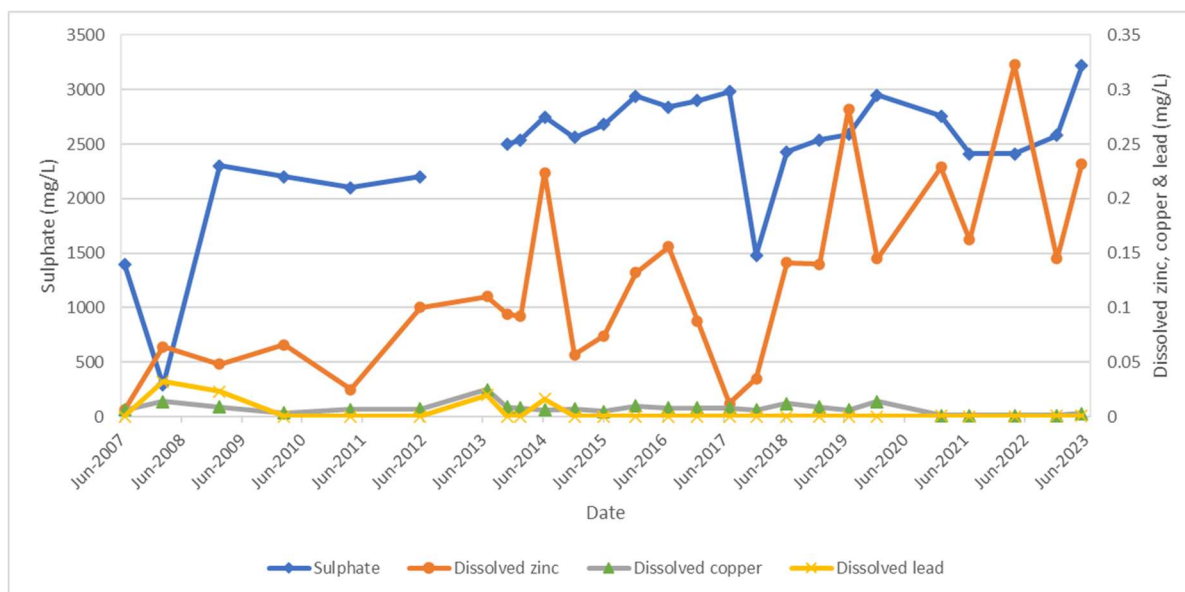


Figure 7-41. E3 Sulphate and metals

Figure 7-42 shows the results for Piezometer Z1, which is also located at the base of the TDS wall. Conductivity in Z1 (Figure 7-42) continues to decrease attributed to the high rainfall received on site since the peak of 7190 µS/cm during the peak of the drought in December 2019.

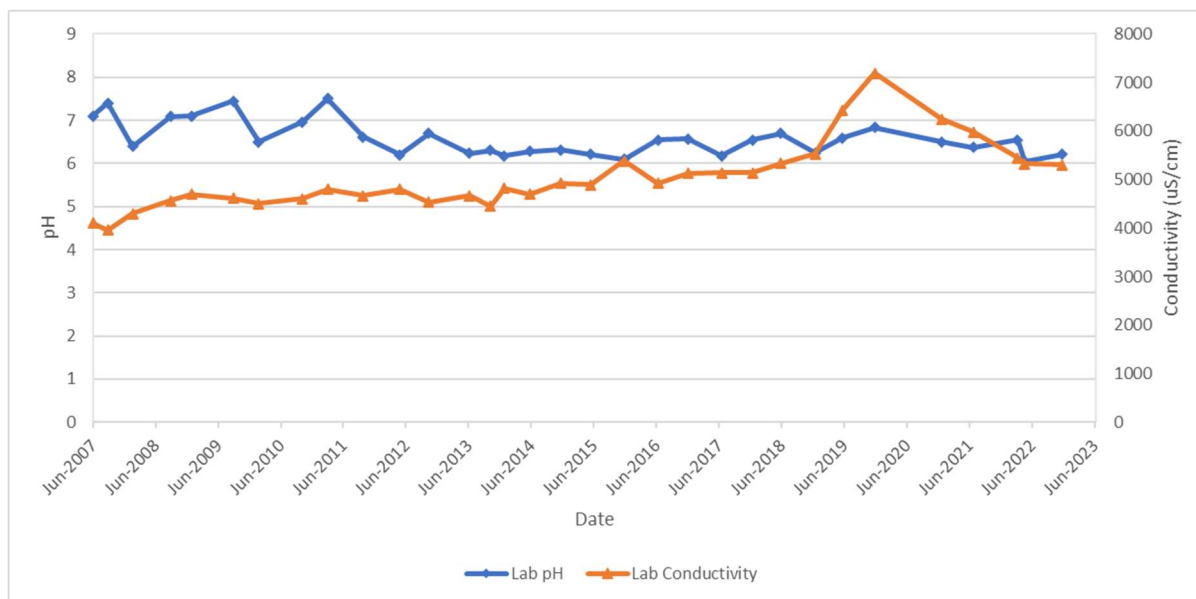


Figure 7-42. Z1 pH and conductivity

The metals results for Z1 are similar to Piezometer E3 with slightly elevated sulphate and zinc concentrations but overall concentrations of metals are relatively low. The influence of recent heavy rainfall is the most likely cause of lower than average zinc and sulphate levels over the past two reporting periods (Figure 7-43).

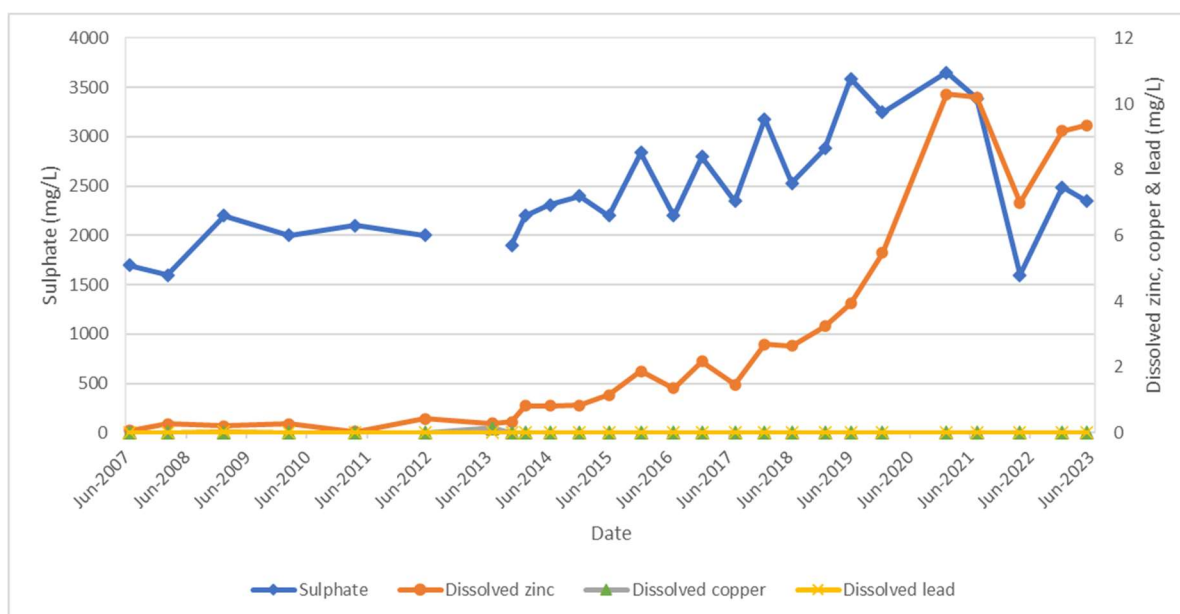


Figure 7-43. Z1 Sulphate and metals

Piezometer F1 is located below the southern embankment of TDS. The results for F1 are provided in Figure 7-44 and Figure 7-45.

The pH level of F1 is near neutral, and the salt concentration dropped back to historic levels of 1500µs/cm over the past three years. Sulphate levels and metals have fluctuated over the years but the actual concentration is very low and also well within background levels.

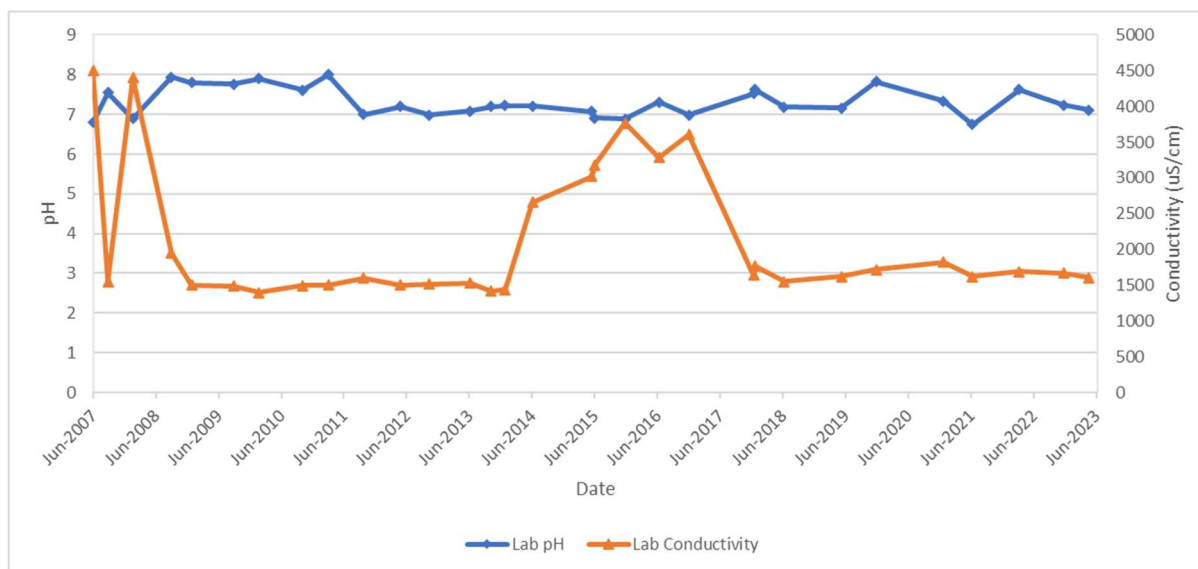


Figure 7-44. F1 pH and conductivity

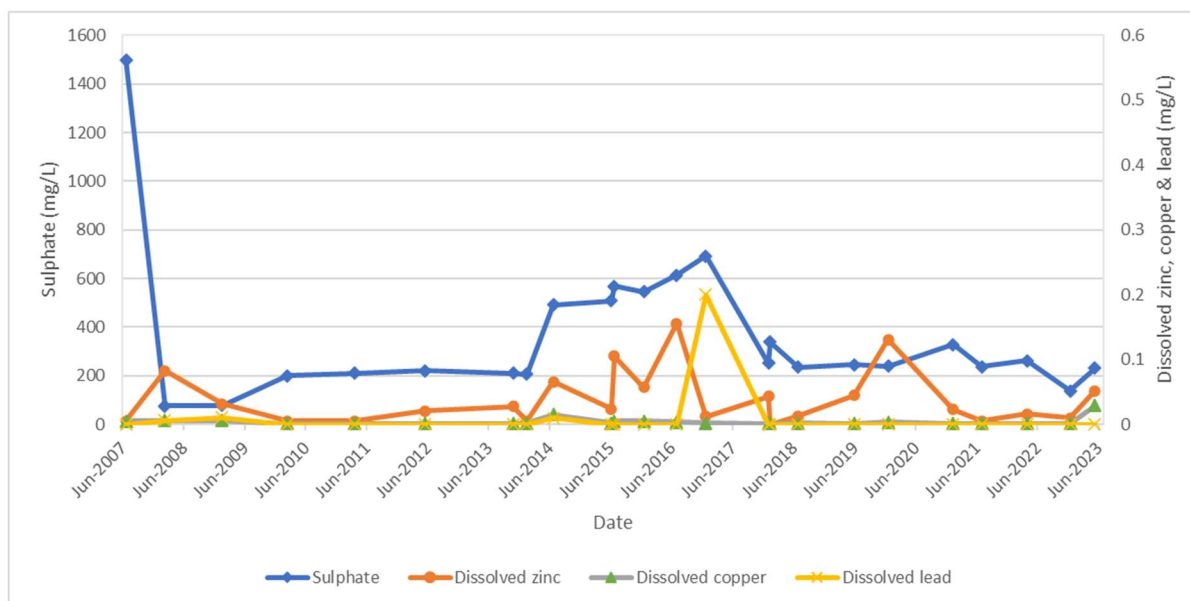


Figure 7-45. F1 Sulphate and metals

Water quality results in MB21 (Figure 7-46 and Figure 7-47) are consistent with the previous reporting period with pH at an average level of 6.13. Conductivity is consistent with the previous reporting period, remaining very low at an average of 743 μ S/cm. Metal concentrations have remained relatively constant as have other parameters which are in line with background groundwater quality recorded in MB3 (Figure 7-16). There is no indication of any downstream contamination attributable to TDS in this area.

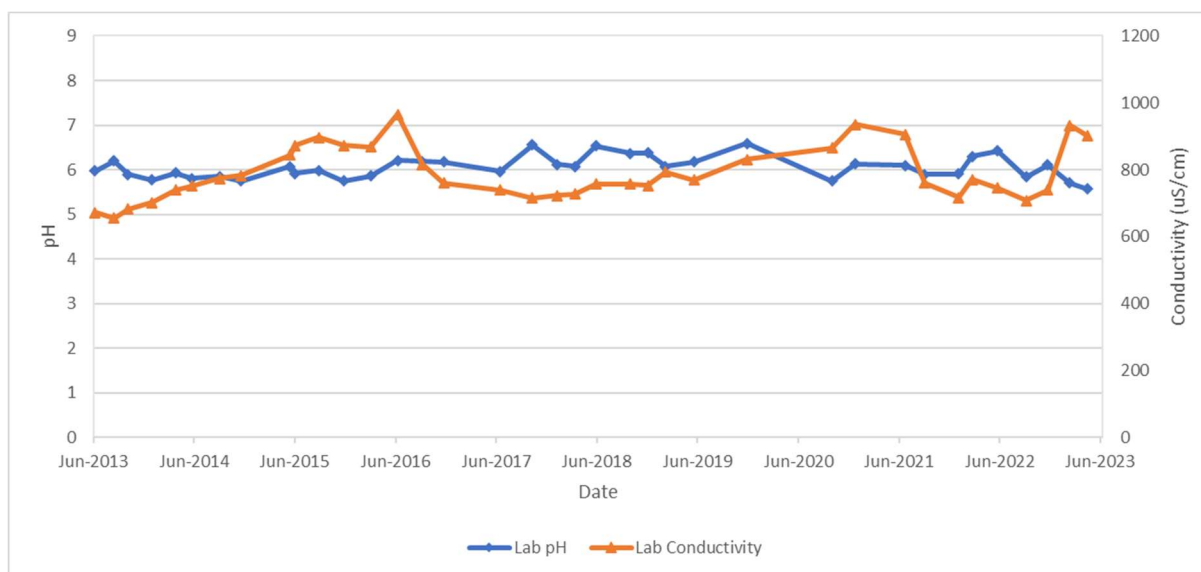


Figure 7-46. MB21 pH and conductivity

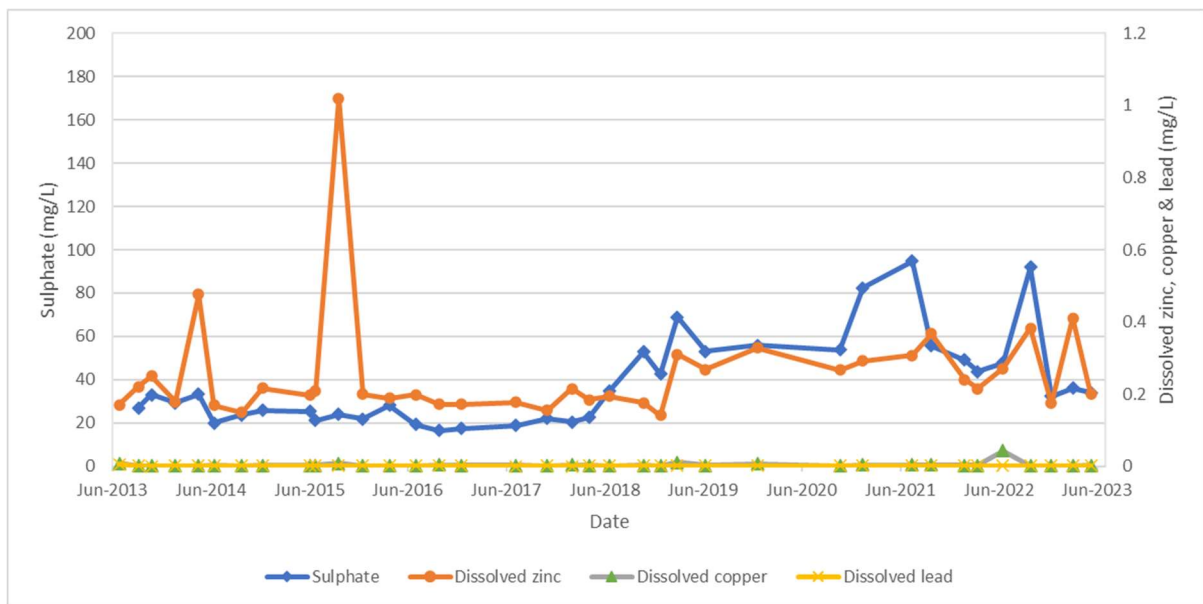


Figure 7-47. MB21 Sulphate and metals

Water quality results in MB22 (Figure 7-48 and Figure 7-49) are consistent with the previous reporting period which indicates slightly acidic water. Conductivity remains consistent with the historical trends. Although sulphate and metal concentrations appear to fluctuate significantly, the absolute values are very low and the variability is considered natural and in response to rainfall, particularly noting the trend for conductivity, sulphate and zinc has been notably downward since high rainfall experienced across site since 2020. MB22 has similar levels of pH, conductivity, sulphate, copper, lead and zinc to background groundwater quality recorded in MB3 (Figure 7-16).



Figure 7-48. MB22 pH and conductivity

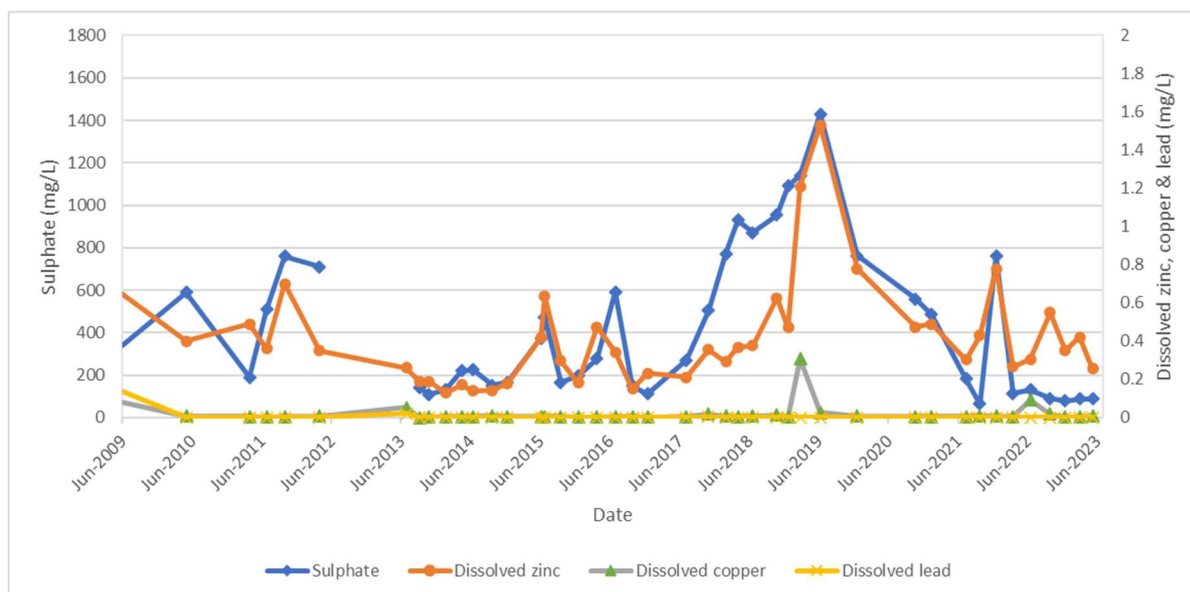


Figure 7-49. MB22 Sulphate and metals

7.5.8. Other groundwater monitoring bores

There are three additional monitoring bores which are relevant to the mining operation. MB4 is located to the east of the bioreactor and upslope of the processing area while MB 8 is located on Collector Road downstream of the processing plant and TSF4. Both these sites represent monitoring bores for the ongoing processing and materials handling on site. MB 6 is located adjacent to the box cut entry on the western side of the void and bioreactor. Since construction of the box cut mine entrance MB6 has tended to be dry reflecting a change to the total catchment area supplying the bore.

The monitoring results for MB 4 are provided in Figure 7-50 and Figure 7-51. There has been periodic fluctuations in pH and electrical conductivity in MB4 over many years. There is a significant difference between the most recent electrical conductivity field reading of 1724mg/L and the lab reading of 2910 mg/L, the former of which would be more similar to the average long term readings for this bore. This bore will continued to be monitored to determine if this is a lab results error. Other metals and water quality parameters are consistent with historical trends.

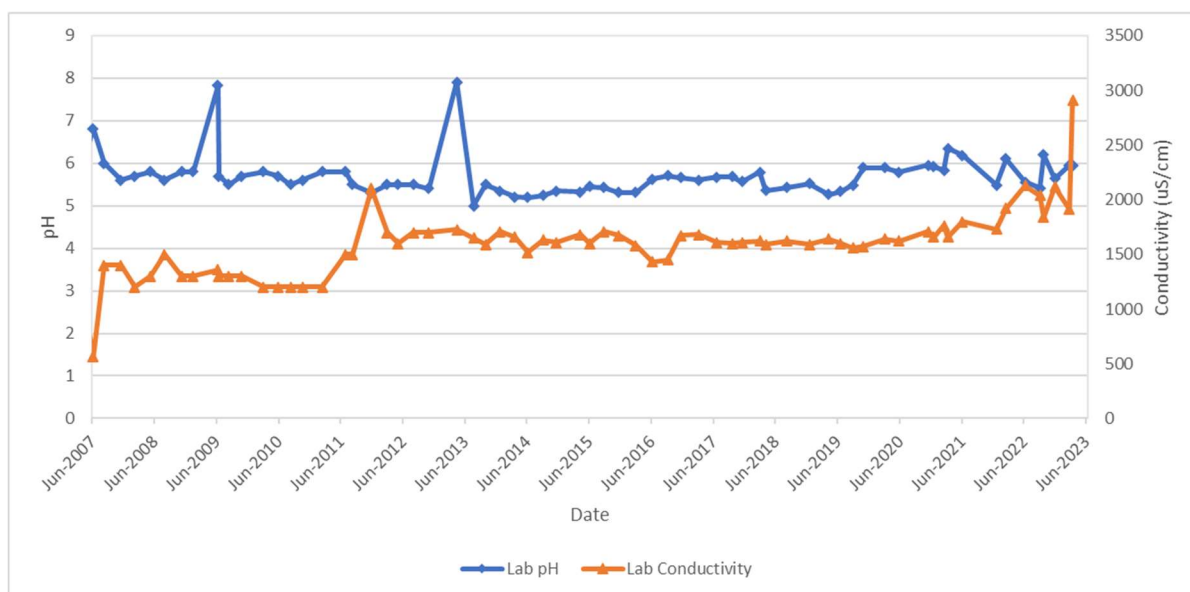


Figure 7-50. MB4 pH and conductivity

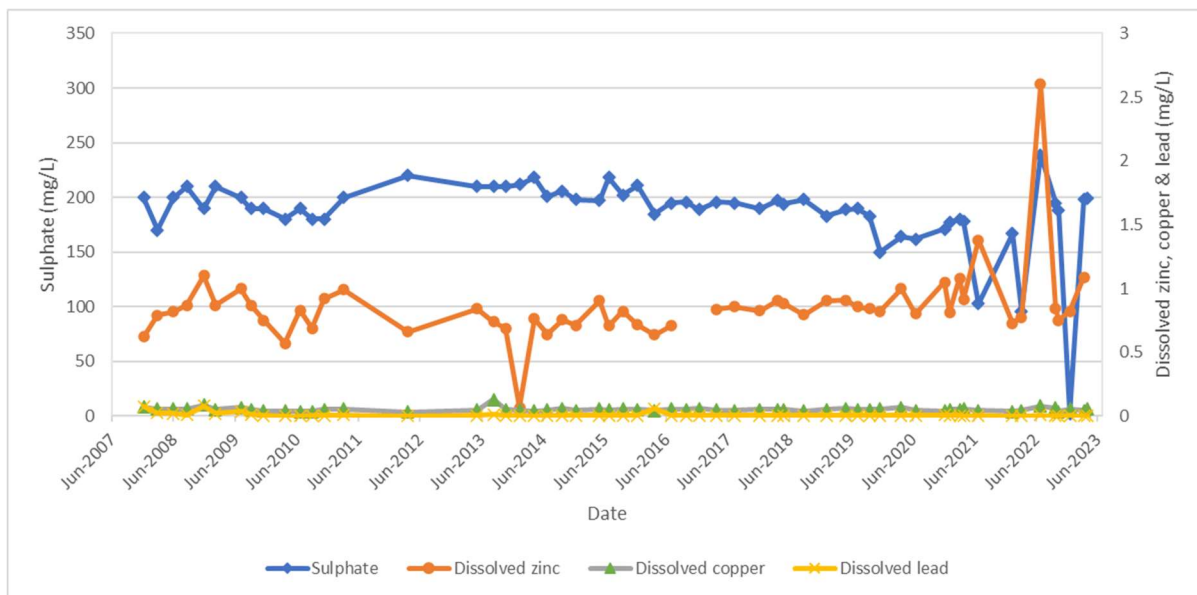


Figure 7-51. MB4 Sulphate and metals

MB 8 (Figure 7-52 and Figure 7-53) is located adjacent to Collector Road to the northeast of the site and downstream of the processing plant and TSF4. It is a valuable analogue site. The pH is relatively stable with an average of 7.54 over the past two reporting periods and also similar to the long-term average value at 7.44 (results since 2007). Conductivity trends declined slightly back to below average levels. The reason for the decrease in conductivity activity is most likely associated with the wet conditions experienced in the region over the past two years.

Sulphate levels in MB8 decreased slightly in during the reporting period. The levels of sulphate are still considered low while metals have been consistently at trace levels. Zinc has fluctuated historically although the concentration even during peaks remains very low. MB8 is situated in an ideal location to determine long-term impacts from both the historic operation as well as current operations from the processing plant site. The site provides water quality from hosted sedimentary rock and is not influenced by the sulphide ore body. MB8 is also used as an ongoing verification of the performance of TSF4.

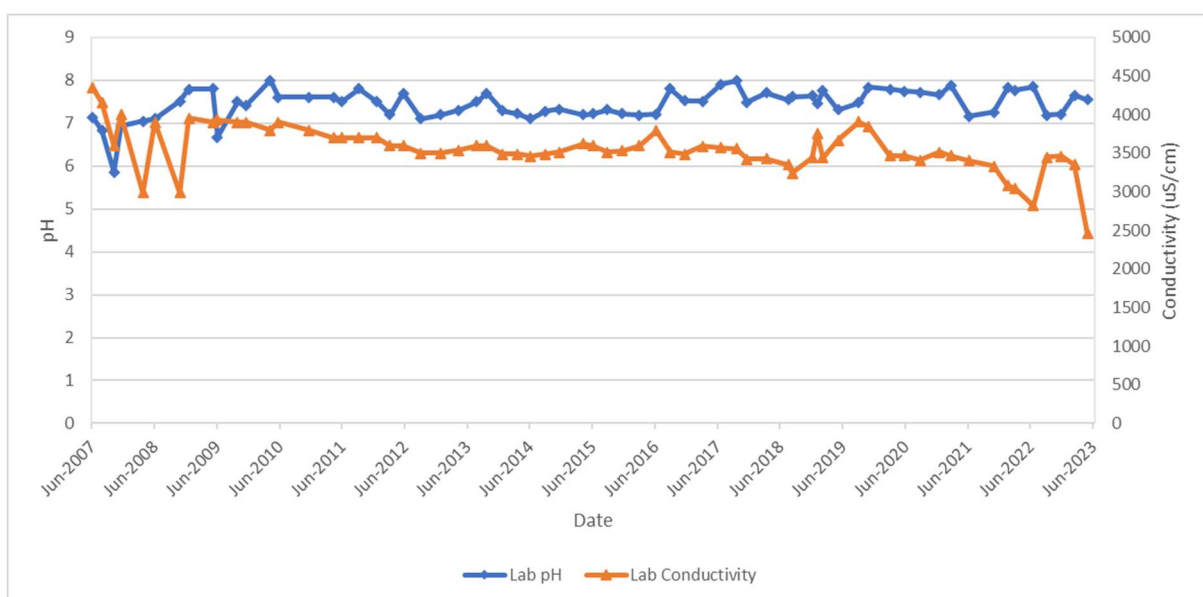


Figure 7-52. MB8 pH and conductivity

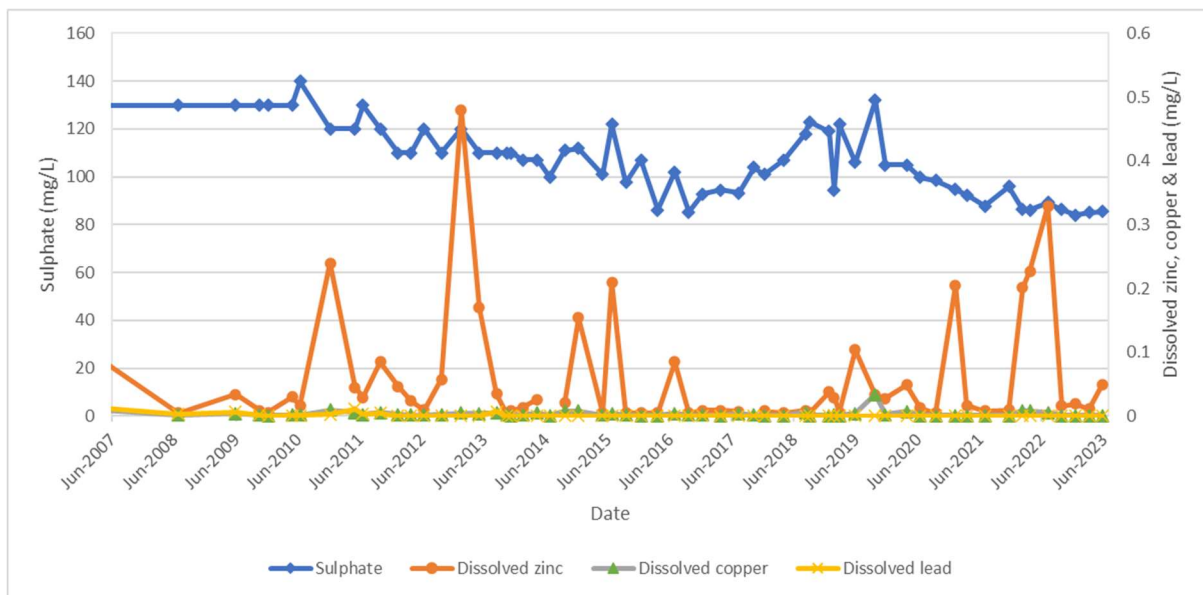


Figure 7-53. MB8 Sulphate and metals

MB 6 is located to the west of the mine void, east of ED3S and adjacent to the new mine box cut entry. This particular bore is solely influenced by underlying geology and not leakage from any storage facility being screened above both the Bioreactor and ED3 dam complex.

Since construction of the box cut entry the water level in MB6 gradually decreased with water level now so low that no sample has been able to be obtained since July 2021. Due to the tendency of MB6 now to be dry, the long term reliability of this bore for monitoring is uncertain. Nevertheless, it will continue to be monitored and samples obtained when possible.

7.5.9. Groundwater pollution monitoring - effectiveness

The Woodlawn mine has an extensive and effective monitoring network which can detect potential contamination of groundwater from disturbed lands, such as the evaporation dams and tailings dams. The current network and monitoring schedule have been discussed at length with various government agencies over many years and is considered effective in determining if the operation is having an impact on the receiving environment. Since taking ownership of the mining operation DEVELOP will continually review and evaluate the efficacy of the monitoring program which has several historical issues. Over time it is likely that new monitoring points will be added to replace superseded data and duplications will be removed.

Details of the Trigger Action Response Plan, developed in consultation with DPI-Water is provided in Section 7.2.1. This TARP nominates bores for assessment of the potential impacts of using paste fill as well as the protection of private agricultural bores from depressurisation caused by mine dewatering.

7.5.10. Groundwater pollution monitoring – future improvements

Monitoring and assessment of results has continued throughout the reporting period by Heron whilst the mine was under C&M in order to meet compliance obligations and to maintain a record of long term groundwater trends and areas that may require further investigation as part of future mining operations. Under the provisions of the Project Approval, additional monitoring bores are required to specifically monitor aspects of the future mining operation. DEVELOP will continue to review the monitoring program to determine the most effective means of establishing a verification and impact prediction process.

7.5.11. Contaminated / Polluted Land

The entire mine site is classed as contaminated with the primary areas being the evaporation dams and tailings dams. At this stage a schedule for reprocessing the tailings has not been developed. However, a 4ha tailings rehabilitation trial on TDN will continue (Section 8.3). ED2 and other remaining mining areas will remain maintained or operational until final closure for either rehabilitation or incorporation into Veolia's Bioreactor operation.

8. REHABILITATION

Details of the rehabilitation program and final rehabilitation were first outlined in the approved 2015 Mining Operations Plan and subsequently in the 2020 C&M Mining Operations Plan and latterly the 2022 Rehabilitation Management Plan. A rehabilitation trial on the northern embankment of TDN commenced in April 2021 and continued through the reporting period. Details of the trial are in section 8.3.

Earlier rehabilitation works on the TSF4 borrow area and legacy waste rock dump are subject to regular inspection. Both sites have responded well the the past three years of above average rainfall. Permanent Landscape Function Analysis (LFA) monitoring sites have been established on the legacy waste rock dump.

The site has been divided into the following primary Domains:

Table 8-1. Mining domains

Mining Domain	Purpose
Domain 1. Primary Infrastructure	Administration buildings Haul road and Light Vehicle Access Road Processing Plant ROM pad and skyway Pollution Control Dam and Process Dam Power lines Car park Sewerage Treatment Plant
Domain 2. Tailings Storage Facilities and Evaporation Dams	Tailings Dam North Tailings Dam South Tailings Dam West Tailings Storage Facility 4
Domain 3. Evaporation Dam 2	Evaporation Dam 2 (ED2)
Domain 4. Water Management Areas	Waste Rock Dam Sediment dams Storm water diversion drains Pipeline infrastructure
Domain 5. Underground Mining Area	Box cut and mine portal Paste Plant Batch Plant Ventilation shafts Dewatering bore
Domain 6. Waste Rock Emplacements	Legacy Rehabilitated Waste Rock Emplacement Temporary new waste rock emplacement
Domain 7. Biodiversity Offset area	71 ha biodiversity offset area in Hickory's Paddock

8.1. Post Mining Land Use

The Environmental Assessment (EA) undertaken for the Woodlawn Project in 2012 identified that the final land capability and use was to be in accordance with the zoning of the Project Site under the Goulburn Mulwaree Local Environmental Plan 2009 (GMLEP, 2009) and Mulwaree Local Environmental Plan 1995 or equivalent legislation. At the time the EA was carried out it was envisaged that the final

land capability and land use would be agricultural lands (suitable for grazing) and areas of native revegetation that are compatible with surrounding vegetation systems.

The Woodlawn mine land zone is presently classified as IN3 – Heavy Industrial. The landscape surrounding Woodlawn mine is RU2 – Rural Landscape. Consequently, it is envisaged that the final land use will be consistent with the pre-mining landscape, existing surrounding landscape and the objectives of the RU2 Rural Landscape zone criteria. Hence, the final land-use domains will include a mix of pasture/grassland areas and native ecosystems compatible with surrounding vegetation systems. Key objectives of the RU2 zone as outlined in the GMLEP, 2009 are to:

- encourage sustainable primary industry production by maintaining and enhancing the natural resource base;
- maintain the rural landscape character of the land;
- provide for a range of compatible land uses, including extensive agriculture;
- protect, manage and restore areas with high conservation, scientific, cultural or aesthetic values;
- protect and enhance the water quality of receiving watercourses and groundwater system and reduce their degradation;
- preserve environmentally sensitive land, including catchment areas, and prevent development likely to result in environmental harm; and
- minimise the potential for conflict between adjoining land uses.

The overarching post mining landuse objective outlined in Project Approval 07_0143 Schedule 3, Condition 6 is for the site to be:

- safe, stable and non-polluting with no final voids on the surface,
- Integrated with the rehabilitation of the Woodlawn Landfill; and
- Revegetated with plant species characteristic of Western Tablelands Dry Forest Vegetation Community.

The above objectives are outlined in the 2022 Woodlawn Mine Rehabilitation Management Plan (RMP), rehabilitation objectives statement and forward program. The RMP states that rehabilitation at the Woodlawn mine site is to enhance local ecological linkages by incorporating self-sustaining native vegetation grown from seed harvested from the local environment. The rehabilitation will incorporate plant species characteristic of the Western Tablelands Dry Forest vegetation community with the primary landuse being a native ecosystem, although some areas may be returned to agricultural landuse for grazing.

Some features of the mining operation may be retained as part of the post mining landuse to be incorporated into ongoing bioreactor operations. The type of infrastructure that may be retained includes power lines and water management facilities. Vehicular tracks may be retained for site maintenance or farm access purposes.

8.2. Rehabilitation performance during the reporting period

The rehabilitation status of the Woodlawn Mine project site is summarised in Table 8-2, but does not include provision for rehabilitation of ED1 which is operated by and used exclusively by the Veolia Woodlawn Bioreactor for their operations.

The active disturbance area includes the tailings dams, ED2, and infrastructure areas. The land being prepared for rehabilitation is for the 4.5 ha rehabilitation trial on TDN and the land under active rehabilitation refers to the 85ha rehabilitated waste rock dump.

Active rehabilitation carried out on site during the reporting period and the forecast period is the rehabilitation trial on TDN (refer to section 8.3).

Table 8-2. Rehabilitation Status

Mine Area Type	Previous Reporting Period (Actual)	This Reporting Period (Actual)	Next Reporting Period (Forecast)
	2020/2021 (ha)	2021/2022 (ha)	2022/2023 (ha)
Total mine footprint	2368	2368	2368
Total Active Disturbance	262.6	262.6	262.6
Land being prepared for rehabilitation	0	4.5	4.5
Land under active rehabilitation	85.9	85.9	85.9
Completed rehabilitation	0	0	0

8.3. TDN Rehabilitation Trial

A 4.5 ha rehabilitation trial has been ongoing on a 4.5ha area adjacent to the northern embankment of TDN. The purpose of the trial is in line with the Project Approval Schedule 3 Condition 2 to ensure the approved tailings dam capping substrate is suitable for ongoing rehabilitating the tailings dams, for landform establishment, and as a suitable growth medium for vegetation in order to achieve final land use objectives. In addition, the Resources Regulator S.240 notice NTCE0011671 Dated 2 March 2023 requires independent advice regarding the suitability of the Woodlawn Organic Output (WOO) product and identification of alternate capping materials.

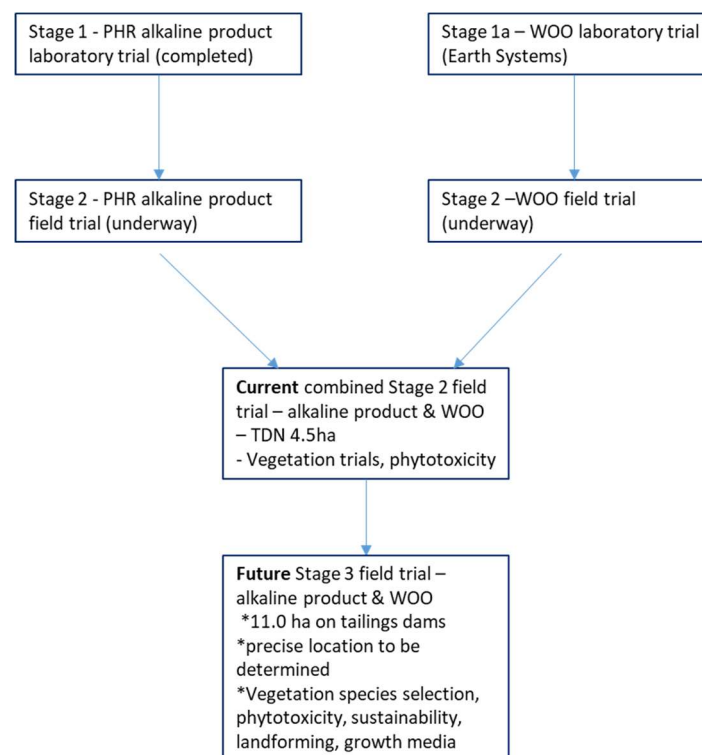


Figure 8-1. Stages of TDN rehabilitation research trial

The Stage 1 alkaline product laboratory trial and the stage 1a WOO laboratory trial have been completed. The Stage 2 field trial on TDN commenced in April 2021 and has been ongoing since. Application of alkaline product to the 4ha trial area has been completed. Application of WOO is continuing on a campaign basis as the material manufactured and provided by Veolia becomes available. By June 2023 approximately 40,000 T of WOO had been placed across 1.75 ha of the trial area

Following successful completion of Stage 2, and approval review and endorsement from the EPA, Stage 3 field trial will commence.

The objectives of the field trial are consistent with the requirements of Project Approval 07_0143 and the Resources Regulator Section 240 Notice NTCE0009097 and RMP objectives.

8.4. Stage 2 field trial - progress to date.

Figure 8-2 shows the location of the progressive cover and study plots across the 4.5ha trial area. The remainder of the area will be progressively capped and subject to ongoing vegetation, stability and sustainability trials.



Figure 8-2. TDN field trial plot layout

The Stage 2 field trial incorporates a combination of products - PHR alkaline product, NAF rock, clay and WOO and topsoil sourced from legacy site topsoil stockpiles. Plots 1-6 have been the subject of a WOO product trial with PHR engaged as the research lead. The WOO product suitability trial has been led by Veolia with cooperation and input from Develop and is in accordance with existing EPA Resource Recovery Order (RRO) and Resource Recovery Exemption (RRE). The trial has been used to assess the initial success of WOO in the capping trial. The first 6 month trial report *Woodlawn TSF Capping Trials Beneficial Reused of Waste Organic Output Stage 2 – Six month Progress Report* (January 2023) has been submitted by Veolia to the EPA. EPA response is awaited.

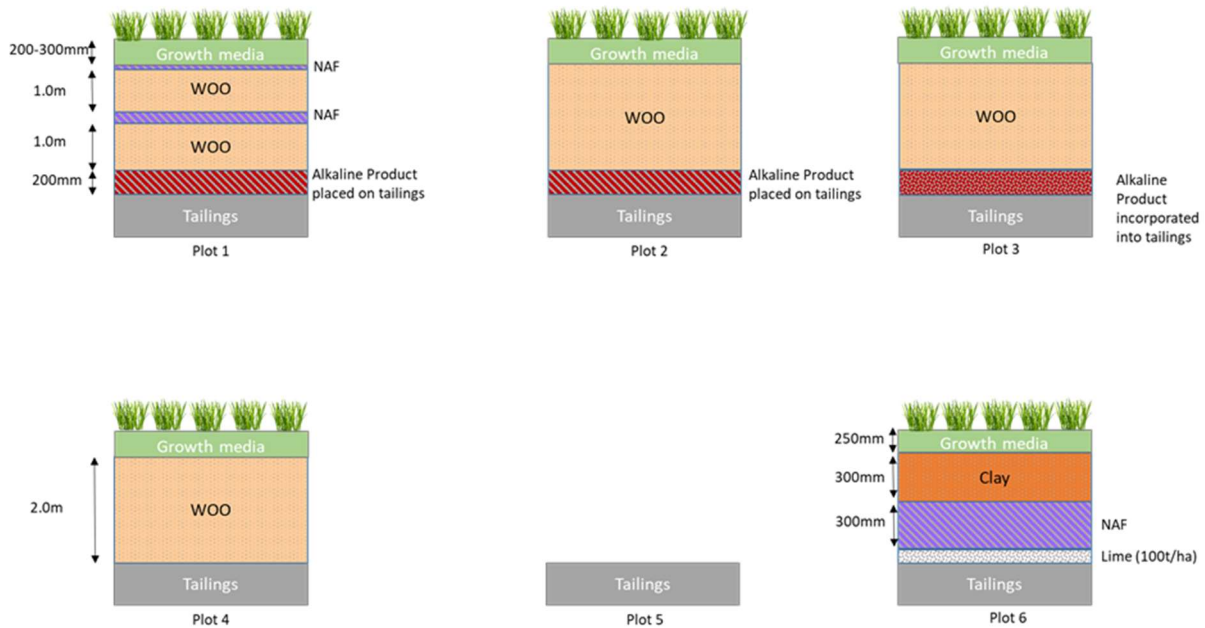


Figure 8-3. TDN rehabilitation trial - plot configuration

The substrate design for trial plot 1-6, the subject of the WOO product suitability trial as shown in Figure 8-3 above, is as follows:

- Plot 1 (representing the approved 2015 MOP capping design).** 300mm PHR alkaline product placed on top of tailings and covered with 2.0m WOO, interplaced with two layers of commercially available inert material (as a substitute for NAF as indicated in the 2015 MOP because there is insufficient NAF available on site), capped with a 250mm layer of topsoil (top soil amended with gypsum, fertiliser and chicken manure fertiliser); Provisionally vegetated with a commercial dryland pasture seed blend.
- Plot 2.** 300mm PHR alkaline product placed on top of tailings and covered with a single 2.0m thick layer of WOO. Capped with 250mm thick layer of topsoil (top soil amended with gypsum, fertiliser and chicken manure fertiliser). Provisionally vegetated with a commercial dryland pasture seed blend.
- Plot 3.** 300mm PHR alkaline product incorporated into top 300mm of the tailings, covered with a single 2.0m thick layer of WOO. Capped with 250mm thick layer of topsoil (top soil amended with gypsum, fertiliser and chicken manure fertiliser). Provisionally vegetated with a commercial dryland pasture seed blend.
- Plot 4.** 2.0m thick layer of WOO placed directly on top of tailings and capped with a 250mm layer of topsoil. The topsoil in this plot has self seeded with native grasses.
- Plot 5.** Control – tailings only.
- Plot 6. (representing the alternate design)** 100t/ha lime, 300mm NAF capillary break, 300mm clay, capped with a 250mm layer of topsoil (top soil amended with gypsum, fertiliser and chicken manure fertiliser); provisionally vegetated with a commercial dryland pasture seed blend.

Plots 7- 14 (Figure 8-3) have been established to trial a variety of WOO and topsoil depths for stability, application of FOGO into the topsoil, and to trial different application methods for the establishment of

a variety of pioneer vegetation species. Once the pioneer species have established satisfactory topsoil nutrient cycling, infiltration and stability functionality, a vegetation trial will commence to identify suitable native grass and shrub species, consistent with the Project Approval, Schedule 3 Condition 6 and final land use objectives contained in the RMP. At the time of this report, Plot 13 is incomplete and additional plots will be established across the remaining trial area using a range of WOO and topsoil configurations.

Table 8-3. Plot configurations - Plots 1-14

Plot ID	Surface area (m2)	Alkaline product (300mm) (Y/N)	WOO depth (1m/2m)	Topsoil (300mm) (Y/N)	Clay layer (500mm) (Y/N)	Inert Rock Layer (300mm) (Y/N)	Previously sown (Y/N)
Plot 1	1097.5	Y	2	Y	N	Y	Y
Plot 2	1290.3	Y	2	Y	N	N	Y
Plot 3	1346.6	Y (inc)	2	Y	N	N	Y
Plot 4	2637.1	N	2	Y	N	N	Y
Plot 5 (control)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Plot 6 (Traditional capping substrate)	214.3	N	N/A	Y	Y	N	Y
Plot 7	1640	Y	2	Y	N	N	N
Plot 8A	858	Y	2	Y	N	N	N
Plot 8B	773	Y	2	Y	N	N	N
Plot 9	1401	Y	2	Y	N	N	N
Plot 10	787	Y	2	Y	N	N	N
Plot 11	416	Y	1	Y	N	N	N
Plot 12	411	Y	1	Y	N	N	N
Plot 13A	2513	N	1	N	N	N	N
Plot 13B	2258	N	1	N	N	N	N
Plot 14A	1364	N	2	Y	N	N	N
Plot 14B	1691	N	2	Y	N	N	N

Additional components of the trial project will continue through the next reporting period and will investigate whether the rehabilitation objectives outlined in the Consent can be achieved with the methodologies being employed for the trial. Ongoing investigations will include optimising placement methodologies, commencement of ongoing vegetation trials and comparison with baseline data and analogue sites.

Studies will involve an investigation into local factors likely to impact the long term viability of the capping material and vegetation. Geomorphic landscape design for the final landform will be developed and trialled to ensure the proposed landform design will be stable and sustainable.

Using the plant species associated with the Western Tablelands Dry Forest vegetation community the following research activities will be included in the trial:

- vegetation trials to identify suitable species generally characteristic of the Western Tablelands Dry Forest Vegetation Community, and/or consistent with the final land use objectives to include the following:
- Vegetation trials to determine best establishment practices for grasses, direct seeding, and tubestock;

- phytotoxicity characteristics of the growth medium and its effects on various vegetation species;
- germination and survivability of different plant species in the association with the various capping materials and their potential for achieving final ecosystem objectives;
- optimum planting density requirements;
- moisture content and water holding capacity of the topsoil layer and WOO substrate;
- drought tolerance of selected species;
- top soil nutrient amendments required for establishment appropriate for the plant species being trialled;
- identifying any soil chemical and physical constraints in the topsoil and subsoil (WOO) layers;
- erosion and sedimentation characteristics of the materials being used for the capping material;
- LFA assessment comparing tailings rehabilitation cover with commensurate analogue sites;
- mycorrhizae establishment and characterisation; and
- grazing/browsing impact of native and feral fauna (mainly kangaroo and deer) on the vegetation.

8.5. Shade house recommissioning

After being held in abeyance due to limited resources during the period Woodlawn Mine was in C&M, the shade house has been upgraded and reactivated. Several tree, shrub and grass species, grown from seed collected on site have been sown and when mature enough will be planted in the biodiversity offset area, WOO trial and to enhance the visibility screen plantings (Figure 8-4).

Figure 8-4. Shade house seedlings (R) & hardening off area (L)



8.6. TDS Seepage drains and return dam upgrade

Works to improve the TDS seepage return dam and drains commenced during the reporting period. The works were initiated to fulfil a requirement of Resources Regulator S240 Notice Section 240 Notice NTCE0009097 and NTCE0011671 and address Project Approval Schedule 3, Condition 1a. The works entail improvement to the existing return dam by lining it with HDPE lining, automation of the pumping system, installation of flow monitoring instrumentation and v-notch weirs, diversion of stormwater away from the collection system, repair to the access track and rehabilitation of eroded areas. The purpose of the flow monitoring instrumentation and v-notch weirs is to allow a better understanding and estimation of the actual seepage volume from the drainage blanket.

Shows the progress of the return dam improvement works at the time of this report.



8.7. Actions for next reporting period

The following rehabilitation actions are planned for the next reporting period:

- Completion of TDS return dam and drainage works including HDPE lining of return dam, installation of instrumentation and v-notch weirs for flow monitoring and installation of a float activated pump. (S240 NTCE0011671
- TDN WOO trial – ongoing but including commencement of vegetation trials (PA Schedule 3, Condition 2).
- Plant initial 2ha of trees/shrubs in the biodiversity offset area (PA Schedule 3, Condition 6, Table 2).
- Expand capacity at shade house for seedling growth for planned rehabilitation and vegetation trial plantings.
- Enhance visibility screen plantings and replace dead trees (PA Schedule 4, Condition 28).
- Further improvement to rehabilitation vegetation on the TSF4 downstream borrow area.
- Continue LFA assessment for analogue sites, rehabilitation sites and biodiversity offset area.
- Develop a program for rehabilitation of areas of erosion on the legacy waste rock dump.
- Completion of directions in S240 Notice NTCE 0011671.
- Undertake a mine dewatering options assessment in consultation with the EPA.
- Participate in a Pollution Reduction assessment in consultation with the EPA.
- Upgrade environmental data management by migrating to a new environmental data management system – EquiS.

9. COMMUNITY

During the reporting period the following community consultation has taken place:

- Community consultation meetings on 5 October 2022 and 1 February 2023, .
- Regular Articles in the local Tarago Times produced monthly,
- Site visits by local emergency services representatives.
- Participation in Local Emergency Management Committee meetings.
- Sponsorship and coordination of a community snake familiarisation session at the Tarago Community Hall
- Major sponsor donation to the 2023 Tarago show committee for the 2023 Annual Show

9.1. Complaints

There have been no community complaints received by the Woodlawn Mine Project during the reporting period.

10. INDEPENDENT AUDIT

10.1. Independent Audit report 17 March 2022

An independent environmental audit of Project Approval Conditions 07_0143 MOD 2 and EP&A Act was carried out by Senversa and a report provided on 17 March 2022.

A summary of the key audit outcomes and an action plan addressing the outcomes is provided in Table 10-1.

The next independent environmental audit is due to be completed by 14 September 2024.

Table 10-1. Independent Audit - Key Audit Outcomes

Condition	Comment/Audit Finding/Recommendation	Compliance Status	Action Plan	Action Status
Project Approval 07_0143-MOD02				
Schedule 3 Condition 1 Tailings Dams	Heron identified during the site inspection stormwater drainage pipes that direct water from the south into Tailings Storage Facility 4 (TSF4) in non-compliance with this condition. Heron advised that plans are underway to redirect this clean water over TSF4 and discharge to the north. While the non-compliance results in higher water levels within TSF4, it is considered to pose a low risk of environmental harm. Recommendation: Implement redirection of stormwater.	Non compliant	Design and construct stormwater diversion drain around TSF4	Completed - July 2022. A sump and diversion drain have been constructed to divert stormwater away from TSF4
Schedule 3 Condition 1 Tailings Dams	Tailings reprocessing operations commenced in TDS in March 2019. The source of the seepage has not yet been identified and repaired and it is anticipated that this condition will be Non-Compliant by March 2022. This will subsequently delay lining of the existing seepage collection area. Recommendation: Review the timing of this condition in 07_0143-MOD03 prior to recommencement of mining operations	Not Triggered	This matter has been under investigations in accordance with Resources Regulator Section 240 Notice NTCE0009097 dated 14 Oct 2021 and NTCE 0011671 dated 2 March 2023. An independent tailings dam expert engineer has found, during the course of the Section 240 notice investigations, that the dam drainage blanket is operating as designed and that TDS does not have a leak per se. Rather the seepage is through the as designed drainage blanket. A submission with an application to modify this condition in the project approval will be submitted in 07_0143-MOD03	Seepage return dam and drains have been upgraded in accordance with the action outcomes of S240 Notice0009097 and NTCE 0011671. Subsequent Independent Engineer report received. Next action to submit a modification to the Consent (MOD3)

Schedule 3 Condition 3 Underground Mining	Extraction Plan Section 4.2.1 details an exclusion zone of 200 m around the existing open cut (Woodlawn Landfill). Heron confirmed that construction operations conformed with the approved design including the 200 m exclusion zone, verified by a design review and sign-off process. Recommendation: Include a process to verify compliance with this condition in the next revision of the Extraction Plan.	Compliant	Prepare an amendment to the Extraction Plan prior to mining operations	Plan for investigation and consultation with Veolia. Completion December 2022
Schedule 3 Condition 3 Underground Mining	The Paste Fill Management Plan (PFMP) includes results of the paste fill chemical analysis trial, approved by the Department/Secretary on 29/8/2019. It also requires the backfill to be physically and chemically stable and non-polluting. Toxicity characteristic leaching procedure (TCLP) results from the paste fill trial indicate that the concentration of the majority of metals in leachate, including lead (46 mg/L), copper (4.84 mg/L) and zinc (13.9 mg/L), exceeded the adopted site-specific trigger values. These results indicate that the paste fill is potentially polluting. Recommendation: Reassess the method of paste fill testing and the adopted trigger values prior to paste plant recommissioning. Ongoing testing of the paste will be required following paste plant recommissioning. Consider further leachate testing including ASLP.	Non compliant	Undertake a reassessment of the paste fill testing method and trigger values prior to resumption of paste plant recommissioning including further leachate testing	Revise existing PFMP and amend as appropriate prior to resumption of paste fill operations.
Schedule 3 Condition 5 Paste Fill	The PFMP includes results of the paste fill chemical analysis trial and was approved by the Department/Secretary on 29/8/2019. The PFMP Section 3.3 committed to the provision of operational paste fill testing results to the Department/Secretary in the first Annual Review.	Compliant	Amend PFMP to Include provision for paste monitoring results to be reported in future Annual Reviews and report accordingly following resumption of paste fill operations	Amend PFMP prior to resumption of paste fill operations.

			Testing results were not included in the 2019-2020 Annual Review. Recommendation: Include paste monitoring results as described in the PFMP in the Annual Review reports. Ongoing monitoring of the paste fill and paste fill water will be required following paste plant recommissioning			
Schedule 4 Condition 3	Existing Acid Drainage		Approval 07_0143 is dated 4/7/2013 and this condition became non-compliant from 4/7/2018. A passive treatment system has been proposed for the Waste Rock Dam (WRD) and the WRMP specifies implementation of the system by the end of mining operations. Recommendation: Align the timeframe for the passive treatment system implementation between the WRMP and proposed 07_0143MOD3.	Non compliant	Identify a suitable passive treatment system and seek Resource Regulator endorsement of the design as soon as possible. Amend the timeframe in the project approval and WRMP and seek approval for such time-frame in project approval 07_0143MOD03	Initial investigations have been commenced to source the point(s) of origin of the seepage so that the passive system can be targeted at the seepage origin points. Actions: 1. Prepare 07-0143MOD3 to amend the time frame. 2. Identify a suitable independent expert to develop a project design and consult with Resources Regulator prior to implementation of PTS.
Schedule 4 Condition 4	Water Management Plan		Recommendation: Include consultation with Veolia and Infigen Energy in Appendix 4 of the Water Management Plan (WMP).	Compliant	Amend WMP	Prepare revision to WMP prior to recommencing operations.
Schedule 4 Condition 4A	Water Management Performance Measures		WMP Section 3.4: Erosion and sedimentation control. Erosion was observed on the western side of the Rehabilitated Waste Rock Dump during the site inspection. Heron advised that due to drought conditions and the timeframe for slope regrading, replanting works have had limited success in this area.	Compliant	Develop a program of works for progressive rehabilitation of erosion on the Rehabilitated Waste Rock Dump	A program of works has been identified. Progressive rehabilitation of erosion areas will be implement RWRD works program.

			Erosion control matting was also observed on this slope. Recommendation: Continue/recommence rehabilitation of the waste rock dump and include erosion control measures as practicable across the site.			
Schedule 4 Blasting Hours	Condition 9		Blasting at the box cut commenced on 25 September 2018. Blast times were not reported in the Annual reviews. Heron advised the blasting hours were compliant with Table 6. Recommendation: Report blasting hours in the Annual Reviews.	Compliant	Report blasting hours in Annual Reviews	Incorporate in Annual Reviews following resumption of blasting operations at Woodlawn
Schedule 4 Blast Management Plant	Condition 12		Recommendation: Include consultation with Veolia and Infigen Energy.	Compliant	Amend Blast Management Plan to includes consultation with Veolia and Iberdrola	Amend Blast Management plant accordingly for next revision
Schedule 4 Waste	Condition 29		200 L metal drums and cut-off intermediate bulk containers (IBCs) containing waste grease were observed south of the Processing Plant, stored on pallets. The containers were unlabelled, uncovered and were not stored within a bund. A large amount of demolition material (including reinforced concrete) was present on the western edge of TDS. Recommendation: Characterise, store, handle and dispose of these containers appropriately, ideally should be stored in a bunded and covered area. The longterm plan for the use/placement of the demolition material should be expressed in the EMS.	Non compliant	IBC's containing waste grease have been relocated to a bunded area, and waste disposal contract has since been established. Waste Grease to be disposed of using a licenced contractor. Plan for appropriate disposal of legacy demolition material from the original Woodlawn processing plant to be developed and incorporated in next revision of the EMS	Hydrocarbons are disposed of using a licensed waste collection contractor. A bioremediation pad has been installed for managing small scale contaminated material
Schedule 5 Notification of Landowners	Condition 1		Air quality exceedances were recorded during the audit period. Investigation concluded the exceedances to be the result of regional dust storms	Non compliant	Seek modification to Consent to include provision for dust exceedances arising from off-site sources to be excluded from	Project Approval 07_0143 MOD03 to include request for exclusion

	and bushfires and consequently did not inform affected landowners. Recommendation: Review this condition as part of Project Approval MOD 3 such that notification of landowners is not required in the case of off-site generated dust exceedances.		landholder requirements	notification
Schedule 5 Condition 5 Revision of strategies, Plans and Programs	Recommendation: Clarify document control sections for each management plan to differentiate between document reviews, revisions and submissions to stakeholders. Make clear which stakeholders have been consulted in development of the plans. A number of management plans are non-compliant for approval from the Department/Secretary following the latest revisions. It is noted that a review of the management plans is proposed prior to recommencement of mining operations. Management Plans must be approved by the Department/Secretary prior to implementation and the approval letter should be attached to each plan.	Non Compliant	All management plans to be amended to include clear document control provisions. Include reference to Department/Secretary approval in future revisions of all management plans	Management plans are progressively being amended. All revisions to be completed in accordance with the final Mine Plan and resumption of operations.
Environmental Protection Licence 20821				
R1.5 and R1.7 Annual Return Documents	Annual return documents must be retained for a period of at least 4 years	Non Compliant	Update Document Management System to retain copies of all EPL annual returns	Update Document Management System.
Special Mining Lease 20				
3. Mining Operations Plan and Rehabilitation Report	The location of the waste rock dump was moved from the approved location. The approved location was an existing vegetated area and rather than remove the vegetation, the dump was moved to an already cleared location a short distance away. Heron notified the DPIE of the breach and the non-compliance was reported in the NSW Resources Regulator Compliance Audit (Feb 2020). The location of the box	Non Compliant	Prepare and submit Project Approval 07_0143 MOD03	Prepare MOD3. Completion prior to resumption of operations.

cut mine entry was also altered and was the subject of a penalty notice.

Heron advised that the new locations will be included in the Project Approval MOD 3 application.

10.2. Independent Audit report

The independent audit report for the 2018 Audit undertaken on 18 19 August 2018 in accordance with Schedule 6, Condition 9 was received on 20 Aug 2021. The Audit report covered the period 1 July 2017 to 30 June 2018 and reported the performance against the approved Mining Operations Plan and Project Approval 07_0143 MOD2. Activities undertaken during the Audit period included construction of the Woodlawn Project and commissioning.

A summary of the key audit outcomes and an action plan addressing the outcomes is provided in Table 10-1.

The Audit identified no non-compliances in relation to the review of documents but identified 3 non-compliances arising from a DPE audit undertaken in October 2017 and July 2018. The three non-compliances included:

- Passive treatment system for Waste Rock Dump drainage;
 - This issue is ongoing and will be subject to a modification to the Project Approval
- Construction certificates;
- Occupancy Certificates have been issued.
- Vegetation Screening.
 - At the time of the Audit the vegetation screen had not been planted due to drought conditions. The screen has subsequently been planted.

The Audit Report also referred to a 2019 Audit (outside the independent audit period) (Ref: NSW Resources Regulator (2020), Compliance audit program: Woodlawn Mine, Tarago Operations Pty Ltd (dated: February 2020, revision RR20/1163). The audit report identified one non-compliance, five observations and two improvement suggestions as follows:

- One non-compliance as onsite operations vary to the MOP
- Five observations including:
 - Landscape function analysis baseline monitoring has not been undertaken;
 - Areas of erosion and vegetation failure;
 - Revise MOP and Waste Rock Management Plan (WRMP) for better management of potential acid forming material;
 - Rehabilitation strategy for Hickory's Paddock; and
 - Regulator must be notified of breaches in operation of site.
- Two suggestions for improvement:
 - Further recording of site activities as per management plans detailed in Section 3.1: Document review; and
 - Improvements to recording and tracking system to ensure issues of concern are addressed.
-

11. INCIDENTS AND NON-COMPLIANCES DURING THE REPORTING PERIOD

11.1. Incidents

There have been no incidents during the reporting period.

11.2. Non-compliances

There have been no non compliances during the reporting period.

11.3. Official notices

11.3.1. Section 240 notice NTCE0009097

On 14 October 2021 the Resources Regulator issued a Notice under the Mining Act 1992 section 240 (NTCE0009097) in relation to a Risk Assessment and its associated table of *Consolidated Recommendations of the Tailing Storage Facilities – Operational and Rehabilitation Aspects During Care and Maintenance* prepared by SP Solution on 13 January 2021 with 5 directives as outlined Table 11-1.

Table 11-1. Section 240 Notice – NTCE0009097 dated 14 Oct 2021 - summary of Directions

Direction No	Direction summary	Date for compliance	Status
1	Nominate a suitably qualified and experience tailings storage facility (TSF) expert	14 January 2022	Completed
2	Undertake the TDS seepage assessment / studies nominated in the RA	14 July 2022	Report completed with ongoing action
3	Undertake long term capping design and performance assessment studies nominated in the RA	14 July 2022	Report completed with ongoing action
4	Undertake the Geotechnical characterisation of TSF construction material and surface water management assessment studies nominated in the RA	14 October 2022	Ongoing
5	Submit a report prepared by the suitably qualified expert nominated at Direction 1	14 January 2023	Ongoing

11.3.2. Section 240 notice NTCE0009097

Following a revision of progress on the Directions in consultation with the Regulator, and a request for extension of time to complete the Directions, the Regulator issued a revised S240 Notice – NTCE0011671 dated 2 Mar 2023.

A summary of the Directions in NTCE0011671 is contained in Table 11-2.

Table 11-2. Section 240 Notice NTCE0011671 dated 2 March 2023 - summary of Directions

Direction No.	Direction summary	Date for compliance	Status
1	Submit a report prepared by a suitably qualified expert specified under Direction 1 of NTCE0009097 (Noting ‘Mining One’ has been nominated and approved as the ‘suitably qualified expert’ – email approval issued 21 January 2022. Our Reference AREQ0024478. a. How each of the additional controls outlined in Table 1: Consolidated Recommendations of the “Tailings Storage Facilities – Operational and Rehabilitation Aspects During Care and Maintenance, Risk Assessment”, prepared by SP Solutions and dated 13 January 2021 (Our Reference: RR21/28981) have been addressed and implemented. b. Provide additional information/new evidence if the risk controls have changed and how they will be addressed.	14 January 2024	Pending

- c. Description of the methodology and key assumptions of how the rehabilitation and closure requirements for all Tailings Storage Facilities (TSFs) at Woodlawn Mine have been developed (e.g., how this aligns with future mine plans/development and ability to source capping material etc).
- d. Water balance modelling for all TSFs, both during operations and post closure, and implications for short and long-term seepage.
- e. The performance requirements of capping to support the nominated final landuse rehabilitation outcomes for all TSFs, including seepage.
- f. The preferred capping design and the available source of capping material, including verification that adequate volumes of capping material are available i.e., provision of rehabilitation material inventories.
- g. Final landform design of the TSFs to address long term stability, surface water erosion and potential settlement of tailings. The landform design must include (where relevant) surface water management structure requirements (including spillways) meeting appropriate hydrological projections. Note: ANCOLD Guidelines on Tailings Dams, July 2019 and the ICMM Global Tailings Standard provides design criteria for closure.
- h. Where further studies or research are required to be undertaken to address the issues above, the report will need to include details of the scope as well as specific milestones for when these studies are scheduled for completion. The schedule for completion needs to include a summary table (i.e., Gantt chart), with milestones/completion dates these are to be developed in consultation with the Resources Regulator)

2	Prepare a report documenting progress towards addressing the requirements of Direction 1 of this Notice	30 April 2023	Report submitted
3	Prepare a report documenting progress towards addressing the requirements of Direction 1 of this notice	31 July 2023	Pending
4	Undertake the Geotechnical characterisation of TSF construction material and surface water management assessment studies nominated in the RA	31 October 2023	Pending

11.3.3. EPA Notice of Variation 1621681 dated 17 August 2022

Following the failure of the stormwater diversion drain surrounding Tailings Dam West, as reported in the 2021/22 Annual Report, and subsequent Clean Up notice issued by the EPA, remediation actions were completed by Heron and Develop. The EPA closed the clean up notice, but issued a notice requiring a Pollution Reduction Risk Assessment be undertaken (EPL Variation 1621681 dated 17 Aug 2022). The Risk Assessment report was provided to the EPA on 30 November 2022. Subsequent site inspections by the EPA, have led to the advice that a site pollution reduction assessment will be undertaken during the next reporting period.

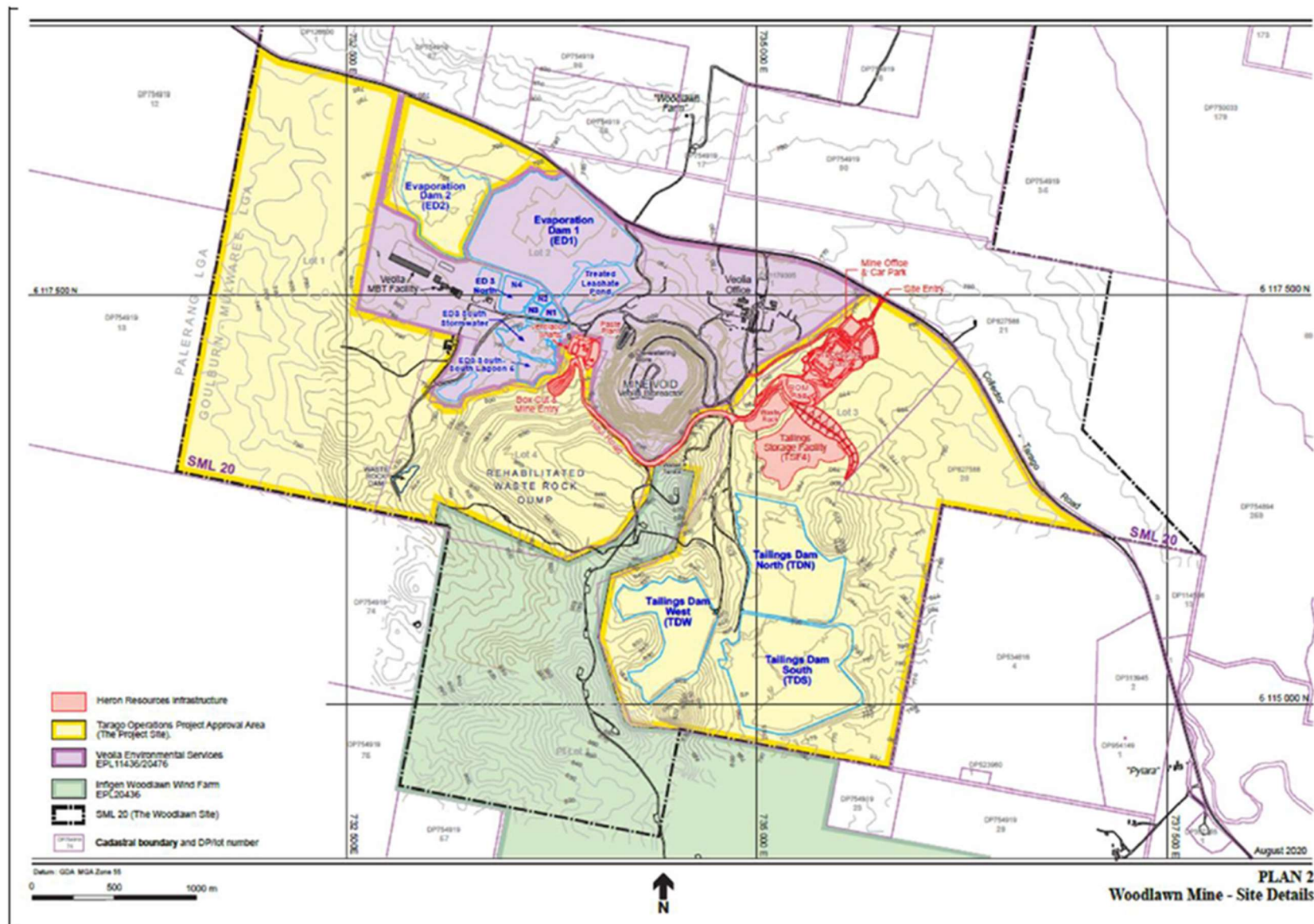
12. ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

The following activities are planned to be carried out during the 2023/24 reporting period in accordance with the Project Approval conditions:

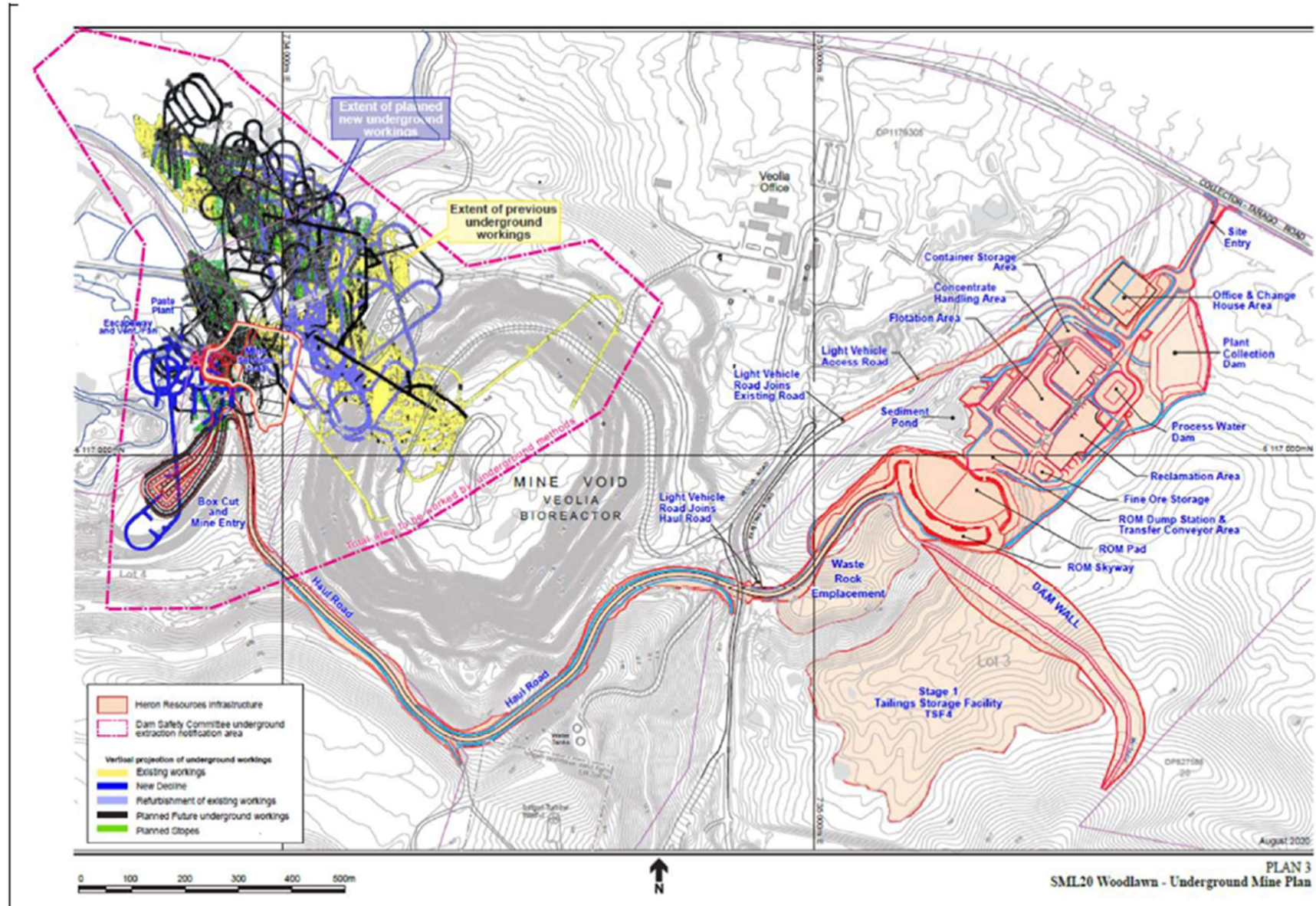
- Revised Environmental Management Strategy and plans to be finalised prior to operational restart and where appropriate resubmitted for Departmental approval.
- MOD3 to be submitted including the following issues:
 - Reorientation of the box cut and underground mine entry.
 - Updated layout of the paste plant facility.
 - Modification for the handling and storage of waste rock generated by the underground mine.
 - Variation of the time for development of a passive treatment system for the waste rock dam.
 - Removal of the condition contained in Schedule 3, Condition 1(g) regarding a possible leak from tailings dam south.
- Develop a scope of works for a passive treatment system for the Waste Rock Dam in accordance with Schedule 4, Condition 3 of the Consent.
- Implement a plan of work for any controls identified in the Risk Assessment carried out in response to the EPA Proposed Pollution Reduction Program – Condition U1.1 and U1.2 of EPL 20821 dated 26 July 2022 (section 11.3.3).
- Finalise outstanding works for any recommendations made by the independent experts in relation to Resources Regulator Section 240 Notice NTCE0009097 and NTCE 0011671 (Section 11.3.1 and 11.3.2).
Development a management strategy for waste rock and include in a revision of the waste rock management plan (Section 7.4.4).
- Migrate the environmental management system to Earthsoft EquiS data management system .

[illegible]

Plan 2. Woodlawn Mine Plan – Area of Operations



Plan 3. Woodlawn Mine Underground Mine Plan



Water Transfers

- Between ED1 and ED2
- From ED1 to Tarago Operations Processing Site
- From Old Plant Runoff Dam to Tarago Operations Processing Site
- From Woodlawn Dam to Tarago Operations Processing Site
- Between tailings dams and ED1
- From Waste Rock Dam to ED1
- From Veolia treated leachate / storm water to ED2 / process plant
- Underground water to evaporation dams

Legend

- Heron Resources Infrastructure
- Tarago Operations EPL20821
- Veolia Environmental Services EPL11436/20476
- Infigen Woodlawn Wind Farm EPL20436
- SML 20 (The Woodlawn Site)
- Cadastral boundary and DP/lot number

Map Labels: Evaporation Dam 2 (ED2), Evaporation Dam 1 (ED1), Treated Leachate Pond, Mine Office & Car Park, Site Entry, Tailings Storage Facility (TSF4), Tailings Dam North (TDN), Tailings Dam West (TDW), Tailings Dam South (TDS), REHABILITATED WASTE ROCK DUMP, MINE VOID, Veolia Office, MBT Facility, ED3 North, ED3 South, South Lagoon & Box CUL & Mine Entry, Woodlawn Park, Palarang LGA, GOULBURN-MUKWARRA LGA, SML 20, DP154819 12, DP154819 13, DP154819 14, DP154819 15, DP154819 16, DP154819 17, DP154819 18, DP154819 19, DP154819 20, DP154819 21, DP154819 22, DP154819 23, DP154819 24, DP154819 25, DP154819 26, DP154819 27, DP154819 28, DP154819 29, DP154819 30, DP154819 31, DP154819 32, DP154819 33, DP154819 34, DP154819 35, DP154819 36, DP154819 37, DP154819 38, DP154819 39, DP154819 40, DP154819 41, DP154819 42, DP154819 43, DP154819 44, DP154819 45, DP154819 46, DP154819 47, DP154819 48, DP154819 49, DP154819 50, DP154819 51, DP154819 52, DP154819 53, DP154819 54, DP154819 55, DP154819 56, DP154819 57, DP154819 58, DP154819 59, DP154819 60, DP154819 61, DP154819 62, DP154819 63, DP154819 64, DP154819 65, DP154819 66, DP154819 67, DP154819 68, DP154819 69, DP154819 70, DP154819 71, DP154819 72, DP154819 73, DP154819 74, DP154819 75, DP154819 76, DP154819 77, DP154819 78, DP154819 79, DP154819 80, DP154819 81, DP154819 82, DP154819 83, DP154819 84, DP154819 85, DP154819 86, DP154819 87, DP154819 88, DP154819 89, DP154819 90, DP154819 91, DP154819 92, DP154819 93, DP154819 94, DP154819 95, DP154819 96, DP154819 97, DP154819 98, DP154819 99, DP154819 100.

Scale: 0 500 1000 m

North Arrow: N

Map Date: August 2020

Map Title: Woodlawn Site EPL - Water Transfer

ENVIRONMENTAL MONITORING SITES & SITE NUMBER

- Groundwater
- Surface Water
- △ Dust
- △ Dust - HIRAS (High Volume Air Sampler)
- ▽ Subsurface Monitoring
- ⊗ Noise

OWNERSHIP OF MONITORING SITES

- Red: Veolia Environmental Services EPL 11436
- Blue: Tarago Operations EPL 20621
- Green: Shared EPL sites
- Orange: Tarago Operations SML 20 monitoring sites

PLAN 0
Woodlawn Project
Environmental Monitoring Sites