



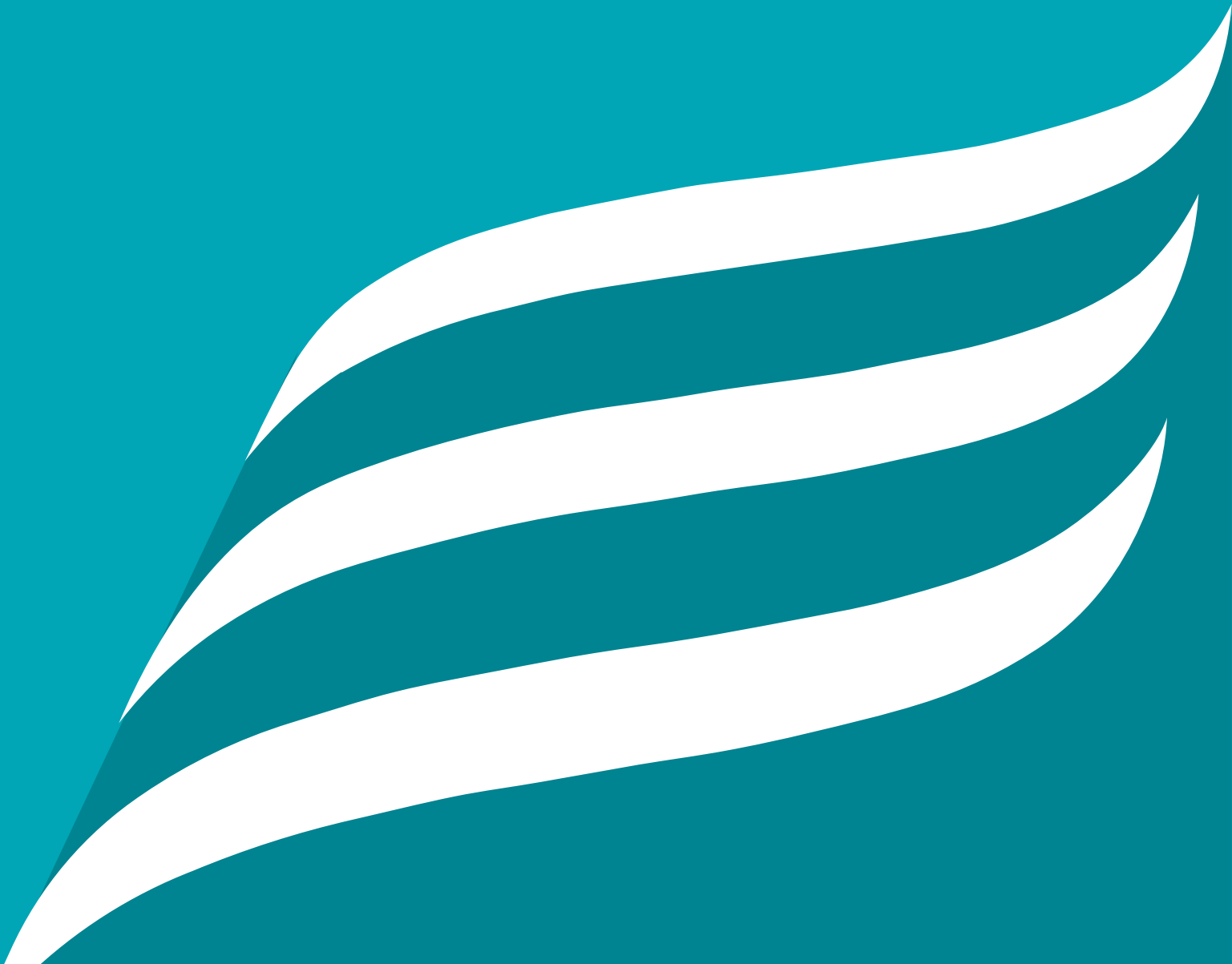
AIC MINES LIMITED

Underground Water Impact Report

Jericho Project

QC4036_002-REP-001-3

28 APRIL 2025



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1. INTRODUCTION

1.1 Context

The Jericho Project (the project) is a proposed Iron Sulphide Copper Gold (ISCG) mining operation being developed by AIC Jericho Pty Ltd (AICJ), a wholly owned subsidiary of AIC Mines Limited (AIC). The project is located in the McKinlay Shire Local Government Area (LGA), 60 km southeast of Cloncurry, and 155 km east-southeast of Mount Isa. The project is 4 km south of the existing AIC Eloise Copper Mine (ECM). The project site is proposed to cover a land area of approximately 30.56 hectares (ha); however, the Mining Lease (ML) area covers approximately 890 ha.

AICJ has been granted a standard Environmental Authority for preliminary mining activities which are granted within ML100348. The location of the Jericho project is shown on Figure 1.1.

1.2 Project Description

The project will involve the development of:

- Underground areas:
 - Underground work areas – including mine workings, 175 m to 500 metres below the surface.
 - Underground link drive – to connect underground work areas to AIC Mines' existing ECM. The underground link drive (ULD) will be used to transport ore, waste rock and water to ECM for processing, storage and export. The link drive will be between 150 m to 250 m below the surface and approximately 3 km in length running in a northerly direction.
- Surface areas:
 - Vent shaft compounds and access tracks to extract air from underground tunnel and mine working areas, includes access tracks to provide access to vent shaft surface areas for maintenance.
 - Co-located access tracks and power corridor approximately 5 km long and 20 metres (m) wide, the co-located powerline corridor will be used to provide high-voltage power from ECM to the project and allow for maintenance access.

The project is estimated to produce approximately 11,700 tonnes (t) of copper and 9,500 ounces (oz) of gold annually, with Run of Mine (ROM) ore peaking at 1.1 million tonnes per annum (Mt/A).

Minimal surface disturbance will be required during construction and operation. Waste rock produced by mining activities will be stored underground within voids at ECM or Jericho, with tailings stored in exiting tailings storage facilities at ECM. Construction will require approximately 20 personnel, operations will require up to 70, and accommodation will be provided at the nearby ECM Camp for up to 200 people. Power will be supplied by diesel generators at ECM, with a capacity of 1-1.5 MW, expandable to 4 MW.

Water needs will be met using groundwater sourced from underground activities, directed to ECM storage dams and used within mining and processing as needed.

1.3 Purpose and Legislative Requirements

The purpose of this report is to fulfil the legislative requirements of an Underground Water Impact Report (UWIR) in accordance with Chapter 3 of the *Water Act 2000* (Water Act). The purpose of a UWIR is to describe, make predictions about and manage the impacts of underground water extraction by the resource tenure holder.

The components of the UWIR which are required to meet the requirements of the *Water Act 2000* are described in Version 3.02 of the Guideline: Underground Water Impact Reports and Final Reports (Guideline), Department of Environment and Science (DES) (DES, 2017). Section 5 of the guideline describes specific components which are required to be included in a UWIR.

Table 1.1 provides a cross-reference table for the UWIR guideline requirements.

TABLE 1.1: WATER ACT PROVISIONS

Water Act Provision	Sub-Provision	UWIR Section
S3761(1) (a) for the area to which the report relates	i. The quantity of water produced or taken from the area because of the exercise of any previous relevant underground water rights; and	Section 3, Section 3.1
	ii. An estimate of the quantity of water to be produced or taken because of the exercise of the relevant underground water rights for a 3-year period starting on the consultation day for the report;	Section 3.2
S376 (1) (b) For each aquifer affected, or likely to be affected, by the exercise of the relevant underground water rights -	i. A description of the aquifer; and	Section 4.2
	ii. An analysis of the movement of underground water to and from the aquifer, including how the aquifer interacts with other aquifers; and	Section 4.3
	iii. An analysis of the trends in water level change for the aquifer because of the exercise of the rights mentioned in paragraph (a)(i); and	Section 5
	iv. A map showing the area of the aquifer where the water level is predicted to decline, because of the taking of the quantities of water mentioned in paragraph (a), by more than the bore trigger threshold within 3 years after the consultation day or the report;	Figure 5.1, Figure 5.2, Figure 5.3
	v. A map showing the area of the aquifer where the water level is predicted to decline, because of the exercise of relevant underground water rights, by more than the bore trigger threshold at any time;	Figure 5.4, Figure 5.6, Figure 5.8
S376 (1) (c) A description of the methods and techniques used to obtain the information and predictions under paragraph (b);	-	Section 5
S376 (1) (d) A summary of information about all water bores in the area shown on a map mentioned in paragraph (b)(iv), including the number of bores, and the location and authorised use or purpose of each bore;	-	Section 2.6
S376 (1) (da) A description of the impacts on environmental values that have occurred, or are likely to occur, because of any previous exercise of underground water rights;	-	Section 6
S376 (1) (db) An assessment of the likely impacts on environmental values that will occur, or are likely to occur, because of the exercise of underground water rights -	i. During the period mentioned in paragraph (a)(ii); and	Section 6
	ii. Over the projected life of the resource tenure;	Section 6.3.2, Figure 6.1

Water Act Provision	Sub-Provision	UWIR Section
S376 (1) (e) A program for -	i. Conducting an annual review of the accuracy of each map prepared under paragraph (b)(iv) and (v); and	Section 5.5
	ii. Giving the chief executive a summary of the outcome of each review, including a statement of whether there has been a material change in the information or predictions used to prepare the maps;	Section 6.4
S376 (1) (f) A water monitoring strategy as provided in s378	-	Section 7.2
S376 (1) (g) A spring management strategy;	-	Section 8
S376 (1) (h) If the responsible entity is the office	i. A proposed responsible tenure holder for each report obligation mentioned in the report; and	Not Applicable
	ii. For each immediately affected area – the proposed responsible tenure holder or holders who must comply with any make good obligations for water bores within the immediately affected area;	Not Applicable
S376 (1) (i) Other information or matters prescribed under a regulation.	-	Not Applicable
S376 (2) However, if the underground water impact report does not show any predicted water level decline in any area of an affected aquifer by more than the bore trigger threshold during the period mentioned in subsection (1)(b)(iv) or at any time as mentioned in subsection (1)(b)(v), the report does not have to include the program mentioned in subsection (1)(c)	-	Not Applicable
S378 1(a) Water Monitoring Strategy	i. Strategy for monitoring the quantity of water produced or taken from the area because of the exercise of relevant underground water rights; and	Section 7.2
	ii. Changes in the water level of, and the quality of water in, aquifers in the area because of the exercise of the rights;	Section 6.3
S378 (b) The rationale for the strategy;	-	Section 7.1
S378 (c) A timetable for implementing the strategy;	-	Section 7.2
S378 (d) A program for reporting to the office about the implementation of the strategy.	-	Section 7.6
S378 (2) The strategy must include:	a) the parameters to be measures; and	Section 7.3
	b) the locations for taking the measurements; and	
	c) the frequency of the measurements.	

Water Act Provision	Sub-Provision	UWIR Section
S378 (3) If the strategy is prepared for an UWIR, the strategy must also include a program for the responsible tenure holder or holders under the report to undertake a baseline assessment for each water bore that is:	a) Outside the area of a resource tenure; but b) Within the area shown on the map prepared under section 378 (b)(v).	Not Applicable
S378 (4) If the strategy is prepared for a final report, the strategy must also include a statement about any matters under a previous strategy that have not yet been complied with.	-	Not Applicable

1.3.1 Water Act 2000

The Queensland *Water Act 2000* (Water Act) regulates the planning, supply, and allocation management of water resources in Queensland. The Water Act establishes a head of power for issuing water licences for the taking of water from a location or the interference with water at a location including the management of impacts on groundwater caused by the exercise of underground water rights by the resource sector. It is intended to:

- Sustain the health of ecosystems, water quality, water-dependent ecosystems and biological diversity.
- Recognise the interests of Aboriginal people and Torres Strait Islanders.
- Enable fair access to water resources in support of economic development.
- Promote the efficient use of water.

The Water Act provides for Water Plans to be prepared on a catchment-by-catchment basis to sustainably manage and allocate water resources in Queensland. They have been developed to balance water allocations for human use with environmental flows (that is, leaving water in a watercourse or aquifer to maintain natural processes), and may apply to rivers, lakes and springs, overland flow, and underground water (groundwater).

Chapter 3 of the *Water Act 2000* provides for the management of impacts on underground water (groundwater) due to the exercise of underground water rights by resource tenure holders. It provides a regulatory framework that requires a resource tenure holder to:

- Monitor and assess the impacts of groundwater extraction associated with resources extraction on water bores and springs.
- Prepare underground water impact reports (UWIR) that establish obligations to monitor and manage impacts on aquifers and springs.
- Manage the cumulative impacts due to the exercise of two or more resource tenure holders' underground water rights.
- Enter into good agreements with owners of bores impacted by the exercise of underground water rights.

The initial UWIR for a mineral development license or mining lease is required prior to the exercise of the underground water rights.

1.3.1.1 Bore Trigger Thresholds

Sections 376(b)(iv) and 376(b)(v) of the Water Act refers to bore trigger thresholds. As defined in the Water Act, a bore trigger threshold for an aquifer means a decline in the water level that is:

- Five metres (m) for consolidated aquifers (e.g. Sandstones, shale).
- Two metres for unconsolidated aquifers (e.g. Sand/alluvial aquifers).

The area within which water levels are predicted to be lowered in an aquifer by more than the bore trigger threshold within three years, due to water extraction, is referred to as the Immediately Affected Area (IAA).

The area within which water levels are predicted to be lowered by more than the bore trigger threshold in the long term, due to water extraction, is referred to as the Long-term Affected Area (LTAA).

1.3.1.2 Water Plan

The Water Plan applicable to groundwater in the project study area is:

- Water Plan (Gulf) 2007 (Great Artesian Basin Groundwater Management Area).

The Water Plan overlying the mine area is the:

- Water Plan (Great Artesian Basin and Other Regional Aquifers) 2017 (GABORA).

The mineral deposit at the site is wholly within the Soldiers Cap Group (Proterozoic metasediments) basement rocks, which are in the Water Plan (Gulf) 2007. These rocks are a meta-sedimentary sequence of rocks are stratigraphically beneath the GABORA sedimentary rocks.

An overview of the GABORA Water Plan groundwater units that overlie the project are provided in Table 1.2.

TABLE 1.2: GABORA GROUNDWATER UNITS WITHIN THE STUDY AREA

Groundwater Unit	Groundwater Sub-Area(s)	Geological Formation
Rolling Downs	Eromanga Wallumbilla	Wallumbilla Formation
Hooray	Eromanga West Hooray	Gilbert River Formation

1.3.1.3 Water Regulation 2016

The Water Regulation (2016) supports the Water Act relating to the identification of watercourses. The Water Regulation defines Great Artesian Basin plan related water as:

- (a) water to which the Water Plan (Great Artesian Basin and Other Regional Aquifers) 2017 applies, other than the water in:
 - (i) the Betts Creek beds groundwater unit.
 - (ii) the Cape Rolling Downs groundwater sub-area.
 - (iii) the Normanton groundwater area.
 - (iv) the Winton Mackunda groundwater unit.

- (b) water that is accessible by drilling through water mentioned in paragraph (a).

The proposed project consisting of the link drive from the ECM, and the underground mining of the Jericho mineral deposit is wholly within the Soldiers Cap Group (Proterozoic metasediments) basement rocks, which are stratigraphically beneath the GABORA sedimentary rocks (refer to Table 1.2) and therefore in the Water Plan (Gulf) 2007.

1.3.1.4 Great Artesian Basin & Other Regional Aquifers Water Management Protocol

The *GABORA Water Management Protocol* (Department of Natural Resources and Mining (DNRME) 2017) (hereafter referred to as the GABORA Protocol) provides the framework for the implementation of the GABORA, specifically:

- The protection of flows to GDEs, by ensuring cumulative drawdown is less than 0.4 metres (m) at nominated GDE locations, and that the point of take is greater than 5 km.
- The protection of existing licenses, by ensuring new take is a sufficient distance from existing locations and the drawdown is due to the proposed take is less than 5 m at all existing takes in that groundwater unit.
- Rules for relocation, whereby relocation may not be between different zones, into a shallower unit, and only into sub-areas as specified in the GABORA Protocol.
- Sharing of water licenses.
- Rules for seasonal water assignment.

The GABORA Protocol relates to potential groundwater extraction from the GAB aquifers for Project activities. Where such activities are proposed, the drawdown may be estimated through a hydrogeological assessment that includes suitable studies. The period of such an assessment must be at least 100 years from the commencement of the proposed water take.

1.4 Report structure

The structure of this UWIR has been prepared in accordance with that outlined in the Guideline: (Water Act 2000) Underground Water Impact Reports and Final Reports (DES, 2021) (UWIR Guideline). This guideline specifies that a UWIR must contain information that has been outlined in each of the following parts of the guideline:

- Background and existing environment.
- Part A: Information about underground water extractions resulting from the exercise of underground water rights.
- Part B: Information about aquifers affected, or likely to be affected.
- Part C: Maps showing the area of the affected aquifer(s) where underground water levels are expected to decline.
- Part D: An assessment of the impacts to the environmental values from the exercise of underground water rights.

- Part E: A water monitoring strategy.
- Part F: A spring impact management strategy.
- Part G: For a CMA, assignment of responsibilities to resource tenure holders.

Part G is not required as part of this UWIR as the Jericho project is not located within a cumulative management area (CMA).

The relevant Water Act requirements for each part of the UWIR Guideline above are listed at the beginning of the relevant sections in this report.

1.5 Report Consultation Day

Section 322(1) of the Water Act defines the consultation day of a UWIR as ‘the day a notice is first published about the proposed report’. The commencement date of the UWIR will be the date that it is approved by the Chief Executive.

The Jericho project is required to provide a UWIR for its predicted take for the period of three years from the consultation day and then subsequent reports within 10 days of the day which is three years after the commencement date.

The exercise of underground water rights associated with the Jericho mine will commence in Q1 2025.

1.6 Summary of Public Consultation

In accordance with section 381 of the Water Act, AICJ prepared the first UWIR for the project and released a consultation draft for public consultation on 13 December 2024. All bore owners were notified of the availability of the report, public consultation sessions were held in December 2024 and January 2025. Consultation closed on 15 January 2024 and no written submissions were received by the close of business on the 17 January 2025 prior to submitting the final UWIR.

A summary of the consultation process, the feedback received, and the way AICJ has considered feedback in preparing the final UWIR for approval by the administering authority is available in Appendix D:.

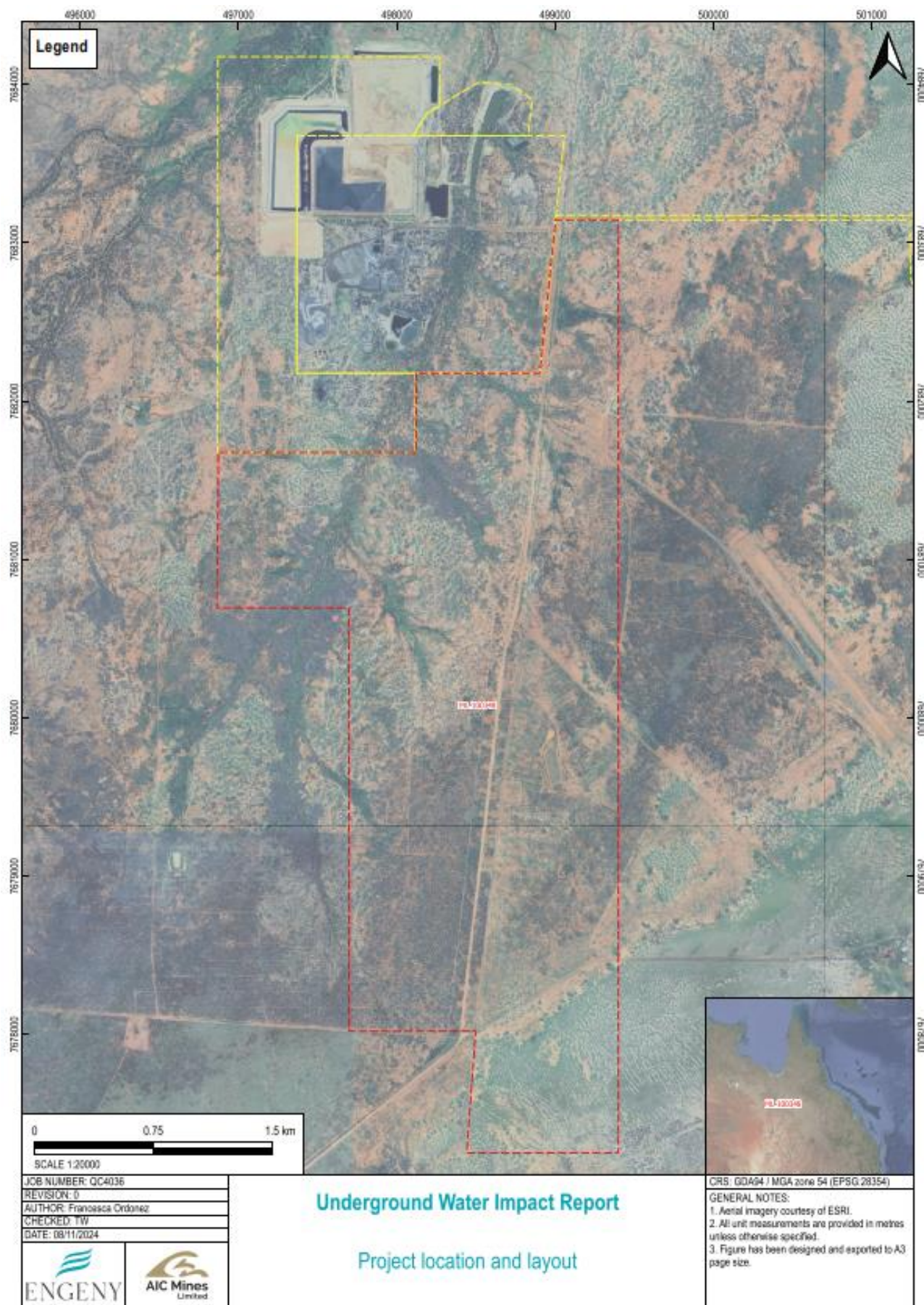


FIGURE 1.1: PROJECT LOCATION AND LAYOUT

2. BACKGROUND

2.1 Study Area

The study area for the groundwater assessment encompasses a 5 km wide buffer around the extent of the proposed Jericho underground mine development area. The study area has been selected to characterise the existing hydrogeological environment in context of the project and incorporate the potential extent of the project's influence on local groundwater units and environmental values (EVs), such as groundwater dependent ecosystems (GDEs), third-party water bores, or aquatic ecosystems. Potential cumulative impacts from ECM were considered in the assessment.

2.2 Climate

The project has a prevailing hot semi-arid climate (Köppen: BSh Trewartha: BShb) with two distinct seasons. There is a pronounced wet season from December to March and a warm to hot, generally rainless dry season typically extending from April to November.

Climate data for the project has been sourced from the Queensland Government's SILO database (SILO, 2024). SILO produces interpolated measurements based on data from surrounding Bureau of Meteorology (BoM) stations. For this assessment, SILO data was obtained for the at location -21.00, 141.00.

Monthly rainfall for the project area is shown in Figure 2.1 and is highly seasonal. On average, the project area receives 408 millimetres (mm) of rainfall per year. Most of this rainfall occurs during the wet season months December - March. Monthly evaporation data for the project area is shown in Figure 2.2. The monthly evaporation has a similar trend to the monthly rainfall, with the highest evaporation rates occurring in December - March. In each month of the year, average evaporation exceeds average rainfall.

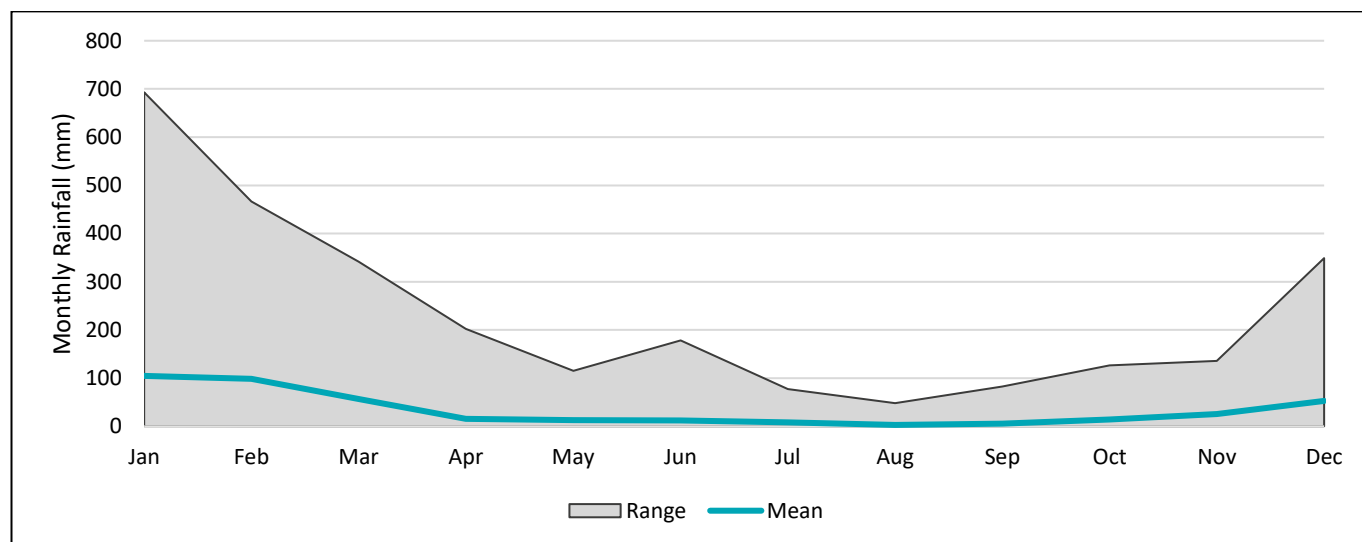


FIGURE 2.1: SUMMARY OF RAINFALL DATA FOR THE PROJECT AREA (SILO, 2024)

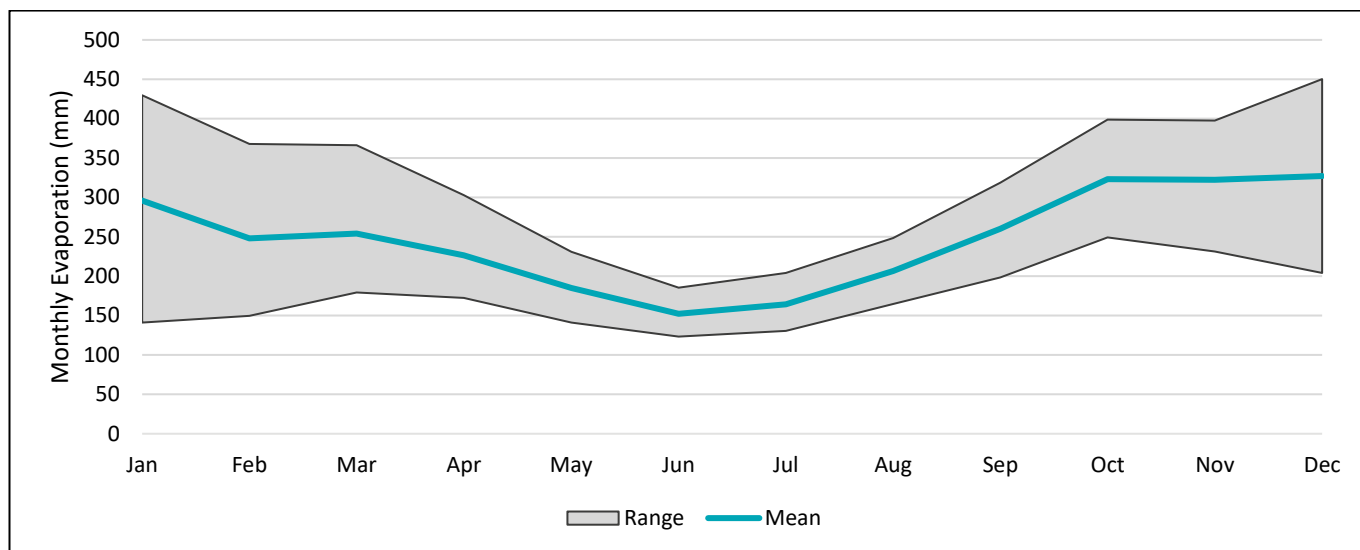


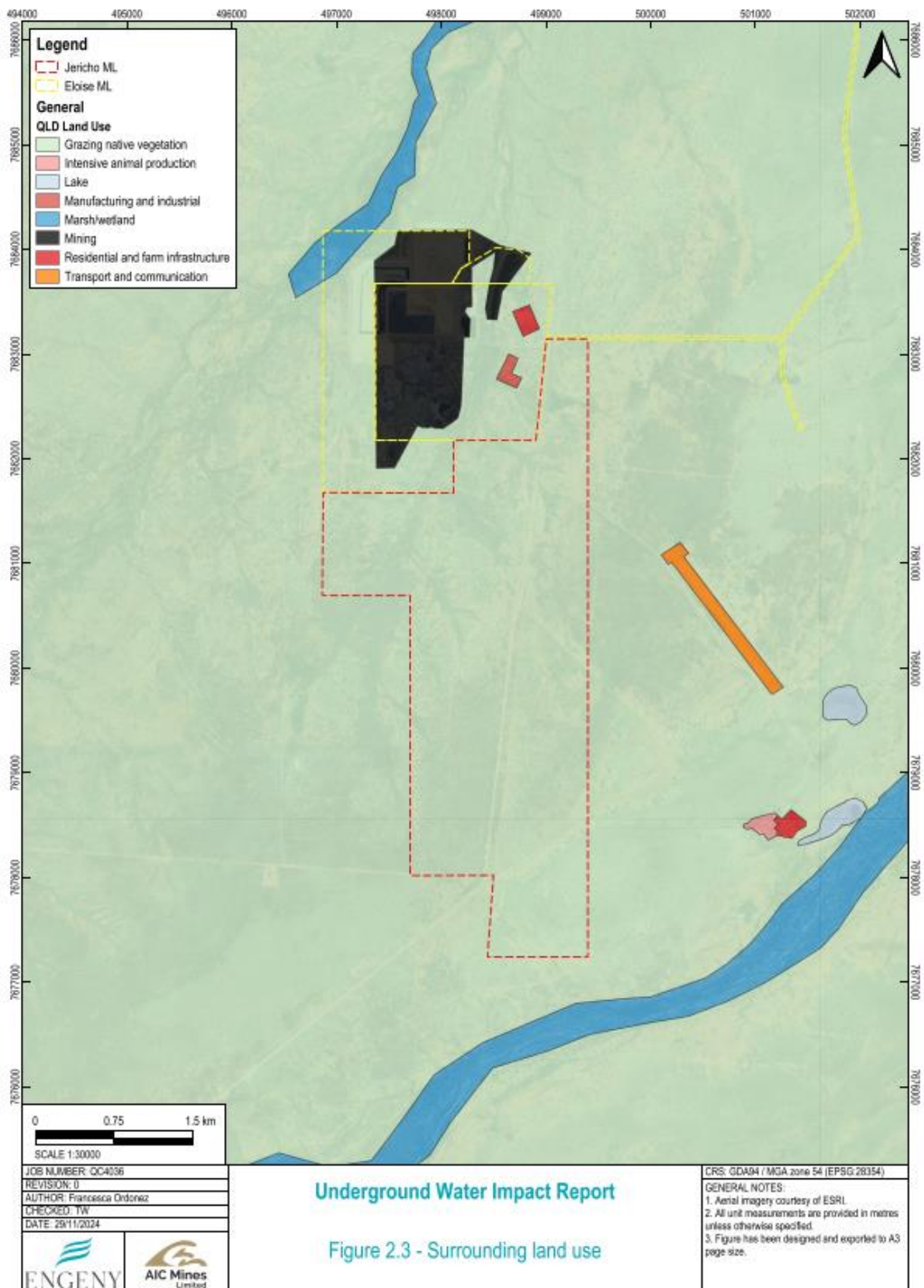
FIGURE 2.2: SUMMARY OF EVAPORATION DATA FOR THE PROJECT AREA (SILO, 2024)

2.3 Topography

The existing topography within and adjacent to the project area ranges between 181 mAHD and 201 mAHD. The highest point within the project ML is in the south-west corner of the mining lease area. From this point, the project area slopes down relatively gently (grades of approximately 1%) towards the first and second order tributaries of Scrubby Creek to the north, and the Fullarton River in the south.

2.4 Land Use

Land use in and immediately surrounding the mining lease is grazing native vegetation. An area of residential and intensive animal husbandry is located approximately 1.5 km east of the southern portion of the mining lease. An area mapped as transport and communication (assumed to be an airstrip) is located approximately 1 km east of the mining lease. Mining is noted as the land use to the north, along with an area of waste treatment and disposal and residential (assumed to be the mining camp). An extract of the surrounding land use obtained from Queensland Globe (Queensland Government, 2024c) is presented in Figure 2.3.



Underground Water Impact Report

Figure 2.3 - Surrounding land use

FIGURE 2.3: SURROUNDING LAND USE

2.5 Surface Water Features

Several first and second order tributaries traverse the MLA area (Refer to Figure 2.5). All but one of these are mapped as Drainage Features under the *Water Act 2000* (Water Act) and flow in a northerly direction into the second order tributary known as 'Scrubby Creek East'. The remaining waterway is mapped as 'unmapped' under the Water Act but is still a first order tributary in the very southern end of the MLA area flowing south into the Fullarton River and would also likely constitute a Drainage Feature under the Water Act. There are no Watercourses mapped under the Water Act within the MLA area.

All infrastructure is located within the local catchment of Scrubby Creek East with no interaction with the Fullarton River catchment to the south. The majority of the surface infrastructure for the project (everything except the power line corridor) is located within the south-west corner of the MLA area and as such there is no interaction with any Drainage Features. The powerline corridor crosses up to three minor first order Drainage Features but is offset from the main Scrubby Creek East drainage path by at least 500 metres.

Outside of the MLA area, Scrubby Creek East continues to flow in a northerly direction through the adjacent ECM until its confluence with Scrubby Creek approximately 5 km north of the MLA area. Scrubby Creek eventually joins the Fullarton River far north of the project site. The Fullarton River then flows downstream into the Cloncurry River.

2.5.1 Wetlands

According to *WetlandMaps* (Queensland Government Department of Environment and Science, 2019), the closest non-lacustrine wetland areas to the project area are located approximately 2.5 km to the south-east (refer to Figure 2.6). These wetlands are classified as modified palustrine wetlands (i.e., inland, nontidal wetlands characterised by the presence of trees, shrubs and emergent vegetation). The Fullarton River to the south of the project area is also mapped as a riverine wetland (i.e., wetlands found along the edges of rivers, streams and creeks) with no observed modifications.

As all proposed surface infrastructure is located within the Scrubby Creek local catchment, it is not expected that the project will influence or interact with these wetland areas.

The location of the mapped wetlands is shown on Figure 2.6.



Figure 2.5

Site Hydrology and Fluvial Networks
Jericho Mine
Surface Water Impact Assessment



Legend

-  Concurry River Sub Basin
-  Flinders River Catchment
-  Mining Lease Application



0 50 100 km
Kilometers

Scale @ A4 1:3,000,000
Date: 22/1/2024
Drawn By: HB
Project Number: QC4036_001

FIGURE 2.4: PROJECT AREA WITHIN REGIONAL AND LOCAL CATCHMENTS

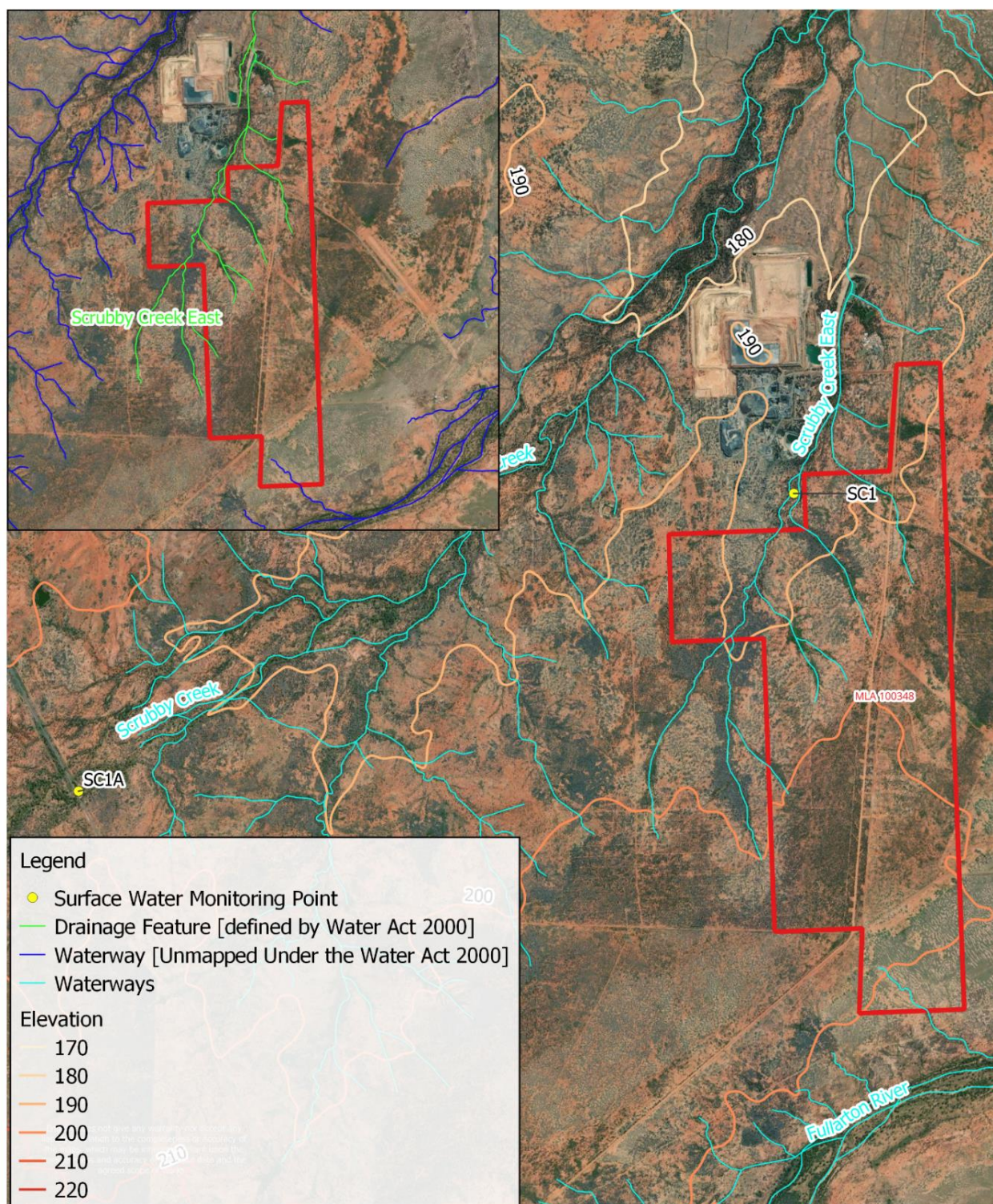


Figure 2.6
Surface Water Features
Jericho Mine
Surface Water Impact Assessment

FIGURE 2.5: SURFACE WATER FEATURES WITHIN AND ADJACENT TO THE PROJECT AREA

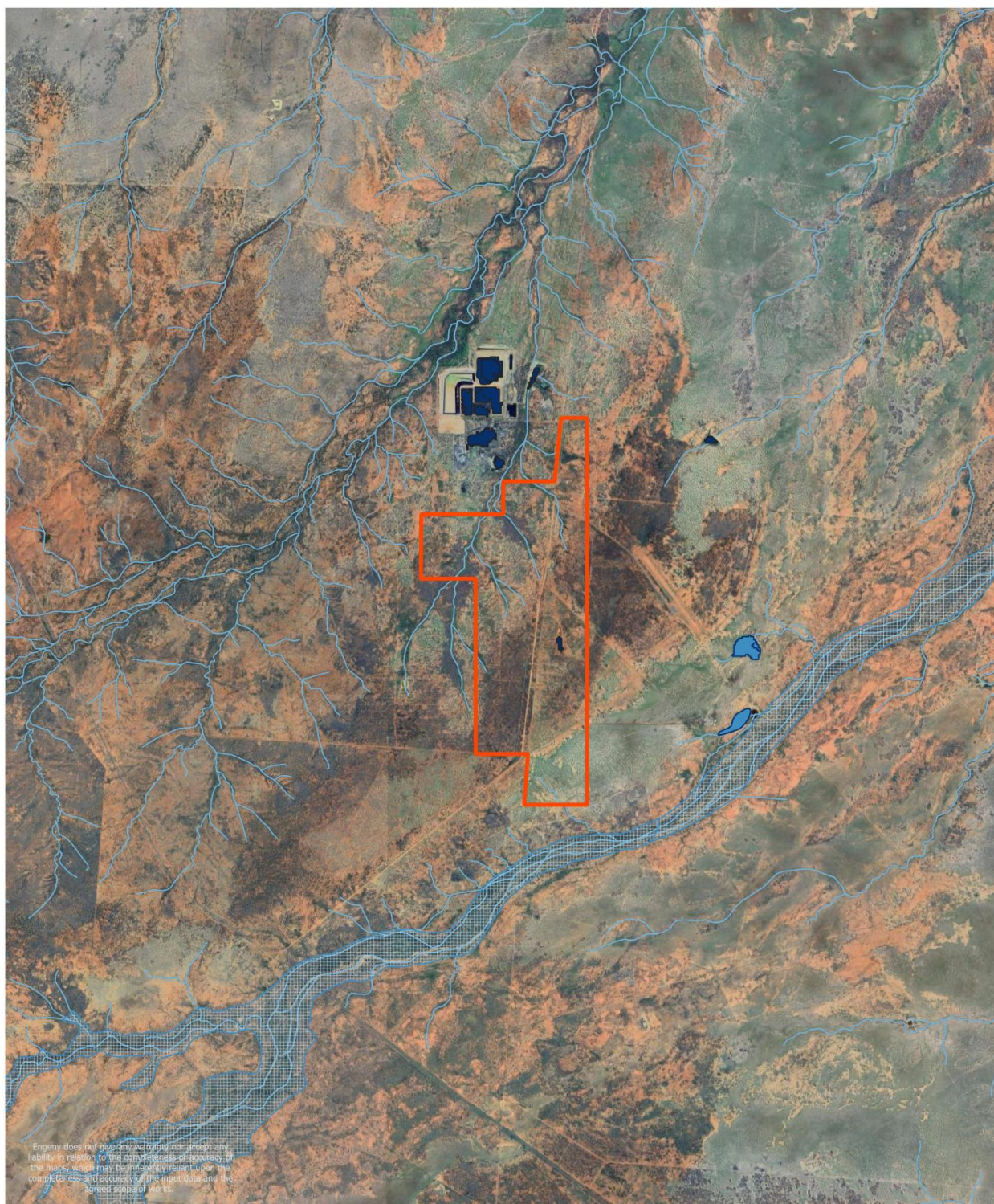


Figure 2-7

Wetlands Mapped in the Vicinity of the Project Area
Jericho Mine
Surface Water Impact Assessment

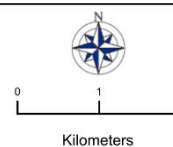


Legend

- Jericho Mining Lease Application
- Waterways

Wetland Areas

- Lacustrine
- Palustrine
- Riverine



Scale @ A4 1:75,000
Date: 22/1/2024
Drawn By: MB
Project Number: QC4036_002

FIGURE 2.6: WETLANDS MAPPED IN THE VICINITY OF THE PROJECT AREA

2.6 Sensitive Receivers

Sensitive receivers and Environmental Values (EV) near the projects and an assessment of potential groundwater impacts is required to understand which EVs may be impacted. Accordingly, Section 6 of this report identifies the EVs that may be impacted by the proposed activity as per the EP Act requirements. These sections are also to be read in conjunction with Section 1.3.

The following sections outline the existing sensitive receivers in the area, such as underground water users, environmentally sensitive areas, springs, and Groundwater Dependent Ecosystems (GDEs).

2.6.1 Underground Water Users Bore Record Search

A search of private registered groundwater bores (Queensland Government, 2024c) shows the presence of one hundred and thirteen (113) registered bores within a 5 km radius of the site. Many the registered bores (108) are shallow groundwater monitoring bores associated with the ECM groundwater monitoring and are not considered as underground water users.

A search of registered bores from the QLD spatial database groundwater data website (Queensland government, 2024b) identified seven (7) underground water bores. None of the bores are within the project tenement area of Mining Lease (ML) 100348.

One registered bore (RN93345) is listed as abandoned but usable and four are listed as abandoned and destroyed. Water quality (where provided) is generally fresh to slightly saline with neutral to moderately alkaline pH. The status and use of the registered underground water uses in the study area are detailed in Table 2.1 and shown on Figure 2.7.

There are two registered bores with water licences in the study area (Licence 93029J and 93047J). Locations of registered water licences are also shown on Figure 2.7.

Groundwater levels and groundwater quality available from a search of registered bores from the QLD spatial database groundwater data website (Queensland government, 2024b) identified seven (7) underground water bores that have groundwater level and/or quality measurement records available. Seven registered bores have water level data recorded, and four have groundwater quality on the drilling logs or measured after drilling. Table 2.1 summarises the surrounding underground water uses in the study area.

TABLE 2.1: SURROUNNDING UNDERGROUND WATER USERS

Bore ID Name	Distance and direction from lease boundary	Status/Use	Depth (m)	Aquifer (m)	Screen/open hole (m)	Strata description / Formation name*
RN118181 Supplementary Bore	1.5 km east	Existing	48.0	30 -	30 - 48	Granite/ Soldiers Cap Group - undiff
RN93345 Elrose House Bore	1.7 km east	Abandoned but still usable	30.5	18 - 30	23 – 30.5	Hard quartzite/ Not recorded
RN93349 Comet Bore	1.7 km south	Existing	122.0	Not recorded	110 - 122	Not recorded
RN93719 Van Latham Bore	4.7 km south-west	Existing	72.0	15 -, 54 -	14 – 21 54 - 72	Sandstone/ Wallumbilla Formation
RN163019 Levuka 1	1.9 km south-west	Existing / Water Supply	48.0	41 - 42	33 - 45	Black shale/ Not recorded
RN163020	4.2 km north-west	Existing / Water Supply	42.0	33 - 34	30 - 42	Black shale/ Not recorded
RN184894	4.6 km north-west	Existing	78.0	60 – 78	60 - 78	NR (white sand with schist)/ Not recorded

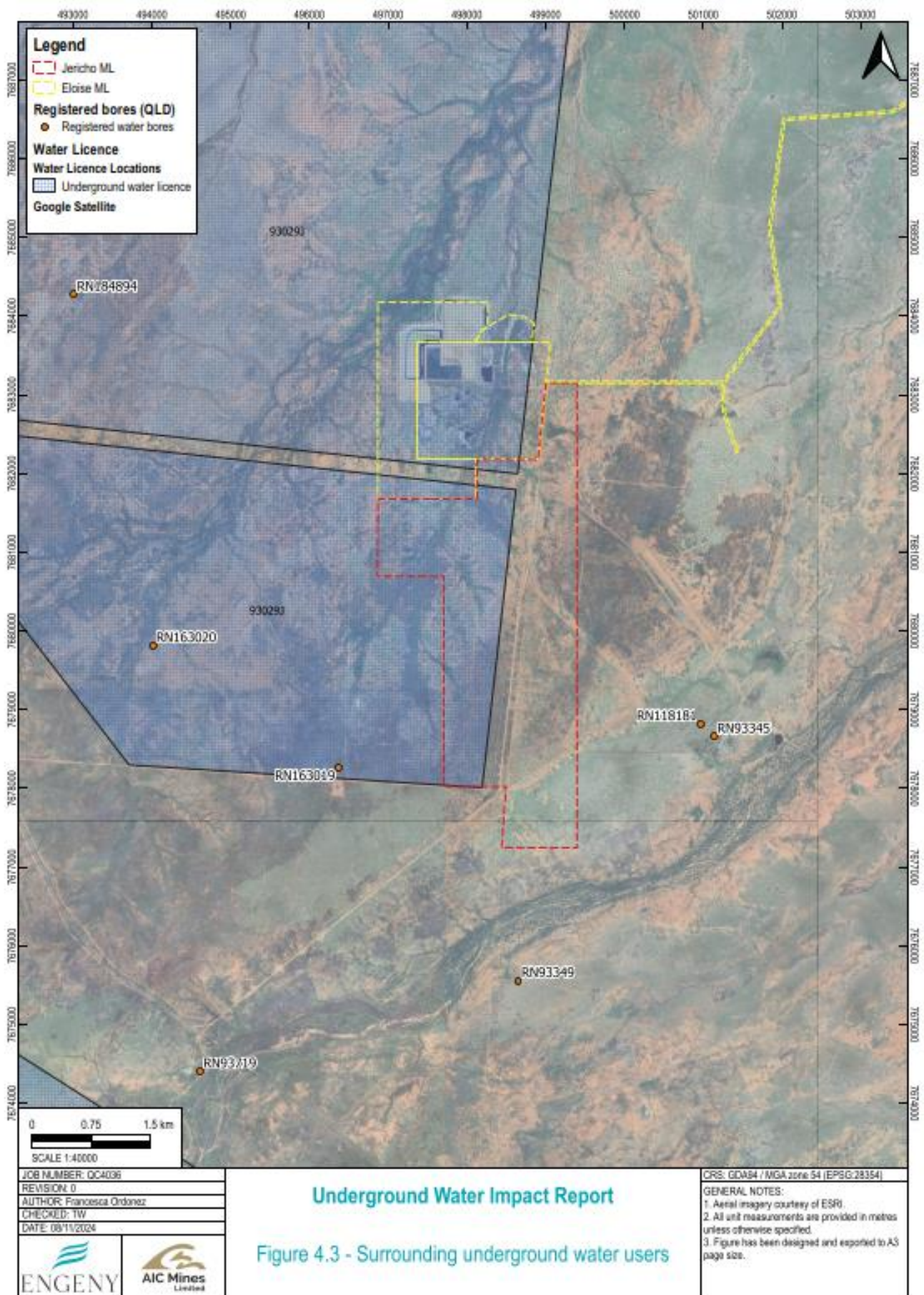


FIGURE 2.7: UNDERGROUND WATER USERS

2.6.2 Environmentally Sensitive Areas

A Category B Environmentally Sensitive Area (ESA) associated with the endangered Regional Ecosystem (RE) 1.3.7 (*Eucalyptus camaldulensis* woodland on channels and levees) is mapped in the north-west corner of the MLA area (Queensland Government, 2024c). However, this ESA was not identified during the field survey undertaken for the project (Epic Environmental, 2023). Engeny understand at the time of writing this report that an application is being made to update the property map of assessable vegetation (PMAV) to confirm that no ESA exist within the surveyed area. The potential impacts on the ESA, with regard to groundwater has been assessed. The mapped Category B ESA is shown on Figure 2.8.

2.6.3 Springs

There are no permanently, intermittently, or inactive springs mapped within the study area (Queensland Government, 2024d).

2.6.4 Groundwater Dependent Ecosystems (GDEs)

The GDEs are defined as: *“ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services”* (DES, 2022).

A search of the Australian Government Bureau of Meteorology Groundwater Dependent Ecosystem (GDE) Atlas (BoM, 2024) shows the presence of:

- High potential Terrestrial GDE from national assessment in the Fullarton River, approximately 0.5 km south of ML100348.
- Moderate potential Aquatic GDE from national assessment in the Fullarton River, approximately 1.1km east of ML100348.
- Low potential Terrestrial GDE from national assessment within ML100348, to the north in Scrubby Creek.
- Low potential Aquatic GDE wetland from national assessment approximately 2.2km east of ML100348.

Figure 2.9 illustrates GDEs obtained from the GDE Atlas. Overall, GDEs are considered to not occur in the Soldiers Cap Group (Proterozoic metasediments) aquifer, due to the depth of the confined aquifer, no hydraulic connection with the shallow Tertiary sediments, and poor water quality. The depth to water in the study area in the tertiary sediments is greater than 10 m, therefore GDEs would not be supported due to the depth to the water table.

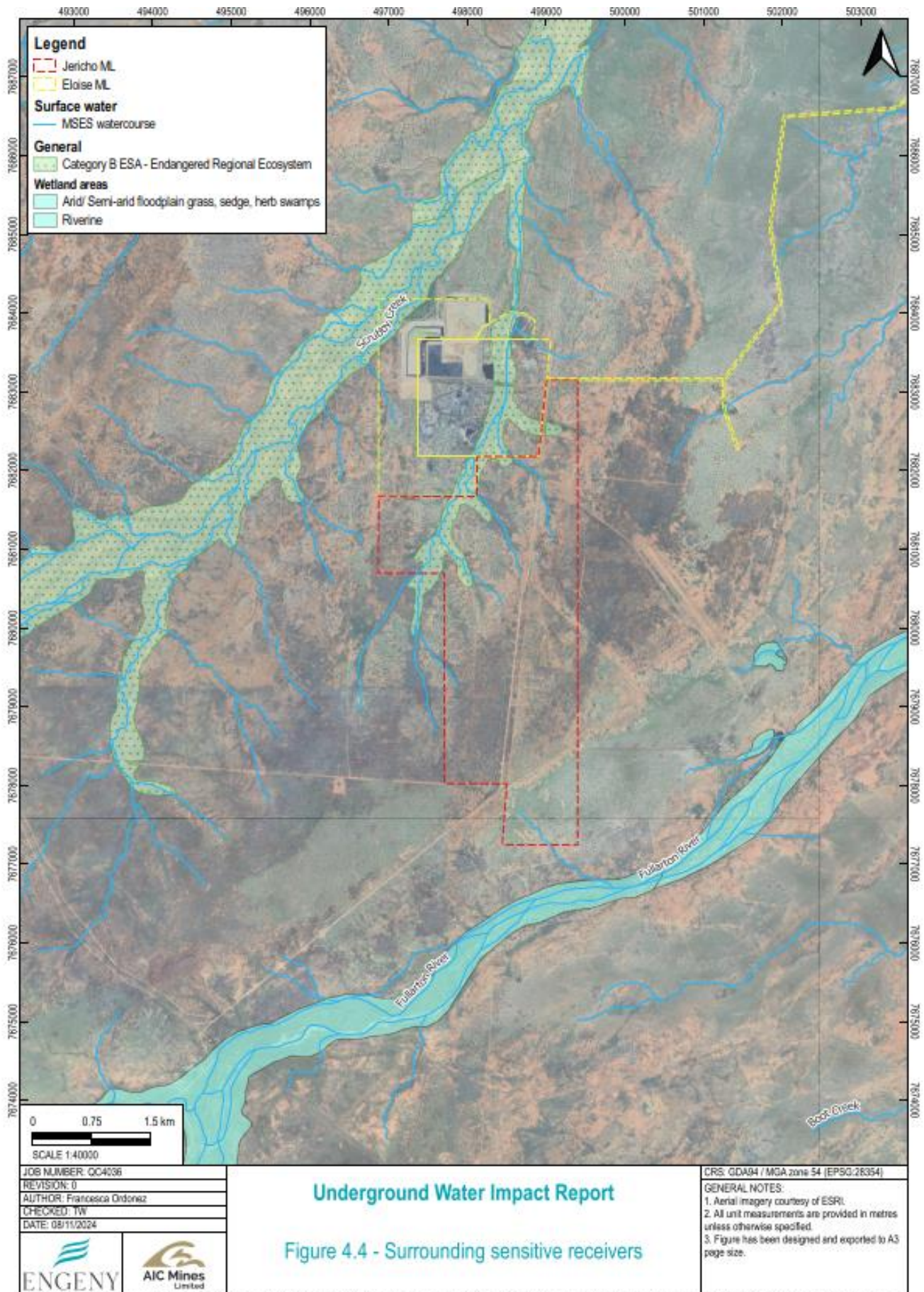


FIGURE 2.8: SENSITIVE RECEIVERS MAPPED IN THE VICINITY OF THE PROJECT

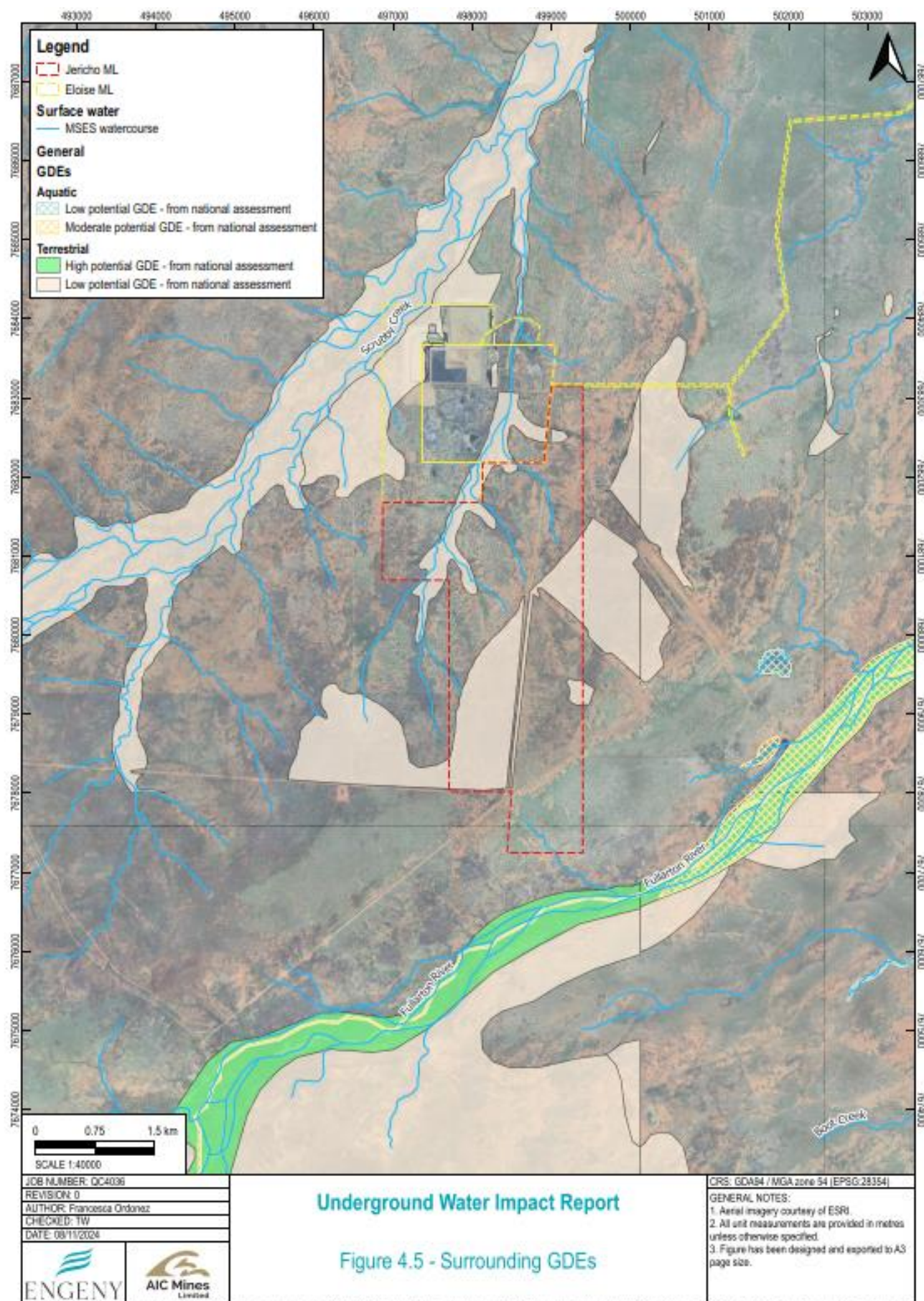


FIGURE 2.9: GROUNDWATER DEPENDENT ECOSYSTEMS

2.7 Jericho Monitoring Network

The groundwater monitoring network at Jericho consists of thirteen (13) monitoring bores at various depths. Monitoring bore 23JEWB001-23JEWB0010, were installed in July 2023. Three (3) monitoring bores (24JEWB011, 24JEWB015, and 24JEWB016) are associated with the ULD to establish baseline hydrogeologic conditions, were installed in August 2024, and have been incorporated into the monitoring network used for this report.

The existing Jericho groundwater monitoring bore network is outlined in Table 2.2 (summarises the location, target formation and construction details for each of the monitoring bores) and shown on Figure 2.10. The monitoring bore construction logs are provided in Appendix A:.

2.7.1 Jericho Monitoring and Sampling Information

The Jericho monitoring and sampling information collected between October 2023 and November 2024 is summarised in Table 2.2. The monitoring results have been used to determine the baseline groundwater level and quality conditions at the site and have been used in this report.

TABLE 2.2: JERICHO GROUNDWATER MONITORING AND SAMPLING SUMMARY

ID	Screened geology	Screen (mbGL)	Interval	Number of groundwater level measurements	Number of groundwater quality analysis	Hydraulic test
23JEWB001	Wallumbilla Formation	37 - 40		17	17	Yes
23JEWB002	Wallumbilla Formation	45 - 48		Measured as dry (x16)*	0	-
23JEWB003	Gilbert River Formation	70 - 73		15 (1 measured as dry)*	15	Yes
23JEWB004	Tertiary Sediments	7 - 10		Measured as dry (x16)*	0	-
23JEWB005	Tertiary Sediments	7 - 10		Measured as dry (x17)*	0	-
23JEWB006	Tertiary Sediments	7 - 10		Measured as dry (x17)*	0	-
23JEWB007	Wallumbilla Formation	60 - 63		13 (5 measured as dry)*	12	Yes
23JEWB008	Wallumbilla Formation	41 - 44		16	15	Yes
23JEWB009	Wallumbilla Formation	42 - 45		17	17	Yes
23JEWB010	Soldiers Cap Group (Proterozoic metasediments)	70.5 – 73.5		9 (8 measured as dry)*	9	Yes
24JEWB011	Soldiers Cap Group (Proterozoic metasediments)	52 – 55		6 (1 measured as dry)*	6	-
24JEWB015	Soldiers Cap Group (Proterozoic metasediments)	64 – 67		Measured as dry (x7)*	0	-
24JEWB016	Wallumbilla Formation	66 - 69		5 (3 measured as dry)*	5	-

Note: mbGL metres below ground level. * number of measurements measured as dry.

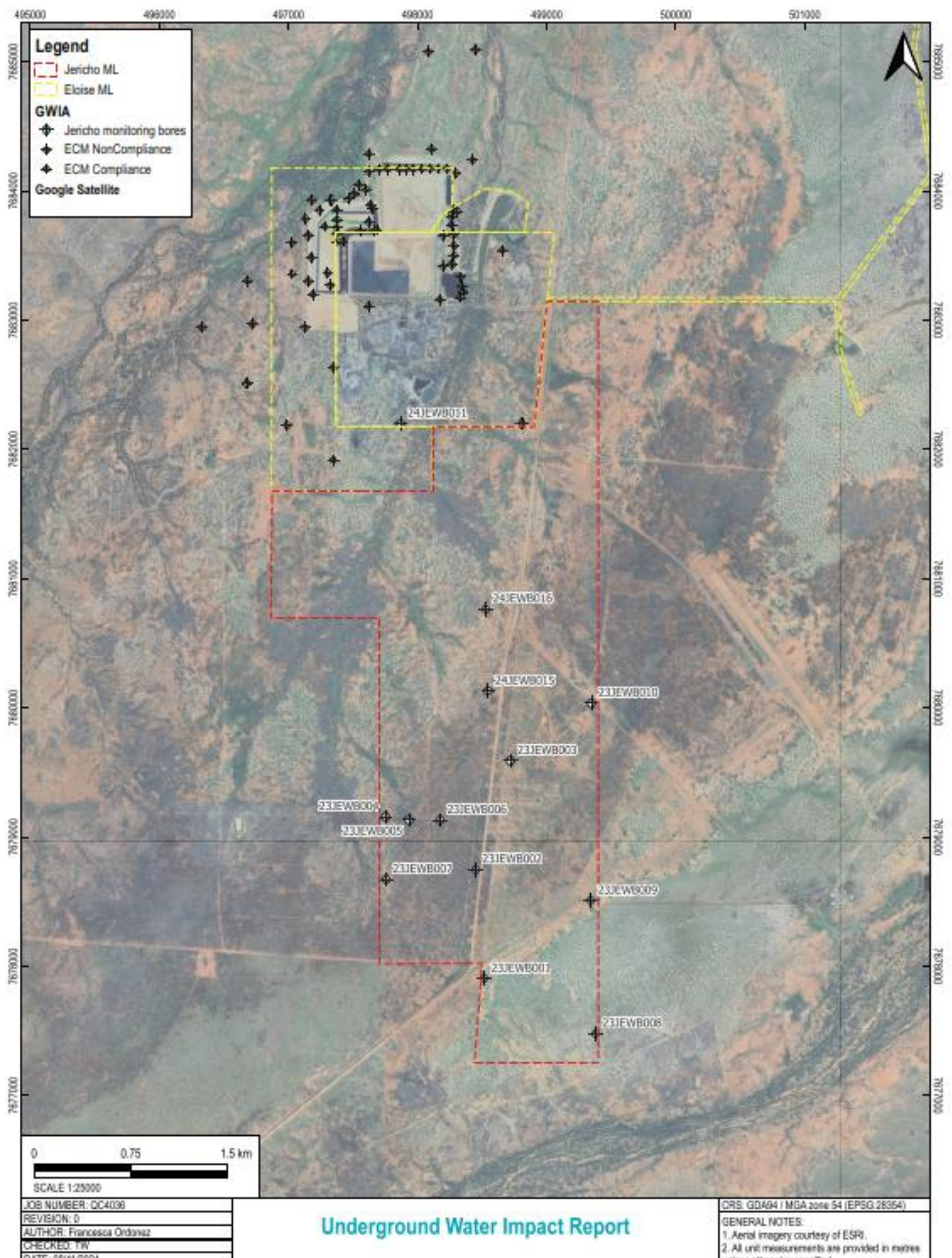


FIGURE 2.10: JERICHO GROUNDWATER MONITORING NETWORK

3. PART A: UNDERGROUND WATER EXTRACTION

This section addresses the requirements under Section 376(a) of the Water Act and requirements.

3.1 Quantity of Water Already Produced

Underground water rights have not been exercised at the Jericho project to date. No groundwater has been produced by the Jericho project to date as construction of this underground mine has not yet commenced. A groundwater impact assessment has been prepared and submitted for the site-specific Environmental Authority.

3.2 Quantity of Water to be Produced in the Next Three Years

The estimated groundwater seepage volume for the ULD, Jericho underground mine and total for a three-year period (2025- 2027) have been calculated by predictive modelling (presented in Appendix C:) and the results are presented in Table 3.1. Details on the development and implementation of the numerical predictive model are outlined in Section 5.

TABLE 3.1: ESTIMATED GROUNDWATER INFLOW VOLUMES

Year	ULD produced groundwater (ML)	Jericho underground mine produced groundwater (ML)	Total produced groundwater (ML)
2025	2.1	0.0	2.1
2026	3.0	0.0	3.0
2027	5.5	9.9	15.5

4. PART B: AQUIFER INFORMATION AND UNDERGROUND WATER FLOW

This section addresses the requirements under Section 376(b)(i – iii) of the Water Act and requirements.

4.1 Geology

The surficial regional geology shows that the surrounding landscape is covered by Quaternary/Tertiary aged, poorly consolidated sediments comprising sand, silt, gravel and clay (denoted by Ta-QLD) that are commonly ferruginised (denoted by Tpf-CKG) or mottled. Holocene (Quaternary aged, Qa-QLD) alluvium comprising sand, gravel, silt and clay occurs along the alignment of Scrubby Creek.

Beneath this surficial Quaternary and Tertiary sediments, the sequence at the project comprises mudstones (some carbonaceous) with minor sandstones of the Wallumbilla Formation. The Wallumbilla Formation is up to 60 m thick and is underlain by the Gilbert River Formation, which is a basal conglomerate with a silty/sand/mud matrix. The Wallumbilla Formation and Gilbert River Formation form part of the Eromanga Basin, a sub-basin of the Great Artesian Basin (GAB).

The copper, gold, silver mineralisation does not outcrop at surface and is hosted within the metasediments of the Soldiers Cap Group (Proterozoic metasediments). The Soldiers Cap Group with the Fullarton River Group collectively comprise the Maronan Supergroup, a 10 km thick sequence consisting of terrigenous and volcanoclastic sediments and bimodal volcanics. The basement rocks comprise micaceous quartz-arenites, biotite schists, muscovite schists and amphibolites. The sequence grades into biotite schists and muscovite-dominant schists to the east. The nearest fault zone is located along the north west boundary of the project and overlying the ULD.

The stratigraphic sequence in the vicinity of the project (from youngest to oldest) is described in Table 4.1. The surficial regional geology, as mapped by the Department of Natural Resources (DoR) is shown on Figure 4.1.

TABLE 4.1: STRATIGRAPHIC SEQUENCE

Age	Group		Formation	Description
Quaternary/ Tertiary	Alluvium		-	Sediments associated with ephemeral drainage lines
	Rolling Group	Downs	Mackunda Formation	Feldspathic sandstone and siltstone
			Alluru Mudstone	Primarily blue-grey mudstone (partly pyritic) and interbedded calcareous siltstone, limestone and lesser sandstone
			Toolebuc Formation	Limestone, calcareous bituminous shale and coquinite
			Wallumbilla Formation	Marine grey mudstone and siltstone with minor interbeds of fine-grained glauconitic and calcareous sandstone, local thin micritic limestone beds and heavy minerals strandline accumulations
Jurassic			Gilbert River Formation	Quartzose sandstone, conglomeratic in part, with some siltstone and mudstone.
Proterozoic	Williams Supersuite		Foxes Creek Diorite and Saxby Granite	Various intrusives including diorite, granite and monzodiorite
	Soldiers Group	Cap	Llewellyn Creek Formation, Mount Norna Quartzite and Toole Creek Volcanics	Meta-sedimentary sequence of arenites and schists, psammites. Contains the Jericho ore body

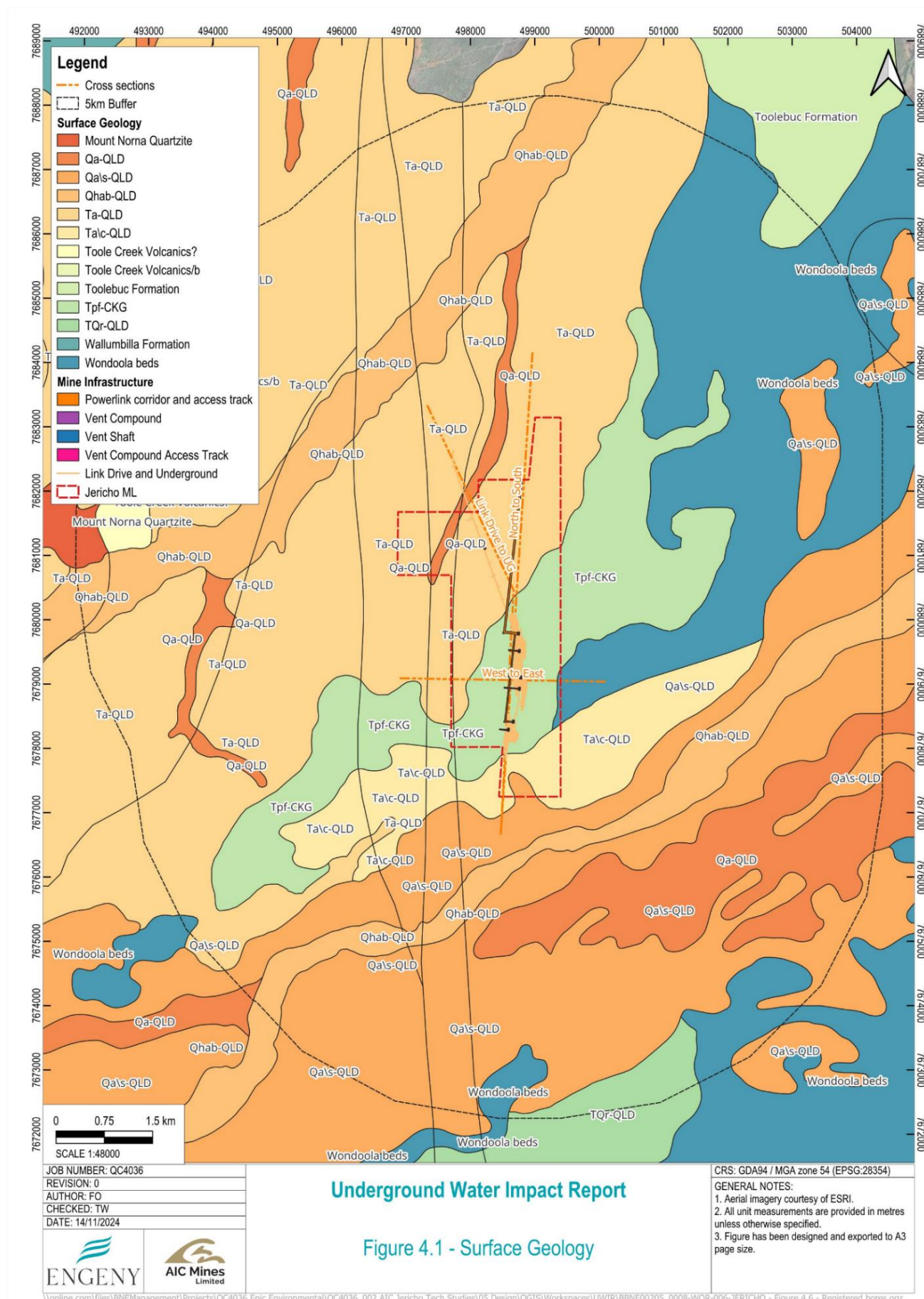


FIGURE 4.1: SURFACE GEOLOGY

4.2 Aquifer Descriptions

The hydrological regime of the Jericho project comprises four hydrostratigraphic units (HSU) as follows:

- shallow, thin and unsaturated Tertiary aged sediments.
- low permeability mudstone of the Cretaceous age Wallumbilla Formation.
- the Gilbert River Formation aquifer.
- Soldiers Cap Group (Proterozoic metasediments) basement rocks.

The shallow Tertiary age sediments are typically dry and unsaturated and a non-permanent aquifer in the vicinity of the Jericho project. Shallow groundwater may exist along watercourses following periods of rain and recharge. At the Jericho site the Tertiary sediments are up to 12 m below surface.

The Wallumbilla Formation consists predominantly of a black mudstone and shale with discontinuous sandy lenses of limited areal extent and low permeability. Extensive drilling undertaken in the region has confirmed that the Wallumbilla Formation is continuous over the project area and has low permeability. The formation is between 45 m and 70 m thick. The upper few metres are extremely weathered. Regionally is regarded as an aquitard and a confining unit i.e. it may contain groundwater but is not capable of transmitting significant quantities of groundwater.

The Gilbert River Formation conformably underlies the Wallumbilla Formation and consists of sand, claystone, and conglomerate. Regionally, this formation is classified as an aquifer located on the western side of the Great Artesian Basin (GAB). Where exploration drilling has encountered the Gilbert River Formation, the groundmass was observed to be welded and to have no porosity and had a very low water yield. Where present, it generally is between 3 m to 5 m in thickness. It is used extensively for stock watering purposes in the region.

Proterozoic basement unconformably underlies the Gilbert River Formation and hosts the ore body mined at Jericho project. Groundwater occurrence in the basement is controlled by secondary features within the rock mass such as fractures or faults. The basement rocks have low permeability and are generally regarded as an aquiclude. Table 4.2 presents the interpreted regional hydrostratigraphy.

TABLE 4.2: HYDROSTRATIGRAPHIC UNITS

HSU	Water Plan Groundwater unit	Type
Tertiary Sediments	-	Unconfined porous rock water table aquifer
Wallumbilla Formation	GABORA Rolling Downs Group	Aquitard
Gilbert River Formation	GABORA Hooray	Aquifer (absent across most of the project area)
Soldiers Cap Group (Proterozoic metasediments)	Water (Gulf) Plan Great Artesian Basin Groundwater Management Area	Aquiclude

4.3 Underground Water Flow and Aquifer Interactions

4.3.1 Underground Water Level Trend Analysis

Groundwater level (or hydraulic head pressure) measurements have been used to describe the groundwater levels in the study area. The bore locations with water level measurements (from the QLD spatial database groundwater data website [Queensland government, 2024b] and the site monitoring bores) are shown on Figure 4.2. A summary of the groundwater level information is provided in Table 4.3. The monitoring period was collected between October 2023 and November 2024 (Table 2.2). All measurements are provided Appendix B.1.

A hydrograph showing the hydraulic heads measured in the site monitoring bores is shown on Figure 4.3.

There are three shallow monitoring bores (23JEWB004, 23JEWB005, 23JEWB006), screened in the Tertiary sediments. These monitoring bores have been measured as 'dry' during baseline monitoring, meaning the water table is at a depth greater than 10 metres below ground level (mbgl), and the unconsolidated sediments are dry in the project area.

Groundwater levels in the Wallumbilla Formation aquitard (23JEWB001, 23JEWB007, 23JEWB008, 23JEWB009) are spatially variable and range from 18.06 mbgl to 64.5 mbgl (179.45 mAHD to 133.16 mAHD). The water table present in the Wallumbilla Formation shows limited variation of time.

Groundwater levels measurements in the Gilbert River Formation (measured in 23JEWB003) ranged from 69.78 mbgl to 70.32 mbgl (129.04 mAHD to 128.5 mAHD). These are similar levels that have been measured in ECM monitoring bores.

Groundwater levels measured in the Soldiers Cap Group (Proterozoic metasediments) (23JEWB010), which hosts the Jericho ore body and proposed underground mine have very limited fluctuation, and there is no observable drawdown trend. Monitoring data ranges from 67.85 mbgl - 67.69 mbgl (127.73 m AHD to 127.89 m AHD).

The vertical difference of the measured Groundwater levels in the stacked aquifer/aquitards of the study area, indicate there is a hydraulic separation between the Wallumbilla Formation, the Gilbert River Formation, and the Soldiers Cap Group (Proterozoic metasediments). This is supported by the groundwater quality (discussed further in Section 4.4), which shows a distinct difference in major anions.

Seven (7) registered bores have groundwater levels recorded on drilling logs measured shortly after drilling and available Queensland groundwater database. Three (3) of the registered bores (RN93345, RN93349, and RN118181) have more than one measurement and cover the time period 1995 – 1996 (RN93345), which is before the ECM operation started, and more recent 2017 – 2019 (RN93349 and RN118181). The measurements show that the groundwater levels at these locations have not changed significantly since pre-mining at ECM, and limited drawdown has occurred as a result of the ECM underground mine. A hydrograph showing the groundwater level measurements is shown on Figure 4.4. The location of the groundwater level measurements is shown on Figure 4.2.

TABLE 4.3: GROUNDWATER LEVELS FROM JERICO MONITORING NETWORK.

Monitoring Bore	Hydrostratigraphy	Range (mAHD)	Range (mbgl)	Average (mAHD)	Average (mbgl)
23JEWB004	Tertiary sediments/Upper Wallumbilla Formation	Dry (>10m depth)			
23JEWB005		Dry (>10m depth)			
23JEWB006		Dry (>10m depth)			
23JEWB001	Wallumbilla Formation	178.41 - 179.45	19.1 - 18.06	178.9	18.6
23JEWB002		Dry			
23JEWB007		135.97 - 148.66	62.7 – 49.0	138.5	59.2
23JEWB008		153.69 -157.43	38.3 - 34.56	154.8	37.2
23JEWB009		158.89 – 164.45	38.36 – 32.80	162.8	34.5
24JEWB016		131.01 – 166.08	62.23 - 27.16	143.4	49.8
23JEWB003	Gilbert River Formation	128.5 -163.90	70.27 – 34.92	131.2	67.6
23JEWB010	Soldiers Cap Group (Proterozoic metasediments)	127.62 -127.89	67.96 - 67.69	127.8	67.8
24JEWB011		130.41 - 149.64	53.30 – 34.07	138.3	45.4
24JEWB015		Dry			
93345 (Eloise House Bore)	Hard quartzite (assumed Gilbert River Formation)	176.8 - 178.39	18.2 - 16.61	177.7	17.3
93349 (Comet Bore)	Not recorded (assumed Soldiers Cap Group)	168.2 - 171.5	28.8 - 25.5	170.7	26.3
118181 (Supplementary Bore)	Granite/ Soldiers Cap Group - undiff	146.07 - 149	47.93 - 45	147.2	46.8
93719 (Van Latham Bore)	Sandstone - Wallumbilla Formation	-		9.1 mbgl (2000)	
163019 (Levuka 1)	Sandstone/Not recorded	-		15.0 mbgl (2013)	
163020	Black Shale/Not recorded	-		6.0 mbgl (2013)	
184894	Sand (white sand with schist)/Not recorded	-		26.7 mbgl (2022)	

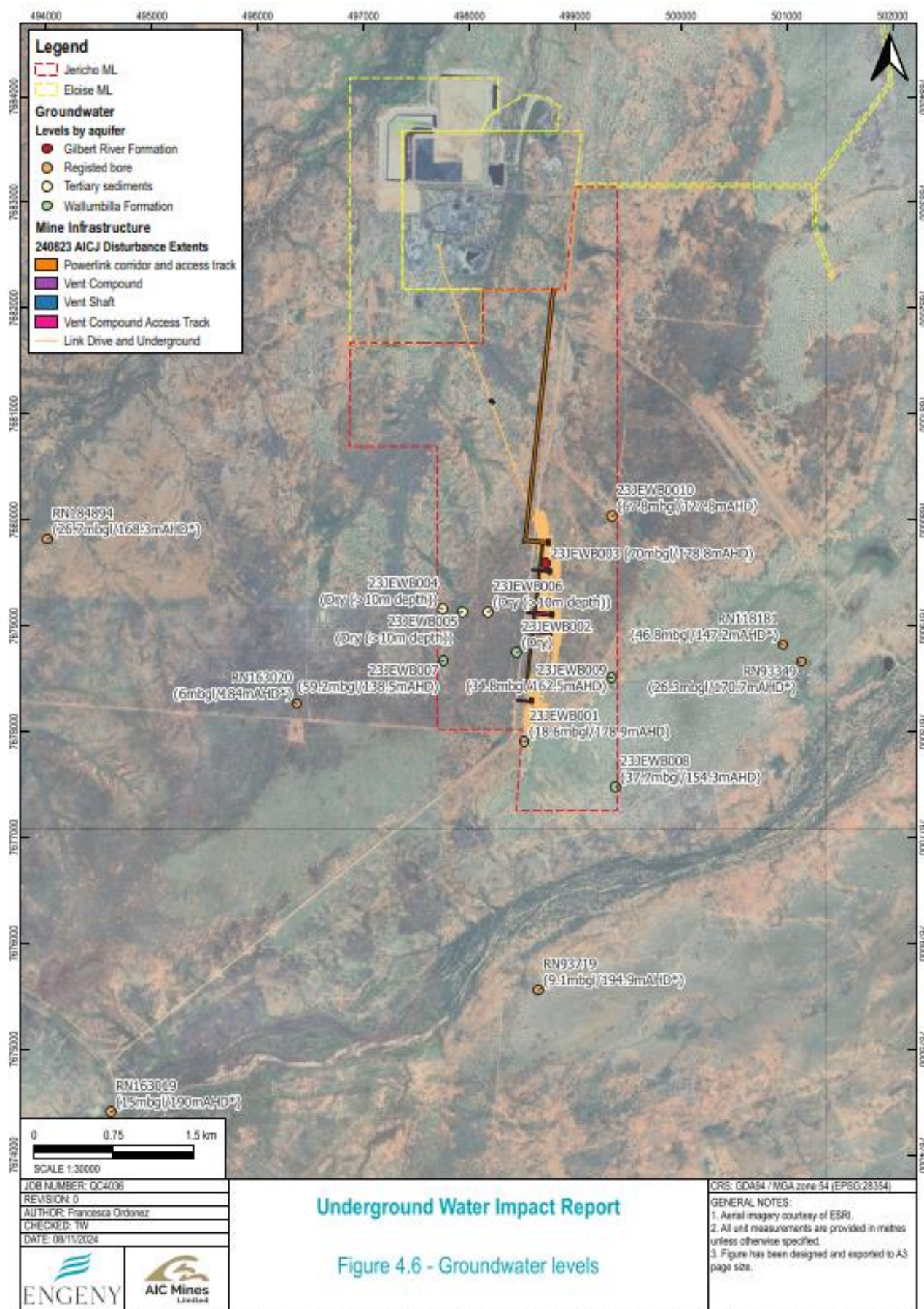


FIGURE 4.2: GROUNDWATER LEVELS

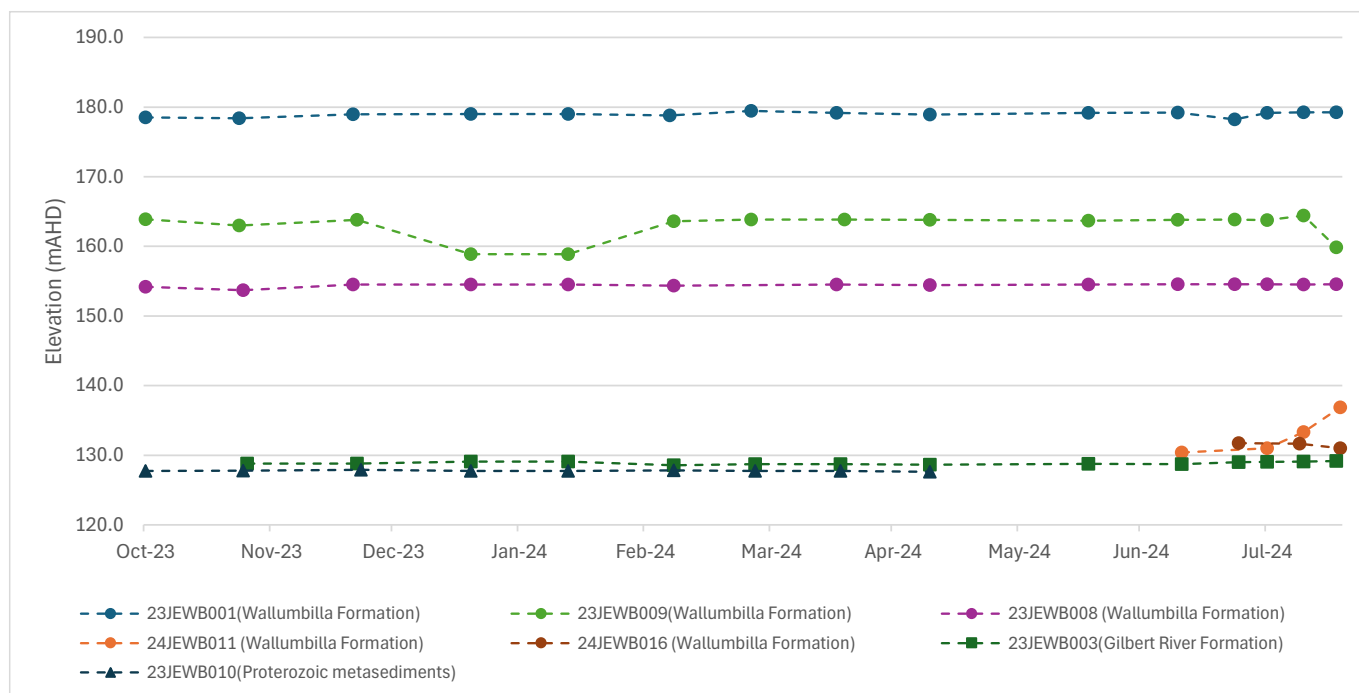


FIGURE 4.3: GROUNDWATER LEVELS IN SITE MONITORING BORES

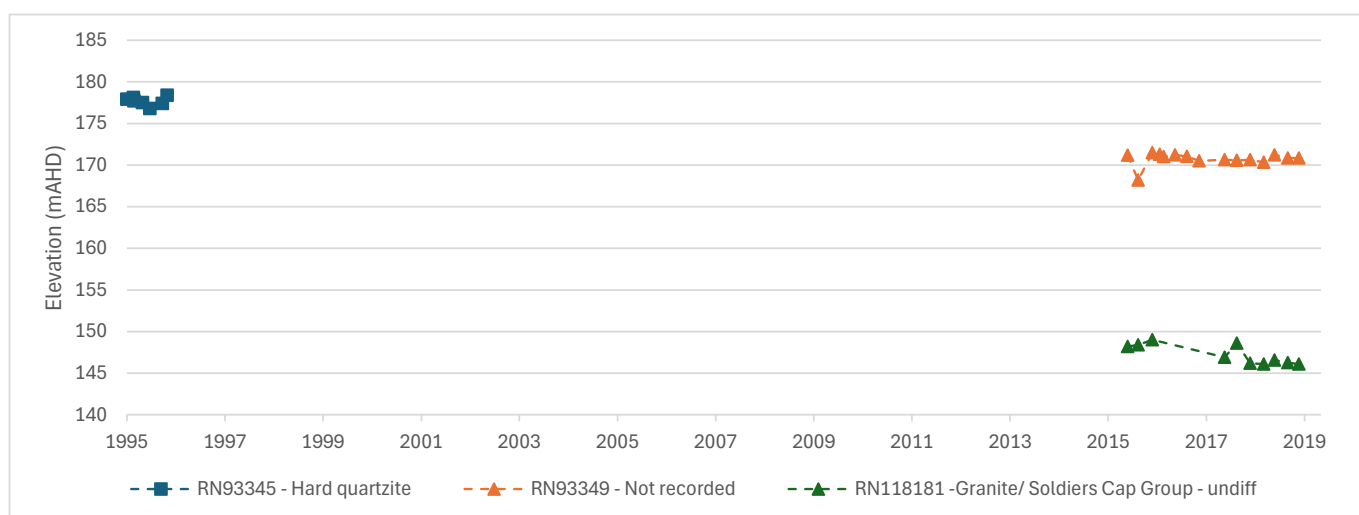


FIGURE 4.4: GROUNDWATER LEVEL FROM SURROUNDING REGISTERED BORES

4.3.2 Hydraulic Conductivity

Hydraulic falling head tests were conducted in 2023 at monitoring bores which recorded a groundwater level at the time of testing. Each test was completed using between twenty and forty litres of fresh, clean water funnelled into each monitoring bore, with the change in groundwater level monitored at thirty-second intervals with a datalogger (hydrogeologist.com.au, 2023). Monitoring bores 23JEWB002, 23JEWB004, 23JEWB005 and 23JEWB006 were dry, therefore no falling head tests were conducted.

The hydraulic conductivity results are of the water bearing fractures intercepted during drilling (i.e. where the monitoring bore screens were placed). The water bearing fractures represents a small proportion of the total rock mass which is mostly impermeable bedrock. The calculated hydraulic conductivity for each monitoring bore, based on the results of the falling head tests, is provided in Table 4.4.

TABLE 4.4: HYDRAULIC CONDUCTIVITIES RESULTS

Bore ID	HSU	Method	Hydraulic conductivity (m/day)	Classification Relative conductivity/aquifer
23JEWB003	Gilbert River Formation	Hvorslev	1.90×10^{-01}	Semi-Pervious/Poor
		Bouwer & Rice	1.99×10^{-01}	Semi-Pervious/Poor
23JEWB001	Wallumbilla Formation	Hvorslev	1.30×10^{-01}	Semi-Pervious/Poor
		Bouwer & Rice	1.38×10^{-01}	Semi-Pervious/Poor
23JEWB007		Hvorslev	1.30×10^{-04}	Impervious/Non-existent
		Bouwer & Rice	1.21×10^{-04}	Impervious/Non-existent
23JEWB008		Hvorslev	1.30×10^{-03}	Semi-Pervious/Poor
		Bouwer & Rice	8.38×10^{-04}	Impervious/Non-existent
23JEWB009		Hvorslev	1.47×10^{-02}	Semi-Pervious/Poor
		Bouwer & Rice	1.38×10^{-02}	Semi-Pervious/Poor
23JEWB010	Soldiers Cap Group (Proterozoic metasediments)	Hvorslev	4.32×10^{-03}	Semi-Pervious/Poor
		Bouwer & Rice	3.89×10^{-03}	Semi-Pervious/Poor

Note: Aquifer classification modified from (Bear, 1972).

4.3.1 Groundwater Flow

The movement of groundwater in the fractured rock aquifers would be largely limited to secondary porosity fracture flow. Groundwater flow would occur primarily within fractures, faults and/or shear zones in the host rock rather than in continuous, interconnected pore spaces as in sand and gravel aquifers. There are only a few water-bearing fractures of a few millimetres thick, and the frequency of fractures generally decreases with depth. The limited presence of water-bearing fractures has important implications for any potential groundwater inflow into the link drive and underground mine.

Groundwater flow in the shallow, unconfined aquifer would be limited to periods after recharge, and generally occur close to recharge areas (i.e. along watercourses), and would be generally reflective of topography, with topographic high and low points dictating groundwater flow directions across the region. In dry times, the shallow tertiary sediments are largely unsaturated, and limited to no lateral groundwater flow would occur.

Lateral groundwater flow in the confined aquifers of the Soldiers Cap Group (Proterozoic metasediments), is assumed to be in a northerly direction, towards the ECM underground mine area, which acts as a groundwater sink in the area. Groundwater flow rates in the deep confined aquiclude would be limited due to the very low hydraulic conductivity of the basement rocks and depend on the interconnectedness of the secondary porosity features (fractures, faults and/or shear zones).

Where present, the Gilbert River Formation aquifer is a confined aquifer where groundwater flow would be horizontal, with limited vertical flow as it is confined by the overlying Wallumbilla Formation (aquitard) and underlying Soldiers Cap Group (Proterozoic metasediments), (aquiclude).

4.4 Groundwater Quality

Information from both publicly available and site-specific water quality sampling programs from site monitoring bores, provides an indication of the study area's groundwater quality.

Groundwater quality is generally brackish to slightly saline in all HSUs, with Total Dissolved Solids (TDS) ranging from 422 – 2,900 mg/L, and slightly alkaline with pH ranging from 7.1 – 10.2. Nutrient concentrations of nitrate and phosphorous are very low. Dissolved metals are generally below laboratory detection limits, with low level detections of:

- Detections of aluminium, arsenic, barium, cadmium, manganese, molybdenum, nickel, strontium, uranium, vanadium, and zinc in the Wallumbilla Formation.
- Detections of aluminium, arsenic, barium, cobalt, nickel, manganese, molybdenum, nickel, strontium, and zinc in the Gilbert River Formation.
- Detections of aluminium, arsenic, barium, copper, manganese, molybdenum, nickel, strontium, and zinc in the Soldiers Cap Group (Proterozoic metasediments).

Aggregated groundwater quality (by HSU) results from the site monitoring bores and for each hydrostratigraphic unit is presented in Table 4.5. Groundwater quality results from the publicly available bore reports (Queensland government, 2024a) is provided in Table 4.5. Laboratory reports from site specific monitoring and sampling are provided in Appendix B.

The piper diagram shown on Figure 4.5 displays the relative concentrations of major ions in groundwater samples in the study area. The groundwater in the study area is a sodium-chloride type. The Wallumbilla has the widest range of groundwater quality.

The Soldiers Cap Group (Proterozoic metasediments), which hosts the Jericho ore body, is chloride anion dominant, while the Gilbert River Formation is sulphate dominant anion. The different anion groups of the Soldiers Cap Group and the Gilbert River Formation could be due to type of rocks and minerals in the aquifers which can significantly influence the concentration of anions. The Gilbert River Formation, part of the GAB, is comprised quartzose sandstone aquifer materials, while the Soldiers Cap Group is comprised of micaceous quartz-arenites, biotite schists, muscovite schists and amphibolite.

The predominance of alkali ions (such as sodium and potassium) over alkaline ions (such as calcium and magnesium) in the groundwater at the site can be attributed to several factors such as ion exchange and weathering of minerals. Ion exchange processes can cause sodium to replace calcium and magnesium on clay minerals, leading to higher concentrations of sodium in groundwater, while weathering of feldspar minerals (i.e. schists and amphibolite), can release sodium and potassium into the groundwater.

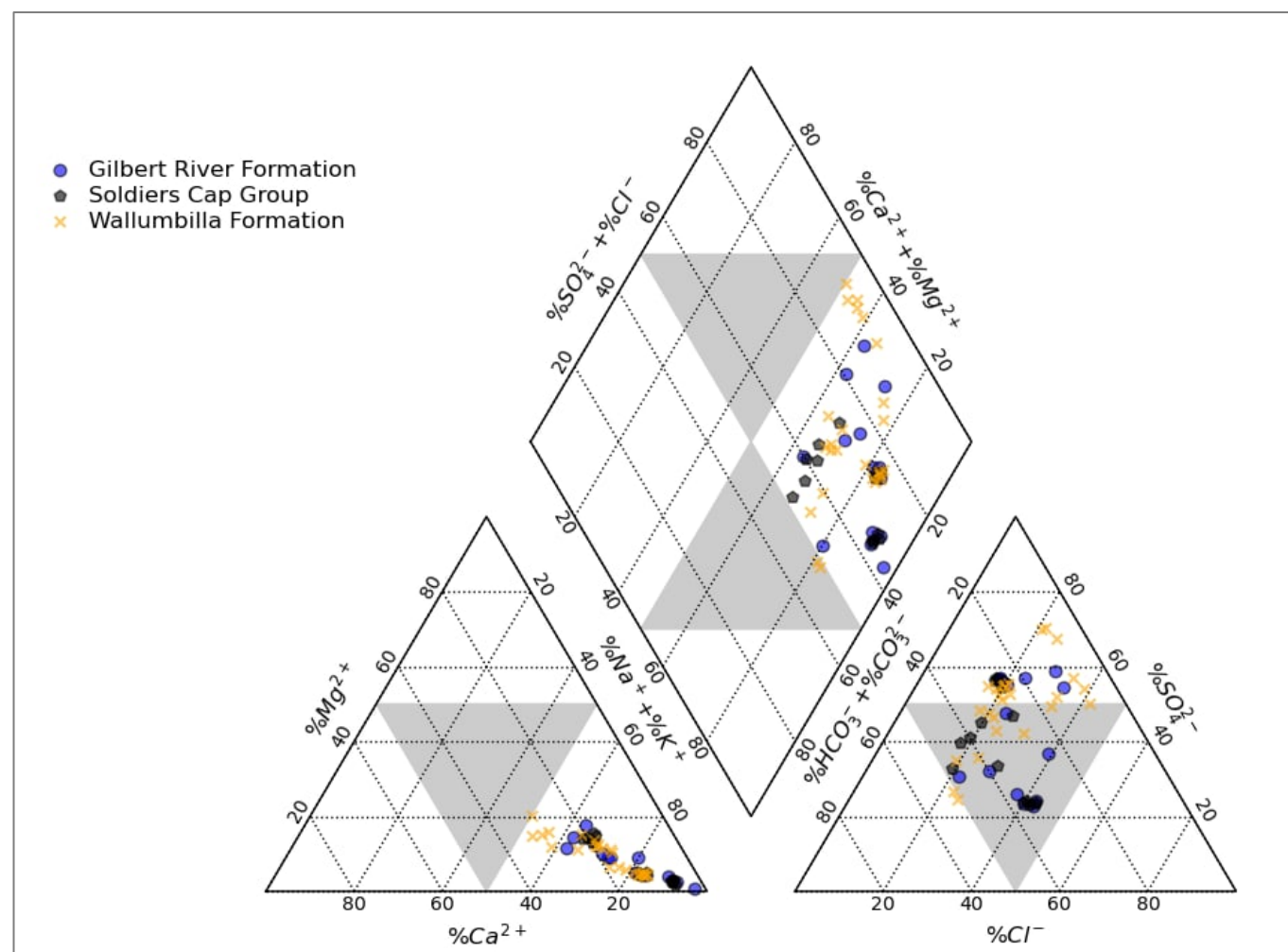
TABLE 4.5: GROUNDWATER QUALITY IN THE STUDY AREA

Parameter	Unit	Wallumbilla Formation			Gilbert River Formation			Soldiers Cap Group (Proterozoic metasediments)		
		Min	Max	Average	Min	Max	Average	Min	Max	Average
Laboratory physicochemical parameters										
Electrical Conductivity	µS/cm	571	4460	1636	800	1100	1010	733	8240	3421
pH	pH	7	10	8	8	8	8	7	10	8
Total Dissolved Solids (TDS)	mg/L	325	2900	1071	592	794	644	422	6480	2595
Major ions										
Calcium	mg/L	22.0	31.0	24.9	5.0	581.0	202.1	4.0	329.0	67.7
Magnesium	mg/L	5.0	7.0	5.5	1.0	239.0	63.1	1.0	81.0	25.1
Sodium	mg/L	178.0	207.0	189.3	176.0	1220.0	547.5	88.0	710.0	273.9
Potassium	mg/L	3.0	4.0	3.2	3.0	18.0	8.9	2.0	38.0	8.0
Fluoride	mg/L	1.8	2.2	2.0	0.3	5.9	3.5	0.2	9.7	1.2

Parameter	Unit	Wallumbilla Formation			Gilbert River Formation			Soldiers Cap Group (Proterozoic metasediments)		
		Min	Max	Average	Min	Max	Average	Min	Max	Average
Chloride	mg/L	61.0	82.0	70.2	123.0	1390.0	462.1	21.0	572.0	153.6
Sulfate as SO ₄	mg/L	258.0	301.0	274.0	98.0	3190.0	1105.6	2.0	1570.0	393.1
Hydroxide Alkalinity as CaCO ₃	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	mg/L	<1	<1	<1	9.0	121.0	69.0	23.0	230.0	96.3
Bicarbonate Alkalinity as CaCO ₃	mg/L	114.0	142.0	131.0	70.0	435.0	227.1	35.0	480.0	271.0
Total Alkalinity as CaCO ₃	mg/L	114.0	142.0	131.0	147.0	435.0	240.9	52.0	480.0	275.4
Dissolved metals										
Aluminium	mg/L	0.1	0.1	0.1	0.01	0.02	0.01	0.01	0.09	0.03
Arsenic	mg/L	0.04	0.13	0.08	0.00	0.02	0.005	0.001	0.01	0.003
Barium	mg/L	0.02	0.04	0.03	0.02	0.11	0.06	0.04	0.25	0.10
Boron	mg/L	0.53	0.61	0.56	0.53	0.71	0.59	0.11	0.92	0.46
Cadmium	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0001	0.0001
Chromium	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.003	0.002
Cobalt	mg/L	0.001	0.001	0.001	0.002	0.01	0.01	0.001	0.003	0.002
Copper	mg/L	<0.001	<0.001	<0.001	0.001	0.001	0.001	0.001	0.001	0.001
Iron	mg/L	<0.05	<0.05	<0.05	0.41	3.78	2.07	0.05	0.90	0.31
Lead	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	mg/L	0.02	0.04	0.03	0.03	7.91	3.08	0.004	1.64	0.57
Molybdenum	mg/L	0.002	0.01	0.003	0.00	0.01	0.01	0.001	0.29	0.03
Nickel	mg/L	0.001	0.004	0.002	0.00	0.05	0.02	0.001	0.02	0.004
Selenium	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	mg/L	0.48	0.62	0.54	0.23	11.6	4.0	0.2	6.75	1.13
Tin	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	mg/L	<0.001	<0.001	<0.001	0.01	0.02	0.02	0.00	0.01	0.002
Vanadium	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.02
Zinc	mg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.04	0.02
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

TABLE 4.6: GROUNDWATER QUALITY FROM BORE REPORTS (QUEENSLAND GOVERNMENT, 2024A)

Registered ID Name	Aquifer (m)	Strata description / Formation name*	Screen/open hole (m)	Water Quality (pH/EC-)
RN118181 Supplementary Bore	30 -	Granite/Soldiers Cap Group - undiff	30 - 48	8.5 2,975 $\mu\text{S}/\text{cm}$
RN93345 Eloise House Bore	18 - 30	Quartzite/Not recorded	23 – 30.5	Potable
RN93349 Comet Bore	Not recorded	Not recorded	110 - 122	8.2 1,271 $\mu\text{S}/\text{cm}$
RN93719 Van Latham Bore	15 -, 54 -	Sand - FULLARTON RIVER GROUP Sandstone - Wallumbilla Formation	14 – 21 54 - 72	Not recorded Potable
RN163019 Levuka 1	41 - 42	Sandstone/Not recorded	33 - 45	7.0 900 $\mu\text{S}/\text{cm}$
RN163020	33 - 34	Black shale/Not recorded	30 - 42	7.0 300 $\mu\text{S}/\text{cm}$
RN184894	60 – 78	Sand (white sand with schist)/Not recorded	60 - 78	Potable


FIGURE 4.5: PIPER DIAGRAM OF WATER CHEMISTRY IN THE STUDY AREA

4.5 Hydrogeological Conceptual Model

Groundwater occurrence, distribution, movement and properties are influenced by the site's geology and key system stresses. System stresses include inputs (i.e. rainfall recharge) and outputs (i.e. seepage into underground mine workings).

The hydrogeological regime at the project comprises four hydro-stratigraphic units consisting of alternating layers of aquifer and aquitards (refer to Table 4.2). These are:

- Tertiary Sediments – a thin blanket of mostly unsaturated Tertiary aged sediments across the entire project.
- Wallumbilla Formation - low permeability shales of the Wallumbilla Formation forming an aquitard.
- Gilbert River Formation - very low permeability claystone, sand and conglomerate of the Gilbert River Formation, and regional aquifer with limited presence at the site.
- Soldiers Cap Group (Proterozoic metasediments) – considered an aquiclude and in which the Jericho mineral deposit is wholly within.

Recharge to the groundwater system is expected to occur primarily via rainfall infiltration. Rainfall distributed recharge is expected to be low, due to the prevailing hot semi-arid climate and high potential evaporation. Water enters the aquifer by infiltration through the surficial unconsolidated sediments in the area.

The main groundwater discharge in the area would be to the nearby ECM, evapotranspiration in areas of shallow groundwater, and flow through the aquifer. There would be limited natural groundwater discharge to surface drainage due to the depth of the water table.

The movement of groundwater in the fractured rock aquifers would be largely limited to secondary porosity fracture flow. Groundwater flow would occur primarily within fractures, faults and/or shear zones in the host rock rather than in continuous, interconnected pore spaces as in sand and gravel aquifers. The limited presence of water-bearing fractures has important implications for any potential groundwater inflow into the link drive and underground mine.

The fractured rock aquifers/aquitards are very low hydraulic conductivity, and this is highlighted by the large vertical difference in hydraulic heads in the different confined hydrostratigraphic units. There is approximately 10-40 m hydraulic head difference between the Wallumbilla Formation and the underlying Soldiers Cap Group, indicating hydraulic separation of the units.

A conceptual hydrogeological model is shown on Figure 4.6.

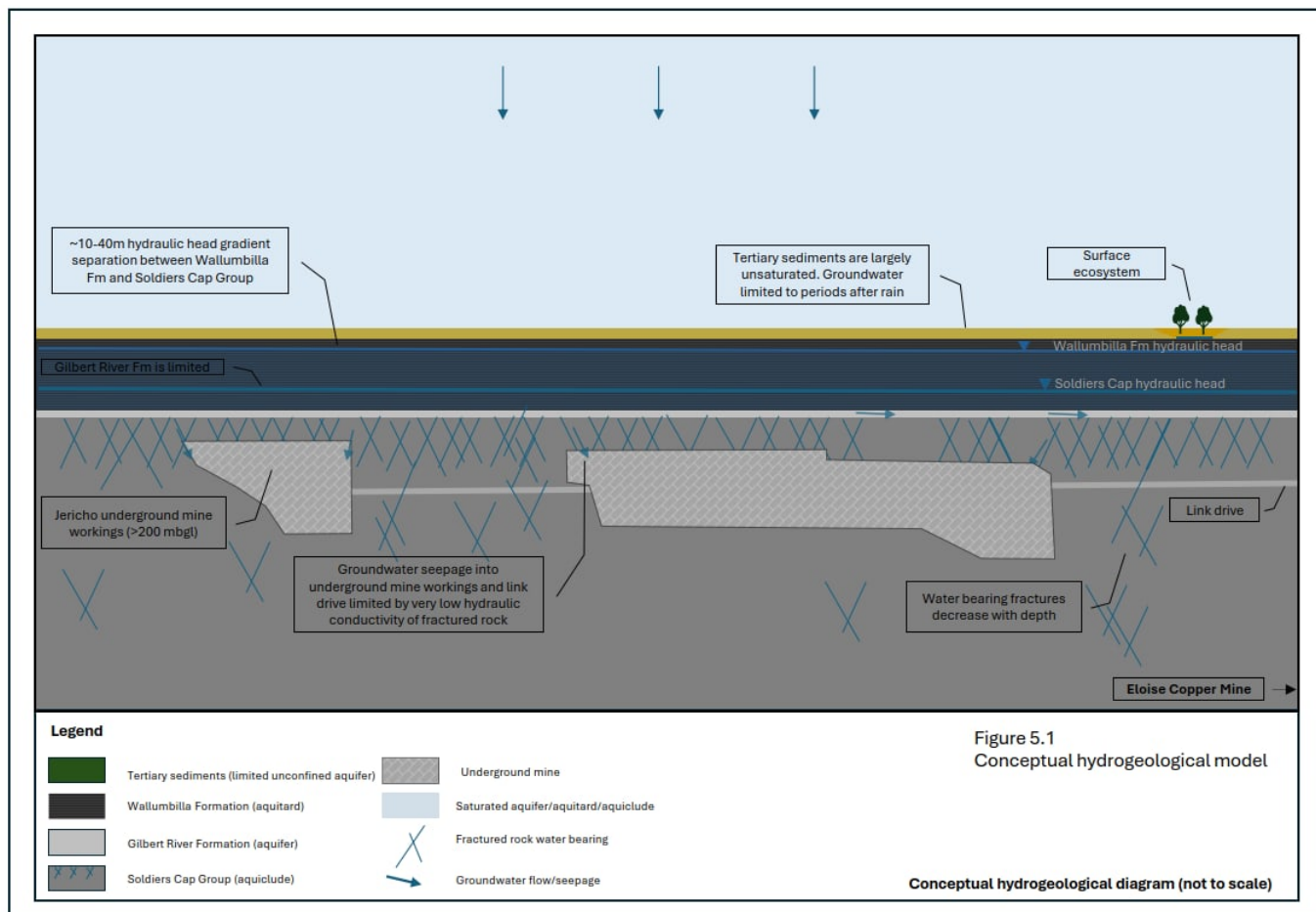


FIGURE 4.6: CONCEPTUAL HYDROGEOLOGICAL MODEL

5. PART C: PREDICTED WATER LEVEL DECLINES FOR AFFECTED AQUIFERS

This section addresses the requirements under Section 376(b-e) (i – iv) of the Water Act.

5.1 Model Development and Methodology

A 3D numerical groundwater model was developed for the Jericho project to assess potential groundwater drawdown and inflow into the underground mine (Hydrogeologist.com.au, 2024). The numerical model used the MODFLOW-USG (Panday et al., 2015) software to represent the conceptual hydrogeological model and regime discussed in Section 4.5. MODFLOW-USG is an “unstructured grid” version of MODFLOW that optimises the model grid and increases numerical stability by allowing for unstructured, variably sized cells (Panday et al., 2013). These cells can take any polygonal shape, with variable size constraints allowing for local grid refinement in areas of interest while maintaining lower resolution where high detail is not required. Variable cell sizes and shapes can greatly reduce the number of grid cells within the model domain while still capturing the required level of detail.

The Australian Groundwater Modelling Guidelines (Barnett et al., 2012) were considered throughout the modelling process. A detailed description of the modelling methodology and outcomes is provided in Appendix C.

Two transient predictive model scenarios were modelled:

- An ‘*approved mining operation*’ scenario which includes the approved Eloise Copper Mine and represents the baseline conditions.
 - This modelling scenario simulates the drawdown of the groundwater as a result of the impact from the existing Eloise Copper Mine operation. This was modelled as the baseline before any impacts from the Jericho Underground Link Drive (ULD) and the Jericho Underground (UG) Mine.
- A ‘*project*’ scenario which includes representation of ‘*approved mining operation*’ and the underground mining at Jericho as well as the ULD.
 - This modelling scenario simulates the drawdown of the groundwater as a result of the impact from both the Eloise Copper Mine (Approved Mining Operations) and the Jericho ULD and the Jericho UG Mine. This scenario attempts to identify the cumulative impact of all operational activities across Eloise and Jericho.

For this UWIR, the groundwater model has been used to predict the groundwater take and resulting groundwater drawdown. These predictions have been used to identify the:

- Immediately Affected Areas (IAA).
- Long Term Affected Areas (LTAA).

These predictions have also been used to assess the potential impacts of the Jericho project on groundwater users and sensitive environmental values.

5.1.1 Incremental and cumulative drawdown

The incremental drawdown is the predicted drawdown of only the Jericho ULD and the Jericho UG Mine. This incremental drawdown is the difference between the modelled ‘*approved mining operations*’ scenario (Eloise Copper Mine) and the modelled ‘*project*’ scenario (Eloise Copper Mine and the Jericho ULD and the Jericho UG Mine).

The cumulative drawdown is the predicted drawdown of the Jericho ULD and the Jericho UG Mine, and Eloise Copper Mine. The ‘*project*’ modelling scenario includes representation of ‘*approved mining operations*’ and the proposed Jericho ULD and the Jericho UG Mine.

5.1.2 Bore threshold

The bore threshold is:

- 2m for unconsolidated aquifers (i.e. Tertiary sediments).
- 5m for consolidated aquifers (i.e. Wallumbilla Formation, Gilbert River Formation, and Soldiers Cap Formation).

5.1.3 Model Layers

The numerical 3D groundwater model consists of ten layers representing the four hydrostratigraphic units (HSU) at Jericho. These are:

- Tertiary sediments – a thin blanket of unsaturated Tertiary aged sediments across the entire project.
- Wallumbilla Formation - low permeability shales of the Wallumbilla Formation forming an aquitard.
- Gilbert River Formation - very low permeability claystone, sand and conglomerate of the Gilbert River Formation, and regional aquifer with limited presence at the site.
- Soldiers Cap Group (Proterozoic metasediments) – considered an aquiclude and in which the Jericho mineral deposit is wholly within.

The metasediments were refined further into 6 layers to capture the changing hydraulic parameters with depth and the underground mining. The model was constructed with ten layers to represent the hydrogeological units and depth relationships. Surface elevation maps corresponding to the top of the model and base elevations for all layers are presented in Appendix C. The thickness of the layers was developed from the AIC geological model and site drilling/bore logs, supplemented with publicly available data where relevant.

5.1.3.1 Hydrostratigraphic Zonation

The model uses six (6) zones to represent hydraulic properties of horizontal hydraulic conductivity (KX) and vertical hydraulic conductivity (KZ). The hydrostratigraphic zones applied in the model are summarised in Appendix C.

5.1.4 Boundary Conditions

Recharge was applied to the model as a percentage of rainfall, which was optimised for each recharge zone during calibration. Recharge zones across layer 1 to represent the various surface geology (i.e., Scrubby Creek and Fullarton River, Eloise Tailings Storage Facility [TSF] and surrounding Tertiary sediments), are shown in Appendix C.

Evapotranspiration (EVT) was applied uniformly across the whole model domain. Due to the general lack of shallow groundwater in the model domain, EVT is largely irrelevant and has negligible effect on the water balance.

Constant head boundaries were applied at nodes in layers 1,2 and 3 along the edges of the model boundary using the MODFLOW Time Variant Specified Head (CHD) Package. This boundary condition allows for the interconnectivity of the model domain with the wider regional groundwater flow system and facilitates groundwater flow across the model boundaries. Heads at CHD cells were constant throughout the steady state and transient model durations and represent a general north-easterly flowing groundwater system. The locations and head elevations for CHD cells for each model layer are included in Appendix C.

Underground mine dewatering was simulated using the MODFLOW Drain (DRN) module. DRN cells are an effective way of representing both the direct removal of water by mining activities as well as the removal of water seeping into underground mine workings over time. DRN cells were applied to Proterozoic model layers (layer 1-5) corresponding with mine elevation plans provided by AIC. A conductance 100 m²/day was applied to all DRN cells. Experience shows that this conductance value is effective in representing underground mining. The extent of the DRN cells applied to represent mining activity for each layer are included in Appendix B. Commencement timings for mine progression of simulated workings is as follows:

- Eloise mining active from stress period 1 (01/01/1996).
- Link drive mining active from stress period 7 (01/01/2025).
- Jericho project mining active from stress period 9 (01/01/2027).

Removal of water from pumping wells in the ECM bore field was represented by the MODFLOW WELL (WEL) module for historic and future pumping. The ECM extraction is not associated with the Jericho project and has been included in the modelling to represent the baseline groundwater conditions. The initial heads for the steady state model were applied at topographic surface. This is a standard approach that helps minimise the convergence time for the steady state model. The heads from the steady state model were then used as the starting heads for the transient calibration. The heads from the end of transient calibration were then used as starting heads for the predictive models.

5.1.5 Calibration

Model calibration was performed to optimise the model parameter values so that the model can better replicate historical observations. The outcome of the calibration process also provided the initial conditions for the transient predictive simulations used to assess the potential effects of the project on the groundwater regime. Calibration was performed by applying both automated PEST (Doherty, 2019a, 2019b) routines and a manual trial-and-error approach.

The available groundwater level data was reviewed to identify the most reliable groundwater level measurements for the transient calibration period. A total of 654 groundwater level measurements from 45 of the 65 available observation sites were included in the calibration dataset. The locations of all observation sites, summary of the sites and calibration results are shown in Appendix C.

The model has been appropriately calibrated to transient conditions based on the following criteria:

- The conceptual model for groundwater flow has been honoured by the calibration.
- Calibration-optimised hydraulic data for the key hydrogeological units are within the range of values measured during field investigations.
- Quantitative calibration metrics (e.g., residual errors) are within guideline-recommended ranges (Barnett et al., 2012).
- The relative contributions of recharge/discharge processes in the model water balance are within the ranges expected and are supported by independent calculations and field observations (e.g. absence of baseflow in mine site watercourses).

5.1.6 Prediction

The calibrated model is therefore deemed to be a suitable tool for assessing the groundwater level effects of the Jericho project within the model domain. The predictive scenarios based on the calibrated model are presented in the next section.

Transient simulations were used to assess the potential impacts of the Jericho mine on the groundwater system. The transient model simulation period was from 2025 to 2036.

Two transient predictive model scenarios were modelled:

- An '*approved mining operations*' scenario which includes the approved Eloise Copper Mine, and represents the baseline conditions for the project; and
- A '*project*' scenario which includes representation of '*approved mining operations*' and the underground mining at Jericho as well as the ULD.

The incremental drawdown is the predicted drawdown of only the Jericho ULD and the Jericho UG Mine. This incremental drawdown is the difference between the modelled '*approved mining operations*' scenario (Eloise Copper Mine) and the modelled '*project*' scenario (Eloise Copper Mine and the Jericho ULD and the Jericho UG Mine).

The cumulative drawdown is the predicted drawdown of the Jericho ULD and the Jericho UG Mine, and Eloise Copper Mine. The '*project*' modelling scenario includes representation of '*approved mining operations*' and the proposed Jericho ULD and the Jericho UG Mine.

5.2 Groundwater Drawdown During the UWIR Period (IAA)

As discussed in Section 5.1, the Immediately Affected Area (IAA) is defined as the area of an aquifer where the water level is predicted to decline by more than the bore trigger threshold within three years (considered the UWIR period). The extent of the predicted drawdown for the aquifers at the Jericho project, namely the Wallumbilla Formation, Gilbert River Formation and Soldiers Cap Formation, were extracted from the numerical model discussed in Section 5.1 (and Appendix C:). The underground mining works in the initial three years consist mainly of developing the ULD and the early parts of underground mine.

There are no bores in within the areas of the bore trigger threshold within the IAA area.

The extent of drawdown for Year 3 (2027) shows the incremental drawdown due to the Jericho project (i.e. project only drawdown).

Figure 5.1 presents the predicted incremental drawdown for the Wallumbilla Formation (model layer 2) for the UWIR period. The modelled IAA for the Wallumbilla Formation over the UWIR period is predicted to no drawdown in the first three years. Figure 5.2 presents the predicted incremental drawdown for the Gilbert River Formation (model layer 3) for the UWIR period. The modelled IAA for the Gilbert River Formation over the UWIR period is predicted to be limited to the extent of the proposed Jericho project. The modelled drawdown is mainly above the ULD due to that area being developed in the first three years. Figure 5.3 presents the predicted incremental drawdown for the Soldiers Cap Formation (model layer 4) for the UWIR period. The modelled IAA for the Soldiers Cap Formation over the UWIR period is predicted to be limited to the extent of the proposed Jericho project.

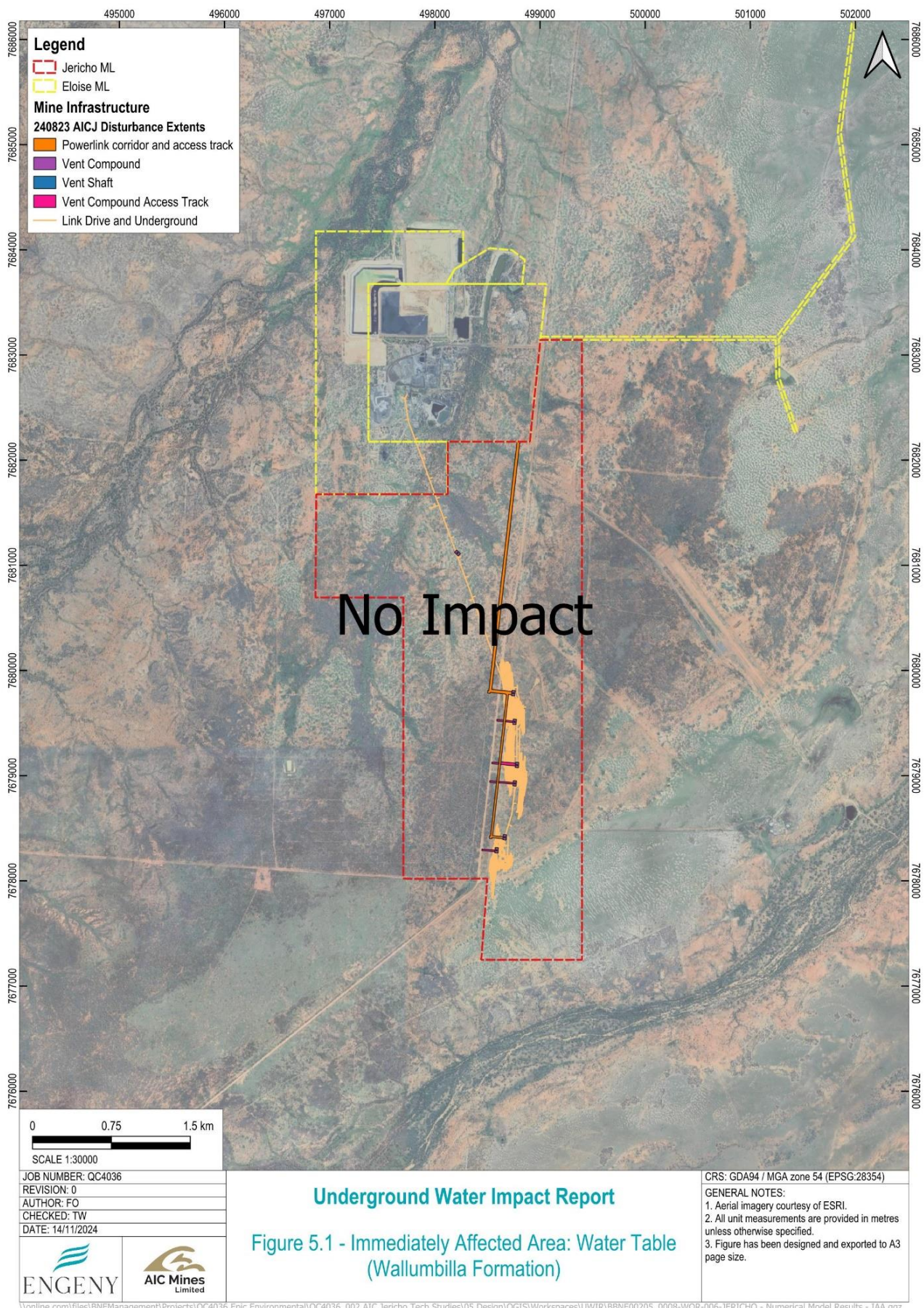


FIGURE 5.1: IMMEDIATELY AFFECTED AREA (IAA): WATER TABLE (WALLUMBILLA FORMATION)

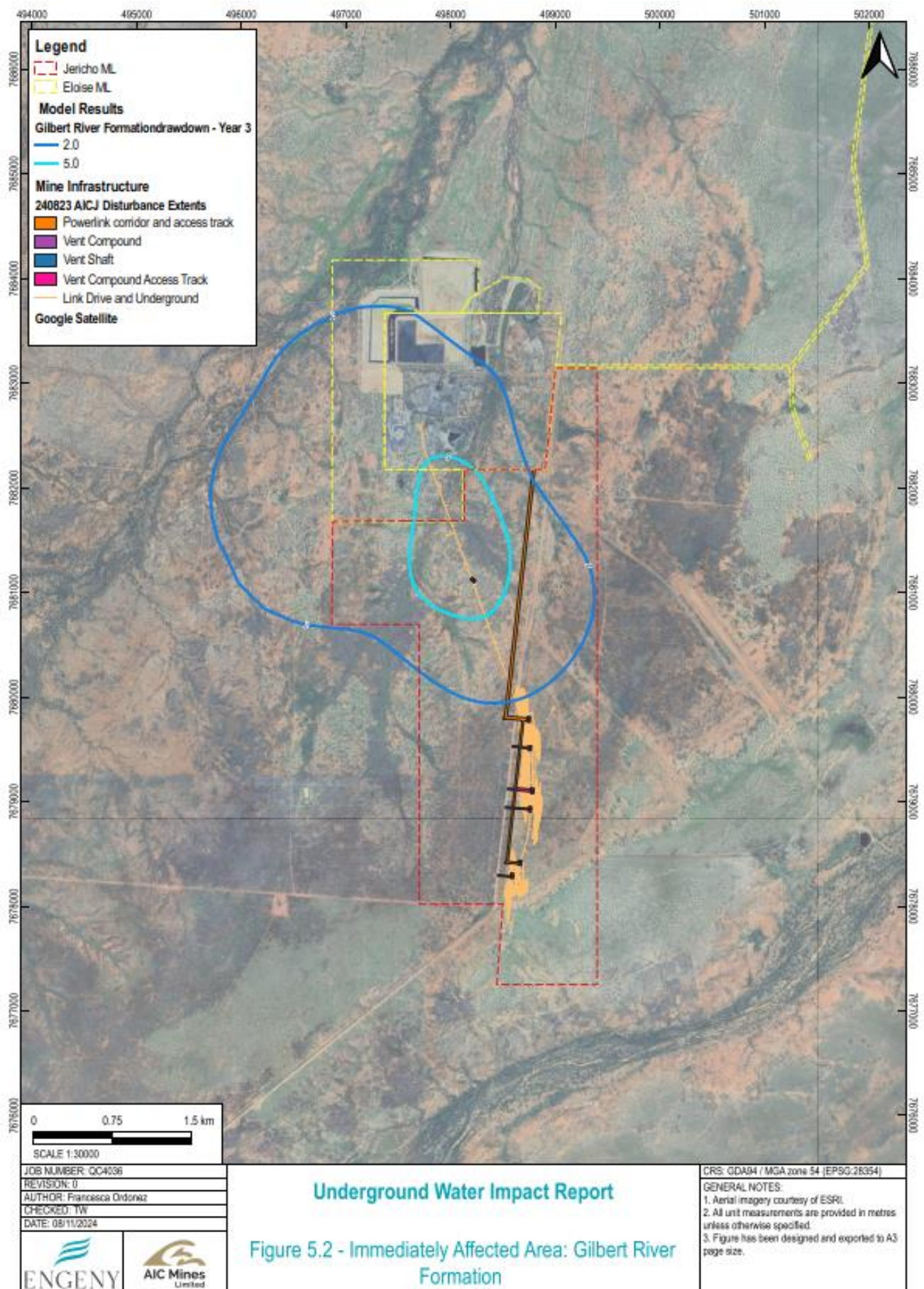


FIGURE 5.2: IMMEDIATELY AFFECTED AREA (IAA): GILBERT RIVER FORMATION

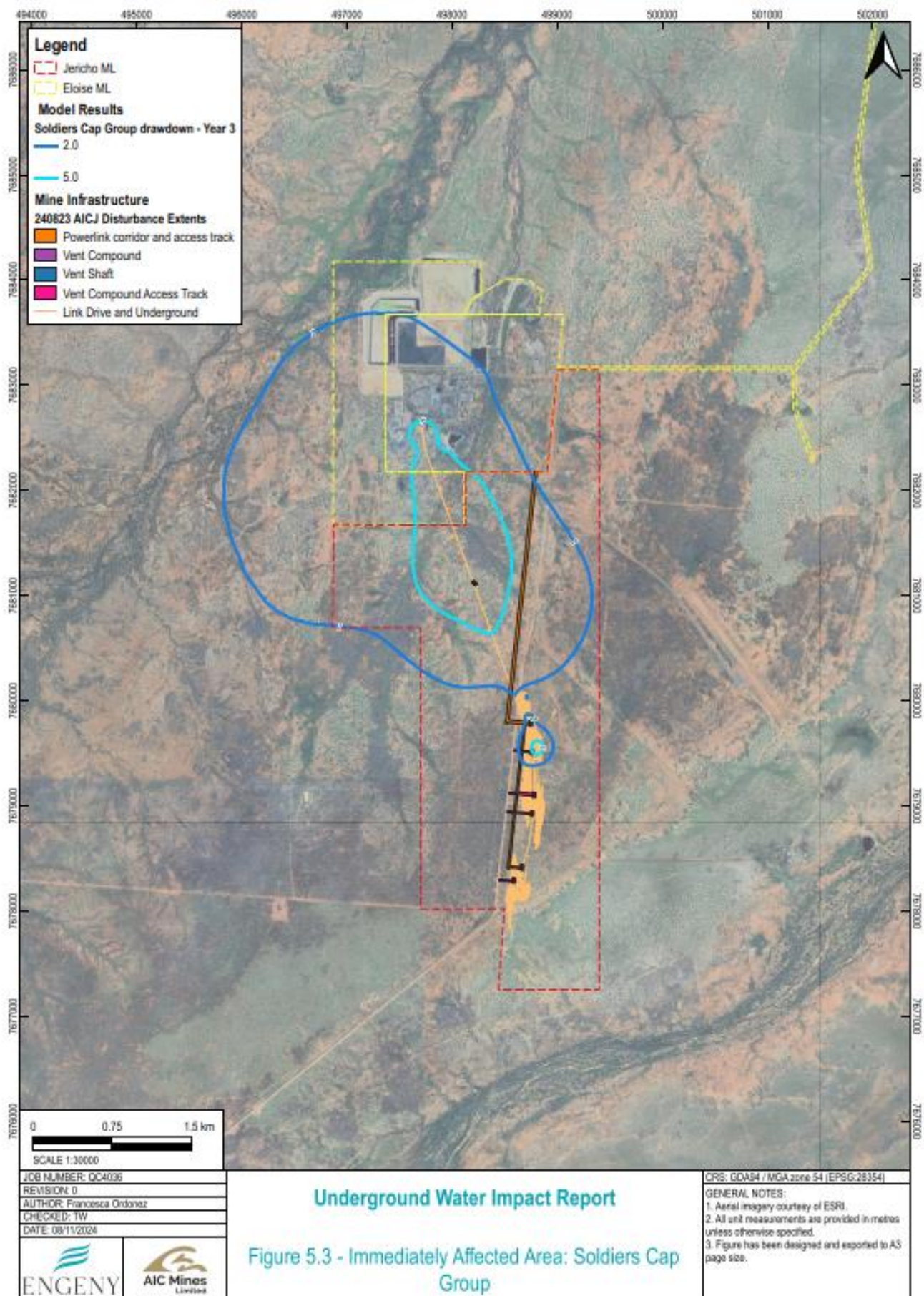


FIGURE 5.3: IMMEDIATELY AFFECTED AREA (IAA): SOLDIERS CAP GROUP

5.3 Groundwater Drawdown Over the Mine Life (LTAA)

As discussed in Section 5.1, the Long-term Affected Area (LTAA) is defined as the area of an aquifer where the water level is predicted to decline by more than the bore trigger threshold at any time over the life of the project.

The extent of the predicted maximum drawdown for the aquifers at the Jericho project, namely the Wallumbilla Formation (water table), Gilbert River Formation and Soldiers Cap Formation, were predicted by the numerical model discussed in Section 5.1 (and Appendix C:).

There are two underground water bores, RN118181 and RN93345, within the area of the bore trigger threshold (5m drawdown) within the LTAA area.

The maximum predicted incremental (i.e. project only drawdown) and cumulative drawdown (drawdown from both the Jericho project and approved mining operations at Eloise Copper Mine) are presented for each hydrogeological unit.

Figure 5.4 presents the predicted maximum incremental drawdown for the Wallumbilla Formation, that the water table is within, throughout the life of the Jericho project. The depth of the predicted incremental drawdown is approximately 2 m due to the Jericho project. Drawdown preferentially propagates towards the west and the north (existing ECM). The cumulative drawdown for the Wallumbilla Formation is shown on Figure 5.5.

Figure 5.6 presents the predicted maximum incremental drawdown for the Gilbert River Formation throughout the life of the Jericho project. The incremental drawdown within the Gilbert River Formation is predicted to be of a similar magnitude to that predicted for the Soldiers Cap Formation. The cumulative drawdown for the Gilbert River Formation is shown on Figure 5.7.

Figure 5.8 presents the predicted maximum incremental drawdown for the Soldiers Cap Formation throughout the life of the Jericho project. The Soldiers Cap Formation has the largest LTAA predicted by the model simulations, with the LTAA extending 4 km away from the Jericho project. The cumulative drawdown for the Soldiers Cap Formation is shown on Figure 5.9.

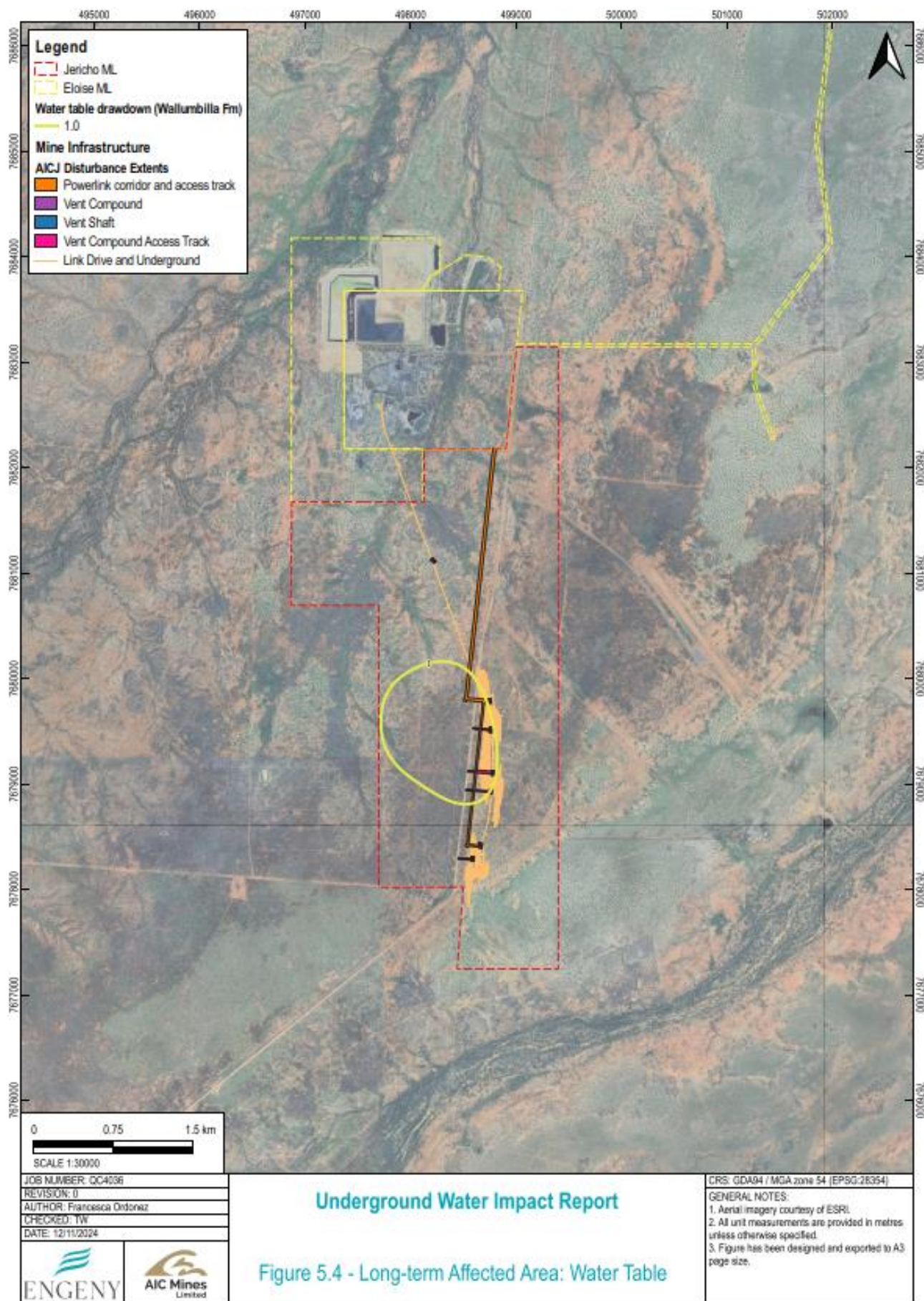


FIGURE 5.4: LONG-TERM AFFECTED AREA (LTAA): WALLUMBILLA WATER TABLE – INCREMENTAL DRAWDOWN

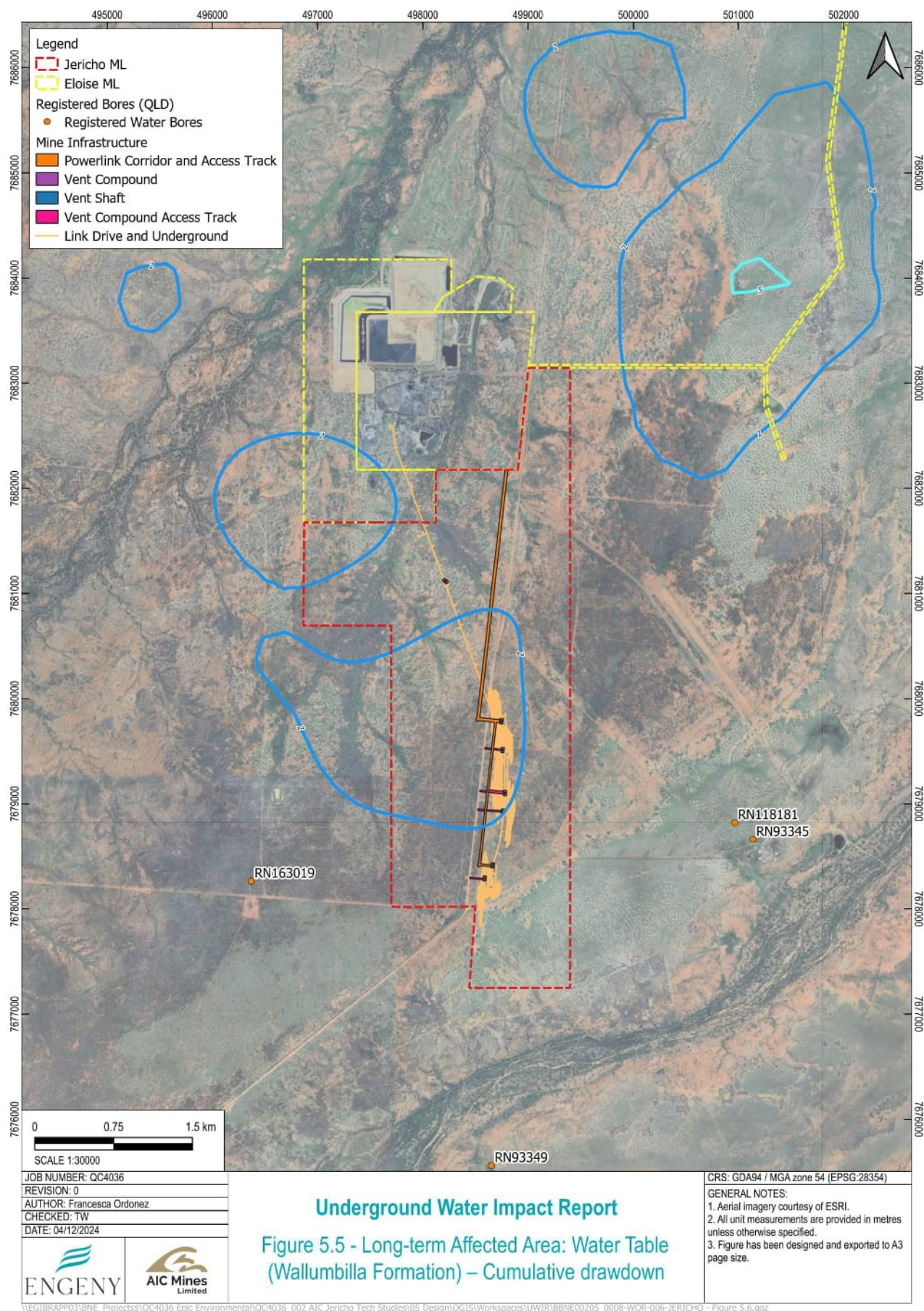


FIGURE 5.5: LONG-TERM AFFECTED AREA (LTAA): WALLUMBILLA WATER TABLE – CUMULATIVE DRAWDOWN

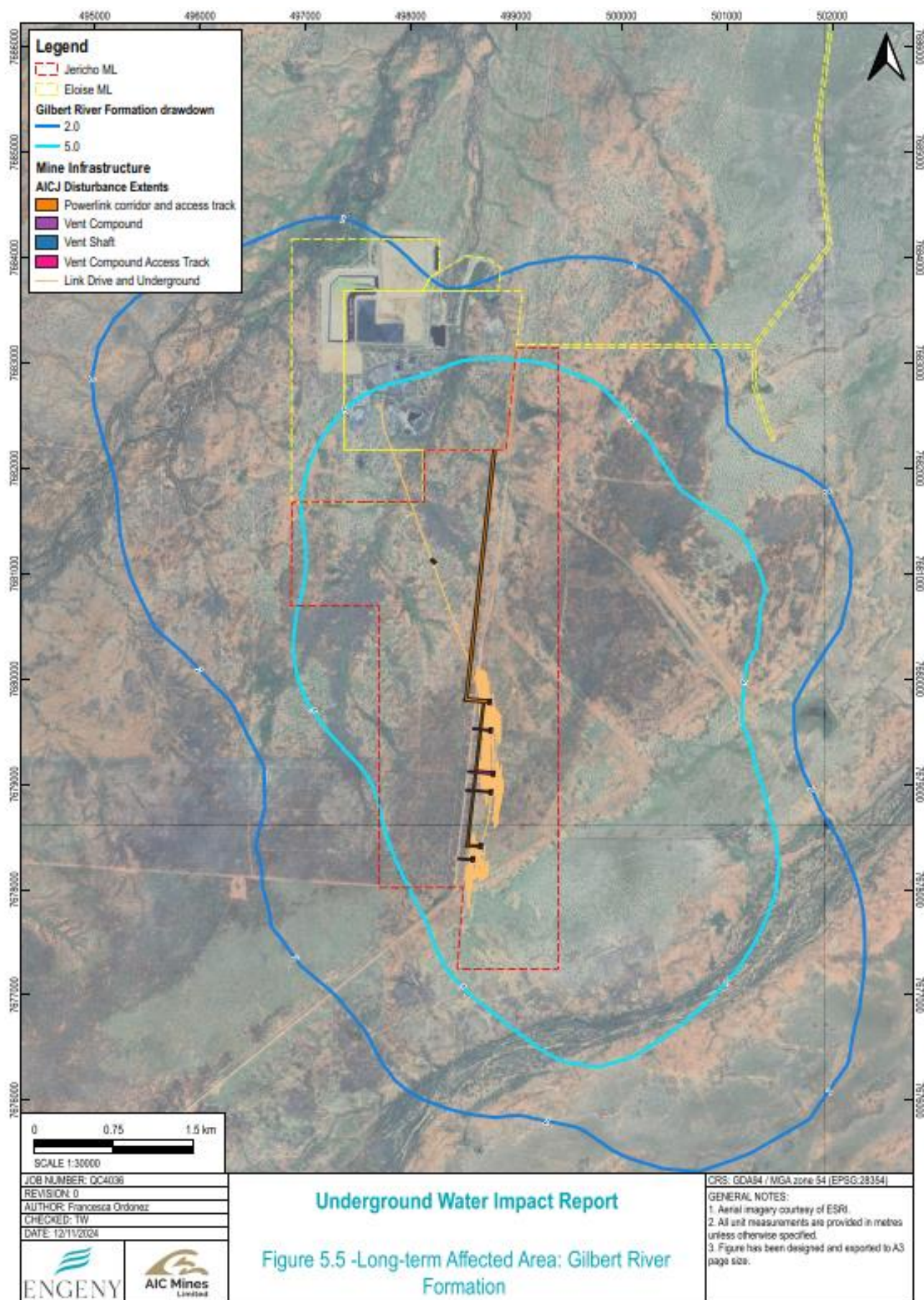


FIGURE 5.6: LONG-TERM AFFECTED AREA (LTAA): GILBERT RIVER FORMATION – INCREMENTAL DRAWDOWN

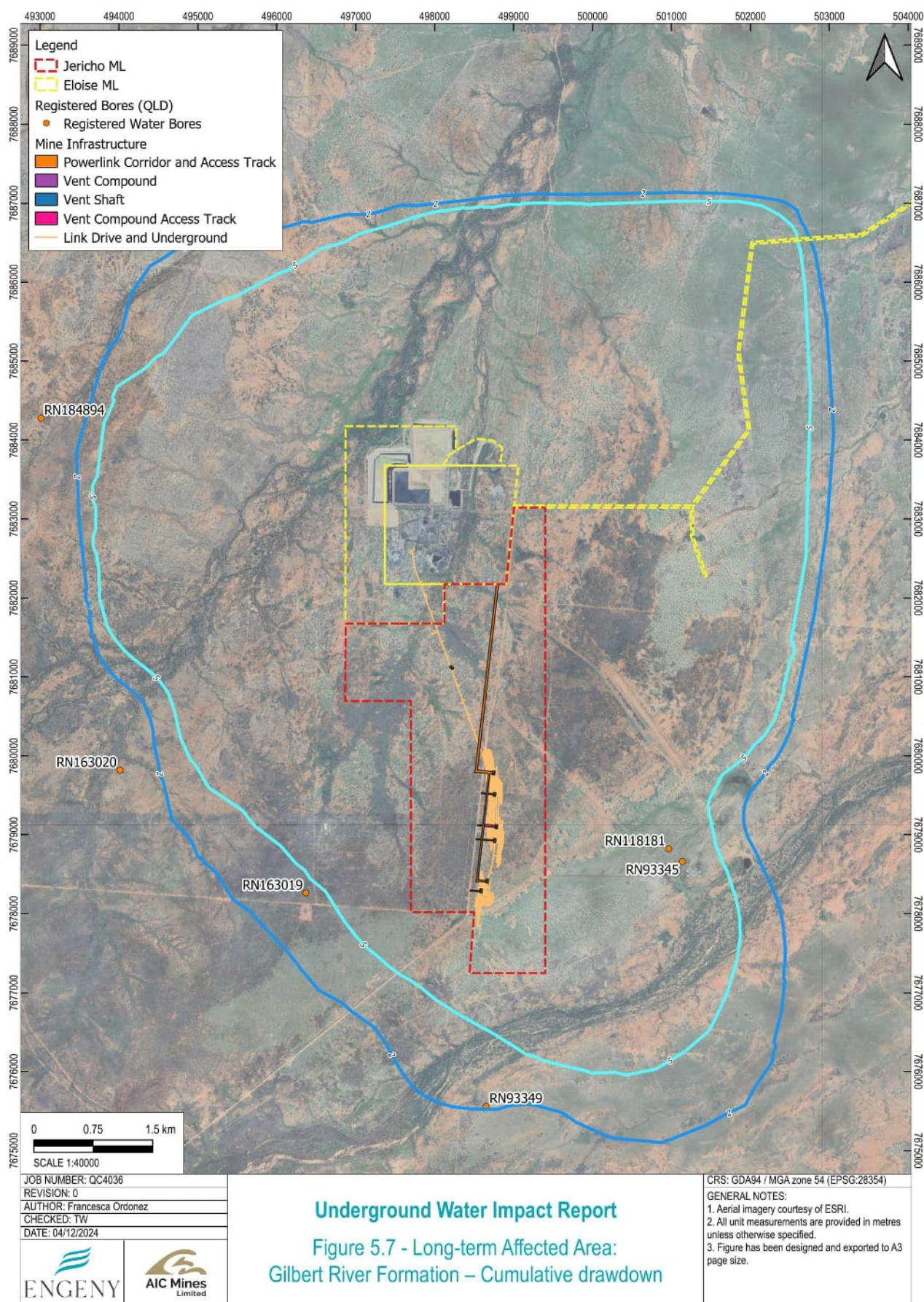


FIGURE 5.7: LONG-TERM AFFECTED AREA (LTAA): GILBERT RIVER FORMATION – CUMULATIVE DRAWDOWN

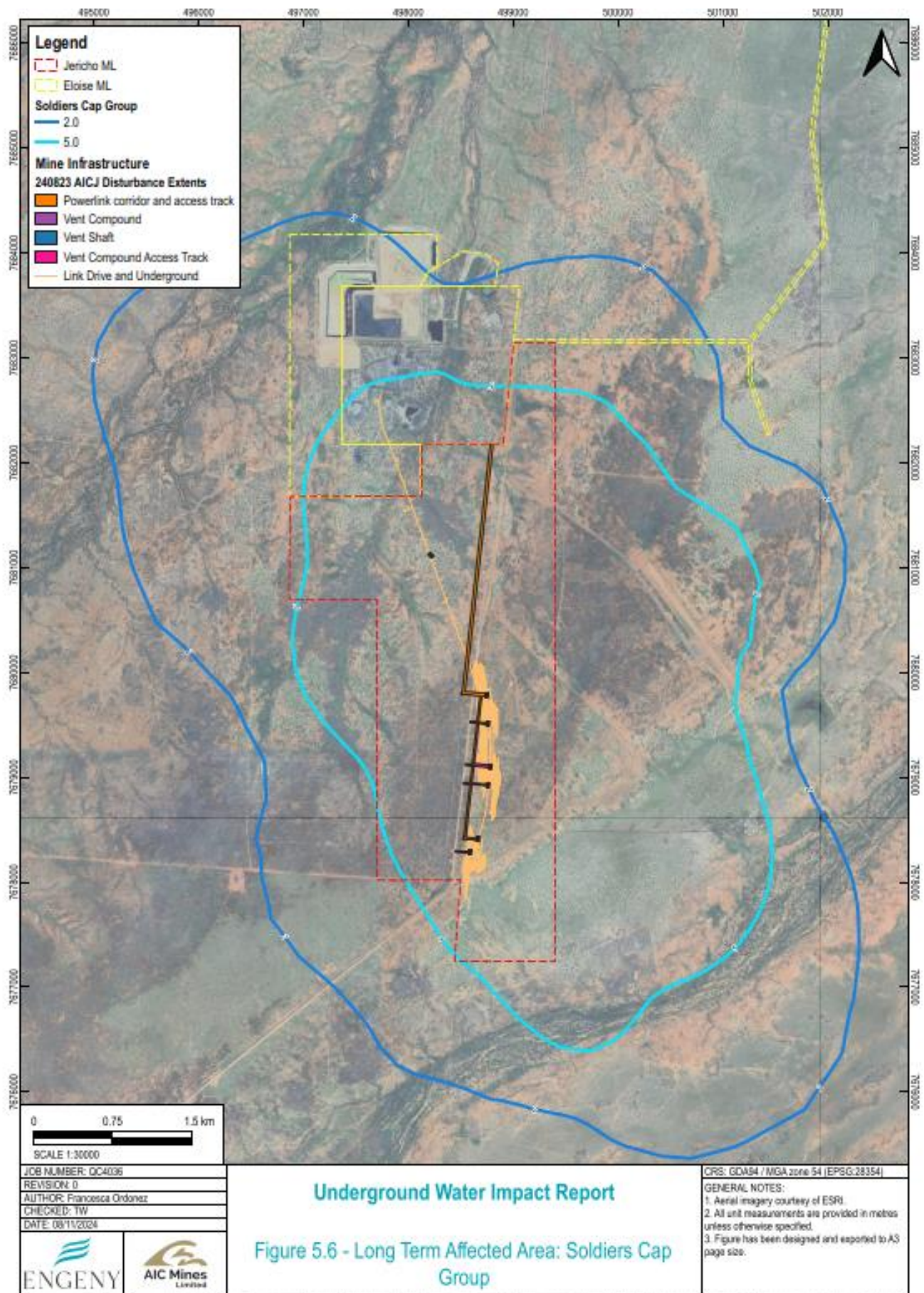


FIGURE 5.8: LONG-TERM AFFECTED AREA (LTAA): SOLDIERS CAP GROUP – INCREMENTAL DRAWDOWN

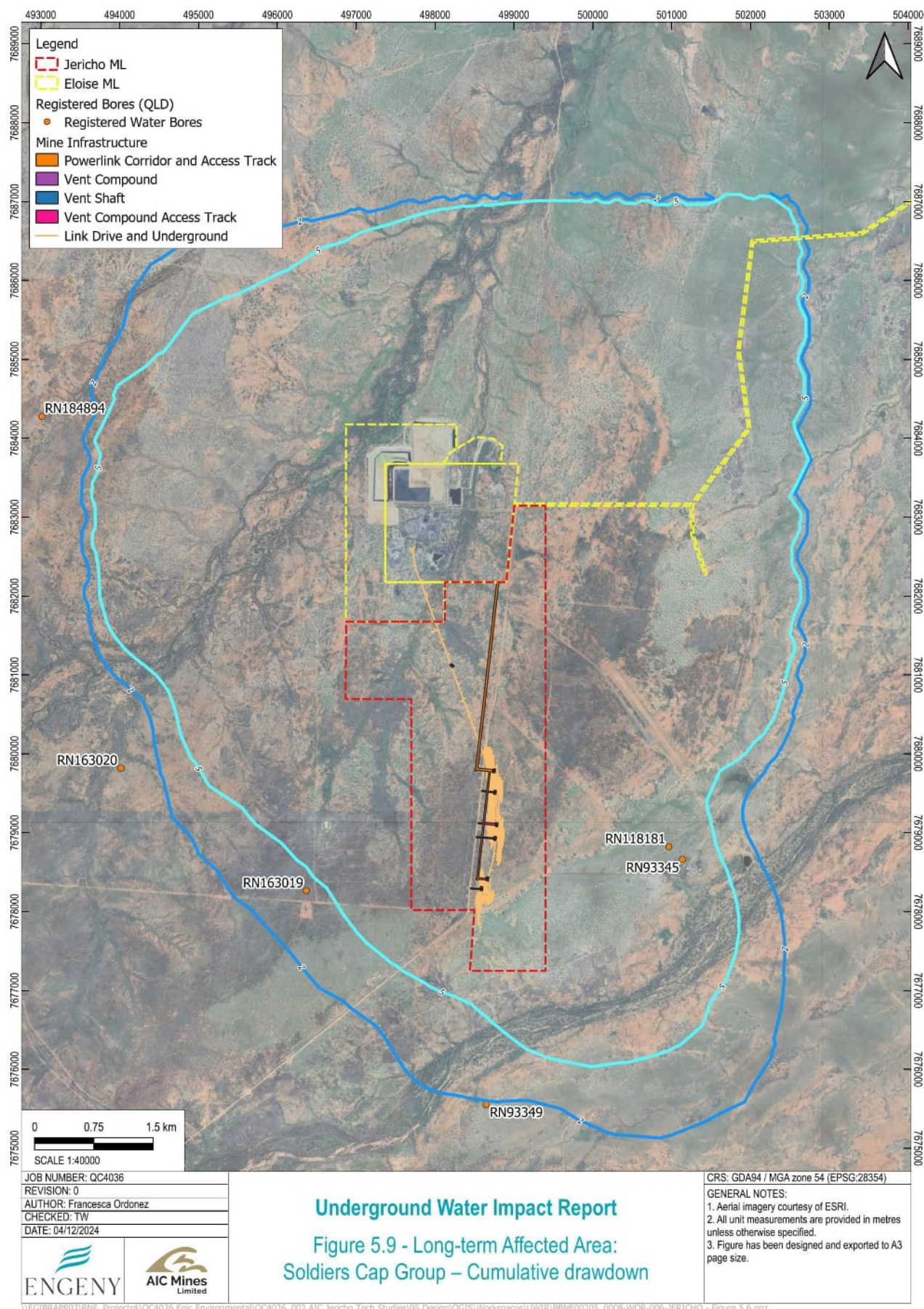


FIGURE 5.9: LONG-TERM AFFECTED AREA (LTAA): SOLDIERS CAP GROUP – CUMULATIVE DRAWDOWN

5.4 Water Bores within IAA and LTAA

There are no registered bores with the tenement area of ML100348, as shown on Figure 2.7. Simulated groundwater level change for the registered underground water users in the wider area, are shown on Figure 5.10. All the registered bores in the area are in consolidated aquifers (refer to Table 2.1).

There are no registered or known water bores (refer to Table 4.5), were identified within the IAA for the Tertiary Sediments, Wallumbilla Formation, Gilbert River Formation, or Soldiers Cap Formation.

Two registered or known water bores, **RN118181** and **RN93345**, were identified within the LTAA of the Gilbert River Formation and Soldiers Cap Formation, as shown on LTAA maps in Section 5.3 (Figure 5.8 [incremental drawdown] and Figure 5.9 [cumulative drawdown]).

The simulated incremental drawdown from Jericho project is similar for both the Gilbert River Formations and the Soldiers Cap Group. RN93345, has a status of abandoned, but still usable. RN118181 has a status of existing. The details of the water bores are summarised in Table 5.1.

TABLE 5.1: UNDERGROUND WATER USERS WITH THE LTAA

Bore ID Name	Distance and direction from lease boundary	Status/Use	Depth (m)	Aquifer (m)	Screen/open hole (m)	Strata description / Formation name*
RN118181 Supplementary Bore	1.5 km east	Existing	48.0	30 -	30 - 48	Granite/ Soldiers Cap Group - undiff
RN93345 Eloise House Bore	1.7 km east	Abandoned but still usable	30.5	18 - 30	23 – 30.5	Hard quartzite/ Not recorded

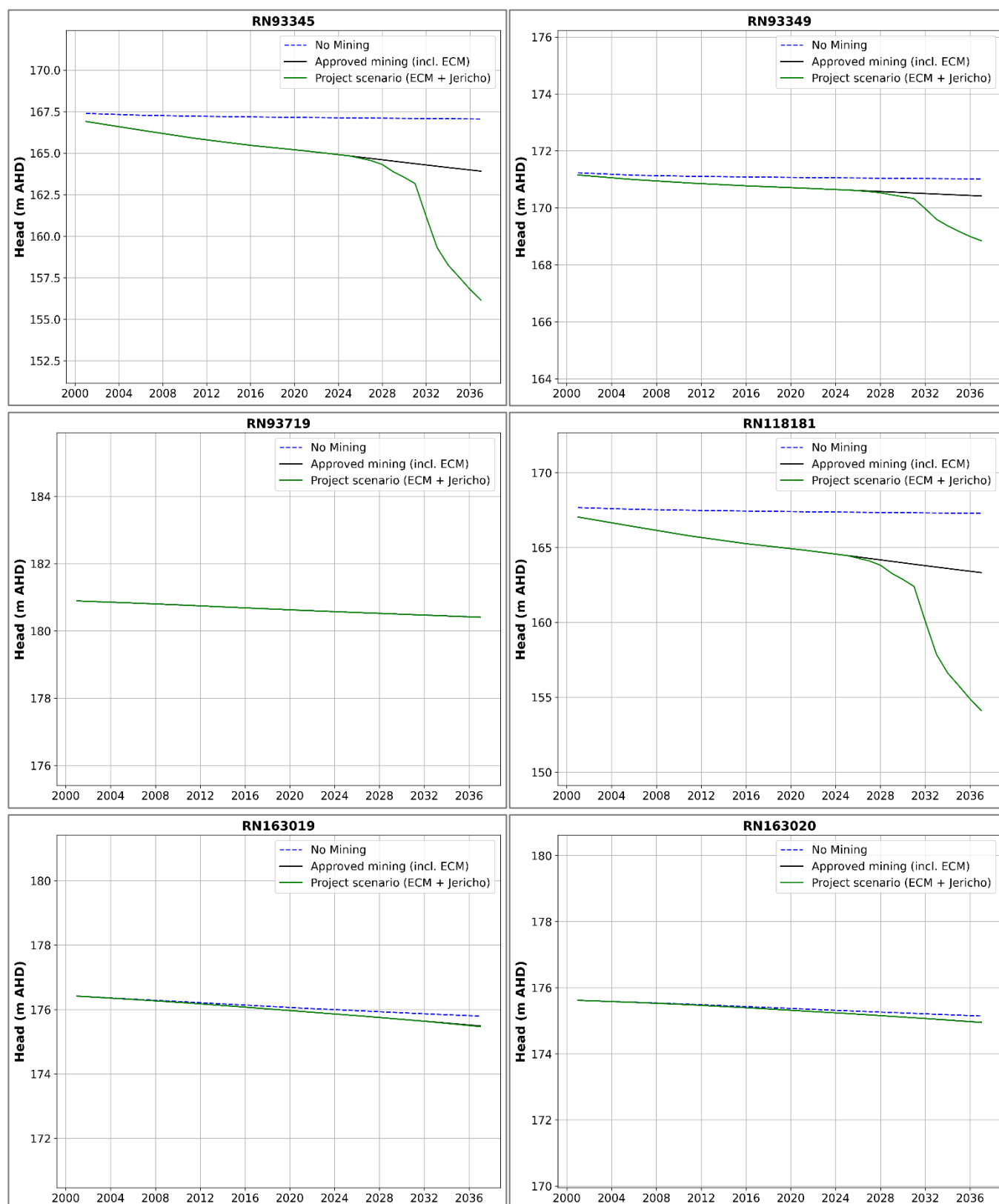


FIGURE 5.10: SIMULATED GROUNDWATER LEVEL AT SURROUNDING REGISTERED BORES

5.5 Review of Maps Produced

AIC will conduct an annual review of the accuracy of the maps presented in Sections 5.3 and 5.4 showing the predicted IAA and LTAA for the potentially affected aquifers. The accuracy of the maps will be assessed by comparing the predicted drawdown to actual drawdown in those monitoring bores which are accessible and predicted to be impacted.

AIC will commit to providing a summary of the outcome of the annual review to the chief executive. The annual review will include a statement of whether there has been a material change in the information or predictions used to prepare the maps.

The first annual review is scheduled to occur in Q1 2026.

5.6 Baseline Bore Assessments and Make Good Obligations

Under the Water Act, make good obligations apply to resource tenure holders for any bore that may be affected. These obligations require the resource tenure holder to:

- Conduct a bore assessment.
- Enter into a make good agreement with the bore owner.
- Comply with the terms of the agreement.
- Negotiate a variation of the agreement if requested.

AICJ have not yet entered into any make good agreements in relation to the project. However, during consultation meetings with landowners in December 2024 and January 2025, AICJ discussed the requirement for bore assessments of bores outside the project ML (ML 100348) and within the predicted LTAA. In response, AICJ made the following commitments:

- **Bore Assessments:** AICJ will complete the bore assessments at Levuka Station (RN184894, RN163020, RN163019) and Elrose Station (RN118181, RN93345, RN93349), following the baseline assessment guideline (ESR/2016/2005, Version 5.06). It is noted that at this stage only RN118181 and RN93345 are within the LTAA bore threshold.
- **Bore Readings and Sampling:** After the bore assessments, AICJ will perform bore readings and sampling every three months, aligned with scheduled sampling of monitoring bores within the project ML.
- **UWIR Approval Notification:** AICJ will notify landowners once the Chief Executive approves the UWIR and when AICJ begins exercising its underground water rights within the Jericho Mining Lease.
- **Annual Report Communication:** Depending on UWIR approval conditions, AICJ will share and discuss the summary annual report with the landowners. The report will comply with Section 376(e)(ii) of the Water Act, detailing whether there has been a material change in the information or predictions used to determine the LTAA.
- **Project Updates:** AICJ will keep the landowners informed about the progress of the Jericho Underground link drive and related works.
- **Impact Communication:** If impacts are identified for the Levuka Station (RN184894, RN163020, RN163019) and Elrose Station (RN118181, RN93345, RN93349) bores, AICJ will promptly inform the landowners.

This is discussed further in Appendix D:.

6. PART D: IMPACTS ON ENVIRONMENTAL VALUES

6.1 Applicable Environmental Values

This section addresses the requirements under Section 376(b-e) of the Water Act and requirements. This section identifies and describes the environmental values related to groundwater within the area of the Jericho project.

The quality of Queensland water is protected under the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 (EPP Water). The EPP Water achieves the objective of the Environmental Protection Act (EP Act) to protect Queensland waters whilst supporting ecologically sustainable development. Queensland waters include rivers, streams, wetlands, lakes, aquifers, estuaries and coastal areas. The EPP Water provides a framework for identifying environmental values (EVs) for Queensland waters and establishes the water quality objectives (WQOs) to protect or enhance those EVs.

6.2 Environmental Values and Water Quality Objectives

The EPP Water (Section 1.3) provides a framework to protect and / or enhance the environmental values and hence suitability of Queensland waters (including groundwater) for various beneficial uses. The project area is not listed in Schedule 1 of the EPP Water, therefore the EVs relevant to the Project, as outlined in Part 3, section 6(2) of the EPP Water, include:

- Aquatic ecosystem.
- Agricultural purposes.
- Recreational purposes.
- Drinking water.
- Industrial purposes.
- Cultural and spiritual values.

The EPP Water provides general Water Quality Objectives (WQO) to support and protect the various EV identified for waters. The WQO are long-term goals for water quality management.

This section focuses on identifying site-specific EVs and WQOs. An overview of all potential EVs within the study area have been and have been subsequently assessed for suitability.

6.2.1 Groundwater EVs and Water Quality Objectives

The following sections compare the groundwater quality sampled from the site monitoring bores from the three hydrostratigraphic units. The proposed project is wholly located in the Soldiers Cap group (Proterozoic metasediments) hydrogeological unit, which is beneath the groundwater units in the GABORA.

The below sections consider whether aquatic ecosystem and applicable human use EVs could be supported from the three hydrostratigraphic units (i.e., for future use). Generally, the water quality within each of the hydrostratigraphic units is naturally inconsistent with the WQOs for the identified EVs. As the water quality generally would not be suitable for human use or sustaining aquatic life, it is demonstrated that there are limited EVs within the three hydrostratigraphic units.

6.2.1.1 Aquatic Ecosystems and GDEs

The aquatic ecosystem EV applies to all waters within the study area. The groundwater quality sampled from site monitoring bores in the study area generally exceeds the WQOs for this EV for electrical conductivity, pH, and several dissolved metals, in all three of the three hydrostratigraphic units. These results indicate that the existing *in-situ* groundwater is likely not suitable for sustaining aquatic ecosystems. Table 6.1 compares the existing groundwater quality in the three relevant hydrostratigraphic units to the aquatic ecosystem (ANZECC 95%) WQO.

TABLE 6.1: COMPARISON OF AQUATIC ECOSYSTEM WQOS AND GROUNDWATER QUALITY

Parameter	Aquatic ecosystem WQO (ANZECC 95%)	Unit	Wallumbilla Formation		Gilbert River Formation		Soldiers Cap Group (Proterozoic metasediments)	
			min	max	min	max	min	max
Laboratory physicochemical parameters								
Electrical Conductivity	435	µS/cm	571.0	4460.0	800.0	1100.0	733.0	8240.0
pH	7.5	pH	7.1	10.2	7.7	8.1	6.7	9.8
Dissolved metals								
Aluminum	0.055	mg/L	<0.01	0.09	<0.01	0.1	<0.01	0.02
Arsenic	0.013	mg/L	<0.001	0.01	0.04	0.13	<0.001	0.02
Cadmium	0.0002	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	0.001	mg/L	<0.001	0.003	<0.001	<0.001	<0.001	<0.001
Cobalt	0.0014	mg/L	<0.001	0.003	<0.001	<0.001	<0.001	0.009
Copper	0.0014	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	0.0034	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	1.9	mg/L	0.004	1.6	0.02	0.04	<0.001	7.9
Molybdenum	0.034	mg/L	<0.001	0.3	0.002	0.006	0.004	0.01
Nickel	0.011	mg/L	<0.001	0.02	<0.001	0.004	<0.001	0.05
Selenium	0.011	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	0.00005	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	0.0005	mg/L	<0.001	0.005	<0.001	<0.001	<0.001	0.02
Vanadium	0.006	mg/L	<0.01	0.02	<0.01	<0.01	<0.01	<0.01
Zinc	0.008	mg/L	<0.005	0.04	<0.005	0.007	<0.005	0.01

Note: Orange shading indicates exceedance for the WQO.

6.2.1.2 Livestock

This EV aims to ensure that water supplied to produce healthy livestock is suitable for this use. Whether EVs can be sustained depends on multiple relevant water quality characterises, as opposed to characteristics of a single parameter alone. Accordingly, while the groundwater *in situ* could be suitable for various stock watering uses based on TDS alone, fluoride concentration exceeds the WQO for the maximum measurements in all three of the three hydrostratigraphic units. Table 6.2 compares the existing groundwater quality in the three hydrostratigraphic units to the stock water WQO.

TABLE 6.2: COMPARISON OF STOCK WATERING WQOS AND GROUNDWATER QUALITY

Parameter	WQO (Maximum)	Unit	Wallumbilla Formation		Gilbert River Formation		Soldiers Cap Group (Proterozoic metasediments)	
			min	max	min	max	min	max
TDS – Sheep	5000	mg/L	325	2,900	592	794	422	6,480
TDS – Beef cattle, horses and pigs	4000							
TDS – Dairy cattle	2500							
TDS – Poultry	2000							
Fluoride	2		0.2	9.7	1.8	2.2	0.3	5.9

Source: Table 9.2.24 (ANZECC & ARMCANZ, 2000). Note: Orange shading indicates exceedance for the WQO.

6.2.1.3 Raw Water for Drinking Water Consumption (Human Use)

Table 6.3 provides a comparison of drinking water WQOs and groundwater quality within the three hydrostratigraphic units. The site-specific data shows that natural groundwater quality (maximum concentrations) generally exceed the WQOs.

TABLE 6.3: COMPARISON OF DRINKING WATER WQOS AND GROUNDWATER QUALITY

Parameter	WQO	Unit	Wallumbilla Formation		Gilbert River Formation		Soldiers Cap Group (Proterozoic metasediments)	
			min	max	min	max	min	max
Laboratory physicochemical parameters								
pH	6.5 - 8.5	pH	7.1	10.2	7.7	8.1	6.7	9.8
Total Dissolved Solids	600	mg/L	325	2,900	592	794	422	6,480
Major ions								
Sodium	180	mg/L	88	710	178	207	176	1,220
Sulphate	250	mg/L	2	1,570	258	301	98	3,190

Note: Orange shading indicates exceedance for the WQO.

6.3 Potential Impacts on the Environmental Values

Change to groundwater quality is expected to be limited, given there will be no discharges of mine affected water. All Jericho associated water will be pumped to the approved ECM water management system.

The potential for groundwater quality to change within the HSUs is limited due to groundwater hydraulic gradient being maintained towards the underground mining area (i.e. the underground mine acts as a groundwater sink). Hydraulic head gradients from the surrounding aquifer to the operating underground mine ensures that the quality of the groundwater in the surrounding (and overlying) aquifers would be unaffected, because groundwater is extracted (as associated water) during the mining operation.

Long term groundwater monitoring from ECM demonstrates that there has been limited change to groundwater quality in aquifers surrounding the ECM underground mine, despite in-situ storage of waste rock.

Section 4.3 compares the groundwater quality sampled from the site monitoring bores from the three hydrostratigraphic units. The proposed Jericho project is wholly located in the Soldiers Cap group (Proterozoic metasediments) hydrogeological unit, which is beneath the groundwater units in the GABORA (section 0).

Generally, the water quality within each of the hydrostratigraphic units is naturally inconsistent with the WQOs for the identified EVs. As the water quality generally would not be suitable for sustaining EVs, and it is demonstrated that there are limited EVs within the three hydrostratigraphic units.

6.3.1 Impacts on Surface Drainage

Creeks in the vicinity of the Jericho project are ephemeral and typically only discharge after heavy rainfall events. Based on site groundwater level monitoring, the groundwater table is greater than 10m below the surface (refer to groundwater levels in Table 4.3), and does not intersect the ground surface in the creek beds and there is no groundwater seepage through the creek beds and banks to provide creek baseflow.

On that basis, any localised drawdown associated with the Jericho project is not anticipated to impact surface water baseflow or natural flow regimes the surrounding watercourses. Therefore, impacts on nearby surface waters are considered not to occur.

The Tertiary Sediments / weathered zone is considered to have the highest potential to supply water to GDEs due to being the shallowest aquifer (when saturated), and potentially unconfined in some areas within the Jericho project. Figure 5.4 presents the maximum predicted drawdown for the water table (within the Wallumbilla Formation) with respect to the locations of potential GDEs.

6.3.2 Potential Impacts to Surface Ecological Systems

Potential impacts to surface aquatic ecosystems (Figure 4.5), are less likely to occur due to the underground mining occurring wholly within the Soldiers Cap Group which is beneath the Wallumbilla Formation (an aquitard), limiting the potential for drawdown to occur in the unconfined aquifer. There are several sensitive receivers at surface within the study area, however, these surface ecological systems are not

hydraulic connected to the Soldiers Cap Group (Proterozoic metasediments), due to the low hydraulic conductivity and depth (greater than 80 mbgl).

The modelling results show that the IAA and LTAA is limited to the vicinity of the mine and does not extend any surface ecological areas. Figure 6.1 shows the groundwater level change during the mining period, and demonstrates that limited drawdown occurs at the sensitive receivers. This is due to the Wallumbilla Formation aquitard limiting vertical seepage of the water table aquifer and propagation of depressurisation from below.

The assessment showed that the surface Tertiary sediments are largely unsaturated above the underground mining area, and the depth to water in the study area is greater than 10 m, and not relied upon by surface ecological systems. There are no recorded or potential groundwater dependent ecosystems within the area of predicted groundwater drawdown (>2 m) which hosts the unconfined water table.

Overall, there would be little to nil predicted adverse impact to the identified surface ecological systems.

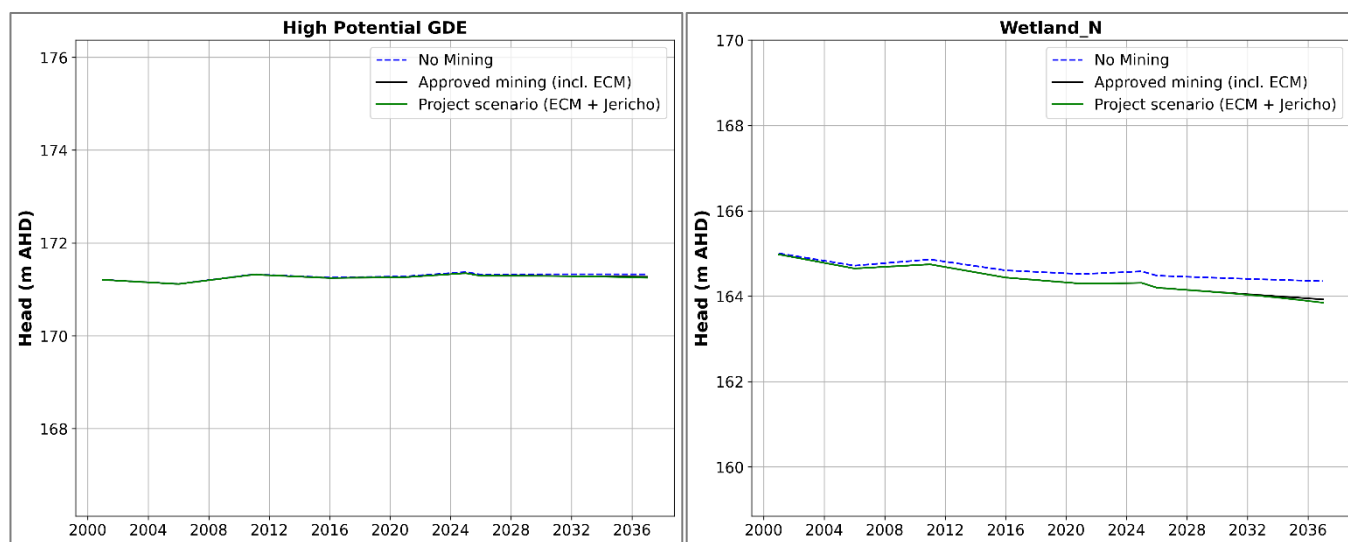


FIGURE 6.1: SIMULATED GROUNDWATER LEVEL CHANGE AT HIGH POTENTIAL GDE

6.4 Impacts to Formation Integrity and Surface Subsidence

Sub-surface formation integrity issues and surface subsidence are not anticipated at the Jericho project due to the small amount of groundwater expected to be produced at the Jericho project from the unconsolidated sediments, and limited drawdown of the water table. The overlying aquifers are not dewatered.

7. PART E: WATER MONITORING STRATEGY

This section addresses the requirements under Section 378 of the Water Act and requirements, and in consideration of the UWIR Guideline.

7.1 Rationale

The groundwater monitoring network was established at the Jericho project in 2023 to establish baseline groundwater level and quality in the area of the proposed underground mine. The monitoring network was developed based upon the general understanding of groundwater flow conditions, the geology of the region, and the available mine plan at the time. The groundwater monitoring network was also developed to satisfy the requirements stipulated in the Jericho project's EA, and the monitoring requirements of the UWIR.

The Jericho project groundwater monitoring bores target the four main hydrostratigraphic units present at the Jericho project - Tertiary Sediments, Wallumbilla Formation Gilbert River Formation, Soldiers Cap Formation. Groundwater levels and quality are monitored across the network periodically in accordance with the Jericho project EA and this water monitoring strategy. The ongoing monitoring program will improve the understanding of the groundwater locally and regionally, and enable ongoing calibration of the numerical groundwater model, particularly following commencement of mining and extraction of underground water.

When establishing the monitoring network, monitoring bore locations were constrained by mining lease boundaries, future mine plans and infrastructure, as well as the orientation of the target geology with respect to the general groundwater flow conditions in the Jericho project area.

The monitoring network was established to supplement the existing monitoring network in place at the ECM, and to ensure that any changes to groundwater conditions as a result of the Jericho project through the exercise of water rights could be monitored and assessed against predictions made in this report, and for the final UWIR.

All monitoring bores at the Jericho project were spatially distributed as far as was reasonably practicable to allow for adequate spatial spread of data across the target formations.

7.2 Monitoring Strategy

The groundwater monitoring network at Jericho consists of thirteen (13) monitoring bores at various depths. Monitoring bore 23JEWB001-23JEWB0010, were installed in July 2023. The existing Jericho groundwater monitoring bore network is outlined in Table 4.3 (summarises the location, target formation and construction details for each of the monitoring bores) and shown in Figure 7.1.

Three (3) monitoring bores (24JEWB011, 24JEWB015, and 24JEWB016) are associated with the ULD to establish baseline hydrogeologic conditions, were installed in August 2024, and have been incorporated into the monitoring network used for this report.

In consideration of the monitoring rationale, the strategy has been developed with consideration of:

- The monitoring program will be commenced within three months of approval of the initial UWIR (this report).
- The quarterly monitoring of water level at Jericho will be synchronised with the quarterly monitoring of groundwater level at ECM to better understand any relationship between the sites.
- The annual monitoring of groundwater quality at Jericho will be synchronised with ECM to better understand any relationship between the sites and parameters.
- The quarterly monitoring of water level at Jericho will be synchronised with the annual monitoring of groundwater quality at ECM and Jericho to better understand any relationship between the sites and parameters.

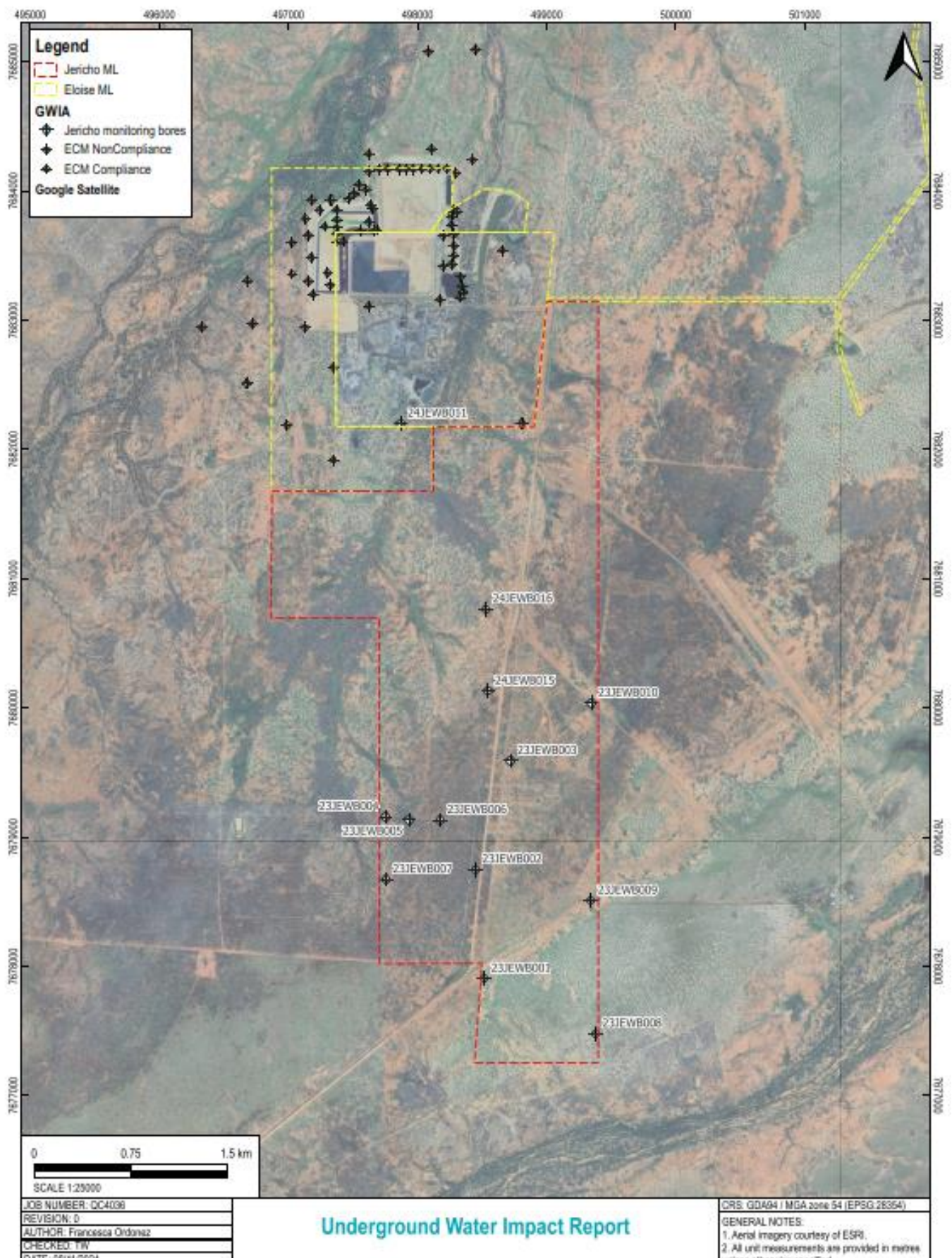


FIGURE 7.1: JERICHO GROUNDWATER MONITORING NETWORK

7.3 Monitoring Frequency and Parameters

A groundwater monitoring program has been developed and will be maintained during the mining operation. The objective of this monitoring program is to monitor the potential impacts to the environment and provide a detection system to identify if environmental harm has or has the potential to occur, and in consideration of the rationale and strategy described above.

The monitoring program using the site monitoring bore network would provide a sufficient spatial and temporal sampling regime to enable valid conclusions about the presence or absence of impacts and contamination on the groundwater regime down gradient of any potential source of contamination.

Details of monitoring frequency and measurements are outlined in Table 7.2 and Table 7.2. All field measurements during construction and occupancy will be recorded in a logbook.

TABLE 7.1: GROUNDWATER MONITORING – GROUNDWATER LEVELS

ID	Screened Geology/Location	Method	Frequency	Timetable
23JEWB001	Wallumbilla Formation	Measured using Dip Meter (or similar method)	Quarterly	January
23JEWB002	Wallumbilla Formation			April
23JEWB003	Gilbert River Formation			July
23JEWB004	Tertiary Sediments			October
23JEWB005	Tertiary Sediments			
23JEWB006	Tertiary Sediments			
23JEWB007	Wallumbilla Formation			
23JEWB008	Wallumbilla Formation			
23JEWB009	Wallumbilla Formation			
23JEWB010	Soldiers Cap Group (Proterozoic metasediments)			
24JEWB011	Soldiers Cap Group (Proterozoic metasediments)			
24JEWB015	Soldiers Cap Group (Proterozoic metasediments)			
24JEWB016	Wallumbilla Formation			
RN118181	Soldiers Cap Group (Proterozoic metasediments)			
RN93345	-			
Groundwater Take	From discharge point to ECM	Flow meter readings fitted on discharge pipe	Monthly	January February March April May June July August September October November December

TABLE 7.2: GROUNDWATER MONITORING – GROUNDWATER QUALITY

Item	Screened Geology	Parameters	Frequency	Timetable
23JEWB001	Wallumbilla Formation	Physiochemical parameters (pH, temperature, redox and Electrical conductivity, Total Dissolved Solids, including observations such as odour, colour)	Annually	April – synchronised with water level monitoring
23JEWB002	Wallumbilla Formation			
23JEWB003	Gilbert River Formation			
23JEWB004	Tertiary Sediments			
23JEWB005	Tertiary Sediments	Major ions (Chloride, Sulphate, Calcium, Magnesium, potassium, Sodium, Alkalinity)		
23JEWB006	Tertiary Sediments			
23JEWB007	Wallumbilla Formation			
23JEWB008	Wallumbilla Formation	Dissolved metals (Aluminium, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Strontium, Tin, Uranium, Vanadium and Zinc.)		
23JEWB009	Wallumbilla Formation			
23JEWB010	Soldiers Cap Group (Proterozoic metasediments)			
24JEWB011	Soldiers Cap Group (Proterozoic metasediments)			
24JEWB015	Soldiers Cap Group (Proterozoic metasediments)			
24JEWB016	Wallumbilla Formation			
RN118181	Soldiers Cap Group (Proterozoic metasediments)			
RN93345	-			

7.4 Baseline Bore Assessments

AICJ will complete the baseline bore assessments at Levuka Station (RN184894, RN163020, RN163019) and Elrose Station (RN118181, RN93345, RN93349), following the baseline assessment guideline (ESR/2016/2005, Version 5.06). The BAP assessment will be undertaken during the next quarterly monitoring event following the approval of this initial UWIR.

AICJ is committed to proactively engaging with the landholders surrounding the project and considers it a proactive measure to undertake the BAP on all relevant bores on those properties.

As described in section 5.4, there are only two water bores which are within the predicted LTAA as listed in Table 7.3. these two bores will be incorporated into the routine monitoring program.

TABLE 7.3: UNDERGROUND WATER USERS WITH THE LTAA

Bore ID Name	Distance and direction from lease boundary	Status/Use	Depth (m)	Aquifer (m)	Screen/open hole (m)	Strata description / Formation name*
RN118181 Supplementary Bore	1.5 km east	Existing	48.0	30 -	30 - 48	Granite/ Soldiers Cap Group - undiff
RN93345 Eloise House Bore	1.7 km east	Abandoned but still usable	30.5	18 - 30	23 – 30.5	Hard quartzite/ Not recorded

7.5 Sampling and Testing Requirements

All groundwater monitoring activities will be carried out by a suitably qualified person with appropriate expertise in hydrogeology and groundwater monitoring. Groundwater monitoring will be conducted in accordance with the latest edition of the *Queensland Monitoring and Sampling Manual*, AS/NZS 5667:11:1998 *Water Sampling Guidelines – Part 11: Guidance on Sampling Groundwater*, and the Australian Government's *Groundwater Sampling and Analysis – A Field Guide* (2009:27 GeoCat #6890.1), or any relevant updates to these guidelines.

All laboratory analyses and tests related to groundwater monitoring will be performed by a laboratory that holds National Association of Testing Authorities (NATA) accreditation for the specific analyses and tests being conducted. If no NATA-accredited laboratory is available for a particular analyte or substance, duplicate samples will be sent to at least two separate laboratories for independent testing or evaluation to ensure reliability and accuracy of results.

Sampling will be conducted by a suitably qualified and experienced person.

7.6 Reporting Program

Following the approval of the UWIR, an obligations register will be created to document all obligations under the UWIR. The register will be regularly updated to reflect the current status of each obligation and will be provided to the administering authority upon request. It will also be updated as directed by the administering authority.

In addition to the obligations register, an Annual Report will be submitted to the Office of Groundwater Impact Assessment (OGIA) and the administering authority each year. This report will include:

- A complete history of groundwater monitoring data over the life of the Jericho project.
- Detailed analysis of trends in groundwater quality and levels, and their impacts on water resources, the environment, and other users.
- A review of the suitability of the monitoring program, and the associated monitoring rationale and strategy.
- An analysis and a statement regarding whether there has been a material change in the information or predictions used to determine the areas included in the UWIR.
- Details of any non-compliances with the obligations listed in the obligations register.

The report will be prepared by a suitably qualified person possessing appropriate qualifications and experience in hydrogeology and groundwater monitoring.

The Annual Report will be issued in March each year.

8. PART F: SPRING IMPACT MANAGEMENT STRATEGY

There are no permanent, intermittent, or inactive springs mapped within the study area (Queensland Government, 2024d).

9. CONCLUSIONS

The impacts of the Jericho project over the UWIR period and the life of the Jericho project have been assessed, using publicly available and site-specific information, and a numerical groundwater flow model to simulate the potential future changes of groundwater levels and seepage into the underground mine. The results show that:

- The groundwater seepage into the mining operations will result in localised drawdown of the Wallumbilla Formation, Gilbert River Formation, and Soldiers Cap Formation once underground water rights have been exercised at Jericho project.
- Mining operations associated with the Jericho project will not impact surrounding surface waters during the UWIR period as there is no interaction between groundwater and surface water features.
- There are no underground water users within the mining lease area, or the IAA.
- The bore trigger threshold is exceeded at two existing surrounding underground water users (RN118181 and RN93345) within the LTAA. RN93345, has a status of abandoned, but still usable. RN118181 has a status of existing.
- Sensitive surface ecological receptors and EVs are not predicted to be affected by groundwater drawdown (Figure 6.1) and therefore no significant groundwater impacts are predicted because of the Jericho project.
- AIC will maintain regular monitoring of the regional bore system and will update the regional groundwater model as needed, to comply with the UWIR conditions, and to quantify any impacts on the groundwater table level and groundwater quality.
- AIC will maintain regular updates with stakeholders on the progress of the underground mining operations and if there is any impact greater than those predicted.

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11. QUALIFICATIONS

- (a) In preparing this document, including all relevant calculation and modelling, Engeny Australia Pty Ltd (Engeny) has exercised the degree of skill, care and diligence normally exercised by members of the engineering profession and has acted in accordance with accepted practices of engineering principles.
- (b) Engeny has used reasonable endeavours to inform itself of the parameters and requirements of the project and has taken reasonable steps to ensure that the works and document is as accurate and comprehensive as possible given the information upon which it has been based including information that may have been provided or obtained by any third party or external sources which has not been independently verified.
- (c) Engeny reserves the right to review and amend any aspect of the works performed including any opinions and recommendations from the works included or referred to in the works if:
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 - (ii) Engeny considers it prudent to revise any aspect of the works in light of any information which becomes known to it after the date of submission.
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APPENDIX A: MONITORING BORE LOGS



Project No.: 4141B

Project Name: Jericho Copper Project Monitoring Bores

MONITORING BORE

23JEWB003 - Site 4

Geological Formations	Material Description	Graphic Log	R.L. (mAHD) Depth (mbGL)	Bore Construction	Bore Description
TIA RY SED IME NTS	CLAY, reddish brown, sandy, sub-angular, 0.2 - 0.5 mm grains, loose		5 204 3 202 1 200		Stick up: +0.45 m
WALLUMBILLA FORMATION	CLAYSTONE, greyish brown, quartz grains, fresh		1 198		
	CLAYSTONE, light reddish grey, brittle, not weathered, quartz grains		3 196		
	CLAYSTONE, light grey		5 194		
	CLAYSTONE, light grey, hard brittle, dry		7 192		
	CLAYSTONE, greyish white, brittle, low strength, dry		9 190		
	SAND		11 188		165 mm diameter bit: 0 m to 95 m (Rotary Air)
	SAND, grey, fine, clay particles, soft		13 186		
	SAND, red, coarse		15 184		
	CLAYSTONE, yellowish grey, low strength, soft, dry		17 182		
	Claystone, yellowish brown, soft, not weathered		19 180		Bentonite grout: 0 m to 65 m
	CLAYSTONE, greyish brown, soft, feels damp		21 178		
	CLAYSTONE, grey, soft, feels damp		23 176		
	CLAYSTONE, grey, soft, feels damp		25 174		
	CLAYSTONE/MUDSTONE, dark grey, soft, feels moist, moderate strength		27 172		
			29 170		
			31 168		50 mm PN18 uPVC blank casing: -0.45 m to 70 m
			33 166		
			35 164		
			37 162		
			39 160		
	CLAYSTONE/MUDSTONE, grey, very fine, brittle, medium strength, not weathered		41 158		
GILBERT RIVER FORMATION			43 156		
			45 154		
			47 152		
			49 150		
			51 148		
			53 146		
			55 144		
			57 142		
	MUDSTONE, grey with small yellow portion, very fine, medium strength, not weathered, some moisture		59 140		
			61 138		
PROTEROZOIC			63 136		
			65 134		
			67 132		Bentonite seal: 65 m to 67 m
	MUDSTONE, claystone, sandy fraction, large (0.5-0.8 cm) clastic grains		69 130		Washed, rounded gravel pack: 67 m to 95 m
	CLAYSTONE, sandy fraction, grey, soft, quartz grains		71 128		50 mm PN18 uPVC machine slotted casing, slot aperture: 1 mm, 70 m to 73 m
	SAND, grey, soft, grains up to 0.5 mm, most rounded		73 126		Water level: 71.12 mbGL, 19/07/2023
	CLAYSTONE, sandy, black/grey, powdery, minor grains 0.5-5 mm		75 124		End cap
	CONGLOMERATE, sand, grey, larger sub-rounded, clasts up to 1 cm		77 122		
	CLAYSTONE, powdery sand, light grey, very fine, slightly damp, homogeneous		79 120		
			81 118		
			83 116		
			85 114		
			87 112		
	CLAYSTONE, rounded grains 0.5-3 mm, moisture present		89 110		
			91 108		
			93 106		
			95 104		End of hole: 95 mbGL
			97 102		Bore development: 12:30 hrs; EC: 1934 uS/cm; pH: 8.33
			99 100		

Date Drilled: 17.7.2023

Drilling Company: Ingham Drilling

Easting: 498517

RL: 199.3

Driller: N. Bliesner

Drilling Method: Rotary mud

Northing: 7677906

TD: 73.0

Water Bore Driller: N. Bliesner

Logged By: P. Dvoracek

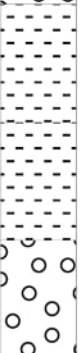
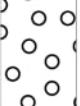
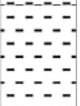
Datum: GDA94 / MGA zone 54

Project No.: 4141B

Project Name: Jericho Copper Project Monitoring Bores

MONITORING BORE

23JEWB004 - Site 8

Geological Formations	Material Description	Graphic Log	R.L. (mAHD) Depth (mbGL)	Bore Construction	Bore Description
TERTIARY SEDIMENTS	CLAYSTONE, red, dry, rare gravel clasts, red/white/black in colour, ~ 2 mm, sub-angular, quartz		1		Stick up: +0.5 m
			199		
			0		200 mm diameter bit: 0 m to 11 m (Rotary Air)
			198		
			1		Bentonite grout: 0 m to 5 m
			197		
			2		125 mm PN18 uPVC blank casing: -0.5 m to 7 m
WALLUMBILLA FORMATION	GRAVEL, red/white/black/orange/yellow in colour, 2 - 30 mm, angular to well-rounded, quartz, common medium grained sand inclusions, common red claystone inclusions		196		
			3		
			195		
			4		
			194		
			5		Bentonite seal: 5 m to 6 m
			193		
	CLAYSTONE, faded red, dry, very rare gravel clasts, black in colour, ~ 2 mm, angular		6		Washed, rounded gravel pack: 6 m to 11 m
			192		
			7		125 mm PN18 uPVC machine slotted casing, slot aperture: 1 mm, 7 m to 10 m
			191		
			8		
			190		
			9		
	CLAYSTONE, light grey (60% matrix), very low strength, heavily weathered, claystone, faded red (40% matrix), semi-consolidated		189		End cap
			10		
			188		
	CLAYSTONE, red to white to pink (60% matrix), dry, semi-consolidated, claystone, light grey (40% matrix), very low strength, heavily weathered, common medium grained sand inclusions		187		End of hole: 11 mbGL
			11		
			186		Bore development: Dry

Date Drilled: 29.8.2023

Drilling Company: Ingham Drilling

Easting: 497750

RL: 198.3

Driller: J. Harvey

Drilling Method: Rotary air

Northing: 7679157

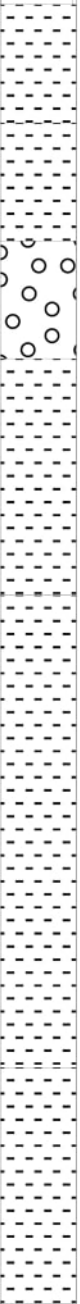
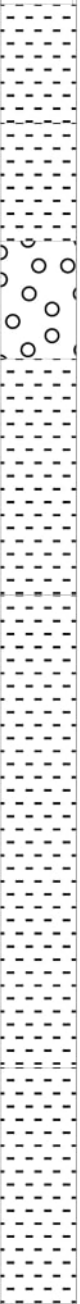
TD: 10.0

Water Bore Driller: J. Harvey

Logged By: J. Barron

Datum: GDA94 / MGA zone 54

Project No.: 4141B
Project Name: Jericho Copper Project Monitoring Bores
MONITORING BORE
23JEWB005 - Site 9

Geological Formations	Material Description	Graphic Log	R.L. (mAHD) Depth (mbGL)	Bore Construction	Bore Description
TERTIARY SEDIMENTS	CLAYSTONE, red, dry		1		Stick up: +0.5 m
	CLAYSTONE, red, dry, very few gravel clasts, white/black/red in colour, ~ 2 mm, sub-rounded to sub-angular, quartz		199		200 mm diameter bit: 0 m to 11 m (Rotary Air)
	GRAVEL, white/black/red in colour, 2 - 10 mm, sub-rounded to sub-angular, occasional fine grained sand inclusions, occasional red claystone		0		Bentonite grout: 0 m to 5 m
	CLAYSTONE, red and slightly white (semi-bleached), fine grained, common fine grained sand inclusions, common gravel clasts, white/black in colour, ~ 2 mm, sub-rounded to sub-angular, quartz		198		125 mm PN18 uPVC blank casing: -0.5 m to 7 m
	CLAYSTONE, red and slightly white (semi-bleached), fine grained, common fine grained sand inclusions, common gravel clasts, white/black in colour, ~ 2 mm, sub-rounded to sub-angular, quartz		1		Bentonite seal: 5 m to 6 m
	CLAYSTONE, red and slightly white (semi-bleached), fine grained, common fine grained sand inclusions, common gravel clasts, white/black in colour, ~ 2 mm, sub-rounded to sub-angular, quartz, rare medium grey claystone clasts, very low strength		2		Washed, rounded gravel pack: 6 m to 11 m
WALLUMBILLA FORMATION	CLAYSTONE, pale white (bleached), very low strength, heavily weathered, very fine grained sand inclusions, very rare gravel clasts, white/red/black in colour, ~ 2 mm, sub-rounded to sub-angular,		197		125 mm PN18 uPVC machine slotted casing, slot aperture: 1 mm, 7 m to 10 m
			196		End cap
			3		End of hole: 11 mbGL
			195		Bore development: Dry
			4		
			194		
			5		
			193		
			6		
			192		
			7		
			191		
			8		
			190		
			9		
			189		
			10		
			188		
			11		
			187		
			12		

Date Drilled: 29.8.2023

Drilling Company: Ingham Drilling

Easting: 497933

RL: 198.2

Driller: J. Harvey

Drilling Method: Rotary air

Northing: 7679133

TD: 10.0

Water Bore Driller: J. Harvey

Logged By: J. Barron

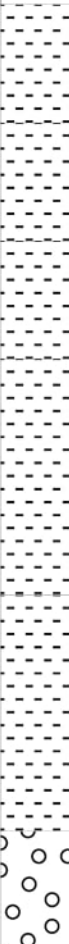
Datum: GDA94 / MGA zone 54

Project No.: 4141B

Project Name: Jericho Copper Project Monitoring Bores

MONITORING BORE

23JEWB006 - Site 10

Geological Formations	Material Description	Graphic Log	R.L. (mAHD) Depth (mbGL)	Bore Construction	Bore Description
TERTIARY SEDIMENTS	CLAYSTONE, red, dry		0		Stick up: +0.5 m
	CLAYSTONE, red to medium brown, dry, rare gravel clasts, red/white/black in colour, 2 - 5 mm, angular to sub-angular		1		200 mm diameter bit: 0 m to 11 m (Rotary Air)
	CLAYSTONE, red to medium brown, dry, common gravel clasts, red/white/black in colour, 2 - 10 mm, angular (majority) to sub-angular, quartz		2		Bentonite grout: 0 m to 5 m
	CLAYSTONE, red to orange, dry, very rare gravel clasts, red/white/black in colour ~ 2 mm, sub-rounded, quartz		3		125 mm PN18 uPVC blank casing: -0.5 m to 7 m
	CLAYSTONE, red to orange, dry, very rare gravel clasts, red/white/black in colour ~ 2mm, sub-rounded, quartz, very rare clay clasts, light grey, very low strength		4		Bentonite seal: 5 m to 6 m
	GRAVEL, red/white/black in colour, clasts 2-5 mm, sub-angular to sub-rounded, common fine grained sand inclusions, occasional orange claystone		5		Washed, rounded gravel pack: 6 m to 11 m
	SANDSTONE (60% matrix), orange to dark yellow, fine grained, gravel (40% matrix), red/white/black/orange in colour, 2 - 10 mm, sub-rounded to sub-angular, occasional soil, orange		6		125 mm PN18 uPVC machine slotted casing, slot aperture: 1 mm, 7 m to 10 m
WALLUMBILLA FORMATION	SANDSTONE (75% matrix), pale yellow, fine grained, gravel (25% matrix), red/white/black/orange in colour, 2 - 10 mm, sub-rounded to sub-angular, occasional orange claystone		7		End cap
			8		End of hole: 11 mbGL
			9		Bore development: Dry
			10		
			11		
			12		

Date Drilled: 30.8.2023

Drilling Company: Ingham Drilling

Easting: 498176

RL: 199.2

Driller: J. Harvey

Drilling Method: Rotary air

Northing: 7679131

TD: 10.0

Water Bore Driller: J. Harvey

Logged By: J. Barron

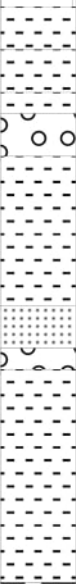
Datum: GDA94 / MGA zone 54

Project No.: 4141B

Project Name: Jericho Copper Project Monitoring Bores

MONITORING BORE

23JEWB007 - Site 1

Geological Formations	Material Description	Graphic Log	R.L. (mAHD) Depth (mbGL)	Bore Construction	Bore Description
TERTIARY SEDIMENTS	CLAYSTONE, medium to dark brown, dry, rare gravel clasts, red/black/orange/white in colour, ~ 2 mm, sub-rounded, quartz sand inclusions CLAYSTONE, faded red (slightly bleached), common fine grained sand inclusions CLAYSTONE, red to orange, dry, common light grey claystone clasts, very low strength, common gravel clasts, red/black/orange/white in colour, ~ 2 mm, sub-rounded GRAVEL, yellow/red/black/orange in colour, 2 - 8 mm, sub-angular to sub-rounded, common medium grained sand inclusions CLAYSTONE, light orange to white to light grey (slightly bleached), occasional gravel clasts, red/white/black/orange in colour, 2 - 8 mm, sub-rounded to sub-angular, common fine grained sand inclusions, very rare to common light grey claystone clasts, very low SANDSTONE, pale yellow, medium grained, common gravel clasts, red/white/yellow/orange in colour, 2 - 30 mm, sub-angular to sub-rounded GRAVEL, white/grey/red in colour, dominantly large clasts, ~ 30 mm, range 2 - 30 mm, sub-angular to sub-rounded, common medium grained sand inclusions CLAYSTONE, dark yellow to green, very low strength, heavily weathered, occasional gravel clasts, red/white/black in colour, ~ 5 mm, very rare fine grained sand inclusions		4 202 3 201 2 200 1 199 0 198 1 197 2 196 3 195 4 194 5 193 6 192 7 191 8 190 9 189 10 188 11 187 12 186 13 185 14 184 15 183 16 182 17 181 18 180 19 179 20 178 21 177 22 176 23 175 24 174 25 173 26 172 27 171 28 170 29 169 30 168 31 167 32 166 33 165 34 164 35 163 36 162 37 161 38 160 39 159 40 158 41 157 42 156 43 155 44 154 45 153 46 152 47 151 48 150 49 149 50 148 51 147 52 146 53 145 54 144 55 143 56 142 57 141 58 140 59 139 60 138 61 137 62 136 63 135 64 134 65 133 66 132 67 131		Stick up: +0.5 m 150 mm diameter bit: 0 m to 18 m (Rotary Air), 18 m to 23 m (Rotary Mud), 23 m to 63 m (Rotary Air) Bentonite grout: 0 m to 58 m 50 mm PN18 uPVC blank casing: -0.5 m to 60 m Bentonite seal: 58 m to 59 m Washed, rounded gravel pack: 59 m to 65 m 50 mm PN18 uPVC machine slotted casing, slot aperture: 1 mm, 60 m to 63 m End cap End of hole: 65 mbGL Bore development: Dry
WALLUMBILLA FORMATION	SHALE, dark grey, low strength, very rare claystone clasts, yellow, rare fine grained sand inclusions SHALE, dark to very dark grey, moderate strength, very rare fine grained sand inclusions SHALE, very dark grey/pale black, moderate strength, very rare fine grained sand inclusions				
PROT EROZ OIC	ARENITE, light grey, high strength, mica inclusions		63 136 64 135 65 134 66 133 67 132 68 131		

Date Drilled: 2.9.2023

Drilling Company: Ingham Drilling

Easting: 497755

RL: 198.2

Driller: J. Harvey

Drilling Method: Rotary air & mud

Northing: 7678672

TD: 63.0

Water Bore Driller: J. Harvey

Logged By: J. Barron

Datum: GDA94 / MGA zone 54

Project No.: 4141B
Project Name: Jericho Copper Project Monitoring Bores
MONITORING BORE
23JEWB008 - Site 5

Geological Formations	Material Description	Graphic Log	R.L. (mAHD) Depth (mbGL)	Bore Construction	Bore Description
			4 3 2 1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48		
			196 195 194 193 192 191 190 189 188 187 186 185 184 183 182 181 180 179 178 177 176 175 174 173 172 171 170 169 168 167 166 165 164 163 162 161 160 159 158 157 156 155 154 153 152 151 150 149 148 147 146 145		
					Stick up: +0.5 m
TERTIARY SEDIMENTS	CLAY, medium brown, dry CLAYSTONE, red to brown, common gravel clasts, white in colour, ~ 3 mm, sub-angular, common medium grained sand inclusions CLAYSTONE, red, rare fine grained sand inclusions CLAYSTONE, red CLAYSTONE, red, common fine grained sand inclusions, rare dark grey claystone clasts, very low strength CLAYSTONE, red, common fine grained sand inclusions CLAYSTONE, orange, common gravel clasts, black/white/orange/red in colour, ~ 2 mm, sub-angular, rare dark grey claystone clasts, very low strength, quartz CLAYSTONE, light grey (40% matrix), claystone, red (30% matrix), gravel (30% matrix)				150 mm diameter bit: 0 m to 25 m (Rotary Mud), 25 m to 44 m (Rotary Air)
	CLAYSTONE, light grey, very low strength, heavily weathered, frequent thin interbedded yellow claystone layers, common medium grained sand inclusions				Bentonite grout: 0 m to 36 m
	SHALE, medium grey, very low strength, heavily weathered, frequent thin interbedded yellow claystone layers SHALE, dark grey, very low strength, heavily weathered, frequent thin interbedded yellow claystone layers SHALE, dark grey, very low strength, heavily weathered, rare thin interbedded yellow claystone layers GRAVEL, red/white/black in colour, 2 - 5 mm, sub-angular, occasional claystone clasts GRAVEL, red/white/black in colour, 2 mm, sub-angular, occasional shale clasts				50 mm PN18 uPVC blank casing: -0.5 m to 41 m
WALLUMBILLA FORMATION	SHALE, dark grey, moderate strength, weathered, rare fine grained sand inclusions				
	SHALE, dark grey to pale black, moderate to high strength, weathered, rare fine grained sand inclusions				Bentonite seal: 36 m to 37 m Washed, rounded gravel pack: 37 m to 47 m
PROTEROZOIC	ARENITE, light grey, high strength, mica inclusions				50 mm PN18 uPVC machine slotted casing, slot aperture: 1 mm, 41 m to 44 m End cap End of hole: 47 mbGL

Date Drilled: 3.9.2023

Drilling Company: Ingham Drilling

Easting: 499378

RL: 192.5

Driller: J. Harvey

Drilling Method: Rotary air & mud

Northing: 7677478

TD: 44.0

Water Bore Driller: J. Harvey

Logged By: J. Barron

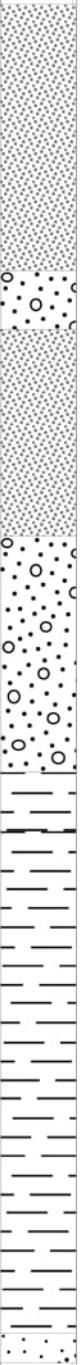
Datum: GDA94 / MGA zone 54

Project No.: 4141B

Project Name: Jericho Copper Project Monitoring Bores

MONITORING BORE

23JEWB009 - Site 6

Geological Formations	Material Description	Graphic Log	R.L. (mAHD) Depth (mbGL)	Bore Construction	Bore Description
TERTIARY SEDIMENTS	REGOLITH, alluvium, medium brown, fine to medium grained, dense,		4 3 2 1 0 198 197 196 195 194 193 192 191 190 189 188 187 186 185 184 183 182 181 180 179 178 177 176 175 174 173 172 171 170 169 168 167 166 165 164 163 162 161 160 159 158 157 156 155 154 153 152 151 150		Stick up: +0.5 m
	CONGLOMERATE, medium brown to red, fine to medium grained, dense				150 mm diameter bit: 0 m to 45 m (Rotary Mud)
	REGOLITH, alluvium, medium brown, fine to medium grained, dense,				
	CONGLOMERATE, medium brown to red, fine to medium grained, dense				
	SHALE, medium green to grey, fine grained, extremely low strength rock, highly weathered, groundwater present 26 - 29 m				Bentonite grout: 0 m to 40 m
	SHALE, dark grey, fine grained, very low strength, fresh				
					50 mm PN18 uPVC blank casing: -0.5 m to 42 m
WALLUMBILLA FORMATION					
PROTEROZOIC	ARENITE/SHALE, medium grey, fine grained, very low strength, fresh				Bentonite seal: 40 m to 41 m
					Washed, rounded gravel pack: 41 m to 45 m
					50 mm PN18 uPVC machine slotted casing, slot aperture: 1 mm, 42 m to 45 m

Date Drilled: 5.10.2023

Drilling Company: Ingham Drilling

Easting: 499343

RL: 197.8

Driller: J. Harvey

Drilling Method: Rotary mud

Northing: 7678508

TD: 45.0

Water Bore Driller: J. Harvey

Logged By: T. Morgan

Datum: GDA94 / MGA zone 54

Project No.: 4141B
Project Name: Jericho Copper Project Monitoring Bores
MONITORING BORE
23JEWB010 - Site 7

Geological Formations	Material Description	Graphic Log	R.L. (mAHD) Depth (mbGL)	Bore Construction	Bore Description
TERTIARY SEDIMENTS	REGOLITH, alluvium, medium brown, fine to medium grained, dense		199 2 197 0 195 2 193 4 191 6 189 8 187 10		Stick up: +0.5 m
	CONGLOMERATE, medium brown to red, fine to medium grained, dense		12 185 14 183		150 mm diameter bit: 0 m to 74 m (Rotary Mud)
WALLUMBILLA FORMATION	SHALE, medium green to grey, fine grained, extremely low strength, highly weathered		16 181 18 179 20 177 22 175 24 173		Bentonite grout 0 m to 68.5 m
			26 171 28 169 30 167 32 165 34 163 36 161 38 159 40 157		50 mm PN18 uPVC blank casing: -0.5 m to 70.5 m
			42 155 44 153 46 151 48 149 50 147 52 145		
			54 143 56 141 58 139 60 137 62 135		
			64 133 66 131 68 129		
	SHALE, dark grey, fine grained, very low strength, fresh		70 127 72 125 74 123 76 121		
PROTEROZOIC	ARENITE, medium grey, fine to medium grained, low strength, fresh				Bentonite seal: 68.5 m to 69.5 m Washed, rounded gravel pack: 69.5 m to 73.5 m 50 mm PN18 uPVC machine slotted casing, slot aperture: 1 mm, 70.5 m to 73.5 m End cap End of hole: 74 mbGL

Date Drilled: 5.10.2023

Drilling Company: Ingham Drilling

Easting: 499347

RL: 196.1

Driller: J. Harvey

Drilling Method: Rotary mud

Northing: 7680037

TD: 73.5

Water Bore Driller: J. Harvey

Logged By: T. Morgan

Datum: GDA94 / MGA zone 54

ProjectArea	Hole number	From	To	Length	Lith1	Lith2	ColourIntensity	Colour1	Colour2	Weathering	Grainsize	Texture1	Texture2	Structure1	Structure2	Comments
Eloise Regional	24JEWB011		0	1	1 ral	soil	dk	bn		cw	fg					sandy clay soil, some coarse-very coarse sand grains
Eloise Regional	24JEWB011		1	2	1 ral		md	bn		cw	mg					sandy clay, more coarse-sand grains to fine gravel (sub-angular) than previous interval
Eloise Regional	24JEWB011		2	5	3 ral		lt	bn	pi	mw	mg					very-coarse sand-fine gravel (sub-rounded)
Eloise Regional	24JEWB011		5	7	2 ral		lt	bn	pi	mw	cg					very-coarse grained sand + gravel (3-5mm) (sub-rounded)
Eloise Regional	24JEWB011		7	13	6 ssh		lt	yl		hw	vfg					clay-rich
Eloise Regional	24JEWB011		13	14	1 ssh		lt	yl	gy	hw	vfg					clay-rich
Eloise Regional	24JEWB011		14	16	2 ssh		lt	gy	yl	hw	vfg					clay-rich
Eloise Regional	24JEWB011		16	56	40 ssh		lt	gy	bu	mw	vfg					clay-rich
Eloise Regional	24JEWB011		56	62	6 aren		lt	gy		mw	vfg					clay-rich+silt





Water bore drilling log

Site name: 24JEWB011

Ensure you have generated a Log ID number prior to submitting >

Click to generate log ID

Authorisation details					Registered number.....Development permit number.....Works reference number JADWB 001					Log ID # 43501584									
SECTION A—LOCATION DETAILS										SECTION B—BORE COMPLETION DETAILS									
Name of landholder AIC Copper Pty Ltd Phone No. 0419926345										Date commenced 2/6/24									
Postal address Matt.fallon@aicmines.com.au Postcode 4823										Date completed 3/6/24									
Real property address Eloise copper Mine, McKinlay QLD Postcode 4823										SECTION C—DRILLING METHOD									
Real property description Lot.....Plan.....or Bore location GPS. Latitude.....Longitude.....Datum.....										☒ Rotary mud ☐ Cable tool									
Easting 497875.0 Northing 7682193.0 Zone.....										☐ Auger ☐ Rotary air									
SECTION D—HOLE SIZE					SECTION I—BORE PURPOSE					SECTION K—WATER BEARING BEDS									
Diameter (mm)		Location (metres)			☐ Domestic ☐ Stock ☐ Irrigation ☐ Commercial ☐ Urban ☐ Industrial ☒ Other (please specify) Monitoring					Depth struck (metres)		Water rose to (metres)		Supply (litres/second)		Conductivity (µS/cm)*		pH	
160		From 0 To 62																	
					SECTION J—PARTICULARS OF STRATA														
					From (metres)		To (metres)		Strata description (use more than one line if required)			Water bed thus(*)							
					0		1		Top soil										
					1		7		Clay, weathered, sandy, browny red										
					7		14		Claytone, weatherd, khaki medium										
					14		48		Sale, dark grey										
					48		62		Bredrock, light grey weatherd										
SECTION E—CASING DETAILS															Final Conductivity (µS/cm): Final pH:				
Type (PVC, steel etc)		Size O.D. (mm)		Wall thickness (mm)		Location (metres)								*Fresh, brackish or salty. Laboratory testing is recommended before human consumption.					
						From To													
PVC PN18		50		3		0 55													
SECTION F—CENTRALISERS															SECTION L—SUB ARTESIAN BORE ON COMPLETION				
Type		Location (metres)								Depth to standing water level from ground level (metres)		Depth to pump suction or bottom of drill stem (metres)							
		From To																	
SECTION G—PERFORATIONS/ SLOTS/ SCREENS															Type of test used ☒ Air ☐ Bail ☐ Pump				
Type		Size O.D. (mm)		Aperture (mm)		Location (metres)								Estimated supply (litres/second)		Duration of test (hours)		Drawdown level from surface (metres)	
						From To								0					
Slots		50		0.5		52 55													
SECTION H—CEMENTING/GRAVEL PACK/ANNULAR FILL DETAILS															SECTION M—ARTESIAN BORE ON COMPLETION				
Type & material size		Hole diameter (mm)		Casing diameter (mm O.D.)		Location (metres)								Shut-in pressure (kPa)		Free flow (litres/second)		Temperature (°C)	
						From To													
Grout		160		50		0 8													
Bentonite		160		50		8 9													
7mm gravel		160		50		9 46													
Bentonite		160		50		46 48													
7mm Gravel		160		50		48 55													
7mm gravel		150				55 62													
															SECTION N—REMARKS				
															Flow rate to low to determine				
															SECTION O—CERTIFICATION				
															I hereby certify that the bore is drilled and constructed according to the conditions of my driller's licence and the information provided is true and accurate.				
															Driller name Jae Presswell		Driller's licence no. 3492		
															Trainee Driller name		Driller's licence no.		
															Signature of driller <i>Jae</i>		Date 12/6/2024		
															Contractor name				

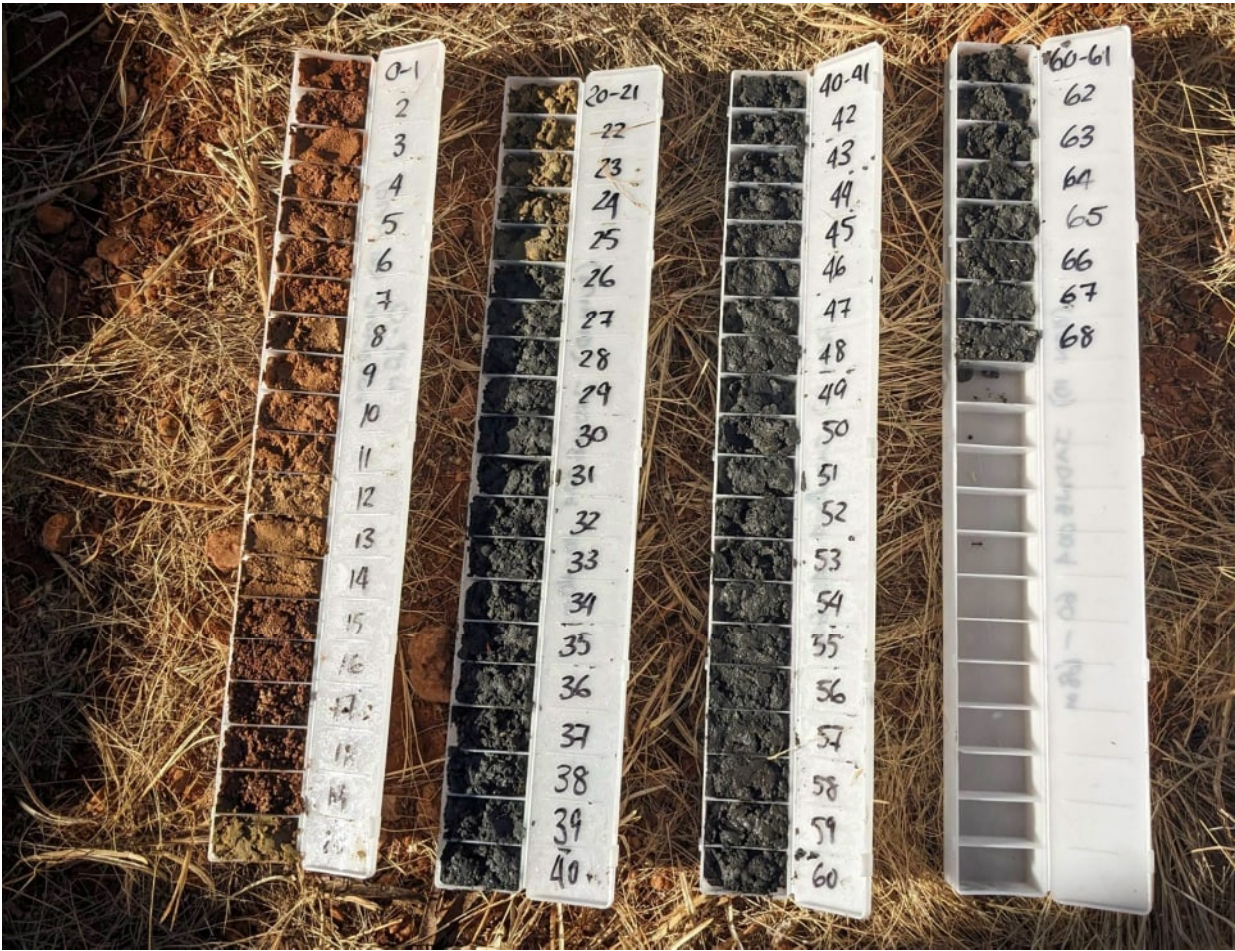
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ProjectArea	Hole number	From	To	Length	Lith1	Lith2	ColourInte	Colour1	Colour2	Weathering	Grainsize	Texture1	Texture2	Structure1	Structure2	Comments	FLSLoggedBy	FLSLoggedI	FLSExported
Eloise Regional	24JEWB015	0	1	1	regolith	soil	light	red		heavy weathering	FG					Sandy soil	Alex Jamieson		N
Eloise Regional	24JEWB015	1	10	9	regolith	soil	mid	red		heavy weathering	MG					Gravel / sand / clay rich soil	Alex Jamieson		N
Eloise Regional	24JEWB015	10	19	9	Alluvium	clay	light	red		mid weathering	CG					Weathered gravel. Sand and soil present. Clay dominant	Alex Jamieson		
Eloise Regional	24JEWB015	19	24	5	Clay	mudstone	mid	yellow		Mid oxidation	FG					Mudstone, mildly oxidised.	Alex Jamieson		
Eloise Regional	24JEWB015	24	25	1	Mudstone	Shale	Light	Grey	Yellow	Fresh	FG					Mudstone/shale contact point	Alex Jamieson		
Eloise Regional	24JEWB015	25	37	12	Shale	Clay	Dark	Grey		Fresh	FG					Clay dominant shale unit	Alex Jamieson		
Eloise Regional	24JEWB015	37	38	1	Shale	Clay	Dark	Grey		Fresh	MG					Clay dominant shale unit with gravel	Alex Jamieson		
Eloise Regional	24JEWB015	38	66	28	Shale	Clay	Dark	Grey		Fresh	FG					Clay dominant shale unit	Alex Jamieson		
Eloise Regional	24JEWB015	66	67	1	Shale	Clay	Dark	Grey		mid weathering	FG					Boundary to Arenite unit	Alex Jamieson		
Eloise Regional	24JEWB015	67	68	1	Arenite	Clay	Dark	Grey		mid weathering	MG					Weathered arenite	Alex Jamieson		
																EOH @ 68m			





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Authorisation details Registered number						Development permit number						Works reference number JADWB 004						Log ID # 43501584						
SECTION A—LOCATION DETAILS														SECTION B—BORE COMPLETION DETAILS										
Name of landholder AIC Copper Pty Ltd														Phone No. 0419926345										
Postal address Matt.fallon@aicmines.com.au														Postcode 4823										
Real property address Eloise copper Mine, McKinlay QLD														Postcode 4823										
Real property description Lot														Plan or Bore location GPS. Latitude Easting 498542.8 Longitude Northing 7680129.2 Datum Zone										
SECTION D—HOLE SIZE					SECTION I—BORE PURPOSE										SECTION K—WATER BEARING BEDS									
Diameter (mm)		Location (metres) From To			☐ Domestic ☐ Stock ☐ Irrigation ☐ Commercial ☐ Urban ☐ Industrial ☒ Other (please specify) Monitoring										Depth struck (metres)		Water rose to (metres)		Supply (litres/second)		Conductivity (µS/cm)*		pH	
160		0 68																						
SECTION E—CASING DETAILS					SECTION J—PARTICULARS OF STRATA																			
Type (PVC, steel etc)	Size O.D. (mm)	Wall thickness (mm)	Location (metres) From To		From (metres)	To (metres)	Strata description (use more than one line if required)				Water bed thus(*)													
PVC PN18	50	3	0	67	0	1	Top soil																	
					1	19	Clay, weathered, sandy, browny red																	
					19	25	Claytone, weatherd, khaki medium																	
					25	66	Sale, dark grey																	
					66	68	Bredrock, light grey weathder																	
SECTION F—CENTRALISERS															Final Conductivity (µS/cm): Final pH:									
Type					Location (metres) From To										*Fresh, brackish or salty. Laboratory testing is recommended before human consumption.									
															SECTION L—SUB ARTESIAN BORE ON COMPLETION									
															Depth to standing water level from ground level Depth to pump suction or bottom of drill stem									
															(metres) (metres)									
															Type of test used ☒ Air ☐ Bail ☐ Pump									
															Estimated supply Duration of test Drawdown level from surface									
															0 (litres/second) (hours) (metres)									
SECTION G—PERFORATIONS/ SLOTS/ SCREENS															SECTION M—ARTESIAN BORE ON COMPLETION									
Type	Size O.D. (mm)	Aperture (mm)	Location (metres) From To												Shut-in pressure		Free flow		Temperature					
Slots	50	0.5	64	67											(kPa)		(litres/second)		(*C)					
SECTION H—CEMENTING/GRAVEL PACK/ANNULAR FILL DETAILS															SECTION N—REMARKS									
Type & material size	Hole diameter (mm)	Casing diameter (mm O.D.)	Location (metres) From To												Flow rate to low to determine									
Grout	160	50	0	21											SECTION O—CERTIFICATION									
Bentonite	160	50	21	22											I hereby certify that the bore is drilled and constructed according to the conditions of my driller's licence and the information provided is true and accurate.									
7mm gravel	160	50	22	56											Driller name Jae Presswell Driller's licence no. 3492									
Bentonite	160	50	56	58											Trainee Driller name Driller's licence no.									
7mm Gravel	160	50	58	67											Signature of driller Date 12/6/2024									
7mm gravel	150		67	68											Contractor name									

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ProjectArea	Hole number	From	To	Length	Lith1	Lith2	ColourIntensity	Colour1	Colour2	Weathering	Grainsize	Texture1	Texture2	Structure1	Structure2	Comments
Eloise Regional	24JEWB016		0	1	1 ral	soil	dk	bn		mw	fmg					sandy clay soil, some coarse-very coarse sand grains
Eloise Regional	24JEWB016		1	2	1 ral		dk	bn		mw	fmg					silty clay
Eloise Regional	24JEWB016		2	4	2 ral		lt	bn		mw	mg					silty clay with coarse sand grains
Eloise Regional	24JEWB016		4	6	2 ral		lt	bn		mw	mg					sandy clay with coarse-very coarse sand grains
Eloise Regional	24JEWB016		6	14	8 ral		lt	bn		mw	fmg					silty clay with fine-med sand
Eloise Regional	24JEWB016		14	15	1 ral		md	bn		mw	cg					very coarse sand with fine gravel (sub-angular), well sorted
Eloise Regional	24JEWB016		15	16	1 ral		md	bn		mw	cg					very coarse sand with coarse gravel (sub-angular) + minor clay, well sorted
Eloise Regional	24JEWB016		16	17	1 ssh		lt	yl	gy	hw	fg					clay-rich with minor med-coarse sand grains
Eloise Regional	24JEWB016		17	21	4 ssh		lt	yl	gy	hw	vfg					clay-rich
Eloise Regional	24JEWB016		21	23	2 ssh		lt	gy	yl	hw	vfg					clay-rich
Eloise Regional	24JEWB016		23	25	2 ssh		dk	gy	yl	hw	vfg					clay-rich
Eloise Regional	24JEWB016		25	69	44 ssh		dk	gy								clay-rich with some harder rock fragments in places
Eloise Regional	24JEWB016		69	71	2 aren		lt	gy								clay-rich, more silt than previous interval, very-fine quartz crystal (~5%) EOH @ 71m





Water bore drilling log

Site name: 24JEWB016

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Authorisation details										Log ID # 98525143									
Registered number.....Development permit number.....Works reference number JADWB 005																			
SECTION A—LOCATION DETAILS										SECTION B—BORE COMPLETION DETAILS									
Name of landholder AIC Copper Pty Ltd Phone No. 0419926345										Date commenced 7/6/24									
Postal address Matt.fallon@aicmines.com.au Postcode 4823										Date completed 8/6/24									
Real property address Eloise copper Mine, McKinlay QLD Postcode 4823										SECTION C—DRILLING METHOD									
Real property description Lot.....Plan.....or Bore location GPS. Latitude.....Longitude.....Datum.....										☒ Rotary mud ☐ Cable tool									
Easting 498183.7 Northing 7681068.4 Zone.....										☐ Auger ☐ Rotary air									
										☐ Other									
SECTION D—HOLE SIZE					SECTION I—BORE PURPOSE					SECTION K—WATER BEARING BEDS									
Diameter (mm)		Location (metres)			☐ Domestic ☐ Stock ☐ Irrigation ☐ Commercial					Depth struck (metres)		Water rose to (metres)		Supply (litres/second)		Conductivity (µS/cm)*		pH	
160		From 0 To 71			☐ Urban ☐ Industrial ☒ Other (please specify) Monitoring														
					SECTION J—PARTICULARS OF STRATA														
					From (metres)		To (metres)		Strata description (use more than one line if required)			Water bed thus(*)							
					0		1		Top soil										
					1		15		Clay, weathered, sandy, browny red										
					15		23		Claytone, weatherd, khaki medium										
					23		70		Sale, dark grey										
					70		71		Bredrock, light grey weatherd										
SECTION E—CASING DETAILS										Final Conductivity (µS/cm): Final pH:									
Type (PVC, steel etc)		Size O.D. (mm)		Wall thickness (mm)		Location (metres)			*Fresh, brackish or salty. Laboratory testing is recommended before human consumption.										
						From To													
PVC PN18		50		3		0 69			SECTION L—SUB ARTESIAN BORE ON COMPLETION										
									Depth to standing water level from ground level (metres)		Depth to pump suction or bottom of drill stem (metres)								
									Type of test used ☒ Air ☐ Bail ☐ Pump										
									Estimated supply (litres/second)		Duration of test (hours)		Drawdown level from surface (metres)						
									0										
SECTION F—CENTRALISERS										SECTION M—ARTESIAN BORE ON COMPLETION									
Type		Location (metres)								Shut-in pressure (kPa)		Free flow (litres/second)		Temperature (°C)					
		From To																	
SECTION G—PERFORATIONS/ SLOTS/ SCREENS										SECTION N—REMARKS									
Type		Size O.D. (mm)		Aperture (mm)		Location (metres)			Flow rate to low to determine										
						From To													
Slots		50		0.5		66 69													
SECTION H—CEMENTING/GRAVEL PACK/ANNULAR FILL DETAILS										SECTION O—CERTIFICATION									
Type & material size		Hole diameter (mm)		Casing diameter (mm O.D.)		Location (metres)			I hereby certify that the bore is drilled and constructed according to the conditions of my driller's licence and the information provided is true and accurate.										
						From To			Driller name Jae Presswell Driller's licence no. 3492										
Grout		160		50		0 18			Trainee Driller name.....Driller's licence no.....										
Bentonite		160		50		18 22			Signature of driller [Signature] Date 12/6/2024										
7mm gravel		160		50		22 45			Contractor name.....										
Bentonite		160		50		45 47													
7mm Gravel		160		50		47 69													
7mm gravel		150				69 71													

APPENDIX B: GROUNDWATER MONITORING RECORD



B.1 Groundwater Level Monitoring Results

TABLE B.1:GROUNDWATER LEVEL MONITORING RESULTS

ID	Sample Date:	SWL_mbgl	SWL_mAHD	Comment
23JEWB001	29/10/2023	19	178.51	-
23JEWB001	21/11/2023	19.1	178.41	-
23JEWB001	19/12/2023	18.53	178.98	-
23JEWB001	17/01/2024	18.48	179.03	access
23JEWB001	10/02/2024	18.48	179.03	-
23JEWB001	6/03/2024	18.7	178.81	-
23JEWB001	26/03/2024	18.06	179.45	-
23JEWB001	16/04/2024	18.34	179.17	-
23JEWB001	9/05/2024	18.57	178.94	-
23JEWB001	28/05/2024	-	-	-
23JEWB001	17/06/2024	18.35	179.16	-
23JEWB001	9/07/2024	18.3	179.21	-
23JEWB001	23/07/2024	19.285	178.225	-
23JEWB001	31/07/2024	18.32	179.19	-
23JEWB001	9/08/2024	18.25	179.26	-
23JEWB001	17/08/2024	18.245	179.265	-
23JEWB001	14/09/2024	35.84	161.67	-
23JEWB001	20/10/2024	36.6	160.91	-
23JEWB002	29/10/2023	-	-	Dry
23JEWB002	22/11/2023	-	-	Dry
23JEWB002	19/12/2023	-	-	Dry
23JEWB002	17/01/2024	-	-	Dry
23JEWB002	10/02/2024	-	-	Dry
23JEWB002	6/03/2024	-	-	Dry
23JEWB002	27/03/2024	-	-	Dry
23JEWB002	17/04/2024	-	-	Dry

ID	Sample Date:	SWL_mbgl	SWL_mAHD	Comment
23JEWB002	9/05/2024	-	-	Dry
23JEWB002	17/06/2024	-	-	Dry
23JEWB002	9/07/2024	-	-	Dry
23JEWB002	23/07/2024	-	-	Dry
23JEWB002	31/07/2024	-	-	Dry
23JEWB002	8/08/2024	-	-	Access
23JEWB002	15/08/2024	-	-	Dry
23JEWB002	14/09/2024	-	-	Dry
23JEWB002	20/10/2024	-	-	Dry
23JEWB003	23/11/2023	70.01	128.81	-
23JEWB003	20/12/2023	70	128.82	-
23JEWB003	17/01/2024	69.73	129.09	access
23JEWB003	10/02/2024	69.73	129.09	-
23JEWB003	7/03/2024	70.27	128.55	-
23JEWB003	27/03/2024	70.1	128.72	-
23JEWB003	17/04/2024	70.1	128.72	-
23JEWB003	9/05/2024	70.2	128.62	-
23JEWB003	28/05/2024	-	-	-
23JEWB003	17/06/2024	70.05	128.77	-
23JEWB003	10/07/2024	70.1	128.72	-
23JEWB003	24/07/2024	69.824	128.996	-
23JEWB003	31/07/2024	69.78	129.04	-
23JEWB003	9/08/2024	69.73	129.09	-
23JEWB003	17/08/2024	69.647	129.173	-
23JEWB003	14/09/2024	34.92	163.9	-
23JEWB003	21/10/2024	-0.5	199.32	Dry
23JEWB004	29/10/2023	-	-	Dry
23JEWB004	22/11/2023	-	-	Dry
23JEWB004	20/12/2023	-	-	Dry

ID	Sample Date:	SWL_mbgl	SWL_mAHD	Comment
23JEWB004	17/01/2024	-	-	Dry
23JEWB004	10/02/2024	-	-	Dry
23JEWB004	7/03/2024	-	-	Dry
23JEWB004	26/03/2024	-	-	Dry
23JEWB004	16/04/2024	-	-	Dry
23JEWB004	9/05/2024	-	-	Dry
23JEWB004	9/07/2024	-	-	Dry
23JEWB004	23/07/2024	-	-	Dry
23JEWB004	31/07/2024	-	-	Dry
23JEWB004	8/08/2024	-	-	Dry
23JEWB004	15/08/2024	-	-	Dry
23JEWB004	13/09/2024	-	-	Dry
23JEWB004	20/10/2024	-	-	Dry
23JEWB005	29/10/2023	-	-	Dry
23JEWB005	22/11/2023	-	-	Dry
23JEWB005	20/12/2023	-	-	Dry
23JEWB005	17/01/2024	-	-	Dry
23JEWB005	10/02/2024	-	-	Dry
23JEWB005	7/03/2024	-	-	Dry
23JEWB005	26/03/2024	-	-	Dry
23JEWB005	16/04/2024	-	-	Dry
23JEWB005	9/05/2024	-	-	Dry
23JEWB005	17/06/2024	-	-	Dry
23JEWB005	9/07/2024	-	-	Dry
23JEWB005	23/07/2024	-	-	Dry
23JEWB005	31/07/2024	-	-	Dry
23JEWB005	8/08/2024	-	-	Dry
23JEWB005	15/08/2024	-	-	Dry
23JEWB005	13/09/2024	-	-	Dry

ID	Sample Date:	SWL_mbgl	SWL_mAHD	Comment
23JEWB005	20/10/2024	-	-	Dry
23JEWB006	29/10/2023	-	-	Dry
23JEWB006	22/11/2023	-	-	Dry
23JEWB006	20/12/2023	-	-	Dry
23JEWB006	17/01/2024	-	-	Dry
23JEWB006	10/02/2024	-	-	Dry
23JEWB006	7/03/2024	-	-	Dry
23JEWB006	26/03/2024	-	-	Dry
23JEWB006	16/04/2024	-	-	Dry
23JEWB006	9/05/2024	-	-	Dry
23JEWB006	17/06/2024	-	-	Dry
23JEWB006	9/07/2024	-	-	Dry
23JEWB006	23/07/2024	-	-	Dry
23JEWB006	31/07/2024	-	-	Dry
23JEWB006	8/08/2024	-	-	Dry
23JEWB006	15/08/2024	-	-	Dry
23JEWB006	14/09/2024	-	-	Dry
23JEWB006	20/10/2024	-	-	Dry
23JEWB007	29/10/2023	61.69	135.97	-
23JEWB007	22/11/2023	49	148.66	-
23JEWB007	20/12/2023	59.65	138.01	-
23JEWB007	17/01/2024	60.1	137.56	access
23JEWB007	10/02/2024	60.1	137.56	access
23JEWB007	6/03/2024	-	-	Dry
23JEWB007	26/03/2024	-	-	Dry
23JEWB007	16/04/2024	-	-	Dry
23JEWB007	9/05/2024	-	-	Dry
23JEWB007	18/06/2024	-	-	Dry
23JEWB007	9/07/2024	60.18	137.48	-

ID	Sample Date:	SWL_mbgl	SWL_mAHD	Comment
23JEWB007	24/07/2024	60.175	137.485	-
23JEWB007	31/07/2024	60.19	137.47	-
23JEWB007	9/08/2024	60.13	137.53	-
23JEWB007	17/08/2024	60.154	137.506	-
23JEWB007	13/09/2024	32.32	165.34	-
23JEWB007	20/10/2024	37.39	160.27	-
23JEWB008	29/10/2023	37.8	154.19	-
23JEWB008	22/11/2023	38.3	153.69	-
23JEWB008	19/12/2023	37.48	154.51	-
23JEWB008	17/01/2024	37.48	154.51	access
23JEWB008	10/02/2024	37.48	154.51	access
23JEWB008	7/03/2024	37.63	154.36	-
23JEWB008	16/04/2024	37.47	154.52	-
23JEWB008	9/05/2024	37.55	154.44	-
23JEWB008	28/05/2024	-	-	-
23JEWB008	17/06/2024	37.48	154.51	-
23JEWB008	9/07/2024	37.44	154.55	-
23JEWB008	23/07/2024	37.431	154.559	-
23JEWB008	31/07/2024	37.45	154.54	-
23JEWB008	9/08/2024	37.47	154.52	-
23JEWB008	17/08/2024	37.42	154.57	-
23JEWB008	14/09/2024	34.56	157.43	-
23JEWB008	20/10/2024	34.8	157.19	-
23JEWB009	29/10/2023	33.34	163.91	-
23JEWB009	21/11/2023	34.25	163	-
23JEWB009	20/12/2023	33.42	163.83	-
23JEWB009	17/01/2024	38.36	158.89	access
23JEWB009	10/02/2024	38.36	158.89	-
23JEWB009	7/03/2024	33.64	163.61	-

ID	Sample Date:	SWL_mbgl	SWL_mAHD	Comment
23JEWB009	26/03/2024	33.38	163.87	-
23JEWB009	18/04/2024	33.4	163.85	-
23JEWB009	9/05/2024	33.46	163.79	-
23JEWB009	28/05/2024	-	-	-
23JEWB009	17/06/2024	33.55	163.7	-
23JEWB009	9/07/2024	33.46	163.79	-
23JEWB009	23/07/2024	33.38	163.87	-
23JEWB009	31/07/2024	33.49	163.76	-
23JEWB009	9/08/2024	32.84	164.41	-
23JEWB009	17/08/2024	37.373	159.877	-
23JEWB009	14/09/2024	32.8	164.45	-
23JEWB009	20/10/2024	37.93	159.32	-
23JEWB010	29/10/2023	67.83	127.75	-
23JEWB010	22/11/2023	67.78	127.8	-
23JEWB010	21/12/2023	67.69	127.89	-
23JEWB010	17/01/2024	67.85	127.73	access
23JEWB010	10/02/2024	67.85	127.73	-
23JEWB010	7/03/2024	67.775	127.805	-
23JEWB010	27/03/2024	67.83	127.75	-
23JEWB010	17/04/2024	67.85	127.73	-
23JEWB010	9/05/2024	67.96	127.62	-
23JEWB010	28/05/2024	-	-	-
23JEWB010	17/06/2024	-	-	Dry
23JEWB010	10/07/2024	-	-	Dry
23JEWB010	23/07/2024	-	-	Dry
23JEWB010	31/07/2024	-	-	Dry
23JEWB010	8/08/2024	-	-	Dry
23JEWB010	15/08/2024	-	-	Dry
23JEWB010	14/09/2024	-	-	Dry

ID	Sample Date:	SWL_mbgl	SWL_mAHD	Comment
23JEWB010	21/10/2024	-	-	Dry
24JEWB011	10/07/2024	53.3	130.41	-
24JEWB011	24/07/2024	-	-	Dry
24JEWB011	31/07/2024	52.7	131.01	-
24JEWB011	9/08/2024	50.4	133.31	-
24JEWB011	18/08/2024	46.825	136.885	-
24JEWB011	13/09/2024	34.07	149.64	-
24JEWB011	21/10/2024	35.26	148.45	-
24JEWB015	9/07/2024	-	-	Dry
24JEWB015	23/07/2024	-	-	Dry
24JEWB015	30/07/2024	-	-	Dry
24JEWB015	8/08/2024	-	-	Dry
24JEWB015	15/08/2024	-	-	Dry
24JEWB015	14/09/2024	-	-	Dry
24JEWB015	20/10/2024	-	-	Dry
24JEWB016	12/07/2024	-	-	Dry
24JEWB016	23/07/2024	-	-	Dry
24JEWB016	24/07/2024	61.49	131.75	
24JEWB016	30/07/2024	-	-	Dry
24JEWB016	8/08/2024	61.6	131.64	-
24JEWB016	18/08/2024	62.23	131.01	-
24JEWB016	14/09/2024	27.16	166.08	-
24JEWB016	20/10/2024	36.52	156.72	-

Note: mbgl – metres below ground level. mAHD – metres above Australian Height Datum

B.2 Groundwater Quality Monitoring Results



CERTIFICATE OF ANALYSIS

Work Order	: EB2341005	Page	: 1 of 10
Client	: AIC MINES LIMITED	Laboratory	: Environmental Division Brisbane
Contact	: wulguru labresults	Contact	: Customer Services EB
Address	: SUITE 3 130 HAY STREET SUBIACO 6008	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 2023.10004_JERICO GW SAMPLING	Date Samples Received	: 29-Dec-2023 07:30
Order number	: ----	Date Analysis Commenced	: 29-Dec-2023
C-O-C number	: ----	Issue Date	: 10-Jan-2024 15:33
Sampler	: JESSICA CRABB		
Site	: ----		
Quote number	: EB23AICMINLTD0002		
No. of samples received	: 8		
No. of samples analysed	: 8		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EK059G (Nitrite + Nitrate as N (NOx)): Sample 23JEWB010 (EB2341005-006) was diluted due to matrix interference. LOR adjusted accordingly.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- It is recognised that EK059G (Nitrite + Nitrate) is less than EK057G (Nitrite) for sample 23JEWB010 (EB2341005-006). However, the difference is within experimental variation of the methods.
- TDS by method EA-015 may bias high for sample 2(23JEWB008) due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB009	23JEWB008	23JEWB003	23JEWB007	23JEWB009
Sampling date / time					20-Dec-2023 06:30	19-Dec-2023 17:20	20-Dec-2023 14:40	20-Dec-2023 14:10	19-Dec-2023 17:55
Compound	CAS Number	LOR	Unit		EB2341005-001	EB2341005-002	EB2341005-003	EB2341005-004	EB2341005-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.02	7.65	7.68	7.66	7.77
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1510	2960	1040	1790	1200
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		913	2400	644	1160	802
EA045: Turbidity									
Turbidity	----	0.1	NTU		17.8	30.8	59.9	33.8	3.2
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		318	127	121	98	321
Total Alkalinity as CaCO ₃	----	1	mg/L		318	127	121	98	321
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		168	1010	266	434	250
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		210	340	72	263	45
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		60	164	28	66	65
Magnesium	7439-95-4	1	mg/L		32	58	6	8	29
Sodium	7440-23-5	1	mg/L		258	487	200	340	206
Potassium	7440-09-7	1	mg/L		9	14	3	10	6
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	0.02	<0.01
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.007	0.103	0.003	0.004
Barium	7440-39-3	0.001	mg/L		0.106	0.152	0.030	0.116	0.063
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	0.0001	<0.0001	0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB009	23JEWB008	23JEWB003	23JEWB007	23JEWB009
Sampling date / time				20-Dec-2023 06:30	19-Dec-2023 17:20	20-Dec-2023 14:40	20-Dec-2023 14:10	19-Dec-2023 17:55
Compound	CAS Number	LOR	Unit	EB2341005-001	EB2341005-002	EB2341005-003	EB2341005-004	EB2341005-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.003	0.004	0.001	0.002	0.002
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.927	0.771	0.029	0.072	0.494
Molybdenum	7439-98-7	0.001	mg/L	0.004	0.061	0.003	0.062	0.007
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.865	2.96	0.578	1.36	0.651
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	0.002	<0.001	0.002	0.002
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.39	0.35	0.61	0.82	0.40
Iron	7439-89-6	0.05	mg/L	0.57	<0.05	<0.05	<0.05	0.35
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.43	10.4	3.51	7.61	0.15
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.015	0.137	0.005	0.003
Barium	7440-39-3	0.001	mg/L	0.128	0.222	0.050	0.167	0.069
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.017	0.010	0.013	0.003
Copper	7440-50-8	0.001	mg/L	<0.001	0.029	0.028	0.021	0.004
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.008	0.009	0.004	<0.001
Nickel	7440-02-0	0.001	mg/L	0.004	0.016	0.012	0.011	0.003
Lead	7439-92-1	0.001	mg/L	<0.001	0.005	0.016	0.003	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	0.044	0.015	0.027	0.013



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB009	23JEWB008	23JEWB003	23JEWB007	23JEWB009
Sampling date / time				20-Dec-2023 06:30	19-Dec-2023 17:20	20-Dec-2023 14:40	20-Dec-2023 14:10	19-Dec-2023 17:55
Compound	CAS Number	LOR	Unit	EB2341005-001	EB2341005-002	EB2341005-003	EB2341005-004	EB2341005-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	1.06	0.939	0.099	0.220	0.487
Molybdenum	7439-98-7	0.001	mg/L	0.004	0.066	0.003	0.084	0.007
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	1.04	3.00	0.594	1.44	0.634
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	0.003	<0.001	0.003	0.002
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.03	0.01	0.03	<0.01
Boron	7440-42-8	0.05	mg/L	0.34	0.33	0.54	0.68	0.34
Iron	7439-89-6	0.05	mg/L	1.71	13.9	6.87	9.19	0.71
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	31.3	11.5	15.0	14.5	19.7
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.8	1.2	2.1	6.0	0.5
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.14	0.43	0.17	0.17	0.08
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	15.8	33.2	9.99	18.4	12.9
∅ Total Cations	----	0.01	meq/L	17.1	34.5	10.7	19.0	14.7



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB009	23JEWB008	23JEWB003	23JEWB007	23JEWB009
Sampling date / time					20-Dec-2023 06:30	19-Dec-2023 17:20	20-Dec-2023 14:40	20-Dec-2023 14:10	19-Dec-2023 17:55
Compound	CAS Number	LOR	Unit		EB2341005-001	EB2341005-002	EB2341005-003	EB2341005-004	EB2341005-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	-----	0.01	%		3.97	1.98	3.29	1.56	6.72
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	-----	0.1	mg/L		4.0	4.4	5.8	5.7	5.2



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB010	FB	LB	----	----
Sampling date / time					21-Dec-2023 06:35	21-Dec-2023 07:30	22-Dec-2023 09:00	----	----
Compound	CAS Number	LOR	Unit		EB2341005-006	EB2341005-007	EB2341005-008	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.32	6.05	6.24	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		962	<1	<1	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		571	<10	<10	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		73.5	0.2	0.2	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		9	<1	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		141	2	2	----	----
Total Alkalinity as CaCO3	----	1	mg/L		150	2	2	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		104	<1	<1	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		136	<1	<1	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		11	<1	<1	----	----
Magnesium	7439-95-4	1	mg/L		3	<1	<1	----	----
Sodium	7440-23-5	1	mg/L		202	<1	<1	----	----
Potassium	7440-09-7	1	mg/L		4	<1	<1	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		0.02	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L		0.006	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L		0.034	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB010	FB	LB	----	----
Sampling date / time				21-Dec-2023 06:35	21-Dec-2023 07:30	22-Dec-2023 09:00	----	----
Compound	CAS Number	LOR	Unit	EB2341005-006	EB2341005-007	EB2341005-008	-----	-----
				Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	0.008	<0.005	<0.005	----	----
Manganese	7439-96-5	0.001	mg/L	0.078	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.005	<0.001	<0.001	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	0.301	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.56	<0.05	<0.05	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	1.59	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	0.008	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L	0.056	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	0.003	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.005	<0.001	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	0.002	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	0.004	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	0.002	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	0.017	<0.005	<0.005	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB010	FB	LB	----	----
Sampling date / time					21-Dec-2023 06:35	21-Dec-2023 07:30	22-Dec-2023 09:00	----	----
Compound	CAS Number	LOR	Unit		EB2341005-006	EB2341005-007	EB2341005-008	-----	-----
					Result	Result	Result	----	----
EG020T: Total Metals by ICP-MS - Continued									
Manganese	7439-96-5	0.001	mg/L		0.241	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L		0.005	<0.001	<0.001	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L		0.463	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Uranium	7440-61-1	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L		0.56	<0.05	<0.05	----	----
Iron	7439-89-6	0.05	mg/L		2.24	<0.05	<0.05	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L		16.3	<0.05	<0.05	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		5.8	<0.1	<0.1	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		0.11	<0.01	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.10	<0.01	<0.01	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.10	<0.01	<0.01	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.18	<0.01	<0.01	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		9.00	0.04	0.04	----	----
∅ Total Cations	----	0.01	meq/L		9.68	<0.01	<0.01	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB010	FB	LB	----	----
Sampling date / time					21-Dec-2023 06:35	21-Dec-2023 07:30	22-Dec-2023 09:00	----	----
Compound	CAS Number	LOR	Unit		EB2341005-006	EB2341005-007	EB2341005-008	-----	-----
					Result	Result	Result	----	----
EN055: Ionic Balance - Continued									
Ø Ionic Balance	----	0.01	%		3.67	----	----	----	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		4.7	9.2	9.4	----	----



CERTIFICATE OF ANALYSIS

Work Order : **ET2305258**
Client : **AIC MINES LIMITED**
Contact : **RODNEY COOPER**
Address : **SUITE 3 130 HAY STREET**
SUBIACO 6008
Telephone : **----**
Project : **Jericho GW**
Order number : **100385**
C-O-C number : **----**
Sampler : **JESSICA CRABB**
Site : **----**
Quote number : **EB23AICMINLTD0002**
No. of samples received : **6**
No. of samples analysed : **6**

Page : 1 of 8
Laboratory : Environmental Division Townsville
Contact : Customer Services ET
Address : 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone : +61 7 4773 0000
Date Samples Received : 01-Nov-2023 11:00
Date Analysis Commenced : 01-Nov-2023
Issue Date : 08-Nov-2023 17:14



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD
Kim McCabe		Townsville Inorganics, Townsville, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- The presence of high SO₄ may bias the EC low.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- EK058G, EA045, EP025, EA005-P, EA010-P, EA015H, ED037-P, ED041G, ED045G, EG052G, EK040P, EK057G, EK059G conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23472 for Chemical Testing and Site no. 23313 for Biological Testing)
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID				SITE 5	SITE 7	SITE 2	SITE 1	SITE 6
Sampling date / time				29-Oct-2023 15:00	29-Oct-2023 17:30	29-Oct-2023 16:00	29-Oct-2023 13:00	29-Oct-2023 14:30
Compound	CAS Number	LOR	Unit	ET2305258-001	ET2305258-002	ET2305258-003	ET2305258-004	ET2305258-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	9.67	9.84	7.64	7.81	7.89
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	3090	1080	2510	4460	2140
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	2180	600	1660	2900	1370
EA045: Turbidity								
Turbidity	----	0.1	NTU	129	774	22.7	316	89.7
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	36	121	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	35	70	294	52	362
Total Alkalinity as CaCO3	----	1	mg/L	71	191	294	52	362
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	1040	129	749	1570	434
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	335	137	232	572	264
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	141	5	170	329	77
Magnesium	7439-95-4	1	mg/L	36	1	81	29	44
Sodium	7440-23-5	1	mg/L	518	219	344	710	359
Potassium	7440-09-7	1	mg/L	31	9	10	22	10
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.02	<0.01	0.02	<0.01
Arsenic	7440-38-2	0.001	mg/L	0.004	0.016	0.003	0.006	0.002
Barium	7440-39-3	0.001	mg/L	0.155	0.015	0.109	0.185	0.126
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.005	0.001	0.005	0.004	0.003
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SITE 5	SITE 7	SITE 2	SITE 1	SITE 6
Sampling date / time				29-Oct-2023 15:00	29-Oct-2023 17:30	29-Oct-2023 16:00	29-Oct-2023 13:00	29-Oct-2023 14:30
Compound	CAS Number	LOR	Unit	ET2305258-001	ET2305258-002	ET2305258-003	ET2305258-004	ET2305258-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.005	<0.001	1.01	0.094	1.64
Molybdenum	7439-98-7	0.001	mg/L	0.072	0.010	0.006	0.294	0.007
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	3.15	0.316	1.90	6.75	1.25
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	0.002	0.001	0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.11	0.58	0.40	0.13	0.26
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.31	<0.05	0.90
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	1.75	13.5	0.31	4.19	2.56
Arsenic	7440-38-2	0.001	mg/L	0.010	0.030	0.004	0.009	0.004
Barium	7440-39-3	0.001	mg/L	0.179	0.104	0.132	0.238	0.174
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0002	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.003	0.020	0.002	0.007	0.002
Copper	7440-50-8	0.001	mg/L	0.023	0.026	0.004	0.029	0.007
Cobalt	7440-48-4	0.001	mg/L	0.002	0.014	0.001	0.006	0.002
Nickel	7440-02-0	0.001	mg/L	0.008	0.020	0.008	0.012	0.005
Lead	7439-92-1	0.001	mg/L	0.005	0.013	<0.001	0.007	0.003
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.064	0.072	0.015	0.093	0.023
Manganese	7439-96-5	0.001	mg/L	0.181	0.280	1.33	0.519	1.95
Molybdenum	7439-98-7	0.001	mg/L	0.075	0.011	0.006	0.293	0.007
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	3.36	0.756	2.08	6.92	1.58
Tin	7440-31-5	0.001	mg/L	0.004	0.011	0.002	0.003	0.003
Uranium	7440-61-1	0.001	mg/L	<0.001	0.001	0.002	0.002	0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.04	<0.01	0.03	<0.01
Boron	7440-42-8	0.05	mg/L	0.15	0.50	0.39	0.16	0.28
Iron	7439-89-6	0.05	mg/L	2.06	18.5	1.38	8.27	4.66
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SITE 5	SITE 7	SITE 2	SITE 1	SITE 6
Sampling date / time					29-Oct-2023 15:00	29-Oct-2023 17:30	29-Oct-2023 16:00	29-Oct-2023 13:00	29-Oct-2023 14:30
Compound	CAS Number	LOR	Unit		ET2305258-001	ET2305258-002	ET2305258-003	ET2305258-004	ET2305258-005
					Result	Result	Result	Result	Result
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L		3.05	14.6	21.8	9.04	34.8
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.2	4.8	0.5	0.2	0.6
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.03	<0.01	<0.01	0.02	0.09
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.03	<0.01	<0.01	0.02	0.09
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.12	0.38	0.08	0.29	0.18
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		32.5	10.4	28.0	49.9	23.7
∅ Total Cations	----	0.01	meq/L		33.3	10.1	30.4	50.2	23.3
∅ Ionic Balance	----	0.01	%		1.22	1.36	4.03	0.39	0.81
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		4.4	2.2	3.6	1.1	4.2



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				DUP	----	----	----	----
Sampling date / time				29-Oct-2023 16:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ET2305258-006	-----	-----	-----	-----
Result				-----	-----	-----	-----	-----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.65	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	2510	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1610	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	24.5	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	290	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	290	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	768	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	234	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	158	----	----	----	----
Magnesium	7439-95-4	1	mg/L	75	----	----	----	----
Sodium	7440-23-5	1	mg/L	326	----	----	----	----
Potassium	7440-09-7	1	mg/L	9	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.003	----	----	----	----
Barium	7440-39-3	0.001	mg/L	0.103	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.006	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				DUP	----	----	----	----
Sampling date / time				29-Oct-2023 16:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ET2305258-006	-----	-----	-----	-----
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	1.00	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.005	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	1.81	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	0.002	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.36	----	----	----	----
Iron	7439-89-6	0.05	mg/L	0.36	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.20	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.004	----	----	----	----
Barium	7440-39-3	0.001	mg/L	0.117	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	0.002	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.003	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.008	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.007	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	1.19	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.006	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	1.91	----	----	----	----
Tin	7440-31-5	0.001	mg/L	0.002	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	0.002	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.38	----	----	----	----
Iron	7439-89-6	0.05	mg/L	1.29	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP	----	----	----	----
Sampling date / time					29-Oct-2023 16:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ET2305258-006	-----	-----	-----	-----
					Result	----	----	----	----
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L		21.7	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.5	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.07	----	----	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		28.4	----	----	----	----
∅ Total Cations	----	0.01	meq/L		28.5	----	----	----	----
∅ Ionic Balance	----	0.01	%		0.14	----	----	----	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		4.2	----	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(WATER) EN055: Ionic Balance

(WATER) ED093F: Dissolved Major Cations

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser

(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EG035F: Dissolved Mercury by FIMS

(WATER) EG035T: Total Recoverable Mercury by FIMS



CERTIFICATE OF ANALYSIS

Work Order	: ET2305816	Page	: 1 of 10
Client	: AIC MINES LIMITED	Laboratory	: Environmental Division Townsville
Contact	: RODNEY COOPER	Contact	: Customer Services ET
Address	: SUITE 3 130 HAY STREET SUBIACO 6008	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: Jericho GW - Raw Water 2023.10004	Date Samples Received	: 28-Nov-2023 10:20
Order number	: ----	Date Analysis Commenced	: 28-Nov-2023
C-O-C number	: ----	Issue Date	: 05-Dec-2023 21:46
Sampler	: JAMIE SMITH		
Site	: ----		
Quote number	: EB23AICMINLTD0002		
No. of samples received	: 9		
No. of samples analysed	: 9		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- EK058G, EA045, EP025, EA005-P, EA010-P, EA015H, ED037-P, ED041G, ED045G, EG052G, EK040P, EK057G, EK059G conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23472 for Chemical Testing and Site no. 23313 for Biological Testing)
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	Site 2	Site 6	Dup_1	FB1	Site 5
Sampling date / time					21-Nov-2023 14:45	21-Nov-2023 15:41	21-Nov-2023 15:41	21-Nov-2023 15:41	22-Nov-2023 07:50
Compound	CAS Number	LOR	Unit		ET2305816-001	ET2305816-002	ET2305816-003	ET2305816-004	ET2305816-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.78	7.75	7.58	5.68	7.91
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1290	1870	1860	<1	2630
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		802	1120	1110	<10	1800
EA045: Turbidity									
Turbidity	----	0.1	NTU		36.8	500	184	<0.1	1370
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		325	424	413	5	116
Total Alkalinity as CaCO ₃	----	1	mg/L		325	424	413	5	116
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		349	226	212	<1	938
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		66	304	305	<1	318
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		69	72	71	<1	134
Magnesium	7439-95-4	1	mg/L		36	44	44	<1	47
Sodium	7440-23-5	1	mg/L		213	329	332	<1	467
Potassium	7440-09-7	1	mg/L		6	9	9	<1	16
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.003	0.001	0.001	<0.001	0.008
Barium	7440-39-3	0.001	mg/L		0.054	0.094	0.087	<0.001	0.163
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				Site 2	Site 6	Dup_1	FB1	Site 5
Sampling date / time				21-Nov-2023 14:45	21-Nov-2023 15:41	21-Nov-2023 15:41	21-Nov-2023 15:41	22-Nov-2023 07:50
Compound	CAS Number	LOR	Unit	ET2305816-001	ET2305816-002	ET2305816-003	ET2305816-004	ET2305816-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.001	0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.001	0.002	0.003	<0.001	0.004
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.414	1.18	1.07	<0.001	0.468
Molybdenum	7439-98-7	0.001	mg/L	0.006	0.004	0.004	<0.001	0.061
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.745	0.996	0.993	<0.001	2.40
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.001	0.001	0.001	<0.001	0.002
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.33	0.41	0.42	<0.05	0.34
Iron	7439-89-6	0.05	mg/L	0.23	0.18	<0.05	<0.05	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.88	11.3	12.5	<0.01	19.6
Arsenic	7440-38-2	0.001	mg/L	0.003	0.007	0.005	<0.001	0.026
Barium	7440-39-3	0.001	mg/L	0.069	0.221	0.193	<0.001	0.276
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0007	0.0004	<0.0001	0.0002
Chromium	7440-47-3	0.001	mg/L	<0.001	0.016	0.015	<0.001	0.031
Copper	7440-50-8	0.001	mg/L	0.006	0.048	0.042	<0.001	0.063
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.008	0.005	<0.001	0.022
Nickel	7440-02-0	0.001	mg/L	<0.001	0.015	0.010	<0.001	0.033
Lead	7439-92-1	0.001	mg/L	<0.001	0.008	0.005	<0.001	0.013
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	0.146	0.098	<0.005	0.098



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID				Site 2	Site 6	Dup_1	FB1	Site 5
Sampling date / time				21-Nov-2023 14:45	21-Nov-2023 15:41	21-Nov-2023 15:41	21-Nov-2023 15:41	22-Nov-2023 07:50
Compound	CAS Number	LOR	Unit	ET2305816-001	ET2305816-002	ET2305816-003	ET2305816-004	ET2305816-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.426	1.58	1.41	<0.001	0.913
Molybdenum	7439-98-7	0.001	mg/L	0.006	0.004	0.003	<0.001	0.060
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.753	1.60	1.54	<0.001	2.69
Tin	7440-31-5	0.001	mg/L	<0.001	0.006	0.003	<0.001	0.001
Uranium	7440-61-1	0.001	mg/L	0.001	0.002	0.002	<0.001	0.005
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.03	0.02	<0.01	0.07
Boron	7440-42-8	0.05	mg/L	0.32	0.44	0.43	<0.05	0.32
Iron	7439-89-6	0.05	mg/L	1.45	16.1	17.2	<0.05	30.6
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	20.0	33.4	36.2	<0.05	9.32
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.4	1.7	1.2	<0.1	2.1
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	0.02	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.02	<0.01	<0.01
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.06	0.20	0.29	<0.01	0.65
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	15.6	21.8	21.3	0.10	30.8
∅ Total Cations	----	0.01	meq/L	15.8	21.8	21.8	<0.01	31.3



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	Site 2	Site 6	Dup_1	FB1	Site 5
Sampling date / time					21-Nov-2023 14:45	21-Nov-2023 15:41	21-Nov-2023 15:41	21-Nov-2023 15:41	22-Nov-2023 07:50
Compound	CAS Number	LOR	Unit		ET2305816-001	ET2305816-002	ET2305816-003	ET2305816-004	ET2305816-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	----	0.01	%		0.64	<0.01	1.31	----	0.74
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		5.7	7.6	6.3	9.5	3.9



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	Site 1	Raw Water	Site 7	Site 4	----
Sampling date / time					22-Nov-2023 12:10	22-Nov-2023 13:50	22-Nov-2023 16:45	23-Nov-2023 07:45	----
Compound	CAS Number	LOR	Unit		ET2305816-006	ET2305816-007	ET2305816-008	ET2305816-009	-----
					Result	Result	Result	Result	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.32	8.53	8.99	7.98	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1480	1270	1040	1010	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		875	700	630	660	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		420	0.3	1680	1940	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		23	49	77	<1	----
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		143	293	119	142	----
Total Alkalinity as CaCO ₃	----	1	mg/L		166	342	196	142	----
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		283	32	124	301	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		237	192	170	70	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		34	5	15	31	----
Magnesium	7439-95-4	1	mg/L		5	<1	5	7	----
Sodium	7440-23-5	1	mg/L		301	318	218	207	----
Potassium	7440-09-7	1	mg/L		8	2	6	4	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		0.02	<0.01	<0.01	<0.01	----
Arsenic	7440-38-2	0.001	mg/L		0.004	<0.001	0.014	0.127	----
Barium	7440-39-3	0.001	mg/L		0.077	0.031	0.032	0.032	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				Site 1	Raw Water	Site 7	Site 4	----
Sampling date / time				22-Nov-2023 12:10	22-Nov-2023 13:50	22-Nov-2023 16:45	23-Nov-2023 07:45	----
Compound	CAS Number	LOR	Unit	ET2305816-006	ET2305816-007	ET2305816-008	ET2305816-009	-----
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	0.001	----
Nickel	7440-02-0	0.001	mg/L	0.001	0.002	0.002	0.004	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	----
Manganese	7439-96-5	0.001	mg/L	0.027	<0.001	0.030	0.020	----
Molybdenum	7439-98-7	0.001	mg/L	0.040	0.001	0.007	0.003	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	0.762	0.210	0.402	0.618	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Uranium	7440-61-1	0.001	mg/L	0.004	<0.001	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	0.02	<0.01	<0.01	<0.01	----
Boron	7440-42-8	0.05	mg/L	0.88	1.34	0.55	0.58	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	18.6	0.01	15.4	42.2	----
Arsenic	7440-38-2	0.001	mg/L	0.008	<0.001	0.027	0.273	----
Barium	7440-39-3	0.001	mg/L	0.220	0.033	0.180	0.251	----
Cadmium	7440-43-9	0.0001	mg/L	0.0002	<0.0001	0.0001	0.0003	----
Chromium	7440-47-3	0.001	mg/L	0.026	<0.001	0.027	0.120	----
Copper	7440-50-8	0.001	mg/L	0.049	<0.001	0.041	0.366	----
Cobalt	7440-48-4	0.001	mg/L	0.012	<0.001	0.021	0.104	----
Nickel	7440-02-0	0.001	mg/L	0.023	<0.001	0.035	0.117	----
Lead	7439-92-1	0.001	mg/L	0.008	<0.001	0.020	0.184	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	0.082	<0.005	0.131	0.204	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID				Site 1	Raw Water	Site 7	Site 4	----
Sampling date / time				22-Nov-2023 12:10	22-Nov-2023 13:50	22-Nov-2023 16:45	23-Nov-2023 07:45	----
Compound	CAS Number	LOR	Unit	ET2305816-006	ET2305816-007	ET2305816-008	ET2305816-009	-----
				Result	Result	Result	Result	----
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.479	0.003	0.589	0.868	----
Molybdenum	7439-98-7	0.001	mg/L	0.037	<0.001	0.008	0.006	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	0.970	0.221	1.03	0.853	----
Tin	7440-31-5	0.001	mg/L	0.002	<0.001	0.001	0.002	----
Uranium	7440-61-1	0.001	mg/L	0.006	<0.001	0.002	0.005	----
Vanadium	7440-62-2	0.01	mg/L	0.08	<0.01	0.05	0.16	----
Boron	7440-42-8	0.05	mg/L	0.81	1.26	0.50	0.48	----
Iron	7439-89-6	0.05	mg/L	26.0	0.72	26.5	90.6	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	15.4	19.5	15.4	15.1	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	9.7	19.9	5.3	1.8	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.44	0.01	0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.44	0.01	0.01	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.28	0.02	0.83	1.06	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	15.9	12.9	11.3	11.1	----
∅ Total Cations	----	0.01	meq/L	15.4	14.1	10.8	11.2	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	Site 1	Raw Water	Site 7	Site 4	----
Sampling date / time					22-Nov-2023 12:10	22-Nov-2023 13:50	22-Nov-2023 16:45	23-Nov-2023 07:45	----
Compound	CAS Number	LOR	Unit		ET2305816-006	ET2305816-007	ET2305816-008	ET2305816-009	-----
					Result	Result	Result	Result	----
EN055: Ionic Balance - Continued									
Ø Ionic Balance	----	0.01	%		1.56	4.50	2.25	0.67	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		5.1	8.5	5.9	4.7	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EG035F: Dissolved Mercury by FIMS

(WATER) EG035T: Total Recoverable Mercury by FIMS

(WATER) EN055: Ionic Balance

(WATER) ED093F: Dissolved Major Cations

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser



CERTIFICATE OF ANALYSIS

Work Order	: ET2400933	Page	: 1 of 6
Client	: AIC MINES LIMITED	Laboratory	: Environmental Division Townsville
Contact	: wulguru labresults	Contact	: Customer Services ET
Address	: SUITE 3 130 HAY STREET SUBIACO 6008	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: 2023.10004_JERICO GW	Date Samples Received	: 14-Feb-2024 10:30
Order number	: ----	Date Analysis Commenced	: 14-Feb-2024
C-O-C number	: ----	Issue Date	: 22-Feb-2024 17:38
Sampler	: Kiara Sumsion		
Site	: ----		
Quote number	: EB23AICMINLTD0002		
No. of samples received	: 4		
No. of samples analysed	: 4		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EK067G conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H+ to the Cations and Nitrate, SiO2 and Fluoride to the Anions.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- EK058G, EA045, EP025, EA005P, EA010P, EA015H, ED037P, ED041G, ED045G, EG052G, EK040P, EK057G, EK059G conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23472 for Chemical Testing and Site no. 23313 for Biological Testing)
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB003	23JEWB001	23JEWB0010	23JEWB009	----
Sampling date / time					10-Feb-2024 00:00	10-Feb-2024 00:00	10-Feb-2024 00:00	10-Feb-2024 00:00	----
Compound	CAS Number	LOR	Unit		ET2400933-001	ET2400933-002	ET2400933-003	ET2400933-004	-----
					Result	Result	Result	Result	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.07	7.82	7.95	10.2	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1040	1270	948	1370	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		794	816	556	786	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		172	2.4	24.4	10.6	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	230	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		133	359	161	54	----
Total Alkalinity as CaCO3	----	1	mg/L		133	359	161	284	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		286	270	99	126	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		66	44	125	164	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		22	50	11	4	----
Magnesium	7439-95-4	1	mg/L		5	26	3	1	----
Sodium	7440-23-5	1	mg/L		182	180	176	242	----
Potassium	7440-09-7	1	mg/L		3	6	3	38	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	0.01	<0.01	----
Arsenic	7440-38-2	0.001	mg/L		0.093	0.002	<0.001	0.001	----
Barium	7440-39-3	0.001	mg/L		0.028	0.053	0.036	0.075	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB003	23JEWB001	23JEWB0010	23JEWB009	----
Sampling date / time				10-Feb-2024 00:00	10-Feb-2024 00:00	10-Feb-2024 00:00	10-Feb-2024 00:00	----
Compound	CAS Number	LOR	Unit	ET2400933-001	ET2400933-002	ET2400933-003	ET2400933-004	-----
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	0.024	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	----
Manganese	7439-96-5	0.001	mg/L	0.029	0.597	0.141	0.004	----
Molybdenum	7439-98-7	0.001	mg/L	0.002	0.001	0.004	0.024	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	0.530	0.560	0.233	0.828	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Uranium	7440-61-1	0.001	mg/L	<0.001	0.001	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Boron	7440-42-8	0.05	mg/L	0.57	0.35	0.55	0.21	----
Iron	7439-89-6	0.05	mg/L	<0.05	0.19	<0.05	<0.05	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	2.05	0.09	0.85	0.07	----
Arsenic	7440-38-2	0.001	mg/L	0.098	0.003	0.002	<0.001	----
Barium	7440-39-3	0.001	mg/L	0.041	0.062	0.048	0.062	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	0.006	0.002	0.002	<0.001	----
Copper	7440-50-8	0.001	mg/L	0.017	0.002	0.004	0.003	----
Cobalt	7440-48-4	0.001	mg/L	0.006	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	0.008	0.002	0.002	0.020	----
Lead	7439-92-1	0.001	mg/L	0.009	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	0.009	<0.005	0.008	0.021	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB003	23JEWB001	23JEWB0010	23JEWB009	----
Sampling date / time					10-Feb-2024 00:00	10-Feb-2024 00:00	10-Feb-2024 00:00	10-Feb-2024 00:00	----
Compound	CAS Number	LOR	Unit		ET2400933-001	ET2400933-002	ET2400933-003	ET2400933-004	-----
					Result	Result	Result	Result	----
EG020T: Total Metals by ICP-MS - Continued									
Manganese	7439-96-5	0.001	mg/L		0.080	0.627	0.204	0.010	----
Molybdenum	7439-98-7	0.001	mg/L		0.002	0.004	0.004	0.020	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L		0.571	0.614	0.310	0.680	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Uranium	7440-61-1	0.001	mg/L		<0.001	0.001	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Boron	7440-42-8	0.05	mg/L		0.49	0.33	0.49	0.15	----
Iron	7439-89-6	0.05	mg/L		4.50	0.63	1.12	0.09	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L		15.2	20.5	16.7	11.0	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		1.9	0.5	5.5	0.5	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.08	0.12	0.11	0.07	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		10.5	14.0	8.80	12.9	----
∅ Total Cations	----	0.01	meq/L		9.50	12.6	8.53	11.8	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB003	23JEWB001	23JEWB0010	23JEWB009	----
Sampling date / time					10-Feb-2024 00:00	10-Feb-2024 00:00	10-Feb-2024 00:00	10-Feb-2024 00:00	----
Compound	CAS Number	LOR	Unit		ET2400933-001	ET2400933-002	ET2400933-003	ET2400933-004	-----
					Result	Result	Result	Result	----
EN055: Ionic Balance - Continued									
Ø Ionic Balance	----	0.01	%		4.86	5.32	1.59	4.63	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		6.1	1.6	3.2	0.6	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EG035F: Dissolved Mercury by FIMS

(WATER) EG035T: Total Recoverable Mercury by FIMS

(WATER) EN055: Ionic Balance

(WATER) ED093F: Dissolved Major Cations

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser



CERTIFICATE OF ANALYSIS

Work Order	: ET2401560	Page	: 1 of 10
Client	: AIC MINES LIMITED	Laboratory	: Environmental Division Townsville
Contact	: Michelle Barker	Contact	: Customer Services ET
Address	: SUITE 3 130 HAY STREET SUBIACO 6008	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: 2023.10004_JERICO GW	Date Samples Received	: 12-Mar-2024 10:15
Order number	: ----	Date Analysis Commenced	: 12-Mar-2024
C-O-C number	: ----	Issue Date	: 20-Mar-2024 16:36
Sampler	: Bronte Barnard		
Site	: ----		
Quote number	: EB23AICMINLTD0002		
No. of samples received	: 9		
No. of samples analysed	: 9		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

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- Analytical Results

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Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- Sample was received with headspace. Results for BOD/dissolved oxygen may vary accordingly.
- EK058G, EA045, EP025, EA005-P, EA010-P, EA015H, ED037-P, ED041G, ED045G, EG052G, EK040P, EK057G, EK059G conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23472 for Chemical Testing and Site no. 23313 for Biological Testing)
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID				DUP	23JEWB010	23JEWB007	23JEWB001	23JEWB003
Sampling date / time				07-Mar-2024 07:25	07-Mar-2024 07:25	06-Mar-2024 11:45	06-Mar-2024 07:39	07-Mar-2024 08:15
Compound	CAS Number	LOR	Unit	ET2401560-001	ET2401560-002	ET2401560-003	ET2401560-004	ET2401560-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.03	8.03	7.66	7.55	7.87
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	910	933	1920	1190	1010
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	508	528	1220	722	614
EA045: Turbidity								
Turbidity	----	0.1	NTU	25.1	24.5	7.0	1.6	79.1
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L	156	157	124	360	131
Total Alkalinity as CaCO ₃	----	1	mg/L	156	157	124	360	131
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA								
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L	97	98	531	246	289
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	130	131	248	41	68
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	12	12	68	53	25
Magnesium	7439-95-4	1	mg/L	3	3	12	27	5
Sodium	7440-23-5	1	mg/L	192	188	333	183	187
Potassium	7440-09-7	1	mg/L	3	3	9	6	3
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.01	0.01	0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	0.003	0.002	0.074
Barium	7440-39-3	0.001	mg/L	0.035	0.035	0.149	0.043	0.024
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				DUP	23JEWB010	23JEWB007	23JEWB001	23JEWB003
Sampling date / time				07-Mar-2024 07:25	07-Mar-2024 07:25	06-Mar-2024 11:45	06-Mar-2024 07:39	07-Mar-2024 08:15
Compound	CAS Number	LOR	Unit	ET2401560-001	ET2401560-002	ET2401560-003	ET2401560-004	ET2401560-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.001	<0.001	0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.012	0.013	0.042	0.016	<0.005
Manganese	7439-96-5	0.001	mg/L	0.152	0.149	0.251	0.462	0.029
Molybdenum	7439-98-7	0.001	mg/L	0.005	0.004	0.054	0.002	0.002
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.248	0.245	1.52	0.553	0.527
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.56	0.56	0.83	0.37	0.55
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	0.08	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	1.35	1.52	0.36	0.05	7.72
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.002	0.002	0.095
Barium	7440-39-3	0.001	mg/L	0.049	0.049	0.146	0.048	0.068
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.002	0.002	<0.001	<0.001	0.023
Copper	7440-50-8	0.001	mg/L	0.002	0.005	0.002	0.002	0.065
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.001	<0.001	<0.001	0.022
Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.002	<0.001	0.022
Lead	7439-92-1	0.001	mg/L	<0.001	0.001	<0.001	<0.001	0.033
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.009	0.008	<0.005	<0.005	0.022



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				DUP	23JEWB010	23JEWB007	23JEWB001	23JEWB003
Sampling date / time				07-Mar-2024 07:25	07-Mar-2024 07:25	06-Mar-2024 11:45	06-Mar-2024 07:39	07-Mar-2024 08:15
Compound	CAS Number	LOR	Unit	ET2401560-001	ET2401560-002	ET2401560-003	ET2401560-004	ET2401560-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.189	0.188	0.226	0.437	0.223
Molybdenum	7439-98-7	0.001	mg/L	0.004	0.004	0.050	0.002	0.003
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.292	0.285	1.35	0.534	0.552
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.03
Boron	7440-42-8	0.05	mg/L	0.53	0.49	0.66	0.34	0.59
Iron	7439-89-6	0.05	mg/L	1.61	1.76	0.45	0.35	15.6
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	17.0	17.2	15.0	20.4	15.7
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	5.4	5.3	3.2	0.4	1.8
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.01	0.01	0.02	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.01	0.02	<0.01	<0.01
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.10	0.10	0.07	0.11	0.24
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	8.80	8.87	20.5	13.5	10.6
∅ Total Cations	----	0.01	meq/L	9.27	9.10	19.1	13.0	9.87



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP	23JEWB010	23JEWB007	23JEWB001	23JEWB003
Sampling date / time					07-Mar-2024 07:25	07-Mar-2024 07:25	06-Mar-2024 11:45	06-Mar-2024 07:39	07-Mar-2024 08:15
Compound	CAS Number	LOR	Unit		ET2401560-001	ET2401560-002	ET2401560-003	ET2401560-004	ET2401560-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	-----	0.01	%		2.60	1.26	3.62	1.86	3.34
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	-----	0.1	mg/L		8.5	9.6	8.8	1.3	6.9



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	LB	FB	23JEWB008	23JEWB009	----
Sampling date / time					06-Mar-2024 18:00	07-Mar-2024 00:00	07-Mar-2024 00:00	07-Mar-2024 00:00	----
Compound	CAS Number	LOR	Unit		ET2401560-006	ET2401560-007	ET2401560-008	ET2401560-009	-----
					Result	Result	Result	Result	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		5.77	5.47	7.80	7.80	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		<1	<1	2500	1080	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		<10	<10	1780	642	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		<0.1	<0.1	6.1	35.2	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		4	3	335	223	----
Total Alkalinity as CaCO ₃	----	1	mg/L		4	3	335	223	----
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		<1	<1	758	163	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		<1	<1	240	134	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		<1	<1	134	26	----
Magnesium	7439-95-4	1	mg/L		<1	<1	50	15	----
Sodium	7440-23-5	1	mg/L		<1	<1	442	178	----
Potassium	7440-09-7	1	mg/L		<1	<1	15	10	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	0.01	<0.01	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	0.006	<0.001	----
Barium	7440-39-3	0.001	mg/L		<0.001	<0.001	0.108	0.058	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	0.001	<0.001	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				LB	FB	23JEWB008	23JEWB009	----
Sampling date / time				06-Mar-2024 18:00	07-Mar-2024 00:00	07-Mar-2024 00:00	07-Mar-2024 00:00	----
Compound	CAS Number	LOR	Unit	ET2401560-006	ET2401560-007	ET2401560-008	ET2401560-009	-----
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.003	0.002	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	0.008	0.007	<0.005	<0.005	----
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.694	0.415	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.040	0.008	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	<0.001	<0.001	2.24	0.450	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	0.003	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.45	0.29	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.07	0.08	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.40	1.87	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.007	0.002	----
Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	0.119	0.075	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.001	0.002	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.002	0.004	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	0.001	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.004	0.006	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.001	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.006	0.012	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	LB	FB	23JEWB008	23JEWB009	----
Sampling date / time					06-Mar-2024 18:00	07-Mar-2024 00:00	07-Mar-2024 00:00	07-Mar-2024 00:00	----
Compound	CAS Number	LOR	Unit		ET2401560-006	ET2401560-007	ET2401560-008	ET2401560-009	-----
					Result	Result	Result	Result	----
EG020T: Total Metals by ICP-MS - Continued									
Manganese	7439-96-5	0.001	mg/L		<0.001	<0.001	0.697	0.424	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	0.048	0.010	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L		<0.001	<0.001	2.14	0.453	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Uranium	7440-61-1	0.001	mg/L		<0.001	<0.001	0.003	<0.001	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	0.48	0.28	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	0.62	2.56	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L		<0.05	<0.05	15.9	26.1	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	1.0	0.6	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	<0.01	<0.01	0.04	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	0.04	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.01	<0.01	0.12	0.17	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		0.08	0.06	29.2	11.6	----
∅ Total Cations	----	0.01	meq/L		<0.01	<0.01	30.4	10.5	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	LB	FB	23JEWB008	23JEWB009	----
Sampling date / time					06-Mar-2024 18:00	07-Mar-2024 00:00	07-Mar-2024 00:00	07-Mar-2024 00:00	----
Compound	CAS Number	LOR	Unit		ET2401560-006	ET2401560-007	ET2401560-008	ET2401560-009	-----
					Result	Result	Result	Result	----
EN055: Ionic Balance - Continued									
Ø Ionic Balance	----	0.01	%		----	----	1.95	4.96	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		9.5	8.8	9.3	4.1	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EG035F: Dissolved Mercury by FIMS

(WATER) EG035T: Total Recoverable Mercury by FIMS

(WATER) EN055: Ionic Balance

(WATER) ED093F: Dissolved Major Cations

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser

(WATER) EG020F: Dissolved Metals by ICP-MS



CERTIFICATE OF ANALYSIS

Work Order : **EB2411032**
Client : **AIC MINES LIMITED**
Contact : Michelle Barker
Address : SUITE 3 130 HAY STREET
SUBIACO 6008
Telephone : ----
Project : 2023.10004_JERICO GW
Order number : ----
C-O-C number : COC #5-TNT-TV
Sampler : ----
Site : ----
Quote number : EB23AICMINLTD0002
No. of samples received : 7
No. of samples analysed : 7

Page : 1 of 10
Laboratory : Environmental Division Brisbane
Contact : Customer Services EB
Address : 2 Byth Street Stafford QLD Australia 4053
Telephone : +61-7-3243 7222
Date Samples Received : 04-Apr-2024 08:00
Date Analysis Commenced : 04-Apr-2024
Issue Date : 10-Apr-2024 13:48



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories

Position

Accreditation Category

Kim McCabe

Senior Inorganic Chemist

Brisbane Inorganics, Stafford, QLD

Vincent Muller

Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB009	23JEWB010	DUP
Sampling date / time					26-Mar-2024 03:00	27-Mar-2024 08:15	26-Mar-2024 17:15	27-Mar-2024 07:45	26-Mar-2024 17:30
Compound	CAS Number	LOR	Unit		EB2411032-001	EB2411032-002	EB2411032-003	EB2411032-004	EB2411032-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.90	7.67	7.89	8.20	7.94
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1220	993	1080	903	1100
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		765	647	613	528	708
EA045: Turbidity									
Turbidity	----	0.1	NTU		2.9	76.2	5450	44.3	5500
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		402	137	211	147	213
Total Alkalinity as CaCO ₃	----	1	mg/L		402	137	211	147	213
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		240	277	164	101	167
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		51	73	121	134	121
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		54	23	34	11	34
Magnesium	7439-95-4	1	mg/L		28	6	18	3	19
Sodium	7440-23-5	1	mg/L		201	191	169	185	170
Potassium	7440-09-7	1	mg/L		6	3	5	3	5
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	0.10	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.002	0.078	<0.001	0.001	<0.001
Barium	7440-39-3	0.001	mg/L		0.062	0.025	0.068	0.039	0.071
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB009	23JEWB010	DUP
Sampling date / time				26-Mar-2024 03:00	27-Mar-2024 08:15	26-Mar-2024 17:15	27-Mar-2024 07:45	26-Mar-2024 17:30
Compound	CAS Number	LOR	Unit	EB2411032-001	EB2411032-002	EB2411032-003	EB2411032-004	EB2411032-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	0.007	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.703	0.030	0.661	0.140	0.625
Molybdenum	7439-98-7	0.001	mg/L	0.001	0.002	0.005	0.004	0.005
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.637	0.566	0.497	0.245	0.486
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.37	0.58	0.33	0.53	0.33
Iron	7439-89-6	0.05	mg/L	0.07	<0.05	0.15	<0.05	0.11
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.03	2.72	0.78	1.48	1.42
Arsenic	7440-38-2	0.001	mg/L	0.002	0.085	0.002	0.003	0.003
Barium	7440-39-3	0.001	mg/L	0.068	0.044	0.090	0.052	0.111
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.007	<0.001	0.002	0.002
Copper	7440-50-8	0.001	mg/L	<0.001	0.028	0.002	0.003	0.004
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.009	<0.001	0.002	0.002
Nickel	7440-02-0	0.001	mg/L	0.001	0.010	0.002	0.002	0.005
Lead	7439-92-1	0.001	mg/L	<0.001	0.014	<0.001	0.001	0.002
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	0.011	0.007	0.010	0.012



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB009	23JEWB010	DUP
Sampling date / time				26-Mar-2024 03:00	27-Mar-2024 08:15	26-Mar-2024 17:15	27-Mar-2024 07:45	26-Mar-2024 17:30
Compound	CAS Number	LOR	Unit	EB2411032-001	EB2411032-002	EB2411032-003	EB2411032-004	EB2411032-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.708	0.096	0.708	0.205	0.749
Molybdenum	7439-98-7	0.001	mg/L	0.004	0.002	0.006	0.004	0.006
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.602	0.567	0.496	0.290	0.564
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.39	0.63	0.34	0.60	0.38
Iron	7439-89-6	0.05	mg/L	0.50	6.02	1.75	2.21	3.14
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	20.9	15.4	20.2	16.9	19.3
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.6	2.0	0.8	5.8	0.8
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.11	0.21	0.20	0.11	0.24
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	14.5	10.6	11.0	8.82	11.1
∅ Total Cations	----	0.01	meq/L	13.9	10.0	10.6	8.92	10.8



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB009	23JEWB010	DUP
Sampling date / time					26-Mar-2024 03:00	27-Mar-2024 08:15	26-Mar-2024 17:15	27-Mar-2024 07:45	26-Mar-2024 17:30
Compound	CAS Number	LOR	Unit		EB2411032-001	EB2411032-002	EB2411032-003	EB2411032-004	EB2411032-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	-----	0.01	%		2.02	2.61	1.78	0.56	1.66
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	-----	0.1	mg/L		2.7	4.8	8.0	5.6	8.2



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	LB	FB	----	----	----
Sampling date / time					27-Mar-2024 13:15	26-Mar-2024 17:30	----	----	----
Compound	CAS Number	LOR	Unit		EB2411032-006	EB2411032-007	-----	-----	-----
					Result	Result	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		6.16	6.10	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		2	2	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		<10	<10	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		1.9	0.2	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		2	2	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		2	2	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		<1	<1	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		<1	<1	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		<1	<1	----	----	----
Magnesium	7439-95-4	1	mg/L		<1	<1	----	----	----
Sodium	7440-23-5	1	mg/L		<1	<1	----	----	----
Potassium	7440-09-7	1	mg/L		<1	<1	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Barium	7440-39-3	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				LB	FB	----	----	----
Sampling date / time				27-Mar-2024 13:15	26-Mar-2024 17:30	----	----	----
Compound	CAS Number	LOR	Unit	EB2411032-006	EB2411032-007	-----	-----	-----
				Result	Result	----	----	----

EG020F: Dissolved Metals by ICP-MS - Continued

Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.008	0.017	----	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L	<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	----	----	----

EG020T: Total Metals by ICP-MS

Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	LB	FB	----	----	----
Sampling date / time					27-Mar-2024 13:15	26-Mar-2024 17:30	----	----	----
Compound	CAS Number	LOR	Unit		EB2411032-006	EB2411032-007	-----	-----	-----
					Result	Result	----	----	----
EG020T: Total Metals by ICP-MS - Continued									
Manganese	7439-96-5	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L		<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Uranium	7440-61-1	0.001	mg/L		<0.001	<0.001	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	----	----	----
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	----	----	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L		<0.05	<0.05	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.01	<0.01	----	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		0.04	0.04	----	----	----
∅ Total Cations	----	0.01	meq/L		<0.01	<0.01	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	LB	FB	----	----	----
Sampling date / time					27-Mar-2024 13:15	26-Mar-2024 17:30	----	----	----
Compound	CAS Number	LOR	Unit		EB2411032-006	EB2411032-007	-----	-----	-----
					Result	Result	----	----	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		9.3	9.0	----	---	---



CERTIFICATE OF ANALYSIS

Work Order	: EB2413748	Page	: 1 of 10
Client	: AIC MINES LIMITED	Laboratory	: Environmental Division Brisbane
Contact	: Michelle Barker	Contact	: Customer Services EB
Address	: SUITE 3 130 HAY STREET SUBIACO 6008	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 2023.10004_JERICO_GW_APR24	Date Samples Received	: 24-Apr-2024 10:40
Order number	: ----	Date Analysis Commenced	: 24-Apr-2024
C-O-C number	: ----	Issue Date	: 29-Apr-2024 15:16
Sampler	: Bronte Barnard		
Site	: ----		
Quote number	: EB23AICMINLTD0002		
No. of samples received	: 6		
No. of samples analysed	: 6		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB008	23JEWB009	23JEWB010
Sampling date / time					16-Apr-2024 16:30	17-Apr-2024 07:30	16-Apr-2024 15:30	18-Apr-2024 07:00	17-Apr-2024 08:00
Compound	CAS Number	LOR	Unit		EB2413748-001	EB2413748-002	EB2413748-003	EB2413748-004	EB2413748-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.96	7.98	8.26	7.99	8.22
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1240	1080	2480	1060	988
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		816	655	1690	634	532
EA045: Turbidity									
Turbidity	----	0.1	NTU		3.3	51.3	122	17.1	7.2
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		385	126	328	196	149
Total Alkalinity as CaCO ₃	----	1	mg/L		385	126	328	196	149
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		213	277	667	168	99
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		40	68	243	108	134
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		54	24	96	36	11
Magnesium	7439-95-4	1	mg/L		27	5	38	18	2
Sodium	7440-23-5	1	mg/L		187	181	364	153	182
Potassium	7440-09-7	1	mg/L		6	3	10	4	3
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.001	0.057	0.005	0.002	0.001
Barium	7440-39-3	0.001	mg/L		0.055	0.026	0.134	0.084	0.041
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB008	23JEWB009	23JEWB010
Sampling date / time				16-Apr-2024 16:30	17-Apr-2024 07:30	16-Apr-2024 15:30	18-Apr-2024 07:00	17-Apr-2024 08:00
Compound	CAS Number	LOR	Unit	EB2413748-001	EB2413748-002	EB2413748-003	EB2413748-004	EB2413748-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.002	0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.646	0.026	1.11	0.638	0.142
Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.002	0.012	0.009	0.004
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.569	0.536	1.64	0.475	0.244
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	0.004	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.36	0.55	0.50	0.34	0.58
Iron	7439-89-6	0.05	mg/L	0.25	<0.05	0.09	0.42	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.02	1.51	1.96	0.38	0.38
Arsenic	7440-38-2	0.001	mg/L	0.001	0.061	0.007	0.002	0.001
Barium	7440-39-3	0.001	mg/L	0.057	0.036	0.147	0.088	0.049
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	0.0002
Chromium	7440-47-3	0.001	mg/L	<0.001	0.004	0.004	<0.001	0.001
Copper	7440-50-8	0.001	mg/L	<0.001	0.011	0.005	<0.001	0.002
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.004	0.003	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	0.004	0.005	0.002	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	0.006	0.001	<0.001	0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	0.006	0.011	<0.005	0.007



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB008	23JEWB009	23JEWB010
Sampling date / time				16-Apr-2024 16:30	17-Apr-2024 07:30	16-Apr-2024 15:30	18-Apr-2024 07:00	17-Apr-2024 08:00
Compound	CAS Number	LOR	Unit	EB2413748-001	EB2413748-002	EB2413748-003	EB2413748-004	EB2413748-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.628	0.050	1.16	0.619	0.157
Molybdenum	7439-98-7	0.001	mg/L	0.002	0.002	0.014	0.008	0.004
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.547	0.552	1.66	0.461	0.283
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	0.004	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.27	0.57	0.49	0.34	0.59
Iron	7439-89-6	0.05	mg/L	0.47	2.89	2.89	1.10	0.41
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	21.1	15.4	16.0	27.2	16.8
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.5	2.0	1.0	0.9	5.9
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.14	0.07	0.19	0.15	0.06
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	13.2	10.2	27.3	10.5	8.82
∅ Total Cations	----	0.01	meq/L	13.2	9.56	24.0	10.0	8.71



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB008	23JEWB009	23JEWB010
Sampling date / time					16-Apr-2024 16:30	17-Apr-2024 07:30	16-Apr-2024 15:30	18-Apr-2024 07:00	17-Apr-2024 08:00
Compound	CAS Number	LOR	Unit		EB2413748-001	EB2413748-002	EB2413748-003	EB2413748-004	EB2413748-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	-----	0.01	%		0.19	3.26	6.41	2.07	0.64
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	-----	0.1	mg/L		7.4	8.4	7.3	3.0	8.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP	----	----	----	----
Sampling date / time					17-Apr-2024 08:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2413748-006	-----	-----	-----	-----
					Result	----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.21	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		971	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		522	----	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		32.8	----	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		155	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		155	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		100	----	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		135	----	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		12	----	----	----	----
Magnesium	7439-95-4	1	mg/L		3	----	----	----	----
Sodium	7440-23-5	1	mg/L		186	----	----	----	----
Potassium	7440-09-7	1	mg/L		3	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		0.01	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L		0.041	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		0.001	----	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				DUP	----	----	----	----
Sampling date / time				17-Apr-2024 08:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2413748-006	-----	-----	-----	-----
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.144	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.004	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	0.249	----	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	0.58	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.90	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.002	----	----	----	----
Barium	7440-39-3	0.001	mg/L	0.052	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	0.002	----	----	----	----
Copper	7440-50-8	0.001	mg/L	0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.006	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP	----	----	----	----
Sampling date / time					17-Apr-2024 08:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2413748-006	-----	-----	-----	-----
					Result	----	----	----	----
EG020T: Total Metals by ICP-MS - Continued									
Manganese	7439-96-5	0.001	mg/L		0.179	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		0.004	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L		0.292	----	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	----	----	----	----
Uranium	7440-61-1	0.001	mg/L		<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L		0.62	----	----	----	----
Iron	7439-89-6	0.05	mg/L		1.10	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L		16.5	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		5.2	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		0.02	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.08	----	----	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		8.99	----	----	----	----
∅ Total Cations	----	0.01	meq/L		9.01	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP	----	----	----	----
				Sampling date / time	17-Apr-2024 08:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB2413748-006	-----	-----	-----	-----
					Result	----	----	----	----
EN055: Ionic Balance - Continued									
Ø Ionic Balance	----	0.01	%		0.14	----	----	----	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		8.2	----	----	----	----



CERTIFICATE OF ANALYSIS

Work Order	: ET2402819	Page	: 1 of 10
Client	: AIC MINES LIMITED	Laboratory	: Environmental Division Townsville
Contact	: Michelle Barker	Contact	: Customer Services ET
Address	: SUITE 3 130 HAY STREET SUBIACO 6008	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: 2023.10004_JERICOH_GW	Date Samples Received	: 14-May-2024 10:25
Order number	: ----	Date Analysis Commenced	: 14-May-2024
C-O-C number	: ----	Issue Date	: 23-May-2024 17:10
Sampler	: TRAVIS BAILEY		
Site	: ----		
Quote number	: EB23AICMINLTD0002		
No. of samples received	: 8		
No. of samples analysed	: 8		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD
Vincent Muller	Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- EK058G, EA045, EP025, EA005-P, EA010-P, EA015H, ED037-P, ED041G, ED045G, EG052G, EK040P, EK057G, EK059G conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23472 for Chemical Testing and Site no. 23313 for Biological Testing)
- All remaining analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- EG020-T (Total Metals by ICP-MS): The positive Copper Method Blank is deemed acceptable as associated results are less than the limit of reporting.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB008	23JEWB009	23JEWB010
Sampling date / time					09-May-2024 07:10	09-May-2024 08:00	09-May-2024 06:50	09-May-2024 07:30	09-May-2024 08:15
Compound	CAS Number	LOR	Unit		ET2402819-001	ET2402819-002	ET2402819-003	ET2402819-004	ET2402819-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.64	7.98	8.09	8.00	8.15
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1170	1010	2230	990	915
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		716	604	1560	546	522
EA045: Turbidity									
Turbidity	----	0.1	NTU		35.6	47.8	705	56.2	28.8
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		413	131	350	211	155
Total Alkalinity as CaCO ₃	----	1	mg/L		413	131	350	211	155
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		200	278	616	156	101
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		30	62	201	98	125
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		56	26	107	37	12
Magnesium	7439-95-4	1	mg/L		26	6	38	18	3
Sodium	7440-23-5	1	mg/L		180	182	363	150	186
Potassium	7440-09-7	1	mg/L		6	4	10	4	3
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.002	0.039	0.006	<0.001	0.002
Barium	7440-39-3	0.001	mg/L		0.074	0.026	0.131	0.074	0.042
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB008	23JEWB009	23JEWB010
Sampling date / time				09-May-2024 07:10	09-May-2024 08:00	09-May-2024 06:50	09-May-2024 07:30	09-May-2024 08:15
Compound	CAS Number	LOR	Unit	ET2402819-001	ET2402819-002	ET2402819-003	ET2402819-004	ET2402819-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.003	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.006	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.581	0.020	0.952	0.576	0.142
Molybdenum	7439-98-7	0.001	mg/L	0.003	0.002	0.022	0.008	0.004
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.538	0.522	1.69	0.424	0.256
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	0.005	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.34	0.57	0.47	0.32	0.57
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.13	0.48	11.8	1.19	0.43
Arsenic	7440-38-2	0.001	mg/L	0.002	0.039	0.016	0.002	0.002
Barium	7440-39-3	0.001	mg/L	0.085	0.030	0.204	0.100	0.047
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.002	0.019	0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.001	0.003	0.036	<0.001	0.002
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.002	0.017	0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.001	0.002	0.021	0.002	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	0.002	0.010	0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.005	<0.005	0.061	0.008	<0.005



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB008	23JEWB009	23JEWB010
Sampling date / time				09-May-2024 07:10	09-May-2024 08:00	09-May-2024 06:50	09-May-2024 07:30	09-May-2024 08:15
Compound	CAS Number	LOR	Unit	ET2402819-001	ET2402819-002	ET2402819-003	ET2402819-004	ET2402819-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.647	0.039	1.32	0.632	0.167
Molybdenum	7439-98-7	0.001	mg/L	0.003	0.002	0.022	0.008	0.004
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.567	0.541	1.69	0.476	0.286
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.001	<0.001	0.006	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.04	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.33	0.58	0.48	0.32	0.57
Iron	7439-89-6	0.05	mg/L	1.11	1.03	18.7	2.23	0.63
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	21.5	15.8	16.4	28.2	16.2
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.4	1.9	0.8	0.7	5.3
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.06
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.03
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.21	0.05	0.54	0.21	0.08
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	13.3	10.2	25.5	10.2	8.72
∅ Total Cations	----	0.01	meq/L	12.9	9.81	24.5	9.95	9.01



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB008	23JEWB009	23JEWB010
Sampling date / time					09-May-2024 07:10	09-May-2024 08:00	09-May-2024 06:50	09-May-2024 07:30	09-May-2024 08:15
Compound	CAS Number	LOR	Unit		ET2402819-001	ET2402819-002	ET2402819-003	ET2402819-004	ET2402819-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	-----	0.01	%		1.32	1.72	1.95	1.36	1.62
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	-----	0.1	mg/L		6.8	9.6	6.9	8.6	6.6



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP	LB	FB	----	----
Sampling date / time					09-May-2024 07:30	09-May-2024 09:00	09-May-2024 08:20	----	----
Compound	CAS Number	LOR	Unit		ET2402819-006	ET2402819-007	ET2402819-008	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.01	6.00	5.73	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		985	<1	<1	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		570	<10	<10	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		169	<0.1	<0.1	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		208	8	8	----	----
Total Alkalinity as CaCO3	----	1	mg/L		208	8	8	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		160	<1	<1	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		95	<1	<1	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		38	<1	<1	----	----
Magnesium	7439-95-4	1	mg/L		18	<1	<1	----	----
Sodium	7440-23-5	1	mg/L		152	<1	<1	----	----
Potassium	7440-09-7	1	mg/L		4	<1	<1	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L		0.076	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				DUP	LB	FB	----	----
Sampling date / time				09-May-2024 07:30	09-May-2024 09:00	09-May-2024 08:20	----	----
Compound	CAS Number	LOR	Unit	ET2402819-006	ET2402819-007	ET2402819-008	-----	-----
				Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Manganese	7439-96-5	0.001	mg/L	0.594	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.007	<0.001	<0.001	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	0.433	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.33	<0.05	<0.05	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	1.11	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L	0.097	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.002	<0.001	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	0.001	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	0.002	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	0.007	<0.005	<0.005	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				DUP	LB	FB	----	----
Sampling date / time				09-May-2024 07:30	09-May-2024 09:00	09-May-2024 08:20	----	----
Compound	CAS Number	LOR	Unit	ET2402819-006	ET2402819-007	ET2402819-008	-----	-----
				Result	Result	Result	----	----
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.643	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.007	<0.001	<0.001	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	0.477	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.31	<0.05	<0.05	----	----
Iron	7439-89-6	0.05	mg/L	2.18	<0.05	<0.05	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	27.4	<0.05	<0.05	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.7	<0.1	<0.1	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.02	<0.01	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.02	<0.01	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.18	<0.01	<0.01	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	10.2	0.16	0.16	----	----
∅ Total Cations	----	0.01	meq/L	10.1	<0.01	<0.01	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP	LB	FB	----	----
Sampling date / time					09-May-2024 07:30	09-May-2024 09:00	09-May-2024 08:20	----	----
Compound	CAS Number	LOR	Unit		ET2402819-006	ET2402819-007	ET2402819-008	-----	-----
					Result	Result	Result	----	----
EN055: Ionic Balance - Continued									
Ø Ionic Balance	----	0.01	%		0.37	----	----	----	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		7.6	9.0	10.2	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser

(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EG035F: Dissolved Mercury by FIMS

(WATER) EG035T: Total Recoverable Mercury by FIMS

(WATER) EN055: Ionic Balance

(WATER) ED093F: Dissolved Major Cations



CERTIFICATE OF ANALYSIS

Work Order	: ET2403956	Page	: 1 of 14
Client	: AIC MINES LIMITED	Laboratory	: Environmental Division Townsville
Contact	: Michelle Barker	Contact	: Customer Services ET
Address	: SUITE 3 130 HAY STREET SUBIACO 6008	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: 2023.10004_JERICO-TD6_GW_July24	Date Samples Received	: 16-Jul-2024 09:40
Order number	: ----	Date Analysis Commenced	: 16-Jul-2024
C-O-C number	: ----	Issue Date	: 23-Jul-2024 17:11
Sampler	: Taysha Hall		
Site	: ----		
Quote number	: EB23AICMINLTD0002 v2		
No. of samples received	: 12		
No. of samples analysed	: 12		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EA045 (Turbidity): Sample was diluted to fit calibration range. LOR adjusted accordingly.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- The presence of high SO₄ may bias the EC low.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Unless otherwise stated, analytical work for this workorder will be conducted by ALS Townsville.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time					09-Jul-2024 16:30	10-Jul-2024 09:00	09-Jul-2024 14:30	09-Jul-2024 16:00	09-Jul-2024 17:00
Compound	CAS Number	LOR	Unit		ET2403956-001	ET2403956-002	ET2403956-003	ET2403956-004	ET2403956-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.42	7.90	8.03	7.93	7.79
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1470	1010	1860	2260	872
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		1000	662	1190	1420	496
EA045: Turbidity									
Turbidity	----	0.1	NTU		20.5	139	34.2	1520	104
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		392	130	156	254	174
Total Alkalinity as CaCO ₃	----	1	mg/L		392	130	156	254	174
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		402	263	488	673	171
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		34	82	234	203	59
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		70	24	63	85	30
Magnesium	7439-95-4	1	mg/L		35	6	14	38	16
Sodium	7440-23-5	1	mg/L		236	192	329	344	142
Potassium	7440-09-7	1	mg/L		6	3	7	8	3
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.003	0.110	0.003	0.004	0.003
Barium	7440-39-3	0.001	mg/L		0.085	0.030	0.140	0.138	0.076
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time				09-Jul-2024 16:30	10-Jul-2024 09:00	09-Jul-2024 14:30	09-Jul-2024 16:00	09-Jul-2024 17:00
Compound	CAS Number	LOR	Unit	ET2403956-001	ET2403956-002	ET2403956-003	ET2403956-004	ET2403956-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.001	0.002	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	0.006	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.551	0.035	0.272	1.36	0.484
Molybdenum	7439-98-7	0.001	mg/L	0.007	0.003	0.044	0.034	0.024
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.856	0.577	1.56	1.56	0.352
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.004	<0.001	0.001	0.002	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.37	0.53	0.78	0.39	0.32
Iron	7439-89-6	0.05	mg/L	0.82	<0.05	0.06	0.45	0.41
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.13	2.55	0.43	0.86	0.41
Arsenic	7440-38-2	0.001	mg/L	0.002	0.120	0.003	0.005	0.004
Barium	7440-39-3	0.001	mg/L	0.086	0.048	0.148	0.163	0.082
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.007	0.002	0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	0.023	0.002	0.002	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.008	<0.001	0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	0.009	0.002	0.003	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	0.014	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	0.010	<0.005	0.007	<0.005



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time					09-Jul-2024 16:30	10-Jul-2024 09:00	09-Jul-2024 14:30	09-Jul-2024 16:00	09-Jul-2024 17:00
Compound	CAS Number	LOR	Unit		ET2403956-001	ET2403956-002	ET2403956-003	ET2403956-004	ET2403956-005
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued									
Manganese	7439-96-5	0.001	mg/L		0.615	0.090	0.287	1.58	0.482
Molybdenum	7439-98-7	0.001	mg/L		0.007	0.003	0.052	0.042	0.026
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		0.816	0.592	1.55	1.71	0.373
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L		0.004	<0.001	0.001	0.003	<0.001
Vanadium	7440-62-2	0.01	mg/L		<0.01	0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L		0.40	0.62	0.88	0.51	0.37
Iron	7439-89-6	0.05	mg/L		1.09	5.38	0.80	2.07	1.10
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L		21.7	14.6	15.5	16.4	24.2
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.4	2.0	2.4	0.8	0.8
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.02	<0.01	0.02	0.01	0.04
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.02	<0.01	0.02	0.01	0.04
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.11	0.11	0.05	0.12	0.17
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		17.2	10.4	19.9	24.8	8.70
∅ Total Cations	----	0.01	meq/L		16.8	10.1	18.8	22.5	9.07



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time					09-Jul-2024 16:30	10-Jul-2024 09:00	09-Jul-2024 14:30	09-Jul-2024 16:00	09-Jul-2024 17:00
Compound	CAS Number	LOR	Unit		ET2403956-001	ET2403956-002	ET2403956-003	ET2403956-004	ET2403956-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	-----	0.01	%		1.08	1.30	2.82	4.81	2.06
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	-----	0.1	mg/L		6.8	6.8	6.9	8.4	7.1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	JADWB001	TD6_2S	JADWB005	TD6_2D	DUP
Sampling date / time					10-Jul-2024 07:50	11-Jul-2024 09:00	12-Jul-2024 11:30	13-Jul-2024 15:00	09-Jul-2024 16:00
Compound	CAS Number	LOR	Unit		ET2403956-006	ET2403956-007	ET2403956-008	ET2403956-009	ET2403956-010
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.35	7.21	7.77	7.86	8.01
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		6110	17300	2080	6320	2280
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		4820	10500	1400	4300	1500
EA045: Turbidity									
Turbidity	----	0.1	NTU		522	0.2	19.2	2320	1020
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		259	287	361	198	247
Total Alkalinity as CaCO ₃	----	1	mg/L		259	287	361	198	247
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		2370	2890	470	1990	673
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		661	4920	208	920	204
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		442	571	74	275	94
Magnesium	7439-95-4	1	mg/L		136	557	18	127	41
Sodium	7440-23-5	1	mg/L		916	2660	386	1040	363
Potassium	7440-09-7	1	mg/L		18	17	7	14	9
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.004	0.001	0.015	0.002	0.004
Barium	7440-39-3	0.001	mg/L		0.104	0.058	0.143	0.078	0.148
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				JADWB001	TD6_2S	JADWB005	TD6_2D	DUP
Sampling date / time				10-Jul-2024 07:50	11-Jul-2024 09:00	12-Jul-2024 11:30	13-Jul-2024 15:00	09-Jul-2024 16:00
Compound	CAS Number	LOR	Unit	ET2403956-006	ET2403956-007	ET2403956-008	ET2403956-009	ET2403956-010
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	0.008	<0.001	0.002	0.002	<0.001
Nickel	7440-02-0	0.001	mg/L	0.051	0.005	0.040	0.029	0.002
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.005	0.030	<0.005	0.009	<0.005
Manganese	7439-96-5	0.001	mg/L	4.96	0.041	0.986	3.18	1.47
Molybdenum	7439-98-7	0.001	mg/L	0.014	0.003	0.027	0.014	0.039
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	8.44	14.7	1.66	5.14	1.75
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.010	0.137	0.006	0.003	0.003
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.56	0.61	0.83	0.49	0.39
Iron	7439-89-6	0.05	mg/L	0.41	<0.05	<0.05	0.11	0.42
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	11.3	0.01	0.14	1.09	1.01
Arsenic	7440-38-2	0.001	mg/L	0.007	0.001	0.015	0.004	0.005
Barium	7440-39-3	0.001	mg/L	0.385	0.062	0.156	0.086	0.158
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.045	0.002	0.001	0.001	0.002
Copper	7440-50-8	0.001	mg/L	0.098	0.002	0.004	0.005	0.003
Cobalt	7440-48-4	0.001	mg/L	0.025	<0.001	0.003	0.003	0.001
Nickel	7440-02-0	0.001	mg/L	0.093	0.005	0.040	0.032	0.004
Lead	7439-92-1	0.001	mg/L	0.005	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.050	0.023	0.006	0.010	<0.005



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				JADWB001	TD6_2S	JADWB005	TD6_2D	DUP
Sampling date / time				10-Jul-2024 07:50	11-Jul-2024 09:00	12-Jul-2024 11:30	13-Jul-2024 15:00	09-Jul-2024 16:00
Compound	CAS Number	LOR	Unit	ET2403956-006	ET2403956-007	ET2403956-008	ET2403956-009	ET2403956-010
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	6.26	0.040	0.996	3.20	1.50
Molybdenum	7439-98-7	0.001	mg/L	0.015	0.003	0.032	0.016	0.041
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	8.91	14.5	1.70	5.38	1.60
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.011	0.151	0.006	0.003	0.003
Vanadium	7440-62-2	0.01	mg/L	0.06	0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.64	0.74	0.97	0.57	0.44
Iron	7439-89-6	0.05	mg/L	33.9	<0.05	0.34	1.95	2.29
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	19.5	79.0	17.2	17.6	15.4
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.9	1.2	1.1	0.7	0.8
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.66	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.02	20.7	0.04	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	21.4	0.04	<0.01	<0.01
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.54	0.02	0.05	0.08	0.12
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	73.2	205	22.9	71.3	24.7
∅ Total Cations	----	0.01	meq/L	73.6	190	22.1	69.8	24.1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	JADWB001	TD6_2S	JADWB005	TD6_2D	DUP
Sampling date / time					10-Jul-2024 07:50	11-Jul-2024 09:00	12-Jul-2024 11:30	13-Jul-2024 15:00	09-Jul-2024 16:00
Compound	CAS Number	LOR	Unit		ET2403956-006	ET2403956-007	ET2403956-008	ET2403956-009	ET2403956-010
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	-----	0.01	%		0.26	3.60	1.60	1.11	1.26
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	-----	0.1	mg/L		8.1	8.2	6.8	7.0	8.1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	LB	FB	----	----	----
Sampling date / time					12-Jul-2024 17:15	12-Jul-2024 17:00	----	----	----
Compound	CAS Number	LOR	Unit		ET2403956-011	ET2403956-012	-----	-----	-----
				Result	Result		----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		5.57	5.53	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		<1	<1	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		<10	<10	----	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		0.6	0.2	----	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		6	4	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L		6	4	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		<1	<1	----	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		<1	<1	----	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		<1	<1	----	----	----
Magnesium	7439-95-4	1	mg/L		<1	<1	----	----	----
Sodium	7440-23-5	1	mg/L		<1	<1	----	----	----
Potassium	7440-09-7	1	mg/L		<1	<1	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	----	----	----
Barium	7440-39-3	0.001	mg/L		<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				LB	FB	----	----	----
Sampling date / time				12-Jul-2024 17:15	12-Jul-2024 17:00	----	----	----
Compound	CAS Number	LOR	Unit	ET2403956-011	ET2403956-012	-----	-----	-----
				Result	Result	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.005	0.012	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.002	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L	<0.001	0.002	----	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	----	----	----
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Barium	7440-39-3	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	LB	FB	----	----	----
Sampling date / time					12-Jul-2024 17:15	12-Jul-2024 17:00	----	----	----
Compound	CAS Number	LOR	Unit		ET2403956-011	ET2403956-012	-----	-----	-----
					Result	Result	----	----	----
EG020T: Total Metals by ICP-MS - Continued									
Manganese	7439-96-5	0.001	mg/L		<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		<0.001	<0.001	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	----	----	----
Strontium	7440-24-6	0.001	mg/L		<0.001	<0.001	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	----	----	----
Uranium	7440-61-1	0.001	mg/L		<0.001	<0.001	----	----	----
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	----	----	----
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	----	----	----
Iron	7439-89-6	0.05	mg/L		<0.05	<0.05	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	----	----	----
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L		<0.05	<0.05	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		<0.1	<0.1	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.01	<0.01	----	----	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		0.12	0.08	----	----	----
∅ Total Cations	----	0.01	meq/L		<0.01	<0.01	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	LB	FB	----	----	----
Sampling date / time					12-Jul-2024 17:15	12-Jul-2024 17:00	----	----	----
Compound	CAS Number	LOR	Unit		ET2403956-011	ET2403956-012	-----	-----	-----
					Result	Result	----	----	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		8.9	8.8	----	---	---

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EG035F: Dissolved Mercury by FIMS

(WATER) EG035T: Total Recoverable Mercury by FIMS

(WATER) EN055: Ionic Balance

(WATER) ED093F: Dissolved Major Cations

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser



CERTIFICATE OF ANALYSIS

Work Order	: ET2404150	Page	: 1 of 10
Client	: AIC MINES LIMITED	Laboratory	: Environmental Division Townsville
Contact	: Michelle Barker	Contact	: Customer Services ET
Address	: SUITE 3 130 HAY STREET SUBIACO 6008	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: 2023.10004_JERICO_GW23jul	Date Samples Received	: 26-Jul-2024 10:15
Order number	: ----	Date Analysis Commenced	: 26-Jul-2024
C-O-C number	: ----	Issue Date	: 02-Aug-2024 19:10
Sampler	: Bronte Barnard		
Site	: ----		
Quote number	: EB23AICMINLTD0002 v2		
No. of samples received	: 8		
No. of samples analysed	: 8		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- Unless otherwise stated, analytical work for this workorder will be conducted by ALS Townsville, NATA accreditation no. 825, site no. 23313.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time					23-Jul-2024 15:45	24-Jul-2024 08:00	24-Jul-2024 08:30	23-Jul-2024 15:00	23-Jul-2024 16:15
Compound	CAS Number	LOR	Unit		ET2404150-001	ET2404150-002	ET2404150-003	ET2404150-004	ET2404150-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.85	8.07	7.95	7.98	7.92
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1490	1040	1870	2120	827
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		1070	632	1260	1480	562
EA045: Turbidity									
Turbidity	----	0.1	NTU		9.2	146	27.0	159	149
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		410	132	162	275	176
Total Alkalinity as CaCO ₃	----	1	mg/L		410	132	162	275	176
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		411	274	494	621	150
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		43	73	277	197	74
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		64	22	61	86	25
Magnesium	7439-95-4	1	mg/L		30	5	13	35	13
Sodium	7440-23-5	1	mg/L		221	186	322	351	137
Potassium	7440-09-7	1	mg/L		6	3	7	8	3
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.003	0.085	0.003	0.005	0.002
Barium	7440-39-3	0.001	mg/L		0.072	0.029	0.135	0.128	0.069
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time				23-Jul-2024 15:45	24-Jul-2024 08:00	24-Jul-2024 08:30	23-Jul-2024 15:00	23-Jul-2024 16:15
Compound	CAS Number	LOR	Unit	ET2404150-001	ET2404150-002	ET2404150-003	ET2404150-004	ET2404150-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.001	0.002	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.470	0.042	0.267	0.968	0.431
Molybdenum	7439-98-7	0.001	mg/L	0.006	0.003	0.046	0.037	0.023
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.742	0.522	1.41	1.64	0.333
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.003	<0.001	0.001	0.004	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.32	0.54	0.73	0.42	0.29
Iron	7439-89-6	0.05	mg/L	0.74	<0.05	<0.05	0.07	0.36
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.17	5.36	1.39	7.90	1.09
Arsenic	7440-38-2	0.001	mg/L	0.004	0.108	0.003	0.015	0.004
Barium	7440-39-3	0.001	mg/L	0.088	0.065	0.174	0.219	0.087
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.013	0.003	0.013	0.001
Copper	7440-50-8	0.001	mg/L	<0.001	0.048	0.004	0.024	0.002
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.013	0.001	0.010	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	0.013	0.003	0.013	0.002
Lead	7439-92-1	0.001	mg/L	<0.001	0.016	<0.001	0.005	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	0.016	0.007	0.046	0.007



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time				23-Jul-2024 15:45	24-Jul-2024 08:00	24-Jul-2024 08:30	23-Jul-2024 15:00	23-Jul-2024 16:15
Compound	CAS Number	LOR	Unit	ET2404150-001	ET2404150-002	ET2404150-003	ET2404150-004	ET2404150-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.529	0.126	0.342	1.34	0.493
Molybdenum	7439-98-7	0.001	mg/L	0.007	0.003	0.051	0.042	0.024
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.894	0.629	1.68	1.89	0.382
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.004	<0.001	0.002	0.005	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.02	<0.01	0.03	<0.01
Boron	7440-42-8	0.05	mg/L	0.39	0.58	0.84	0.40	0.35
Iron	7439-89-6	0.05	mg/L	1.15	9.71	1.92	12.8	1.87
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	21.7	15.3	16.0	16.4	25.0
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.5	2.0	2.4	0.8	0.8
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.05	<0.01	<0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.05	<0.01	<0.01	<0.01	<0.01
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.10	0.13	0.05	0.84	0.16
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	18.0	10.4	21.3	24.0	8.73
∅ Total Cations	----	0.01	meq/L	15.4	9.68	18.3	22.6	8.35



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time					23-Jul-2024 15:45	24-Jul-2024 08:00	24-Jul-2024 08:30	23-Jul-2024 15:00	23-Jul-2024 16:15
Compound	CAS Number	LOR	Unit		ET2404150-001	ET2404150-002	ET2404150-003	ET2404150-004	ET2404150-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	-----	0.01	%		7.58	3.61	7.66	2.87	2.19
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	-----	0.1	mg/L		6.1	6.6	6.7	7.5	6.6



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	JADWB005	LB	FB	----	----
Sampling date / time					24-Jul-2024 09:10	23-Jul-2024 16:50	23-Jul-2024 16:50	----	----
Compound	CAS Number	LOR	Unit		ET2404150-006	ET2404150-007	ET2404150-008	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.04	5.53	5.62	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1860	<1	<1	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		1200	<10	<10	----	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		3.7	<0.1	0.2	----	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	----	----
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	----	----
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		405	4	4	----	----
Total Alkalinity as CaCO ₃	----	1	mg/L		405	4	4	----	----
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		361	<1	<1	----	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		178	<1	<1	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		56	<1	<1	----	----
Magnesium	7439-95-4	1	mg/L		13	<1	<1	----	----
Sodium	7440-23-5	1	mg/L		353	<1	<1	----	----
Potassium	7440-09-7	1	mg/L		6	<1	<1	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		0.01	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L		0.011	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L		0.126	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				JADWB005	LB	FB	----	----
Sampling date / time				24-Jul-2024 09:10	23-Jul-2024 16:50	23-Jul-2024 16:50	----	----
Compound	CAS Number	LOR	Unit	ET2404150-006	ET2404150-007	ET2404150-008	-----	-----
				Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	0.002	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	0.023	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	0.008	<0.005	<0.005	----	----
Manganese	7439-96-5	0.001	mg/L	0.787	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.030	<0.001	<0.001	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	1.28	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Uranium	7440-61-1	0.001	mg/L	0.004	<0.001	<0.001	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.88	<0.05	<0.05	----	----
Iron	7439-89-6	0.05	mg/L	0.08	<0.05	<0.05	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.13	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	0.013	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L	0.144	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Cobalt	7440-48-4	0.001	mg/L	0.002	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	0.028	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				JADWB005	LB	FB	----	----
Sampling date / time				24-Jul-2024 09:10	23-Jul-2024 16:50	23-Jul-2024 16:50	----	----
Compound	CAS Number	LOR	Unit	ET2404150-006	ET2404150-007	ET2404150-008	-----	-----
				Result	Result	Result	----	----
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.908	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	0.032	<0.001	<0.001	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	1.46	<0.001	<0.001	----	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Uranium	7440-61-1	0.001	mg/L	0.005	<0.001	<0.001	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Boron	7440-42-8	0.05	mg/L	0.99	<0.05	<0.05	----	----
Iron	7439-89-6	0.05	mg/L	0.36	<0.05	<0.05	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	18.9	<0.05	<0.05	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	1.1	<0.1	<0.1	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.08	<0.01	<0.01	----	----
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	20.6	0.08	0.08	----	----
∅ Total Cations	----	0.01	meq/L	19.4	<0.01	<0.01	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	JADWB005	LB	FB	----	----
Sampling date / time					24-Jul-2024 09:10	23-Jul-2024 16:50	23-Jul-2024 16:50	----	----
Compound	CAS Number	LOR	Unit		ET2404150-006	ET2404150-007	ET2404150-008	-----	-----
					Result	Result	Result	----	----
EN055: Ionic Balance - Continued									
Ø Ionic Balance	----	0.01	%		3.14	----	----	----	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		5.2	8.4	8.7	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) ED093F: Dissolved Major Cations

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser

(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EG035F: Dissolved Mercury by FIMS

(WATER) EG035T: Total Recoverable Mercury by FIMS

(WATER) EN055: Ionic Balance



CERTIFICATE OF ANALYSIS

Work Order	: ET2404281	Page	: 1 of 10
Client	: AIC MINES LIMITED	Laboratory	: Environmental Division Townsville
Contact	: Michelle Barker	Contact	: Customer Services ET
Address	: SUITE 3 130 HAY STREET SUBIACO 6008	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: 2023.10004_JERICO_GW_Aug24	Date Samples Received	: 02-Aug-2024 10:30
Order number	: ----	Date Analysis Commenced	: 02-Aug-2024
C-O-C number	: ----	Issue Date	: 09-Aug-2024 16:47
Sampler	: Taysha Hall		
Site	: ----		
Quote number	: EB23AICMINLTD0002 v2		
No. of samples received	: 9		
No. of samples analysed	: 9		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- The presence of high SO₄ may bias the EC low.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- Unless otherwise stated, analytical work for this workorder will be conducted by ALS Townsville, NATA accreditation no. 825, site no. 23313.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time					31-Jul-2024 07:40	31-Jul-2024 09:30	31-Jul-2024 10:30	31-Jul-2024 07:15	31-Jul-2024 08:15
Compound	CAS Number	LOR	Unit		ET2404281-001	ET2404281-002	ET2404281-003	ET2404281-004	ET2404281-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.38	7.92	8.03	7.69	7.72
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1510	1020	1860	1910	798
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		958	606	1170	1250	486
EA045: Turbidity									
Turbidity	----	0.1	NTU		19.2	36.0	26.6	257	123
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		435	140	179	358	178
Total Alkalinity as CaCO ₃	----	1	mg/L		435	140	179	358	178
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		384	258	474	449	138
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		44	73	236	229	82
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		72	26	69	74	29
Magnesium	7439-95-4	1	mg/L		36	5	16	27	14
Sodium	7440-23-5	1	mg/L		230	178	341	304	130
Potassium	7440-09-7	1	mg/L		6	3	8	7	3
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.002	0.086	0.003	0.003	0.002
Barium	7440-39-3	0.001	mg/L		0.079	0.032	0.141	0.112	0.077
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time				31-Jul-2024 07:40	31-Jul-2024 09:30	31-Jul-2024 10:30	31-Jul-2024 07:15	31-Jul-2024 08:15
Compound	CAS Number	LOR	Unit	ET2404281-001	ET2404281-002	ET2404281-003	ET2404281-004	ET2404281-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.002	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.541	0.039	0.297	1.06	0.444
Molybdenum	7439-98-7	0.001	mg/L	0.006	0.003	0.048	0.033	0.024
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.805	0.586	1.50	1.26	0.371
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.003	<0.001	0.001	0.002	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.40	0.53	0.82	0.44	0.32
Iron	7439-89-6	0.05	mg/L	0.88	<0.05	0.06	0.34	0.34
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.13	2.93	3.05	2.28	1.59
Arsenic	7440-38-2	0.001	mg/L	0.002	0.090	0.004	0.006	0.004
Barium	7440-39-3	0.001	mg/L	0.083	0.049	0.178	0.125	0.082
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.008	0.007	0.004	0.002
Copper	7440-50-8	0.001	mg/L	<0.001	0.025	0.011	0.004	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.008	0.003	0.004	0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	0.008	0.007	0.004	0.003
Lead	7439-92-1	0.001	mg/L	<0.001	0.012	0.002	0.002	0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	0.012	0.018	0.014	0.013



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time				31-Jul-2024 07:40	31-Jul-2024 09:30	31-Jul-2024 10:30	31-Jul-2024 07:15	31-Jul-2024 08:15
Compound	CAS Number	LOR	Unit	ET2404281-001	ET2404281-002	ET2404281-003	ET2404281-004	ET2404281-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.545	0.108	0.413	1.07	0.438
Molybdenum	7439-98-7	0.001	mg/L	0.007	0.003	0.049	0.032	0.024
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.821	0.551	1.57	1.20	0.350
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.004	<0.001	0.002	0.003	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.01	0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.41	0.59	0.84	0.48	0.30
Iron	7439-89-6	0.05	mg/L	1.05	6.18	4.93	3.92	2.51
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	21.5	15.2	15.7	17.1	24.8
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.5	2.1	2.4	0.9	0.8
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.04	0.04	0.06	0.04	0.06
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.04	0.04	0.06	0.04	0.06
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.11	0.06	0.07	0.19	0.24
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	17.9	10.2	20.1	23.0	8.74
∅ Total Cations	----	0.01	meq/L	16.7	9.53	19.8	19.3	8.33



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time					31-Jul-2024 07:40	31-Jul-2024 09:30	31-Jul-2024 10:30	31-Jul-2024 07:15	31-Jul-2024 08:15
Compound	CAS Number	LOR	Unit		ET2404281-001	ET2404281-002	ET2404281-003	ET2404281-004	ET2404281-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	-----	0.01	%		3.50	3.54	0.76	8.62	2.41
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	-----	0.1	mg/L		6.7	7.8	6.5	7.5	7.1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	JADWB001	JADWB005	LB	FB	----
Sampling date / time					31-Jul-2024 13:10	31-Jul-2024 17:15	31-Jul-2024 13:35	31-Jul-2024 14:00	----
Compound	CAS Number	LOR	Unit		ET2404281-006	ET2404281-007	ET2404281-008	ET2404281-009	-----
					Result	Result	Result	Result	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.16	7.61	5.68	5.48	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		6760	1770	<1	<1	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		5850	1110	<10	<10	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		25.0	21.7	<0.1	<0.1	----
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		375	461	7	7	----
Total Alkalinity as CaCO ₃	----	1	mg/L		375	461	7	7	----
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		3100	299	<1	<1	----
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		700	170	<1	<1	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		469	57	<1	<1	----
Magnesium	7439-95-4	1	mg/L		162	13	<1	<1	----
Sodium	7440-23-5	1	mg/L		1060	340	<1	<1	----
Potassium	7440-09-7	1	mg/L		17	6	<1	<1	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	0.01	<0.01	<0.01	----
Arsenic	7440-38-2	0.001	mg/L		0.004	0.008	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L		0.092	0.124	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				JADWB001	JADWB005	LB	FB	----
Sampling date / time				31-Jul-2024 13:10	31-Jul-2024 17:15	31-Jul-2024 13:35	31-Jul-2024 14:00	----
Compound	CAS Number	LOR	Unit	ET2404281-006	ET2404281-007	ET2404281-008	ET2404281-009	-----
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	0.009	0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	0.052	0.017	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	0.008	<0.005	0.008	<0.005	----
Manganese	7439-96-5	0.001	mg/L	6.60	0.758	<0.001	<0.001	----
Molybdenum	7439-98-7	0.001	mg/L	0.009	0.027	<0.001	<0.001	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	10.2	1.22	<0.001	<0.001	----
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Uranium	7440-61-1	0.001	mg/L	0.020	0.004	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Boron	7440-42-8	0.05	mg/L	0.54	0.88	<0.05	<0.05	----
Iron	7439-89-6	0.05	mg/L	1.72	0.09	<0.05	<0.05	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	8.50	0.16	<0.01	<0.01	----
Arsenic	7440-38-2	0.001	mg/L	0.007	0.009	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	0.304	0.122	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	0.045	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	0.113	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	0.022	0.002	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	0.086	0.018	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L	0.005	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	0.052	<0.005	<0.005	<0.005	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	JADWB001	JADWB005	LB	FB	----
Sampling date / time					31-Jul-2024 13:10	31-Jul-2024 17:15	31-Jul-2024 13:35	31-Jul-2024 14:00	----
Compound	CAS Number	LOR	Unit		ET2404281-006	ET2404281-007	ET2404281-008	ET2404281-009	-----
					Result	Result	Result	Result	----
EG020T: Total Metals by ICP-MS - Continued									
Manganese	7439-96-5	0.001	mg/L		7.52	0.752	<0.001	<0.001	----
Molybdenum	7439-98-7	0.001	mg/L		0.010	0.031	<0.001	<0.001	----
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L		10.5	1.16	<0.001	<0.001	----
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Uranium	7440-61-1	0.001	mg/L		0.022	0.004	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L		0.04	<0.01	<0.01	<0.01	----
Boron	7440-42-8	0.05	mg/L		0.61	0.93	<0.05	<0.05	----
Iron	7439-89-6	0.05	mg/L		23.0	0.41	<0.05	<0.05	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L		23.4	18.9	<0.05	<0.05	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		0.6	1.1	<0.1	<0.1	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		0.04	0.06	<0.01	<0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.04	0.06	<0.01	<0.01	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.09	0.08	<0.01	<0.01	----
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		91.8	20.2	0.14	0.14	----
∅ Total Cations	----	0.01	meq/L		83.3	18.8	<0.01	<0.01	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	JADWB001	JADWB005	LB	FB	----
Sampling date / time					31-Jul-2024 13:10	31-Jul-2024 17:15	31-Jul-2024 13:35	31-Jul-2024 14:00	----
Compound	CAS Number	LOR	Unit		ET2404281-006	ET2404281-007	ET2404281-008	ET2404281-009	-----
					Result	Result	Result	Result	----
EN055: Ionic Balance - Continued									
Ø Ionic Balance	----	0.01	%		4.86	3.52	----	----	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		8.4	5.4	9.1	8.7	----

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) ED093F: Dissolved Major Cations

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser

(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EG035F: Dissolved Mercury by FIMS

(WATER) EG035T: Total Recoverable Mercury by FIMS

(WATER) EN055: Ionic Balance



CERTIFICATE OF ANALYSIS

Work Order	: ET2404472	Page	: 1 of 10
Client	: AIC MINES LIMITED	Laboratory	: Environmental Division Townsville
Contact	: Michelle Barker	Contact	: Customer Services ET
Address	: PO BOX 14 CLONCURRY 4824	Address	: 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone	: ----	Telephone	: +61 7 4773 0000
Project	: 2023.10004_JERICO GW	Date Samples Received	: 13-Aug-2024 10:30
Order number	: ----	Date Analysis Commenced	: 13-Aug-2024
C-O-C number	: ----	Issue Date	: 19-Aug-2024 18:15
Sampler	: JAMIE SMITH		
Site	: ----		
Quote number	: EB23AICMINLTD0002 v2		
No. of samples received	: 10		
No. of samples analysed	: 10		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Kim McCabe		Townsville Inorganics, Townsville, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD
Vincent Muller	Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- The presence of high SO₄ may bias the EC low.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- EG020-T (Total Metals by ICP-MS): The high failing laboratory control standard for Silver is deemed acceptable as all associated analyte results are less than LOR.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB007	23JEWB011	23JEWB001	24JEWB016	23JEWB009
Sampling date / time					09-Aug-2024 07:15	09-Aug-2024 10:20	09-Aug-2024 09:50	09-Aug-2024 17:00	09-Aug-2024 08:30
Compound	CAS Number	LOR	Unit		ET2404472-001	ET2404472-002	ET2404472-003	ET2404472-004	ET2404472-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.89	7.08	7.46	7.75	7.70
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1820	7010	1490	1610	776
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		1230	6070	1050	1070	480
EA045: Turbidity									
Turbidity	----	0.1	NTU		36.6	28.5	4.9	33.0	26.6
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		181	435	435	468	172
Total Alkalinity as CaCO ₃	----	1	mg/L		181	435	435	468	172
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		488	3190	410	235	140
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		229	706	34	148	60
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		65	555	74	46	24
Magnesium	7439-95-4	1	mg/L		15	153	36	10	12
Sodium	7440-23-5	1	mg/L		318	1030	222	302	118
Potassium	7440-09-7	1	mg/L		8	18	7	6	3
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	0.09	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.003	0.003	0.002	0.007	0.002
Barium	7440-39-3	0.001	mg/L		0.134	0.102	0.080	0.118	0.061
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	0.003	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB007	23JEWB011	23JEWB001	24JEWB016	23JEWB009
Sampling date / time				09-Aug-2024 07:15	09-Aug-2024 10:20	09-Aug-2024 09:50	09-Aug-2024 17:00	09-Aug-2024 08:30
Compound	CAS Number	LOR	Unit	ET2404472-001	ET2404472-002	ET2404472-003	ET2404472-004	ET2404472-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.005	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.001	0.045	<0.001	0.012	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	0.039	<0.005
Manganese	7439-96-5	0.001	mg/L	0.289	7.91	0.597	0.623	0.369
Molybdenum	7439-98-7	0.001	mg/L	0.044	0.007	0.006	0.032	0.021
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	1.46	10.6	0.795	1.02	0.303
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.001	0.024	0.003	0.004	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.81	0.60	0.35	0.92	0.30
Iron	7439-89-6	0.05	mg/L	0.06	2.85	0.61	0.14	0.12
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	1.08	0.51	0.10	0.45	2.12
Arsenic	7440-38-2	0.001	mg/L	0.003	0.004	0.002	0.009	0.005
Barium	7440-39-3	0.001	mg/L	0.155	0.121	0.094	0.140	0.095
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.002	0.002	<0.001	<0.001	0.002
Copper	7440-50-8	0.001	mg/L	0.004	0.005	<0.001	0.001	0.005
Cobalt	7440-48-4	0.001	mg/L	0.001	0.007	<0.001	0.002	0.002
Nickel	7440-02-0	0.001	mg/L	0.003	0.051	0.001	0.013	0.004
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.009	0.007	<0.005	<0.005	0.017



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB007	23JEWB011	23JEWB001	24JEWB016	23JEWB009
Sampling date / time					09-Aug-2024 07:15	09-Aug-2024 10:20	09-Aug-2024 09:50	09-Aug-2024 17:00	09-Aug-2024 08:30
Compound	CAS Number	LOR	Unit		ET2404472-001	ET2404472-002	ET2404472-003	ET2404472-004	ET2404472-005
					Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued									
Manganese	7439-96-5	0.001	mg/L		0.350	8.92	0.671	0.721	0.442
Molybdenum	7439-98-7	0.001	mg/L		0.049	0.009	0.007	0.038	0.022
Silver	7440-22-4	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L		1.57	12.1	0.899	1.18	0.369
Tin	7440-31-5	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L		0.002	0.027	0.003	0.004	<0.001
Vanadium	7440-62-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L		0.79	0.55	0.33	0.85	0.30
Iron	7439-89-6	0.05	mg/L		1.76	4.75	1.42	0.93	3.18
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser									
Reactive Silica	----	0.05	mg/L		15.2	24.8	21.4	19.4	25.4
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		2.1	0.5	0.4	1.0	0.8
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	0.01
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.06	0.13	0.11	0.11	0.20
EN055: Ionic Balance									
∅ Total Anions	----	0.01	meq/L		20.2	95.0	18.2	18.4	8.04
∅ Total Cations	----	0.01	meq/L		18.5	85.5	16.5	16.4	7.39



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB007	23JEWB011	23JEWB001	24JEWB016	23JEWB009
Sampling date / time					09-Aug-2024 07:15	09-Aug-2024 10:20	09-Aug-2024 09:50	09-Aug-2024 17:00	09-Aug-2024 08:30
Compound	CAS Number	LOR	Unit		ET2404472-001	ET2404472-002	ET2404472-003	ET2404472-004	ET2404472-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	-----	0.01	%		4.44	5.25	4.89	5.77	4.20
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	-----	0.1	mg/L		9.2	1.0	3.3	5.3	4.0



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB003	23JEWB008	LB	FB	DUP
Sampling date / time					09-Aug-2024 08:00	09-Aug-2024 09:15	09-Aug-2024 07:15	09-Aug-2024 08:30	09-Aug-2024 07:15
Compound	CAS Number	LOR	Unit		ET2404472-006	ET2404472-007	ET2404472-008	ET2404472-009	ET2404472-010
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.92	7.75	5.57	5.50	7.90
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		998	1950	<1	<1	1840
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		640	1330	<10	<10	----
EA045: Turbidity									
Turbidity	----	0.1	NTU		62.6	202	0.2	<0.1	31.1
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		139	318	9	13	180
Total Alkalinity as CaCO ₃	----	1	mg/L		139	318	9	13	180
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		266	531	<1	<1	479
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		67	174	<1	<1	235
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		23	76	<1	<1	65
Magnesium	7439-95-4	1	mg/L		5	31	<1	<1	15
Sodium	7440-23-5	1	mg/L		178	306	<1	<1	325
Potassium	7440-09-7	1	mg/L		3	8	<1	<1	8
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.075	0.003	<0.001	<0.001	0.003
Barium	7440-39-3	0.001	mg/L		0.027	0.103	<0.001	<0.001	0.136
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB003	23JEWB008	LB	FB	DUP
Sampling date / time				09-Aug-2024 08:00	09-Aug-2024 09:15	09-Aug-2024 07:15	09-Aug-2024 08:30	09-Aug-2024 07:15
Compound	CAS Number	LOR	Unit	ET2404472-006	ET2404472-007	ET2404472-008	ET2404472-009	ET2404472-010
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	0.003	<0.001	<0.001	0.002
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.031	0.493	<0.001	<0.001	0.293
Molybdenum	7439-98-7	0.001	mg/L	0.002	0.031	<0.001	<0.001	0.045
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.510	1.27	<0.001	<0.001	1.47
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	0.004	<0.001	<0.001	0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.57	0.42	<0.05	<0.05	0.82
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	2.24	2.09	<0.01	<0.01	0.89
Arsenic	7440-38-2	0.001	mg/L	0.087	0.007	<0.001	<0.001	0.003
Barium	7440-39-3	0.001	mg/L	0.042	0.138	<0.001	<0.001	0.149
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.005	0.004	<0.001	<0.001	0.002
Copper	7440-50-8	0.001	mg/L	0.018	0.006	<0.001	<0.001	0.003
Cobalt	7440-48-4	0.001	mg/L	0.006	0.004	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.006	0.005	<0.001	<0.001	0.003
Lead	7439-92-1	0.001	mg/L	0.009	0.002	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.009	0.014	<0.005	0.006	0.006



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB003	23JEWB008	LB	FB	DUP
Sampling date / time				09-Aug-2024 08:00	09-Aug-2024 09:15	09-Aug-2024 07:15	09-Aug-2024 08:30	09-Aug-2024 07:15
Compound	CAS Number	LOR	Unit	ET2404472-006	ET2404472-007	ET2404472-008	ET2404472-009	ET2404472-010
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.082	1.13	<0.001	<0.001	0.327
Molybdenum	7439-98-7	0.001	mg/L	0.003	0.033	<0.001	<0.001	0.047
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.552	1.37	<0.001	<0.001	1.50
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	0.004	<0.001	<0.001	0.002
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.58	0.46	<0.05	<0.05	0.78
Iron	7439-89-6	0.05	mg/L	4.27	3.72	<0.05	<0.05	1.47
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	15.0	16.3	<0.05	<0.05	15.7
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	1.9	0.8	<0.1	<0.1	2.1
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.08	0.14	<0.01	<0.01	0.07
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	10.2	22.3	0.18	0.26	20.2
∅ Total Cations	----	0.01	meq/L	9.38	19.8	<0.01	<0.01	18.8



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB003	23JEWB008	LB	FB	DUP
Sampling date / time					09-Aug-2024 08:00	09-Aug-2024 09:15	09-Aug-2024 07:15	09-Aug-2024 08:30	09-Aug-2024 07:15
Compound	CAS Number	LOR	Unit		ET2404472-006	ET2404472-007	ET2404472-008	ET2404472-009	ET2404472-010
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	----	0.01	%		4.22	5.83	----	----	3.53
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		5.0	2.3	8.9	8.4	9.8

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser

(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EG035F: Dissolved Mercury by FIMS

(WATER) EG035T: Total Recoverable Mercury by FIMS

(WATER) EN055: Ionic Balance

(WATER) ED093F: Dissolved Major Cations



CERTIFICATE OF ANALYSIS

Work Order : **ET2404561**
Client : **AIC MINES LIMITED**
Contact : Michelle Barker
Address : SUITE 3 130 HAY STREET
SUBIACO 6008
Telephone : ----
Project : 2023.10004_JERICO&TD6_GWAUG24
Order number : ----
C-O-C number : ----
Sampler : Bronte Barnard
Site : ----
Quote number : EB23AICMINLTD0002 v2
No. of samples received : 10
No. of samples analysed : 10

Page : 1 of 10
Laboratory : Environmental Division Townsville
Contact : Customer Services ET
Address : 13 Carlton Street, Kirwan Townsville QLD Australia 4815
Telephone : +61 7 4773 0000
Date Samples Received : 20-Aug-2024 09:50
Date Analysis Commenced : 20-Aug-2024
Issue Date : 26-Aug-2024 20:38



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Beatriz Llarinas	Senior Chemist - Inorganics	Brisbane Inorganics, Stafford, QLD
Beatriz Llarinas	Senior Chemist - Inorganics	Townsville Inorganics, Townsville, QLD
Mark Hallas	Senior Inorganic Chemist	Townsville Inorganics, Townsville, QLD
Narelle Drummond	Laboratory Manager	Townsville Inorganics, Townsville, QLD



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- Sample was received with headspace. Results for dissolved oxygen may vary accordingly.
- EK067G (Total Phosphorous as P): Sample TD6_2S (ET2404561-006) was diluted due to matrix interference. LOR adjusted accordingly.
- As per QWI – EN55-3 Data Interpreting Procedures, Ionic balances are typically calculated using Major Anions - Chloride, Alkalinity and Sulfate; and Major Cations - Calcium, Magnesium, Potassium and Sodium. Where applicable and dependent upon sample matrix, the Ionic Balance may also include the additional contribution of Ammonia, Dissolved Metals by ICPMS and H⁺ to the Cations and Nitrate, SiO₂ and Fluoride to the Anions.
- The presence of high SO₄ may bias the EC low.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- It is recognised that EG020T (Total Metals by ICP-MS) is less than EG020F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- ED045G: The presence of Thiocyanate, Thiosulfate and Sulfite can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time					17-Aug-2024 12:15	17-Aug-2024 14:20	17-Aug-2024 15:20	17-Aug-2024 11:00	17-Aug-2024 14:00
Compound	CAS Number	LOR	Unit		ET2404561-001	ET2404561-002	ET2404561-003	ET2404561-004	ET2404561-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.38	7.88	8.00	7.72	7.70
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1440	1000	1850	1760	740
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		1030	614	1200	1180	441
EA045: Turbidity									
Turbidity	----	0.1	NTU		9.6	32.1	45.6	99.7	69.1
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L		387	125	166	311	146
Total Alkalinity as CaCO ₃	----	1	mg/L		387	125	166	311	146
ED041G: Sulfate (Turbidimetric) as SO₄ 2- by DA									
Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L		390	267	484	425	128
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		36	71	235	159	63
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		71	24	67	67	23
Magnesium	7439-95-4	1	mg/L		35	6	15	27	12
Sodium	7440-23-5	1	mg/L		231	200	338	319	124
Potassium	7440-09-7	1	mg/L		6	3	7	7	3
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.002	0.065	0.002	0.003	0.002
Barium	7440-39-3	0.001	mg/L		0.076	0.027	0.138	0.096	0.057
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time				17-Aug-2024 12:15	17-Aug-2024 14:20	17-Aug-2024 15:20	17-Aug-2024 11:00	17-Aug-2024 14:00
Compound	CAS Number	LOR	Unit	ET2404561-001	ET2404561-002	ET2404561-003	ET2404561-004	ET2404561-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.510	0.037	0.294	0.976	0.350
Molybdenum	7439-98-7	0.001	mg/L	0.006	0.003	0.046	0.029	0.024
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.747	0.519	1.46	1.09	0.284
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.003	<0.001	0.001	0.002	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.35	0.55	0.79	0.43	0.28
Iron	7439-89-6	0.05	mg/L	0.85	<0.05	0.06	0.29	0.26
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.07	0.31	1.87	8.88	1.06
Arsenic	7440-38-2	0.001	mg/L	0.003	0.069	0.003	0.013	0.003
Barium	7440-39-3	0.001	mg/L	0.084	0.030	0.164	0.184	0.073
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.003	0.014	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	0.002	0.006	0.026	0.003
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.001	0.010	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.003	0.012	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	0.002	<0.001	0.006	0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.009	0.046	0.005



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time				17-Aug-2024 12:15	17-Aug-2024 14:20	17-Aug-2024 15:20	17-Aug-2024 11:00	17-Aug-2024 14:00
Compound	CAS Number	LOR	Unit	ET2404561-001	ET2404561-002	ET2404561-003	ET2404561-004	ET2404561-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.549	0.040	0.363	1.22	0.408
Molybdenum	7439-98-7	0.001	mg/L	0.006	0.003	0.049	0.033	0.026
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.827	0.556	1.58	1.50	0.334
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.003	<0.001	0.002	0.004	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	0.03	<0.01
Boron	7440-42-8	0.05	mg/L	0.34	0.52	0.76	0.40	0.26
Iron	7439-89-6	0.05	mg/L	1.10	0.64	2.73	13.3	1.52
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	20.5	14.7	15.0	16.6	25.1
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.4	1.9	2.1	0.9	0.8
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.02	<0.01	<0.01	0.01	0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.02	<0.01	<0.01	0.01	0.01
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.10	0.05	0.07	0.16	0.17
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	16.9	10.0	20.0	19.5	7.36
∅ Total Cations	----	0.01	meq/L	16.6	10.5	19.4	19.6	7.60



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	23JEWB001	23JEWB003	23JEWB007	23JEWB008	23JEWB009
Sampling date / time					17-Aug-2024 12:15	17-Aug-2024 14:20	17-Aug-2024 15:20	17-Aug-2024 11:00	17-Aug-2024 14:00
Compound	CAS Number	LOR	Unit		ET2404561-001	ET2404561-002	ET2404561-003	ET2404561-004	ET2404561-005
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	-----	0.01	%		0.72	1.99	1.43	0.18	1.65
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	-----	0.1	mg/L		6.6	6.6	6.7	6.5	6.9



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TD6_2S	JADWB001	JADWB005	LB	FB
Sampling date / time					16-Aug-2024 15:20	18-Aug-2024 11:25	18-Aug-2024 13:40	17-Aug-2024 13:15	17-Aug-2024 11:30
Compound	CAS Number	LOR	Unit		ET2404561-006	ET2404561-007	ET2404561-008	ET2404561-009	ET2404561-010
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.17	7.04	7.71	5.71	5.98
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		17100	8240	1560	<1	<1
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		12900	6480	1020	<10	<10
EA045: Turbidity									
Turbidity	----	0.1	NTU		10.1	17.4	19.0	<0.1	<0.1
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		274	377	429	2	2
Total Alkalinity as CaCO3	----	1	mg/L		274	377	429	2	2
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		3030	2640	197	<1	<1
ED045G: Chloride by Discrete Analyser									
Chloride	16887-00-6	1	mg/L		4920	1390	147	<1	<1
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		570	581	45	<1	<1
Magnesium	7439-95-4	1	mg/L		579	239	10	<1	<1
Sodium	7440-23-5	1	mg/L		2770	1120	325	<1	<1
Potassium	7440-09-7	1	mg/L		17	16	5	<1	<1
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L		0.001	0.002	0.007	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L		0.046	0.103	0.118	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		0.001	<0.001	<0.001	<0.001	<0.001



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				TD6_2S	JADWB001	JADWB005	LB	FB
Sampling date / time				16-Aug-2024 15:20	18-Aug-2024 11:25	18-Aug-2024 13:40	17-Aug-2024 13:15	17-Aug-2024 11:30
Compound	CAS Number	LOR	Unit	ET2404561-006	ET2404561-007	ET2404561-008	ET2404561-009	ET2404561-010
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.002	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.005	0.012	0.006	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	0.02	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.037	<0.005	<0.005	<0.005	<0.005
Manganese	7439-96-5	0.001	mg/L	0.024	7.58	0.573	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L	0.003	0.005	0.032	<0.001	<0.001
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	13.2	11.6	0.953	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.141	0.016	0.004	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.66	0.71	0.88	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L	<0.05	0.88	0.15	<0.05	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.02	1.30	1.45	<0.01	<0.01
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.003	0.008	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.051	0.161	0.145	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.002	0.004	0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	0.016	0.003	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.004	0.002	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.005	0.017	0.008	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	0.03	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.006	0.006	0.012	<0.005	<0.005



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				TD6_2S	JADWB001	JADWB005	LB	FB
Sampling date / time				16-Aug-2024 15:20	18-Aug-2024 11:25	18-Aug-2024 13:40	17-Aug-2024 13:15	17-Aug-2024 11:30
Compound	CAS Number	LOR	Unit	ET2404561-006	ET2404561-007	ET2404561-008	ET2404561-009	ET2404561-010
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.026	8.33	0.641	<0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L	0.003	0.008	0.035	<0.001	<0.001
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	14.7	13.4	1.04	<0.001	<0.001
Tin	7440-31-5	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	0.149	0.018	0.004	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.59	0.64	0.76	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L	0.06	3.99	2.11	<0.05	<0.05
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052G: Silica by Discrete Analyser								
Reactive Silica	----	0.05	mg/L	76.8	22.4	18.9	<0.05	<0.05
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	1.2	0.3	1.1	<0.1	<0.1
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	0.10	<0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	20.3	<0.01	0.01	<0.01	<0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	20.4	<0.01	0.01	<0.01	<0.01
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.05	0.05	0.08	<0.01	<0.01
EN055: Ionic Balance								
∅ Total Anions	----	0.01	meq/L	207	102	16.8	0.04	0.04
∅ Total Cations	----	0.01	meq/L	197	97.8	17.3	<0.01	<0.01



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TD6_2S	JADWB001	JADWB005	LB	FB
Sampling date / time					16-Aug-2024 15:20	18-Aug-2024 11:25	18-Aug-2024 13:40	17-Aug-2024 13:15	17-Aug-2024 11:30
Compound	CAS Number	LOR	Unit		ET2404561-006	ET2404561-007	ET2404561-008	ET2404561-009	ET2404561-010
					Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued									
Ø Ionic Balance	----	0.01	%		2.55	1.96	1.50	----	----
EP025: Oxygen - Dissolved (DO)									
Dissolved Oxygen	----	0.1	mg/L		9.8	6.6	7.2	8.9	9.0

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry / Biology).

(WATER) ED093F: Dissolved Major Cations

(WATER) EN055: Ionic Balance

(WATER) EG020F: Dissolved Metals by ICP-MS

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser

(WATER) EG020T: Total Metals by ICP-MS

(WATER) EG035F: Dissolved Mercury by FIMS

(WATER) EG035T: Total Recoverable Mercury by FIMS

APPENDIX C: GROUNDWATER MODEL REPORT





hydrogeologist
.com.au

REPORT ON

JERICHO PROJECT

NUMERICAL GROUNDWATER MODELLING REPORT

For: AIC Copper Pty Ltd

Project number: 4141

Date: 19/11/2024

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Appendix B	Boundary conditions
Appendix C	Summary of transient model observations
Appendix D	Calibration hydrographs
Appendix E	Hydraulic conductivities (Kx and Kz)
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Appendix G	Maximum cumulative mine impacts

Jericho Project

Numerical Groundwater Modelling Report

Prepared for
AIC Copper Pty Ltd

1. Introduction

hydrogeologist.com.au has developed a 3D numerical groundwater flow model for the Jericho Project to simulate the existing conditions of the groundwater regime and provide predictions of the effects of potential future underground mining.

The model represents the hydrogeology of the Eloise Copper Mine and the Jericho Project, and its surrounds based on the conceptual groundwater model described the Underground Water Impact Report (UWIR) for the Jericho Project (the Groundwater Report) (Engeny, 2024).

The modelling results presented in this report have been used to support the assessment of groundwater effects presented in the Groundwater Report¹. The specific objectives of the model included:

- predicting changes to local and regional groundwater flow regimes;
- predicting project-specific effects on groundwater resources, users and the environment;
- estimating groundwater inflow into underground mining operations;
- predicting cumulative drawdown on groundwater resources, users and the environment; and
- addressing regulatory requirements in relation to groundwater modelling.

This report provides a detailed description of the modelling, including model design and construction, calibration and predictions. This report is presented as a technical appendix to the Groundwater Report and is intended to be read in conjunction with the groundwater assessment presented in the Groundwater Report.

The report is structured as follows:

- Section 1 – Introduction and overview of the report scope and structure.
- Section 2 – Model design, construction and calibration.
- Section 3 – Model predictive simulations.
- Section 4 – References.
- Appendices.

¹ Note all provided coordinates and maps use GDA94 / MGA Zone 54 projection.

2. Model design

2.1. Model code selection

MODFLOW-USG (Panday *et al.*, 2015) was used as the modelling software used to represent the project. MODFLOW-USG is widely used and accepted by groundwater modelling specialists for predicting impacts associated with mining projects.

MODFLOW-USG is an “unstructured grid” version of MODFLOW that optimises the model grid and increases numerical stability by allowing for unstructured, variably sized cells (Panday *et al.*, 2013). These cells can take any polygonal shape, with variable size constraints allowing for local grid refinement in areas of interest while maintaining lower resolution where high detail is not required. Variable cell sizes and shapes can greatly reduce the number of grid cells within the model domain while still capturing the required level of detail. As a result, model runtimes can be greatly reduced.

Another benefit of MODFLOW-USG is its ability to simulate unsaturated conditions. This enables progressive mine dewatering and post-closure rewetting to be represented by the model.

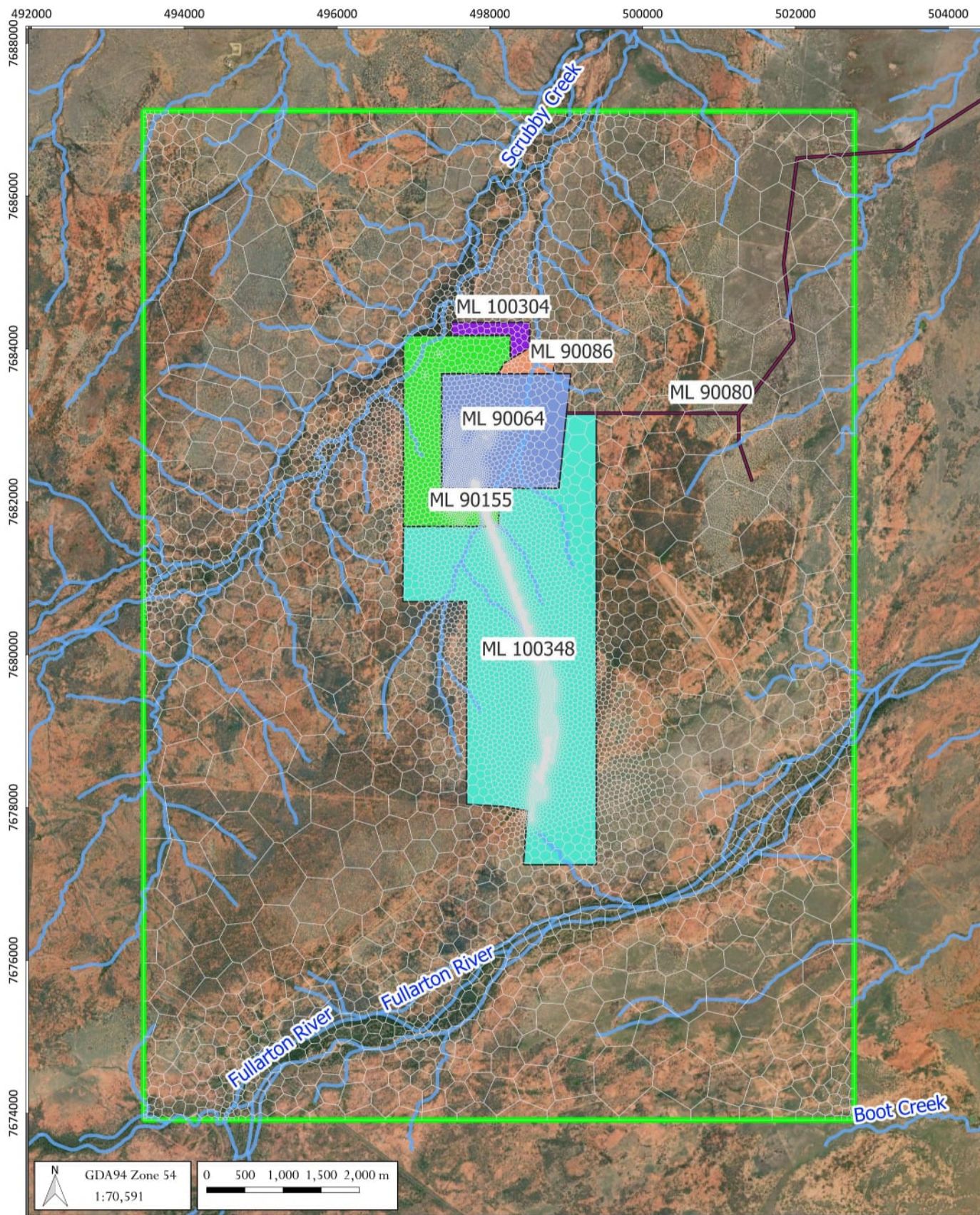
2.2. Model domain

The model domain is shown in Figure 2-1. The domain covers an area of approximately 122 km², extending approximately 9.3 km west to east and 13.2 km north to south.

The model domain extents were designed to be large enough to:

- encompass the full extent of the existing Eloise and the proposed Jericho mining areas and any associated groundwater effects, including cumulative interactions arising from development of the Project; and
- remove significant interaction (i.e., boundary effects) between the depressurisation associated with mining activities and the model boundary conditions.

Natural geological, hydrological and hydrogeological features such as groundwater units, geological structures, watercourses and catchment boundaries were also considerations in determining the extents of the model domain, as required.



LEGEND

	Watercourse	Mining Leases		ML 90080	
	Model Mesh		ML 100348		ML 90086
	Model Domain		ML 100304		ML 90155
			ML 90064		

DATE
03/10/2024

2.3. Model processing and discretisation

Algomesh (Merrick, 2016) was used to develop an unstructured grid based on Voronoi polygons. The model mesh is comprised of 140110 active cells, which range in area of between 0.07 m² to 665,135 m².

The model mesh was refined around watercourses, existing and proposed mining areas and the location of groundwater observation sites. The extent of the model mesh, illustrating the refinement around the various spatial definition features, is shown in Figure 2-1.

The overview of temporal discretisation for individual phases of modelling is presented in Table 2-1 and comprises one (1) steady state period, and 18 transient periods.

Table 2-1 Model temporal discretisation – overview

# of stress periods	Stress period length	Dates	Modelling phase
1	-	-	Steady state calibration period, no-mine development
5	5 years (x 4) 4 years (x 1)	01/01/1996 – 31/12/2024	Transient calibration period, historic mining
12	1 year	01/01/2025 – 31/12/2036	Transient prediction period, Jericho development

2.4. Model layers

The model was constructed with ten layers to represent the hydrogeological units and depth relationships as described in the Groundwater Report. Table 2-2 lists the model layer numbers and the corresponding hydrostratigraphic units. Surface elevation maps corresponding to the top of the model and base elevations for all layers are presented as Appendix A.

The thickness of the layers was developed from the AIC geological model and site drilling/bore logs, supplemented with publicly available data where relevant. Due to a lack of available information regarding spatial variability of layer thicknesses below the Wallumbilla Formation, uniform layer thickness was applied across the model domain for all layers below layer 2.

Table 2-2 Model layer definition

Model layer	Hydrogeological unit	Minimum thickness (m)	Average thickness (m)	Maximum thickness (m)	# Cells per layer
1	Tertiary	4.2	17.8	33.0	14011
2	Wallumbilla Formation	40.1	98.8	140.8	14011
3	Gilbert River Formation	1.0	1.0	1.0	14011
4	Shallow Proterozoic	20.0	20.0	20.0	14011
5	Deeper Proterozoic (75 m – 125 m depth)	50.0	50.0	50.0	14011
6	Deeper Proterozoic (125 m – 200 m depth)	75.0	75.0	75.0	14011
7	Deeper Proterozoic (200 m – 300 m depth)	100.0	100.0	100.0	14011
8	Deeper Proterozoic (300 m – 400 m depth)	100.0	100.0	100.0	14011
9	Deeper Proterozoic (400 m – 500 m depth)	100.0	100.0	100.0	14011
10	Deeper Proterozoic (500 m – 600 m depth)	100.0	100.0	100.0	14011

2.5. Hydrostratigraphic zonation

The model uses six (6) zones to represent hydraulic properties of horizontal hydraulic conductivity (K_x) and vertical hydraulic conductivity (K_z). The hydrostratigraphic zones applied in the model are summarised in Table 2-3. A zone is used in Layer 1 to spatially represent Scrubby Creek and the Fullarton River within the context of the surrounding Tertiary sediments. The zonation of layer 1 is presented spatially as Figure 2-2. For layers underlying layer 1, zones are applied across the entirety of each layer.

Table 2-3 Hydrostratigraphic zonation

Zone	Layer(s)	Hydrostratigraphy
1	1	Tertiary sediments
2	1	Scrubby Creek and Fullarton River
3	2	Wallumbilla Formation
4	3	Gilbert River Formation
5	4	Shallow Proterozoic
6	5 - 10	Deeper Proterozoic

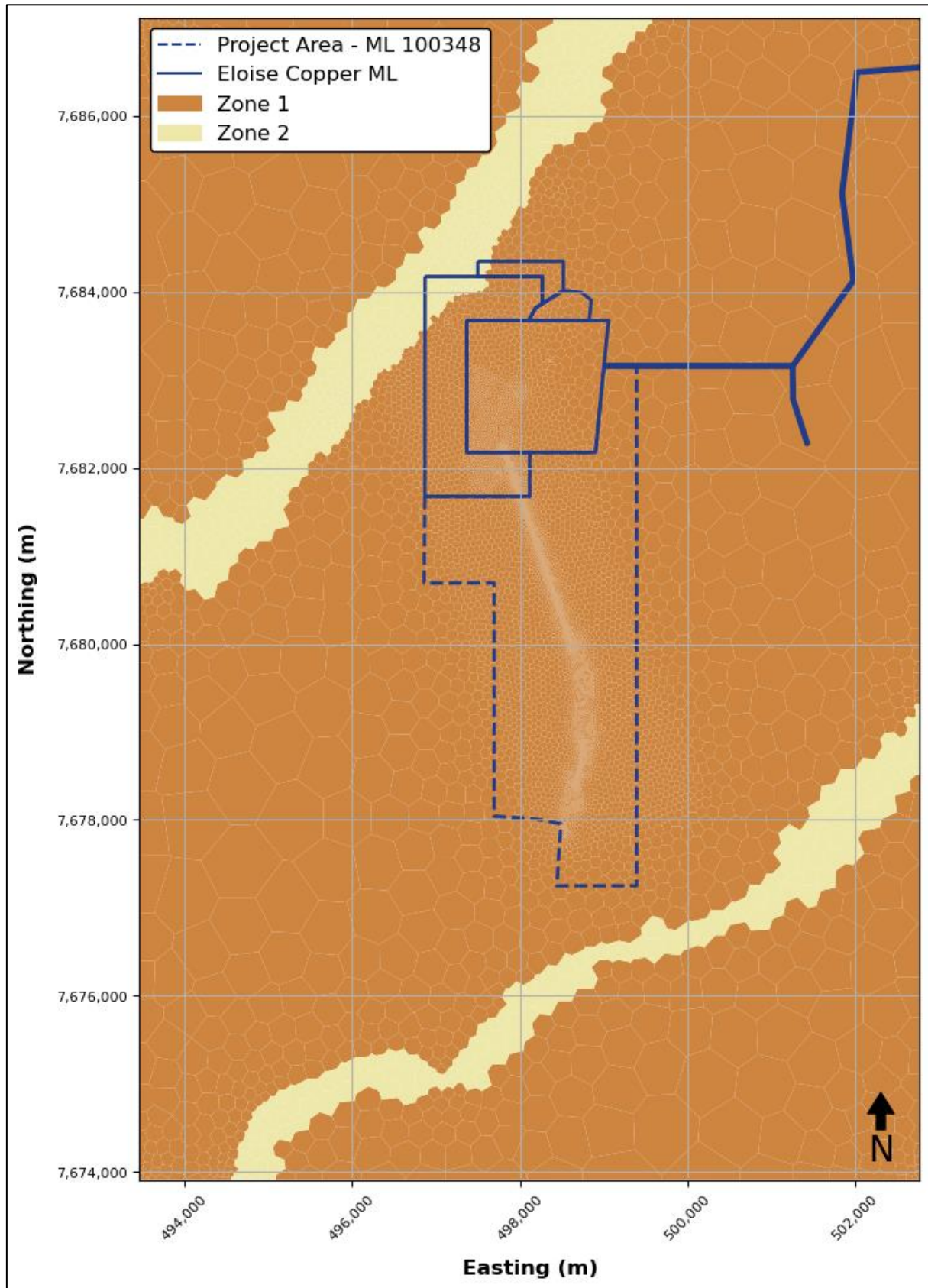


Figure 2-2 Hydrostratigraphic zonation – Layer 1

2.6. Model boundary conditions

Boundary conditions are necessary for solution of the 3D groundwater flow equation that is implemented by MODFLOW-USG. They also provide a means by which auxiliary groundwater fluxes and stresses can be specified within the model. The following boundary conditions have been adopted in the model.

2.6.1. Rainfall recharge

The MODFLOW Recharge (RCH) module was used to apply recharge across layer 1 of the model. Three recharge zones were used across layer 1 to represent the various surface geology (i.e., Scrubby Creek and Fullarton River, Eloise Tailings Storage Facility [TSF] and surrounding Tertiary sediments). Recharge was applied to the model as a percentage of rainfall, which was optimised for each recharge zone during calibration. Recharge zones are shown in Figure 2-3.

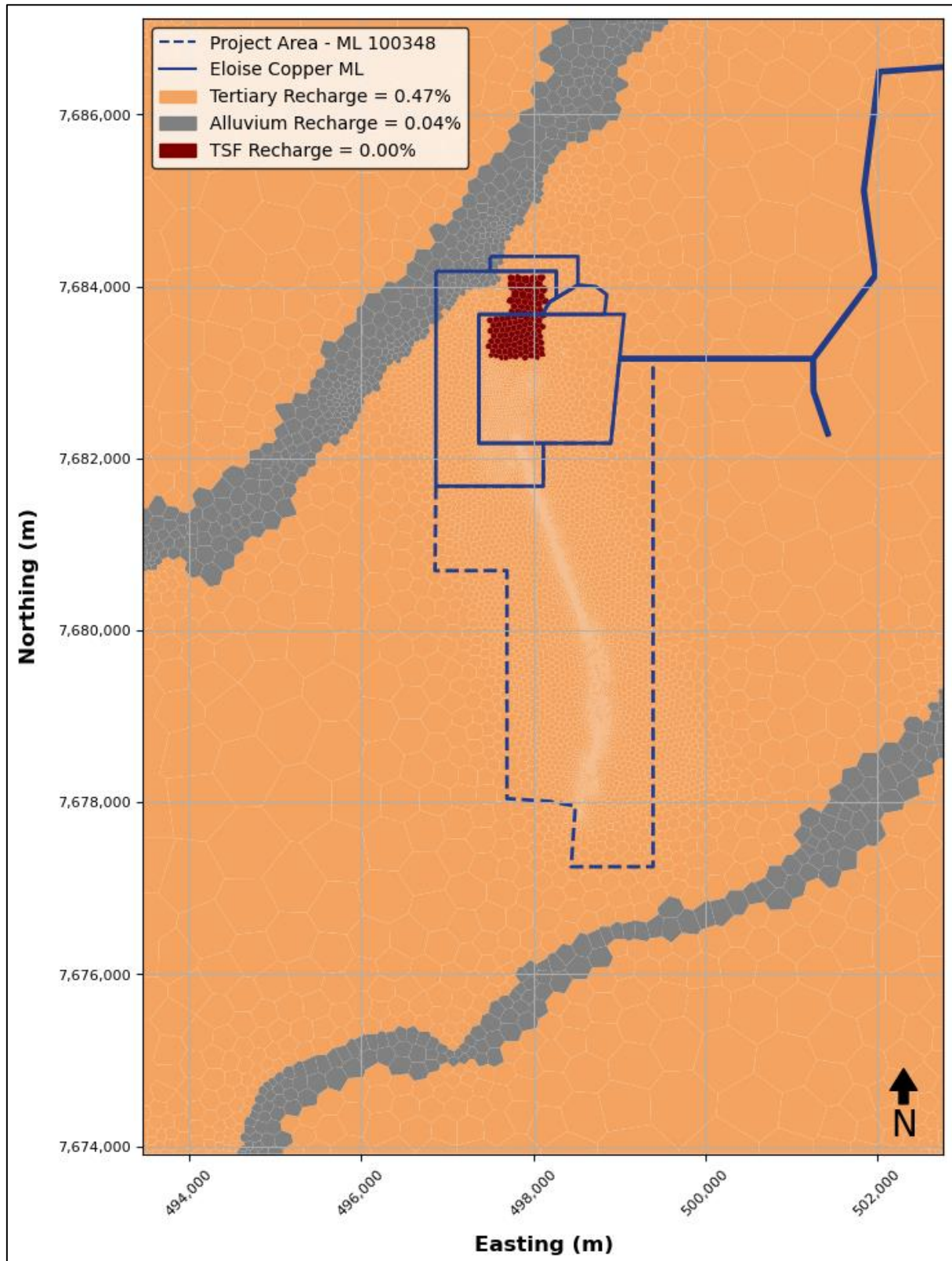


Figure 2-3 Recharge zones

2.6.2. Evapotranspiration

Evapotranspiration was applied uniformly across the whole model domain using the MODFLOW Evapotranspiration (EVT) module. An extinction depth of 2.0 m was applied across the model. This extinction depth is considered appropriate as it represents the depth within which evapotranspiration activity is typically focussed. The maximum rate of evapotranspiration (pan factor) was initially set at 1965.05 mm/year for all zones. The maximum rate of evapotranspiration is considered appropriate to represent the rate at which ponded water at the ground surface can be evaporated at the project area.

EVT in the model only occurs where the groundwater table is shallow and within the extinction depth. Due to the general lack of shallow groundwater in the model domain, EVT is largely irrelevant and has negligible effect on the water balance.

2.6.3. Initial heads

The initial heads for the steady state model were applied at topographic surface. This is a standard approach that helps minimise the convergence time for the steady state model. The heads from the steady state model were then used as the starting heads for the transient calibration. The heads from the end of transient calibration were then used as starting heads for the predictive models.

2.6.4. Constant head boundaries

Constant head boundaries were applied at nodes in layers 1,2 and 3 along the edges of the model boundary using the MODFLOW Time Variant Specified Head (CHD) Package. This boundary condition allows for the interconnectivity of the model domain with the wider regional groundwater flow system and facilitates groundwater flow across the model boundaries. Heads at CHD cells were constant throughout the steady state and transient model durations and represent a general north-easterly flowing groundwater system, consistent with the conceptual model (Section 4.5.3 of the Groundwater Report). The locations and head elevations for CHD cells for each model layer are included in Appendix B.

2.6.5. Mining

Underground mine dewatering was simulated using the MODFLOW Drain (DRN) module. The DRN cells allow for one-way flow of water out of the model. When the computed head drops below the elevation of the drain, the drain cells become inactive. Once activated, the DRN cells remain active until the end of the model simulation. DRN cells are an effective way of representing both the direct removal of water by mining activities as well as the removal of water seeping into underground mine workings over time.

DRN cells were applied to Proterozoic model layers (layer 1-5) corresponding with mine elevation plans provided by AIC. A conductance 100 m²/day was applied to all DRN cells. Experience shows that this conductance value is effective in representing underground mining.

The extent of the DRN cells applied to represent mining activity for each layer are included in Appendix B. Commencement timings for mine progression of simulated workings is as follows:

- Eloise mining active from stress period 1 (01/01/1996);
- Link drive mining active from stress period 7 (01/01/2025); and
- Jericho project mining active from stress period 9 (01/01/2027).

2.6.6. Extraction wells

Removal of water from pumping wells in the Eloise bore field (pumping wells EL11, EL12, EL14, EL16 and EL19) was represented by the MODFLOW WELL (WEL) module for historic and future pumping. Like DRN cells, the WEL package allows for one way flow of water from the model. Pumping rates are specified in the WEL package for each WEL at each stress period in the model, and water is removed from the model according to these rates (or until desaturation of the model layer occurs).

2.7. Calibration process and metrics

Model calibration was performed to optimise the model parameter values so that the model can better replicate historical observations. The outcome of the calibration process also provides the initial conditions for the transient predictive simulations used to assess the potential effects of the project on the groundwater regime.

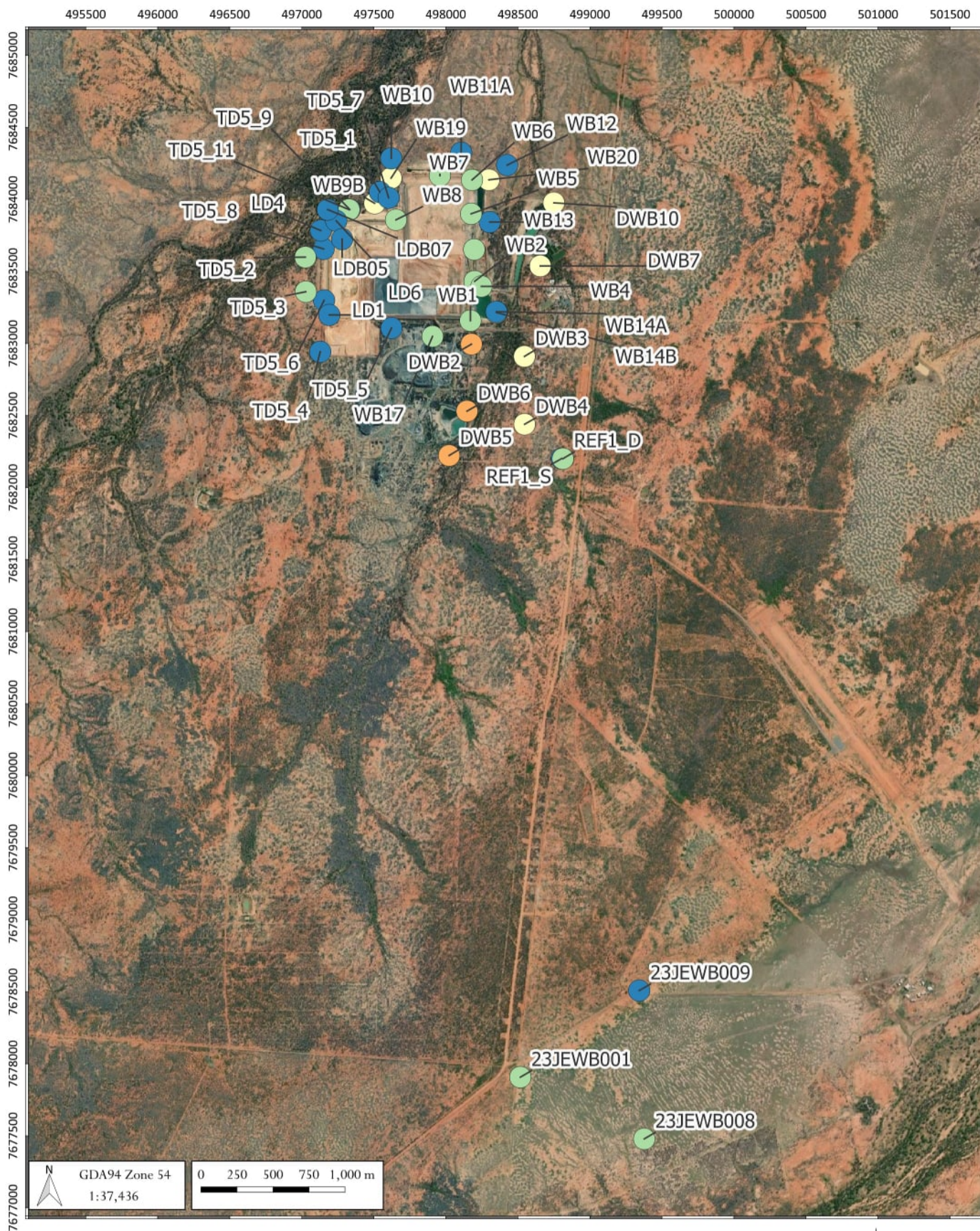
2.7.1. Approach

Calibration was performed by applying both automated PEST (Doherty, 2019a, 2019b) routines and a manual trial-and-error approach. In order to achieve the best possible calibration fit, both approaches allowed for modification of the relevant model properties within pre-set calibration bounds. Prior to calibration, upper and lower calibration bounds were set for each of the tested parameters based on available hydraulic testing data. For hydraulic conductivity fields, pilot points were used to provide spatial heterogeneity in the calibrated parameter fields. The following model properties were updated during the calibration process:

- hydraulic conductivities (K_x and K_z);
- specific Storage (S_s);
- specific yield (S_y);
- recharge;
- riverbed conductance; and
- tailings seepage rate.

2.7.2. Targets

The available groundwater level data was reviewed to identify the most reliable groundwater level measurements for the transient calibration period. A total of 654 groundwater level measurements from 45 of the 65 available observation sites were included in the calibration dataset. The calibration data were weighted so that every observation had an equal weighting. The locations of all observation sites are shown in Figure 2-4 and a summary of the sites is provided as Appendix C.



LEGEND

Observation Targets

- Model Layer 1
- Model Layer 2
- Model Layer 3
- Model Layer 4

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14/10/2024



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Eloise Copper Mine - Groundwater Model (4141H)

Observation Sites

FIGURE No.
2.4

2.7.3. Results

A scatter plot of predicted versus observed hydraulic heads is presented in Figure 2-5. The statistics from the calibrated model are reported in Table 2-4. A constant weight of one (1) was used across all observations, and so, weighted and unweighted statistics are equal. The calibration hydrographs are provided in Appendix D.

Table 2-4 Summary of model calibration performance

Statistical measure		Unit	Value
Number of sites	N	-	45
Number of observations	n	-	654
Range of measured heads	-	m	85.29
Sum of squared residuals	SSQ, Φ	m ²	12823.39
Root mean squared error	RMS	m	4.43
Scaled root mean squared error	SRMS	%	5.19
Residual mean	$\bar{R}$	m	-0.43
Scaled absolute residual mean	$S \bar{R} $	%	-6.71

The transient calibration, across all observations and time steps, achieved a root mean square error (RMS) of 4.43 m. The scaled root mean square error (SRMS) was 5.19%. The SRMS value is below the 10% recommended by the Australian Groundwater Modelling Guidelines (Barnett *et al.*, 2012), and hence, the model calibration is acceptable.

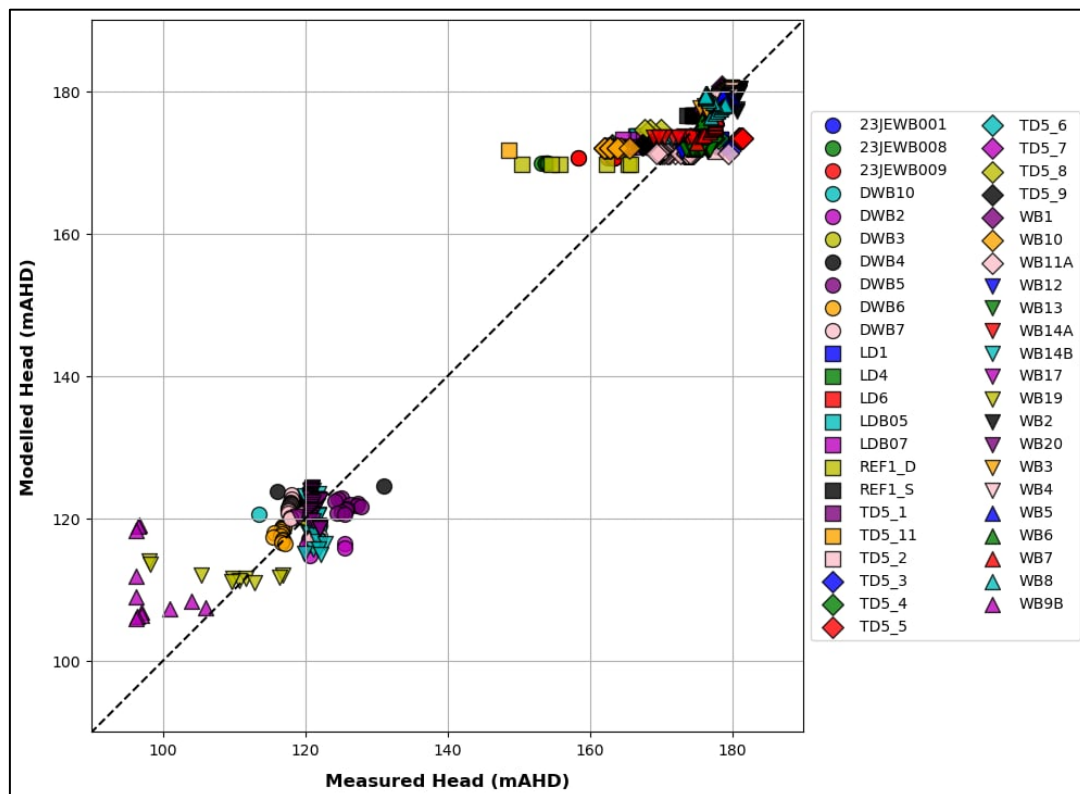


Figure 2-5 Calibration scatter diagram – measured vs. modelled heads

2.8. Calibrated hydraulic parameters

The hydraulic properties were assigned to individual model cells using the zonation approach described in Section 2.5. Calibrated hydraulic properties for individual zones are summarised in Table 2-5 (Kx and Kz) and Table 2-6 (storage and specific yield). Figure 2-6 displays the smoothed distribution of calibrated K values for each zone using Kernel Density Estimate (KDE) plots. These plots provide a continuous probability distribution of hydraulic conductivities within each zone, where the area under each curve represents the total probability and equals one. Maps of calibrated hydraulic conductivity are provided as Appendix E.

Table 2-5 Summary of calibrated K values (Kx and Kz)

Zone	Hydrostratigraphy	K (min)	K (Median)	K (max)	K (std)
		Units = m/day			
1	Tertiary sediments	1.00E-02	8.05E-02	2.50E+00	1.86E-01
2	Scrubby Creek and Fullarton River	1.08E-02	1.76E-01	2.50E+00	6.86E-01
3	Wallumbilla Formation	2.16E-04	2.97E-03	1.10E-02	2.51E-03
4	Gilbert River Formation	1.00E-02	2.47E-01	1.00E+00	3.75E-01
5 & 6	Shallow and Deeper Proterozoic	1.05E-05	3.18E-04	2.00E-03	4.12E-04

Note: Hydraulic Conductivity: 'K'

Table 2-6 Summary of calibrated storage values

Layer	Hydrostratigraphy	Ss	Sy
1	Tertiary sediments; Scrubby Creek and Fullarton River	1.47E-01	1.13E-04
2	Wallumbilla Formation	2.37E-03	8.00E-05
3	Gilbert River Formation	1.27E-03	1.00E-05
4	Shallow Proterozoic	4.02E-03	1.00E-06
5	Deeper Proterozoic	1.17E-04	1.00E-06
6	Deeper Proterozoic	1.09E-03	1.13E-06
7	Deeper Proterozoic	1.02E-04	1.00E-06
8	Deeper Proterozoic	8.60E-04	1.48E-06
9	Deeper Proterozoic	2.15E-03	2.35E-06
10	Deeper Proterozoic	1.47E-01	1.13E-04

Notes: Storage: 'Ss'
Specific yield: 'Sy'

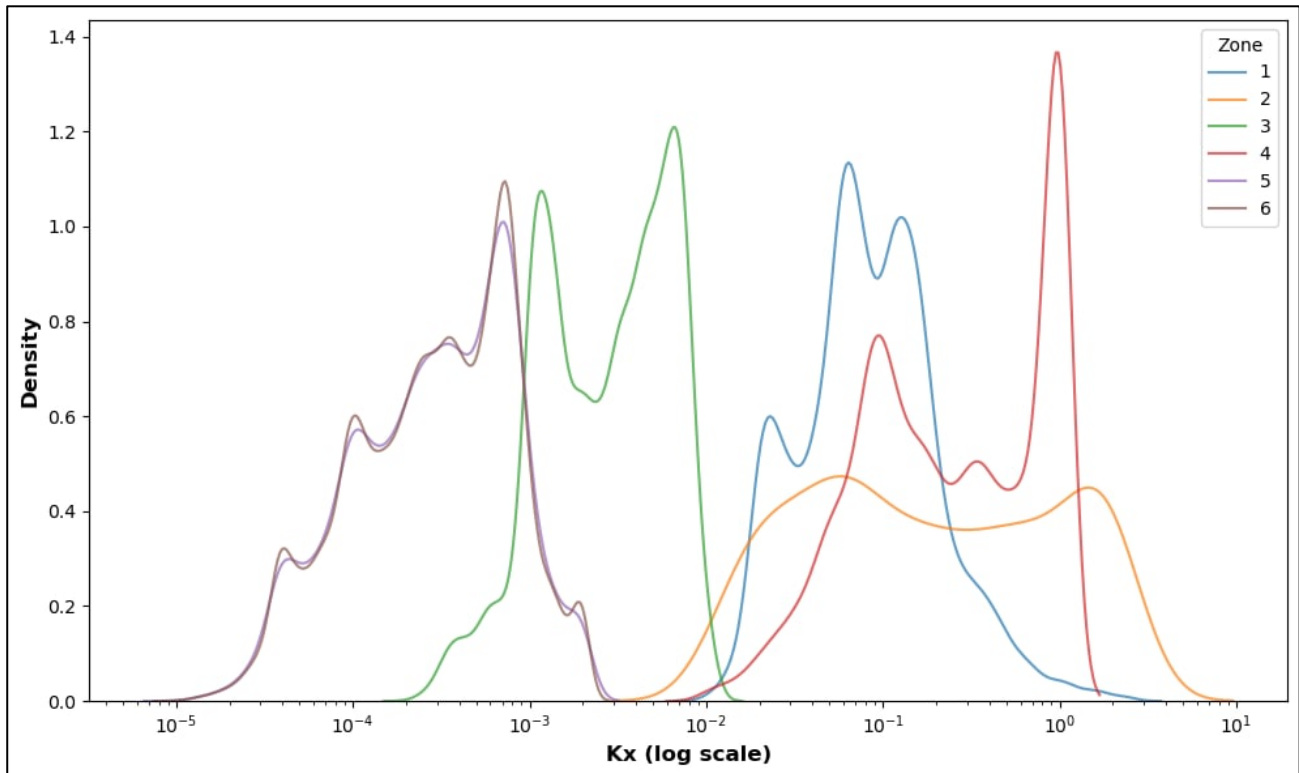


Figure 2-6 Hydraulic conductivity distribution by zone

2.9. Flow and head boundary

Timeseries of the calibrated flow and head boundary parameter was calibrated to measured leakage and represents the seepage flux rate from the Eloise TSF into the groundwater system over the model duration.

2.10. Calibrated recharge

Based on the recharge zonation described in Section 2.6.1, the recharge rate factors were calibrated as percentage of actual rainfall. The calibrated recharge factors for the transient model is presented in Table 2-7.

Table 2-7 Summary of calibrated recharge values

Zone	Description	RCH rate factor Transient (% of rainfall)
1	Tertiary sediments	0.47
2	Scrubby Creek and Fullarton River	0.04
3	Eloise TSF	0.00

2.11. Modelled budgets

A summary of the transient calibration water budget is presented in Table 2-8. It shows that the main driver of groundwater inflow to the model occurs via regional groundwater inflow to the model, driven by constant heads (CHD) and changes in aquifer storage. These inflow sources contribute to 95% of the total inflow to the model, with recharge (RCH) and seepage from the TSF (FHB) contributing the remaining 5% of inflow. The average total inflow rate to the model is 434.9 m³/day.

The main source of outflow from the model is via mining and pumping wells, which together contribute almost 90% of the total outflows from the model. Other drivers of outflow from the model are changes in storage and regional flow. Evapotranspiration does not contribute to any outflows from the model, as the groundwater table elevation is deeper than the extinction depth for all model cells for the entirety of the model duration.

Table 2-8 Transient calibration water budget and mass balance error (end of SP6)

Water budget component		Total volume (m ³)	Total volume (%)	Average rate (m ³ /day)
Inflow	Storage	2,869,980.78	66.4%	279.9
	Constant Head (CHD)	1,307,480.43	29.3%	127.5
	Recharge (RCH)	62,928.01	1.4%	6.1
	Specified Flows (FHB)	219,257.24	4.9%	21.4
	Total	4,459,646.46	100.0%	434.9
Outflow	Storage	416,655.94	9.3%	40.6
	Constant Head (CHD)	316,426.05	7.1%	30.9
	Wells (WEL)	1,846,551.22	41.4%	180.1
	Drains (DRN)	1,880,012.14	42.2%	183.3
	ET (EVT)	0.0	0.0%	0.0
	Total	4,459,645.36	100.0%	434.9
Δ(in-out)		1.10		0.00

Note: This table may contain minor rounding errors where the data has been limited to one decimal place.

The water budget convergence error is presented in Figure 2-7 while the actual inflow and outflow rates for individual boundary conditions are presented in Section 3 for the combined calibration and predictive period. The water budget convergence error is negligible over the course of the calibration model duration (approximately 0.0m³/day with 0.0% error). Percent error remains below 1% throughout the duration of the model, which is in-line with acceptable model standards as stated in the Australian Groundwater Modelling Guidelines (Barnett *et al.*, 2012).

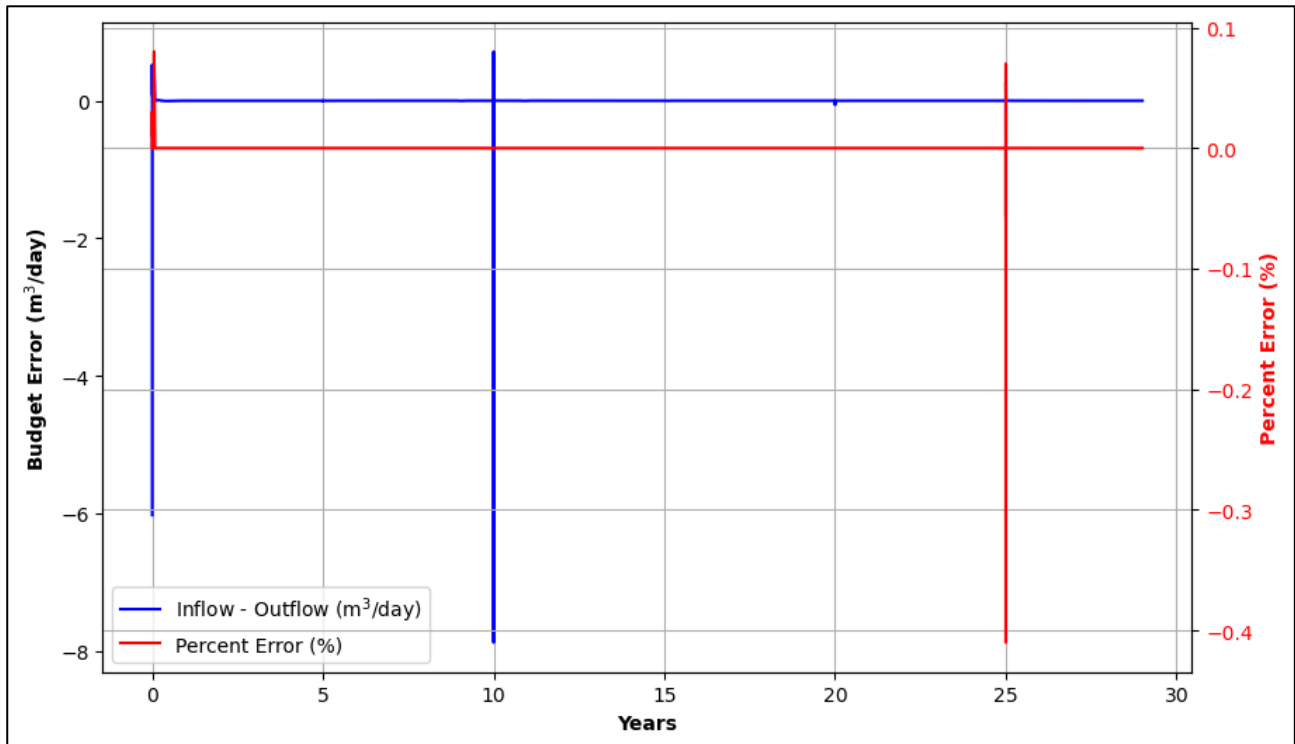


Figure 2-7 Water budget convergence error

2.12. Overall calibration performance

The model has been appropriately calibrated to transient conditions based on the following criteria:

- the conceptual model for groundwater flow has been honoured by the calibration;
- calibration-optimised hydraulic data for the key hydrogeological units are within the range of values measured during field investigations;
- quantitative calibration metrics (e.g., residual errors) are within guideline-recommended ranges (Barnett *et al.*, 2012); and
- the relative contributions of recharge/discharge processes in the model water balance are within the ranges expected and are supported by independent calculations and field observations (e.g. absence of baseflow in mine site watercourses).

The calibrated model is therefore deemed to be a suitable tool for assessing the groundwater level effects of the Jericho Project within the model domain. The predictive scenarios based on the calibrated model are presented in Section 3.

3. Model predictions

Two transient predictive model scenarios were developed, as follows:

- an ‘approved mining operations’ scenario which includes the approved Eloise Copper Mine, and represents the baseline conditions for the project; and
- a ‘project’ scenario which includes representation of ‘approved mining operations’ and the underground mining at Jericho as well as the Link Drive.

The differences between these predictive model scenarios represent the incremental additional groundwater effects of the project, which are discussed in the Groundwater Report.

3.1. Transient prediction – Approved mining operations scenario

The transient prediction run (‘approved mining operations’ scenario) uses a long-term climatic average (recharge and evapotranspiration rates) to define the main boundary conditions (RCH and EVT). Predicted heads of the transient calibration model are used as starting heads for the transient prediction modelling phase. The predictive model stress period (SP) setup is detailed in Section 2.3.

The remaining mine progression parameters remain unchanged from the calibrated model, that is, the mining progression continues to be represented by DRN package and drain cells have the same drain conductance of 100 m²/day applied to the relevant model cells (i.e. those corresponding to depth of mined workings).

3.1.1. Modelled budgets

The summary of the transient prediction water budget is presented in Table 3-1. The timeseries of predicted mining inflows into the mining operations under this scenario is presented as Figure 3-1.

The main source of inflow to the predictive model is regional groundwater flow, with an average recharge rate of 131 m³/day. The main outflow from the predictive model is through the DRN cells and WEL cells, representing mining and pumping wells (average of 181.9 m³/day and 179.0 m³/day, respectively). The water budget convergence error is presented as Figure 3-2 while the actual inflow and outflow rates for individual boundary conditions are presented in Figure 3-3.

Table 3-1 Approved mining scenario – transient prediction water budget and mass balance error

Water budget component		Total volume (m ³)	Total volume (%)	Average rate (m ³ /day)
inflow	Storage	3984153.0	0.6	266.0
	Constant Head (CHD)	1966224.6	0.3	131.3
	Recharge (RCH)	91645.2	0.0	6.1
	Specified Flows (FHB)	219471.4	0.0	14.7
	Total	6261494.2	1.0	418.1
outflow	Storage	440819.8	0.1	29.4
	Constant Head (CHD)	416040.0	0.1	27.8
	Wells (WEL)	2681128.5	0.4	179.0
	Drains (DRN)	2723506.0	0.4	181.9
	ET (EVT)	0.0	0.0	0.0
	Total	6261494.4	1.0	418.1
Δ(in-out)		-0.2		0.0

Note: This table may contain minor rounding errors

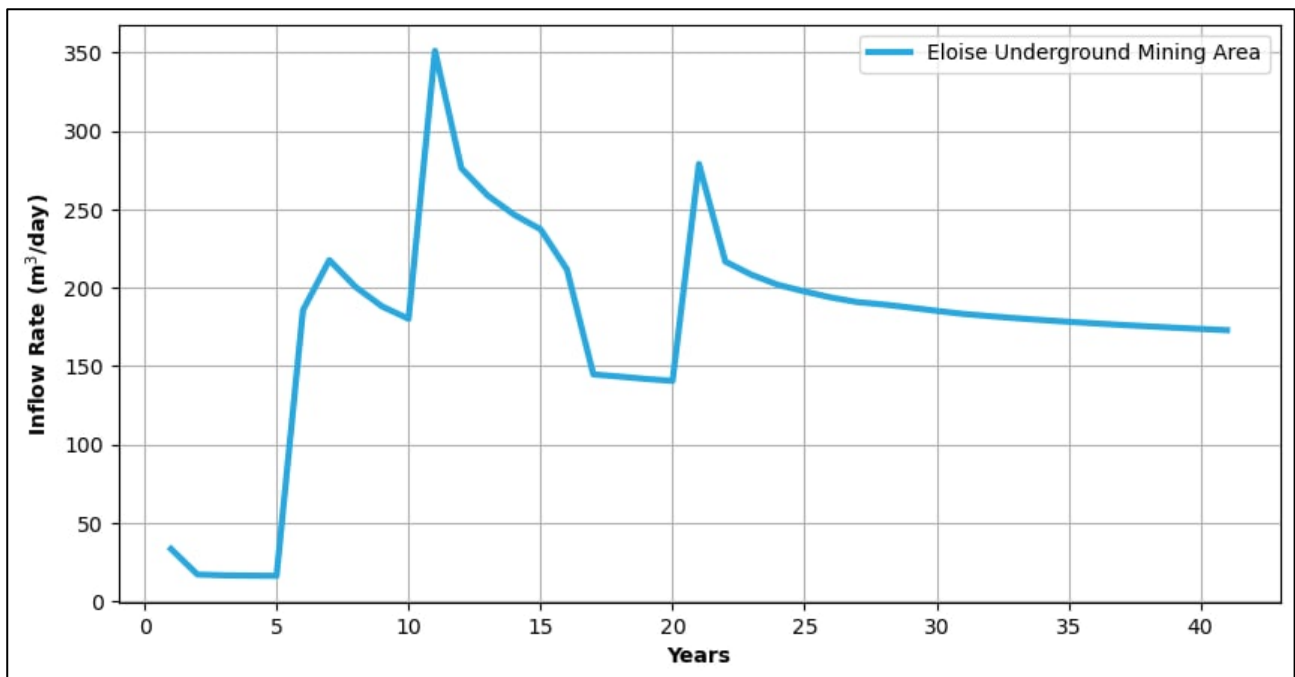


Figure 3-1 Predicted mine inflows – approved mining operations

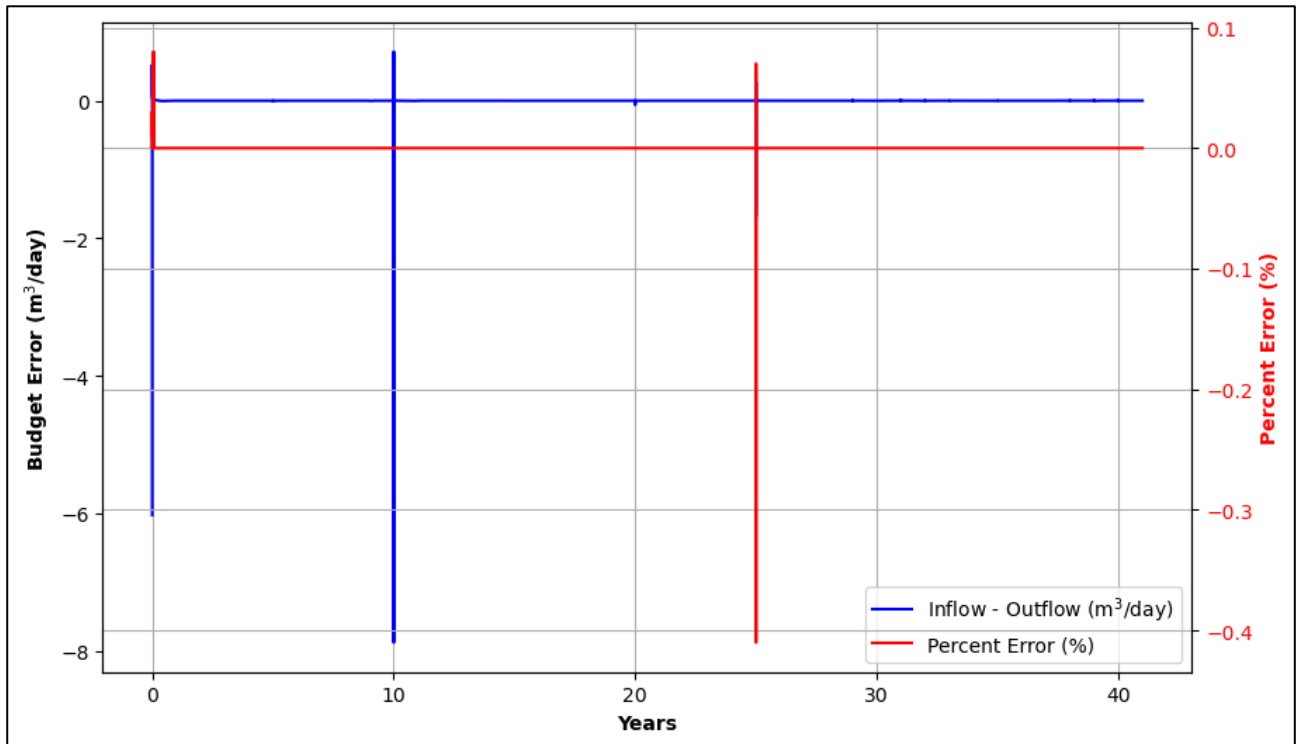


Figure 3-2 Water budget convergence error – approved mining operations

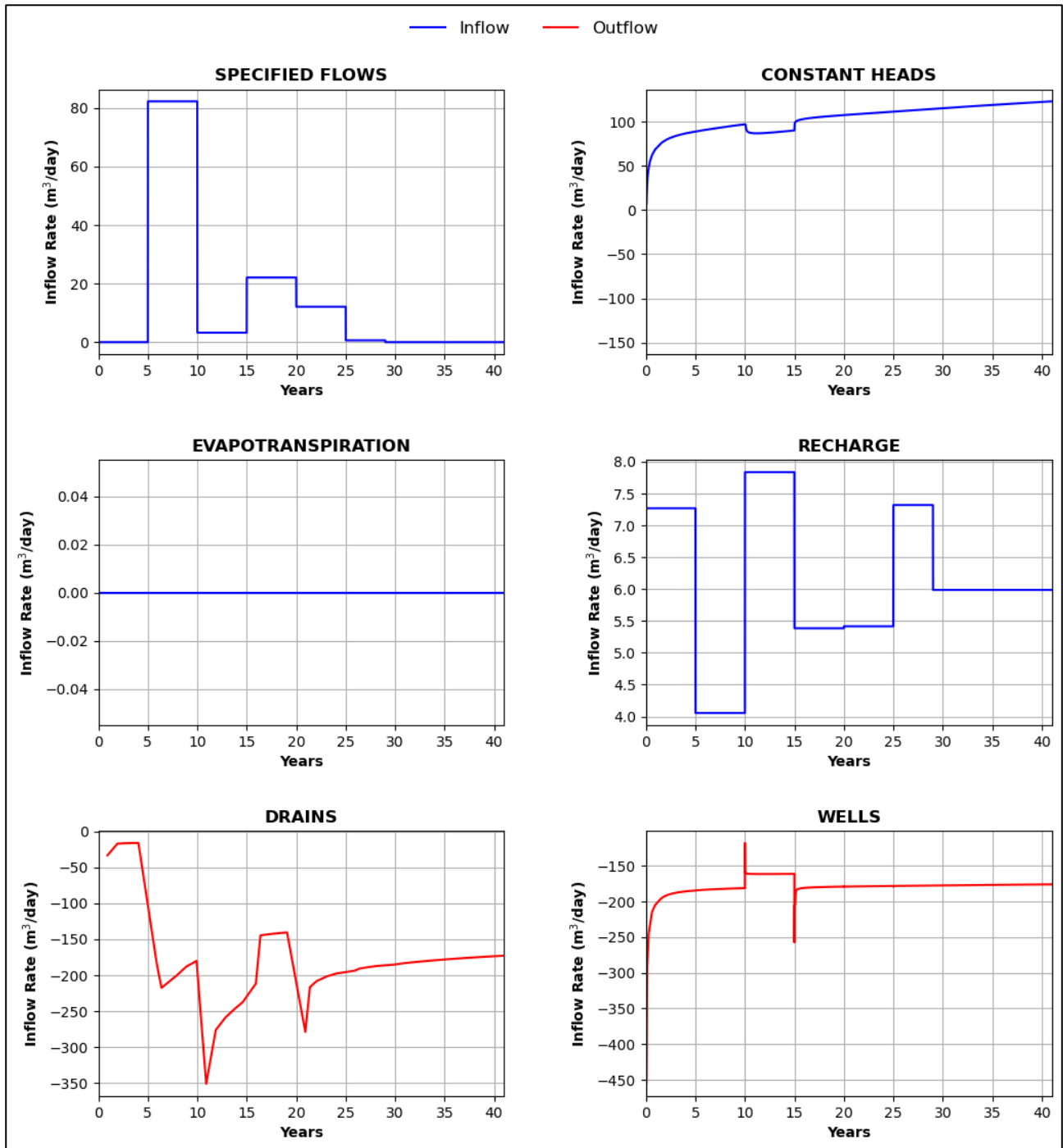


Figure 3-3 Budget inflows and outflows – approved mining operations

3.2. Transient prediction – Project scenario

The transient prediction run ('project' scenario) includes representation of the Link Drive and Jericho Mine. The project activities are described in Section 1.2 of the Groundwater Report.

A drain conductance of 100 m²/day was applied to represent underground mining activities. These conductance values were applied to allow for the complete depressurisation of the underground mining activities.

3.2.1. Modelled budgets

The water budget for the mine scenario transient prediction is summarised in Table 3-2. The timeseries of predicted mining inflows into the mining operations under this scenario is presented as Figure 3-4. Peak inflows to the Project are predicted to be approximately 250 m³/day and occur in 2034. The water budget convergence error is presented in Figure 3-5 while the actual inflow and outflow rates for individual boundary conditions are presented in Figure 3-6.

Table 3-2 Project scenario – transient prediction water budget and mass balance error

Water budget component		Total volume (m ³)	Total volume (%)	Average rate (m ³ /day)
inflow	Storage	4518059.1	0.7	301.7
	Constant Head (CHD)	1973540.0	0.3	131.8
	Recharge (RCH)	91645.2	0.0	6.1
	Specified Flows (FHB)	219471.4	0.0	14.7
	Total	6802715.7	1.0	454.2
outflow	Storage	442074.8	0.1	29.5
	Constant Head (CHD)	409999.3	0.1	27.4
	Wells (WEL)	2679588.0	0.4	178.9
	Drains (DRN)	3271053.6	0.5	218.4
	ET (EVT)	0.0	0.0	0.0
	Total	6802715.8	1.0	454.2
Δ(in-out)		-0.1		0.0

Note: This table may contain minor rounding errors.

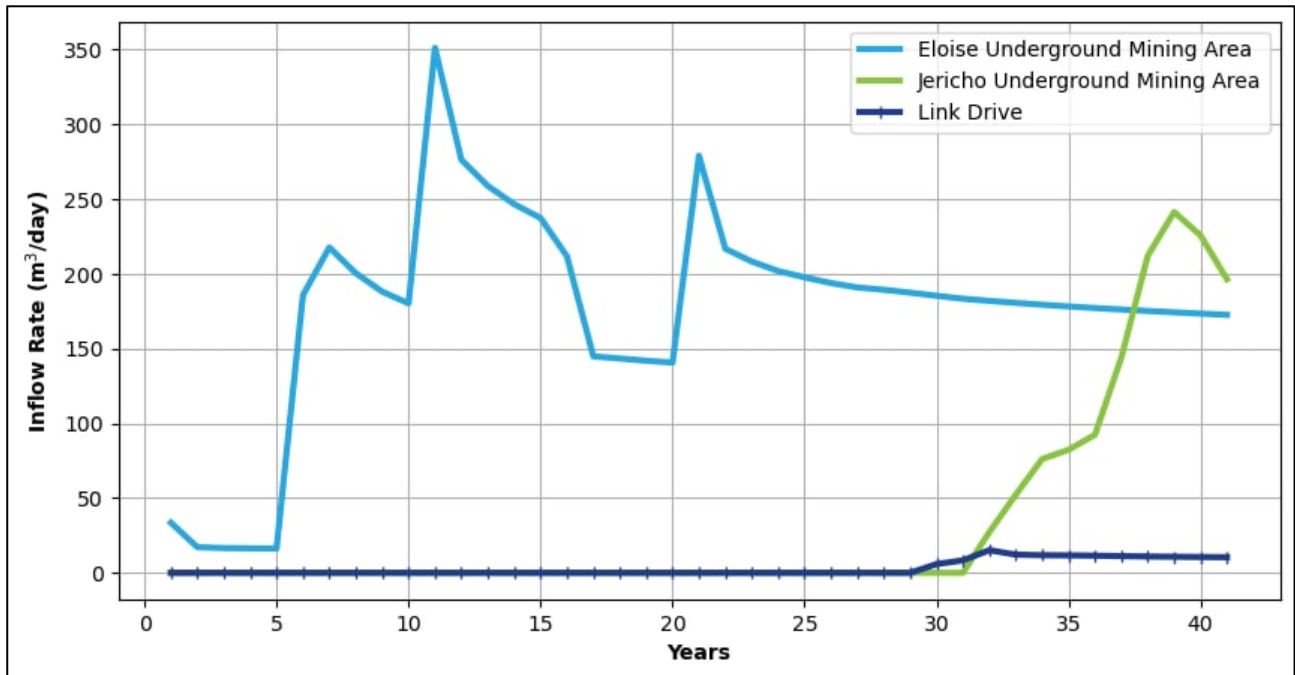


Figure 3-4 Predicted mine inflows – project scenario

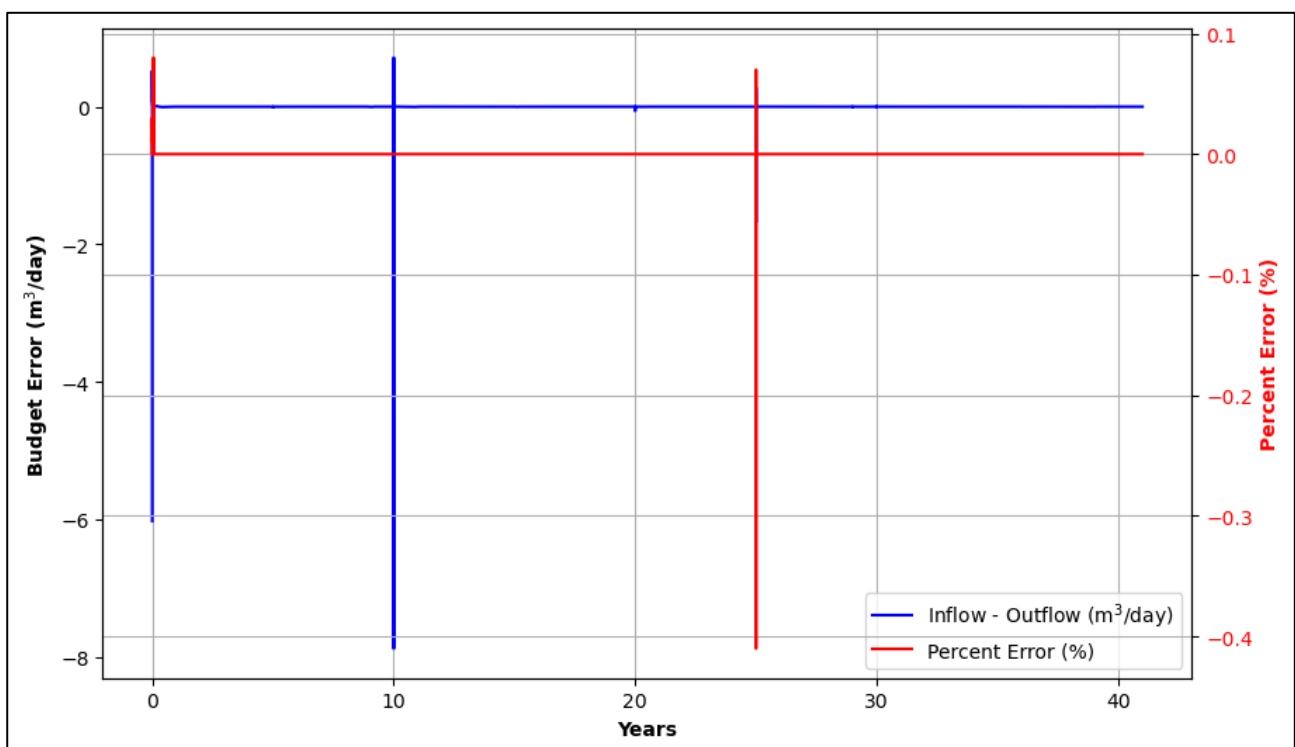


Figure 3-5 Water budget convergence error – project scenario

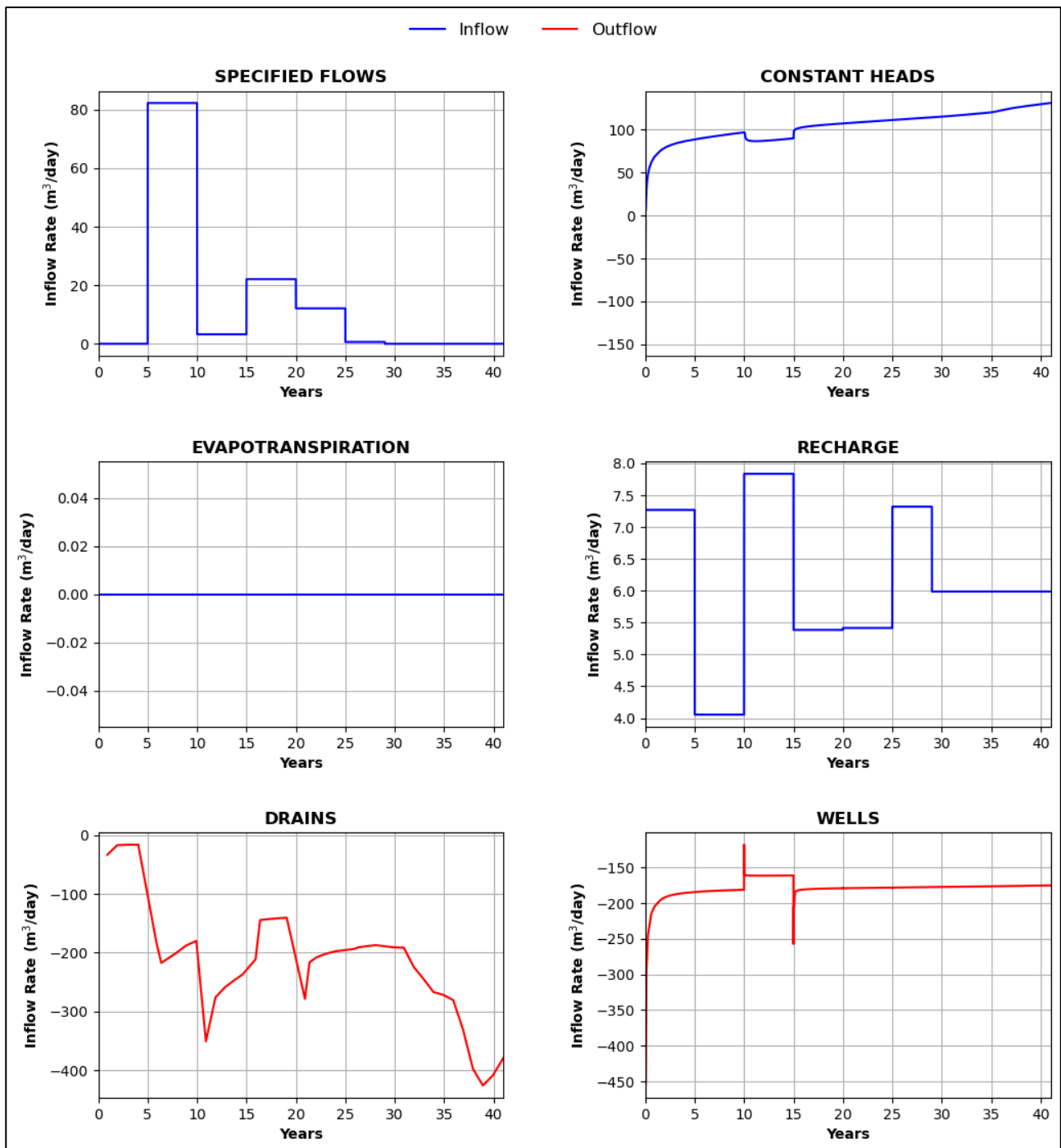


Figure 3-6 Budget inflows and outflows – project scenario

3.3. Modelled project effects

The incremental effect of the project on the groundwater table was calculated from the difference in groundwater elevation between the two predictive scenarios. The project drawdown and cumulative drawdown on the groundwater table are presented in the Groundwater Report. The project depressurisation and the cumulative depressurisation on the water table and individual model layers are provided as Appendix F and Appendix G, respectively. These impacts represent the maximum impact at each cell across all times of the model.

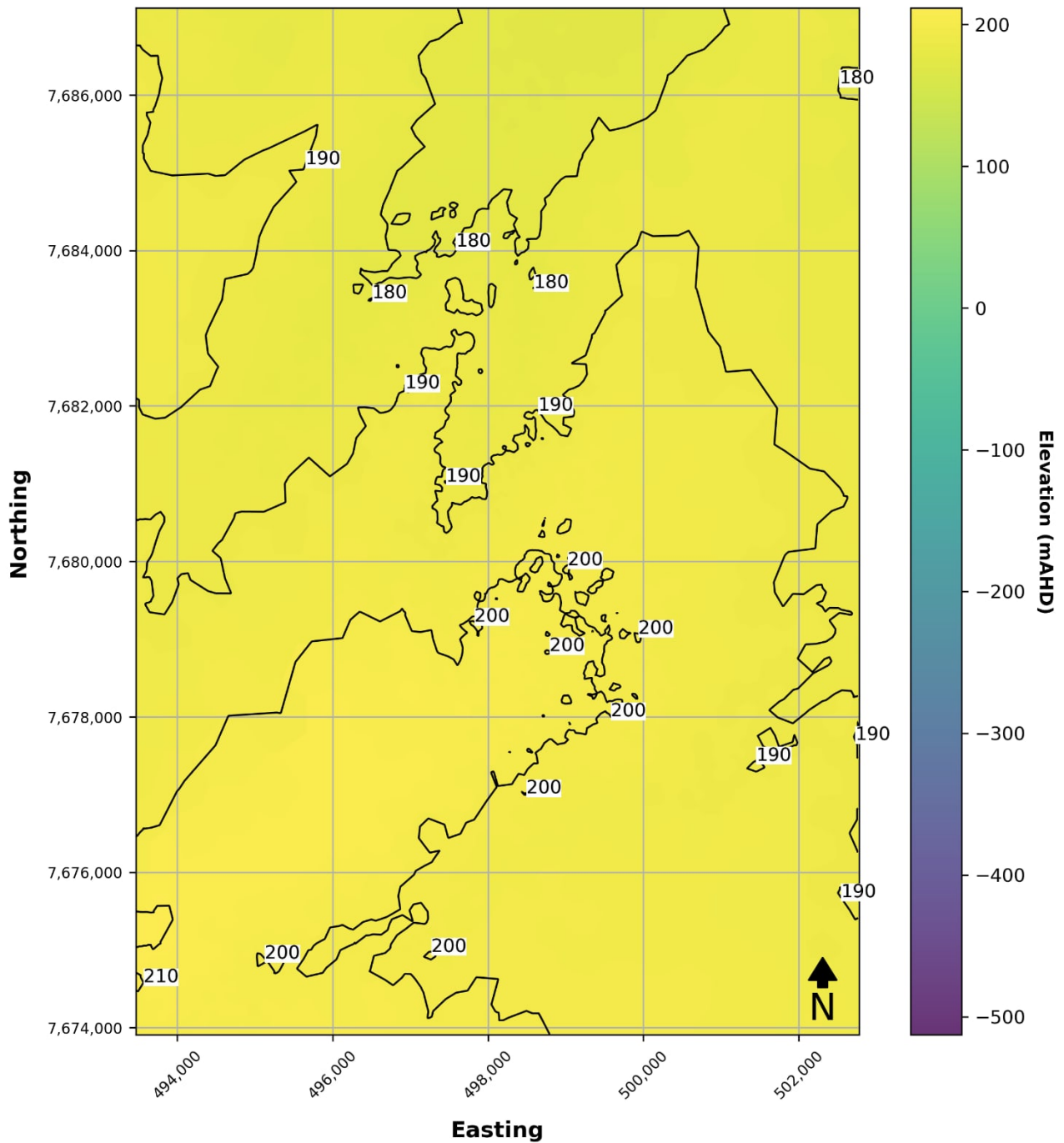
4. References

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- Panday, S., Langevin, C.D., Niswonger, R.G., Ibaraki, M., Hughes, J.D., 2015. MODFLOW-USG. U.S. Geological Survey. <https://doi.org/10.5066/f7r20zfi>

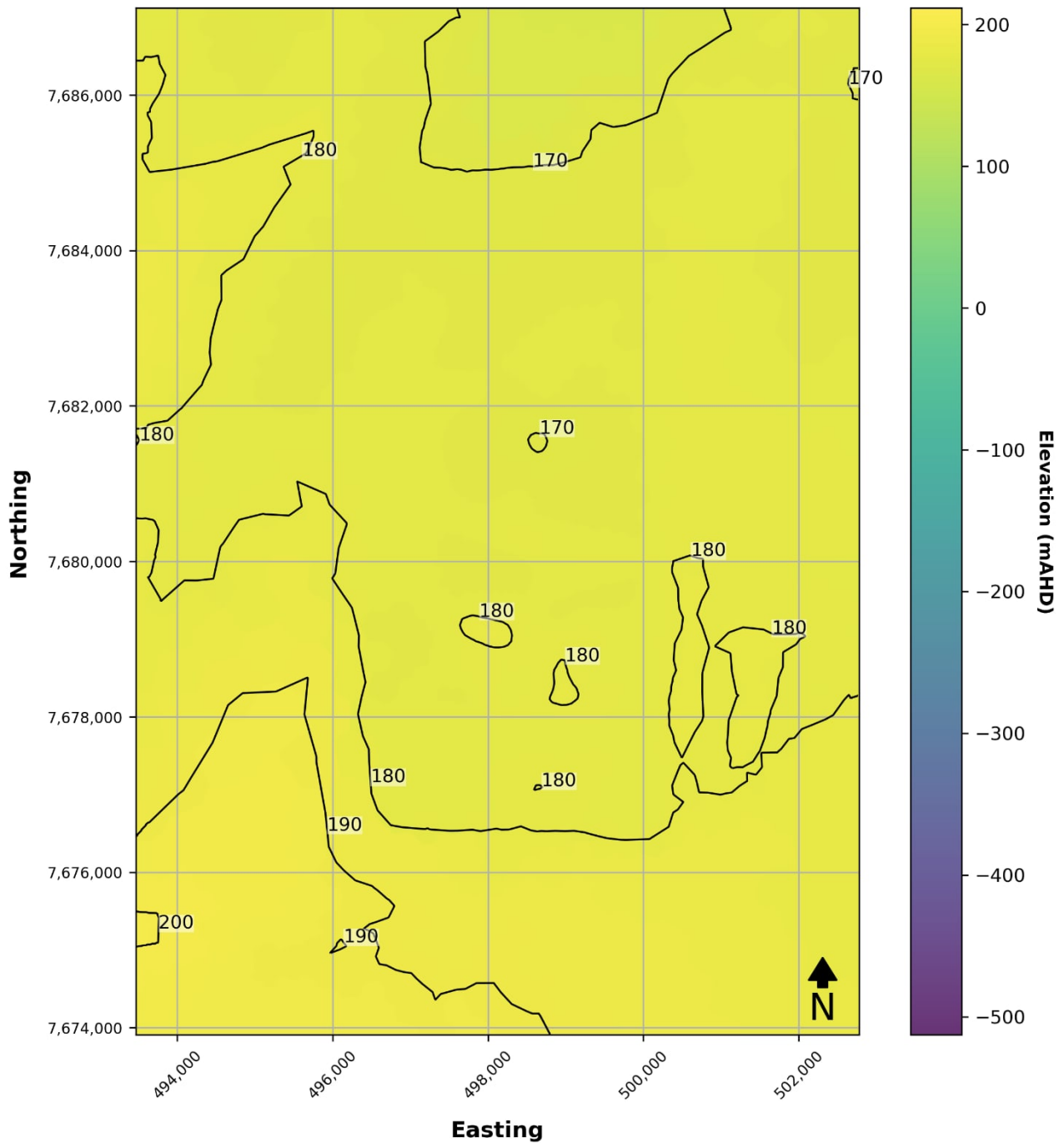
Appendix A Model surface elevations (mAHD)



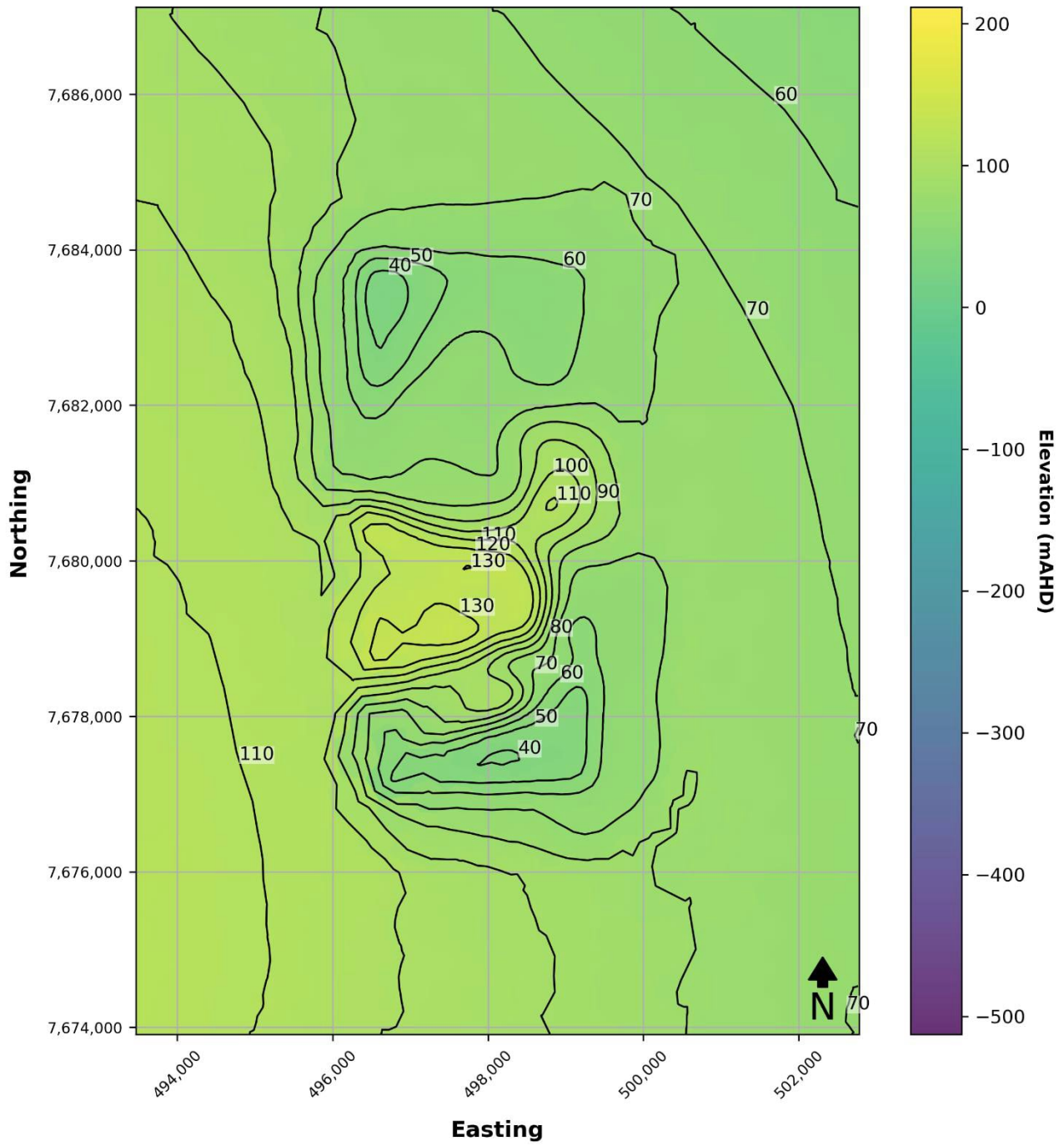
Top of Layer 1 (Surface Topography)



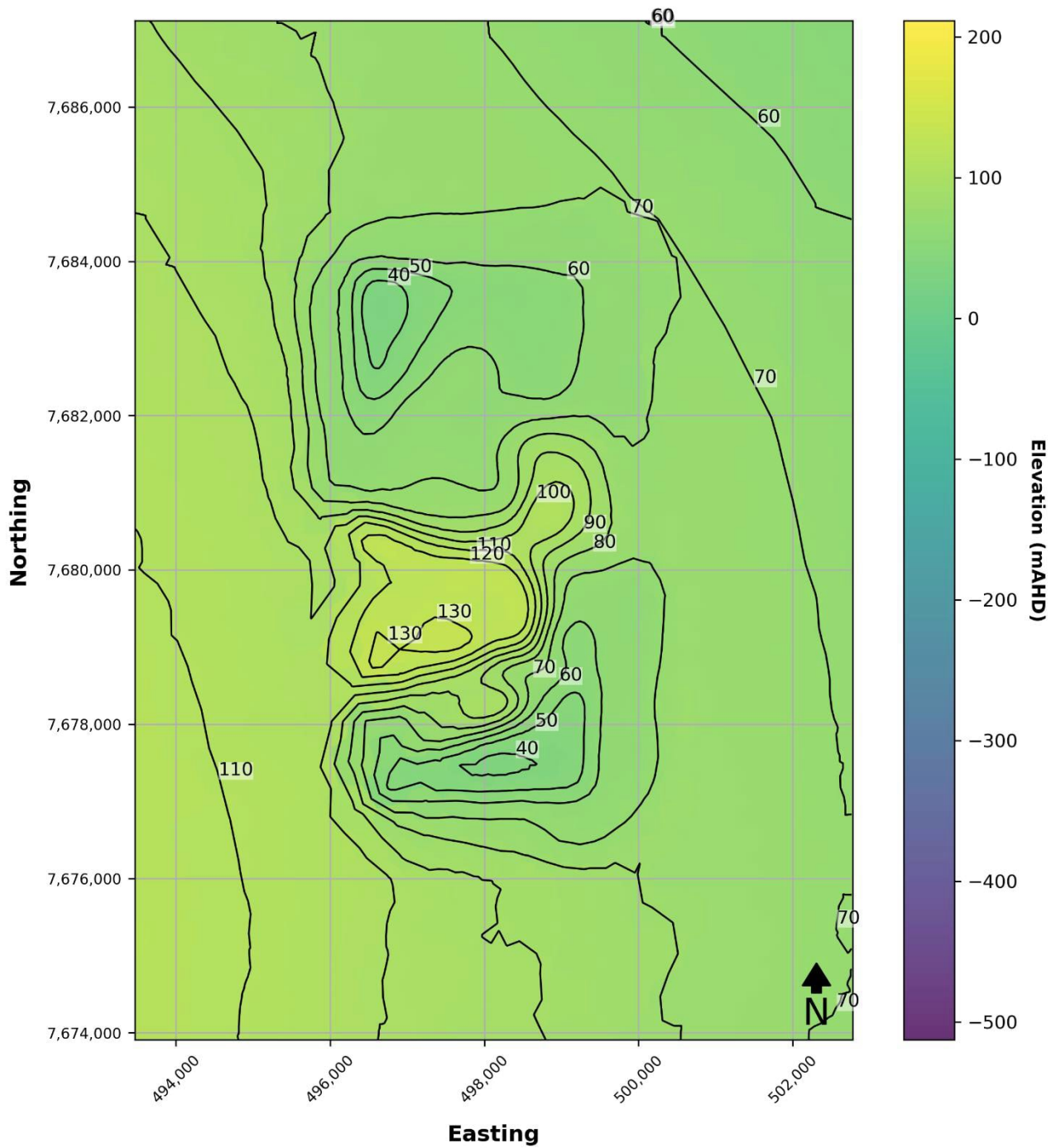
Base of Model Layer 1



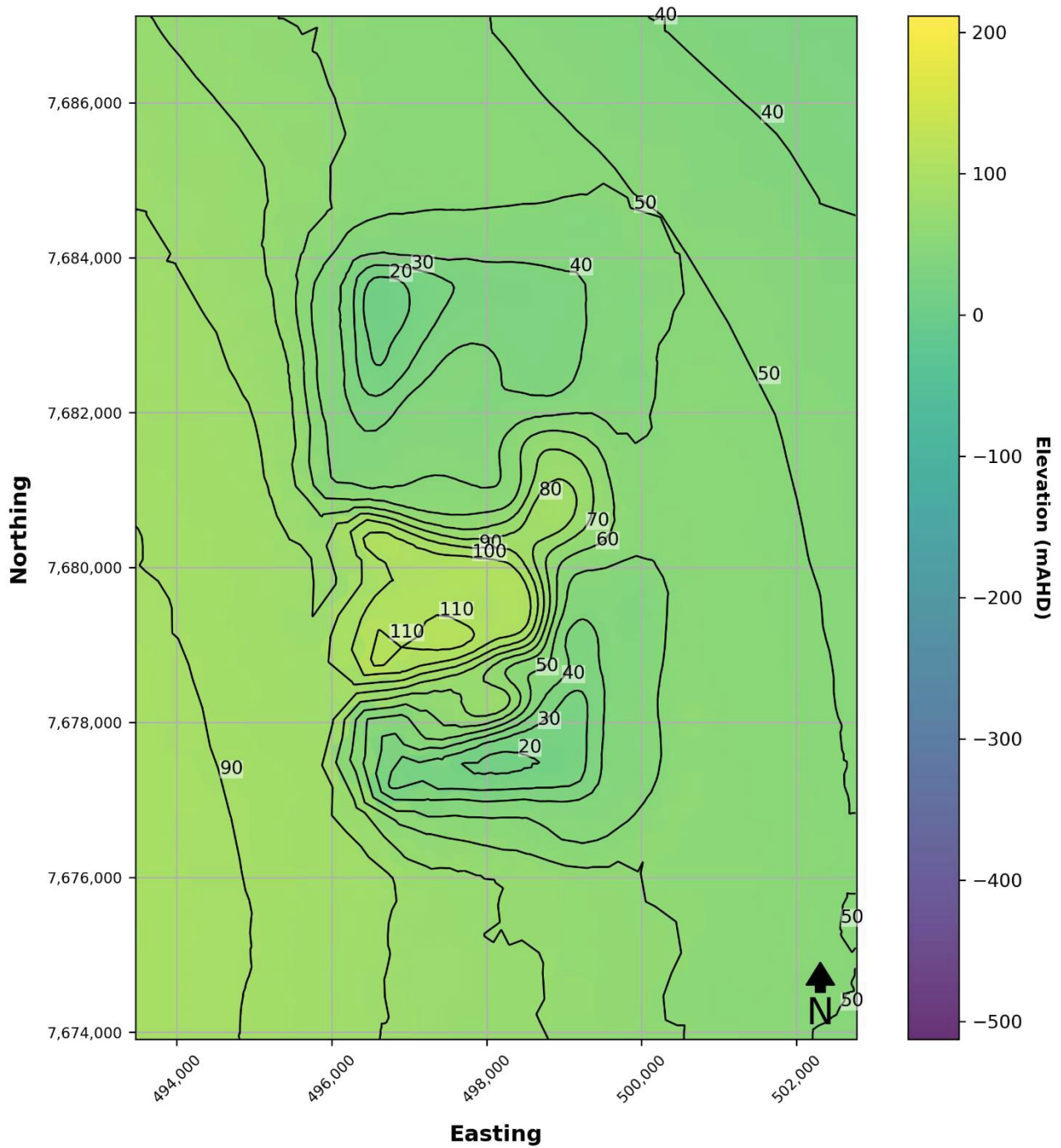
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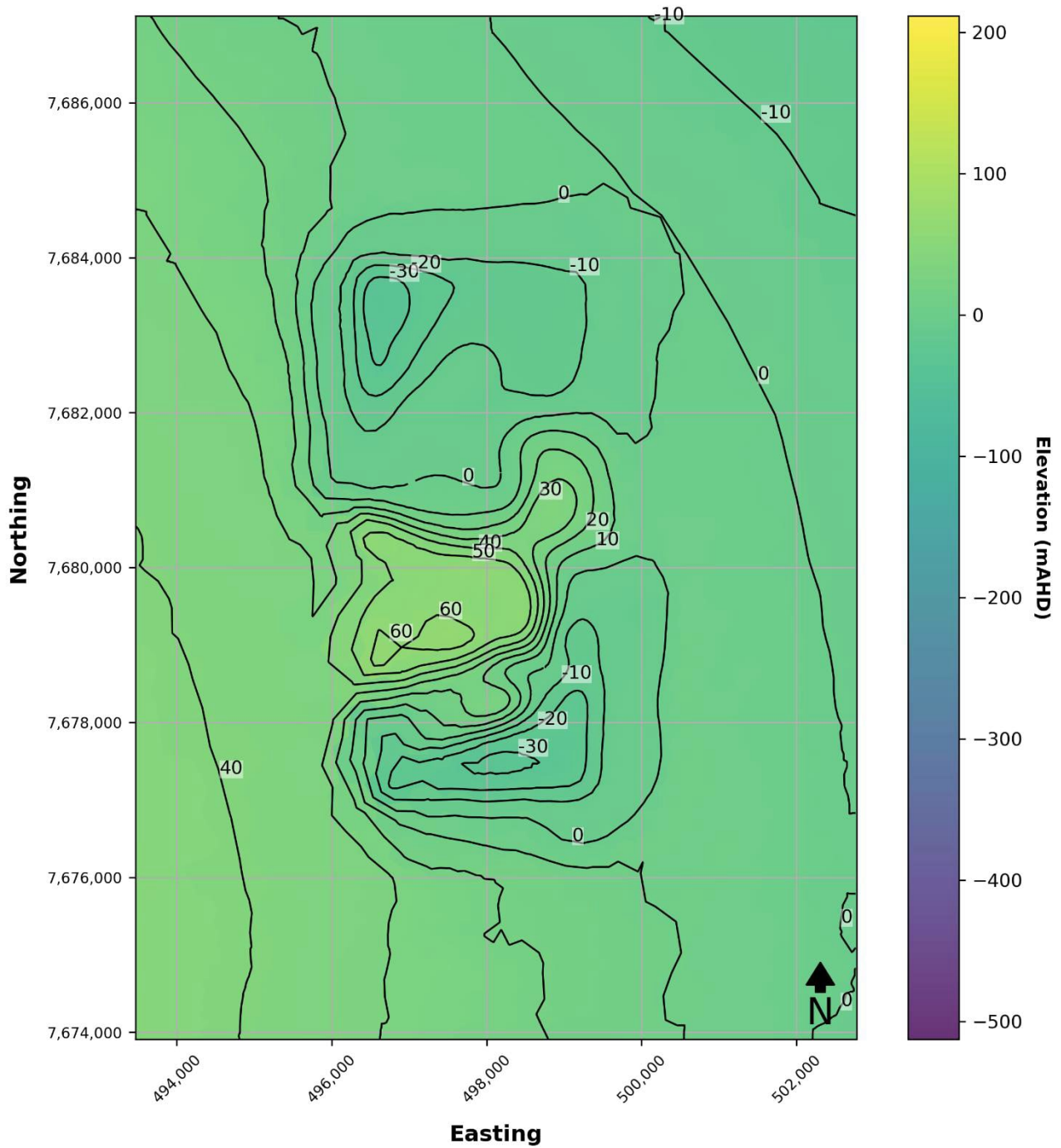
Base of Model Layer 3



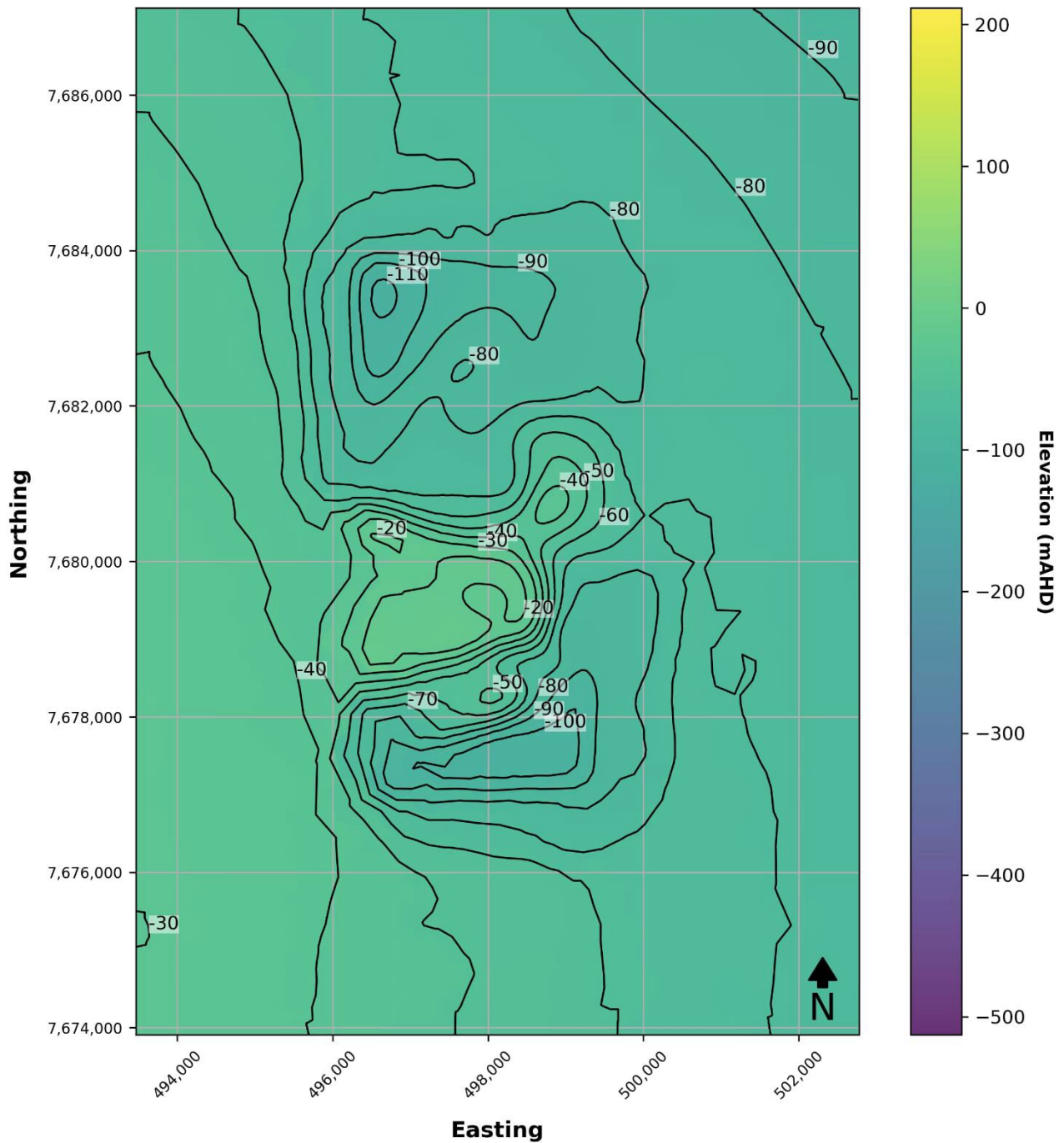
Base of Model Layer 4



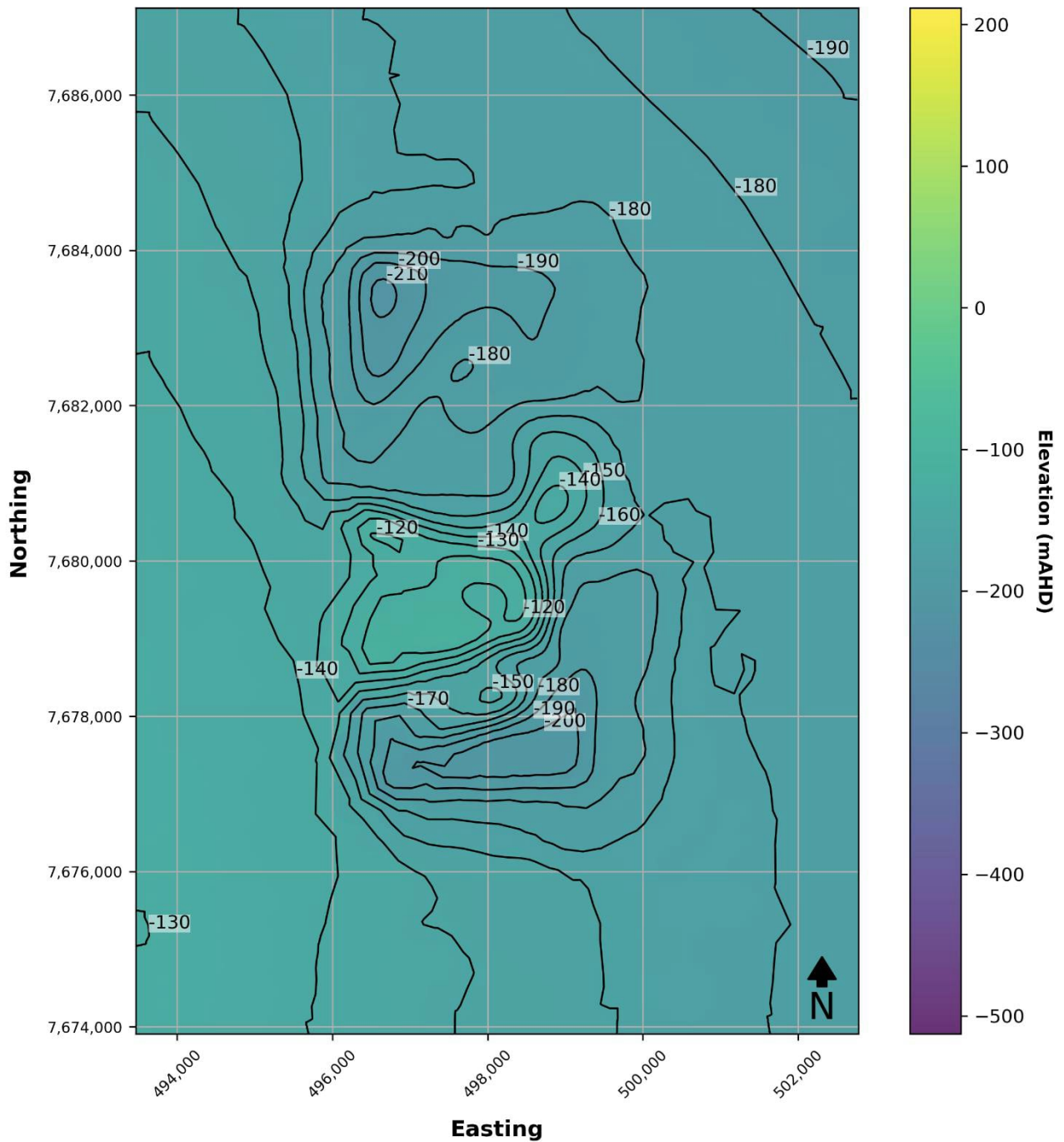
Base of Model Layer 5



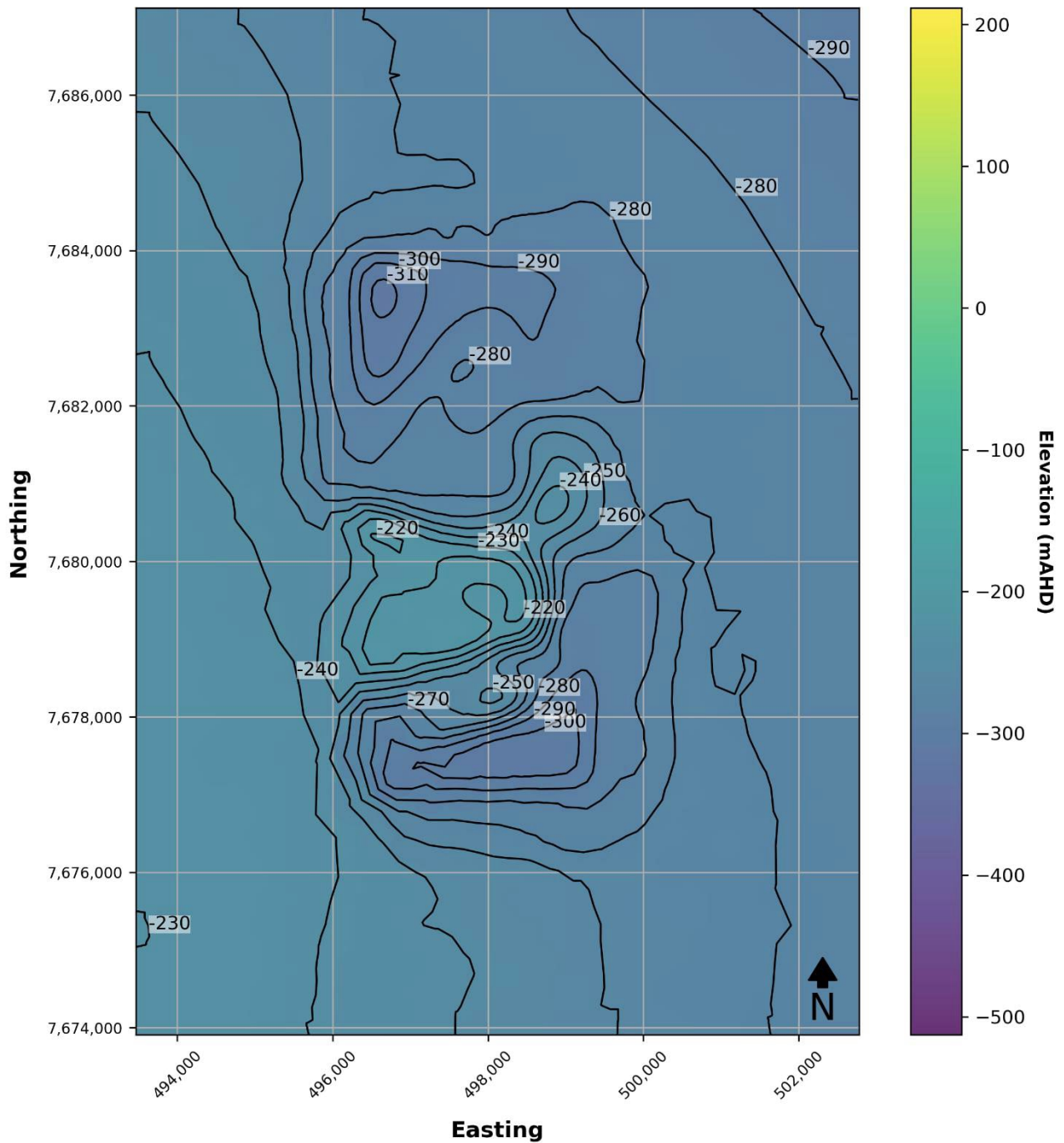
Base of Model Layer 6



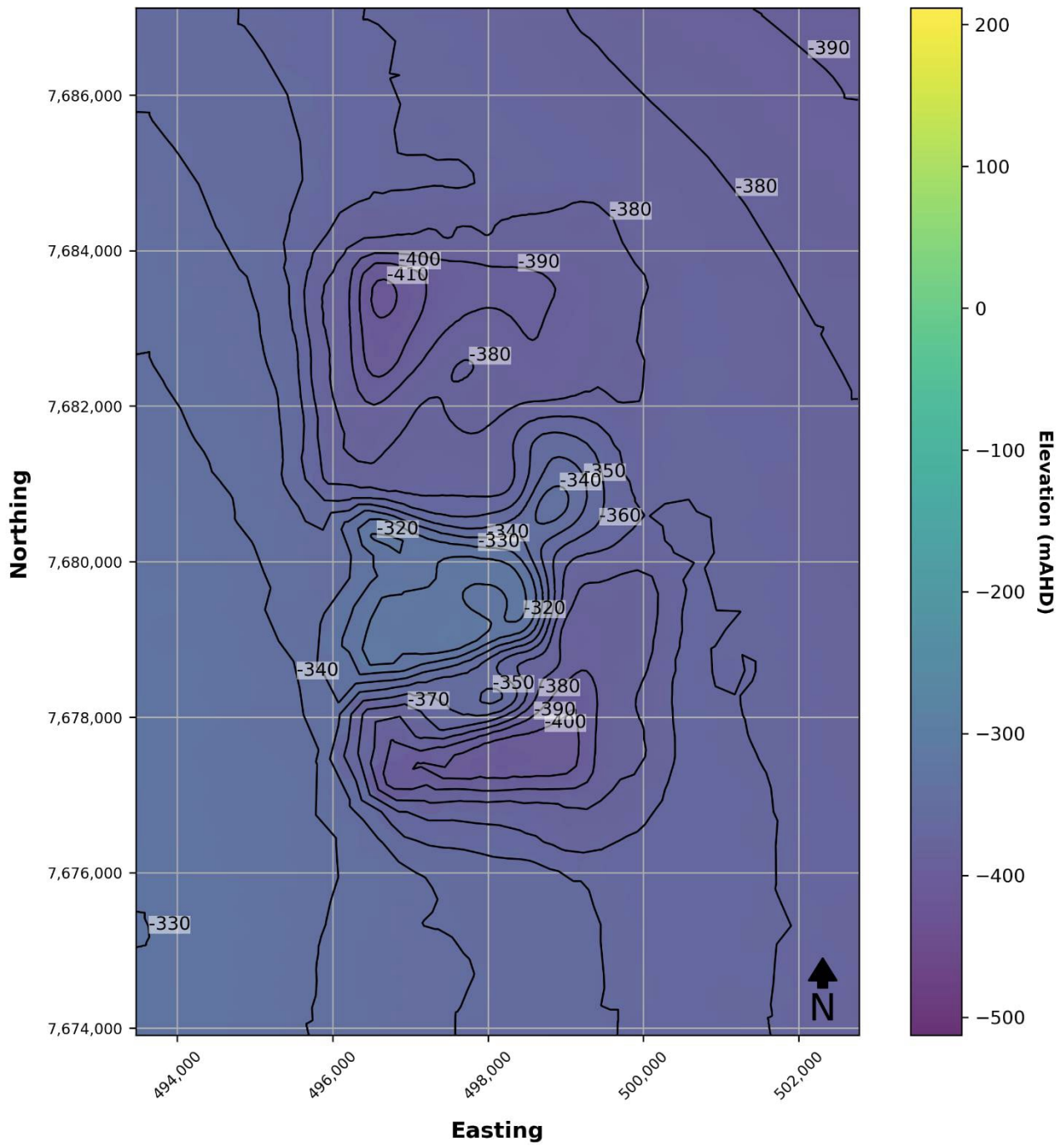
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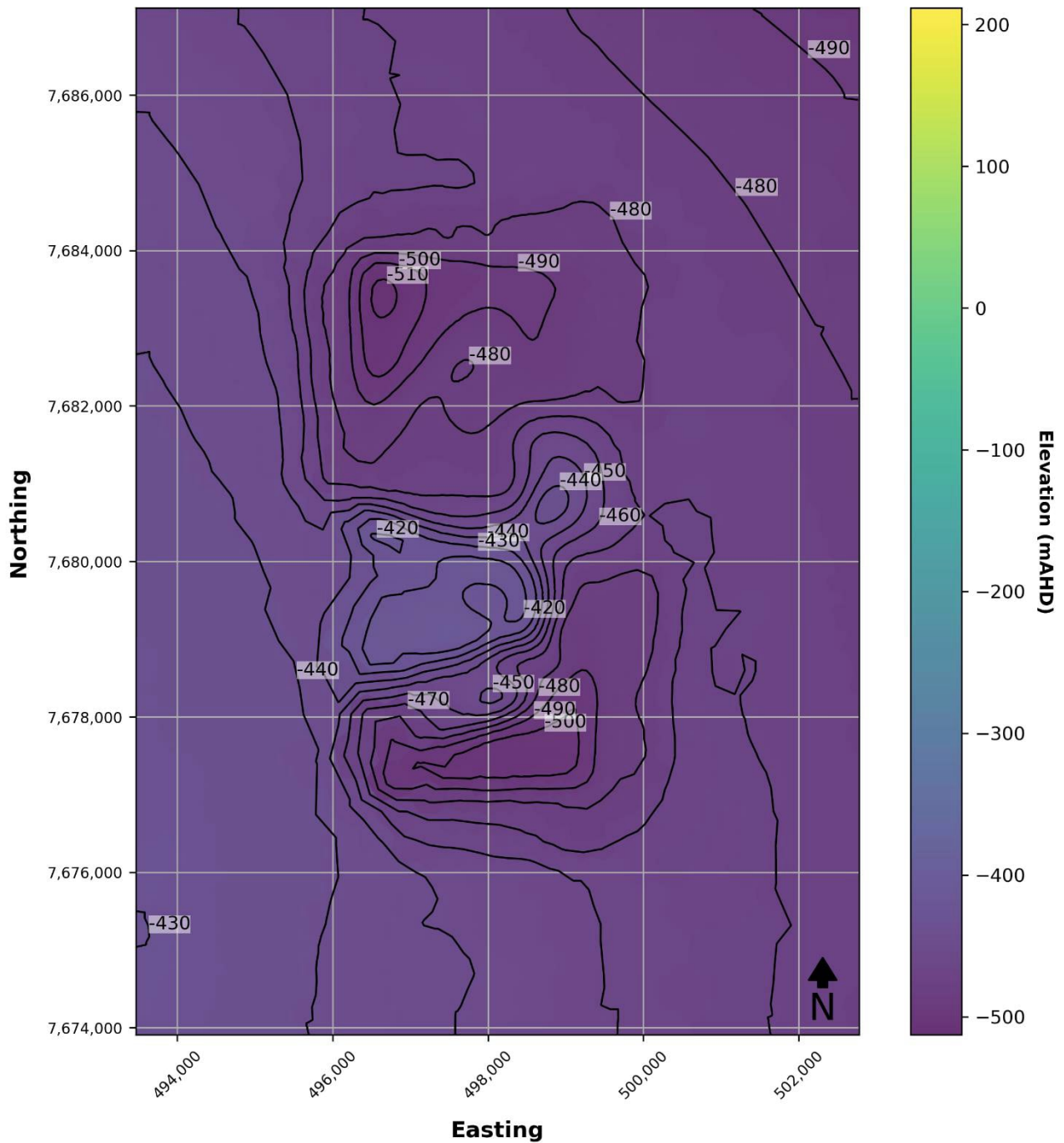
Base of Model Layer 8



Base of Model Layer 9

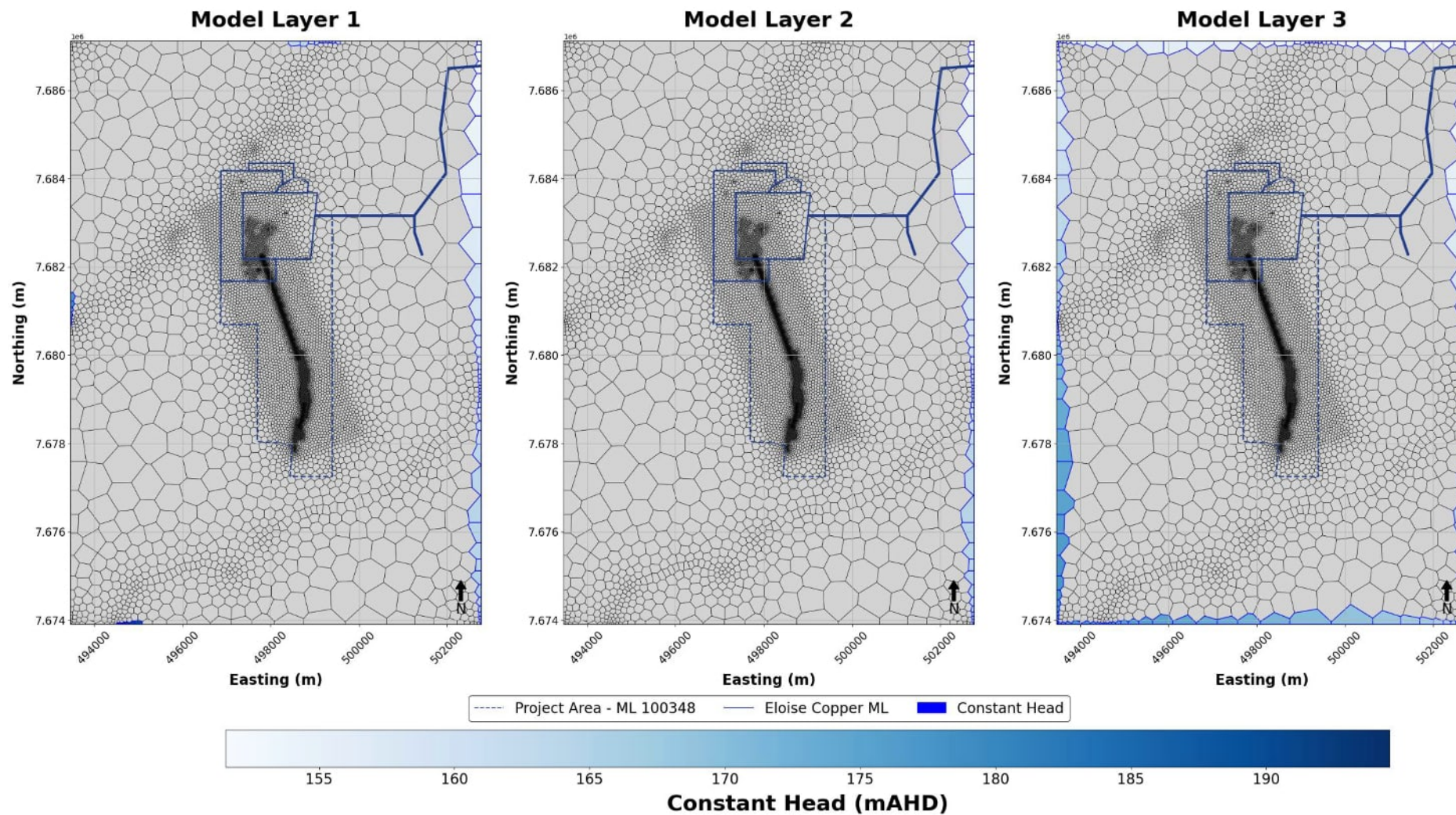


Base of Model Layer 10

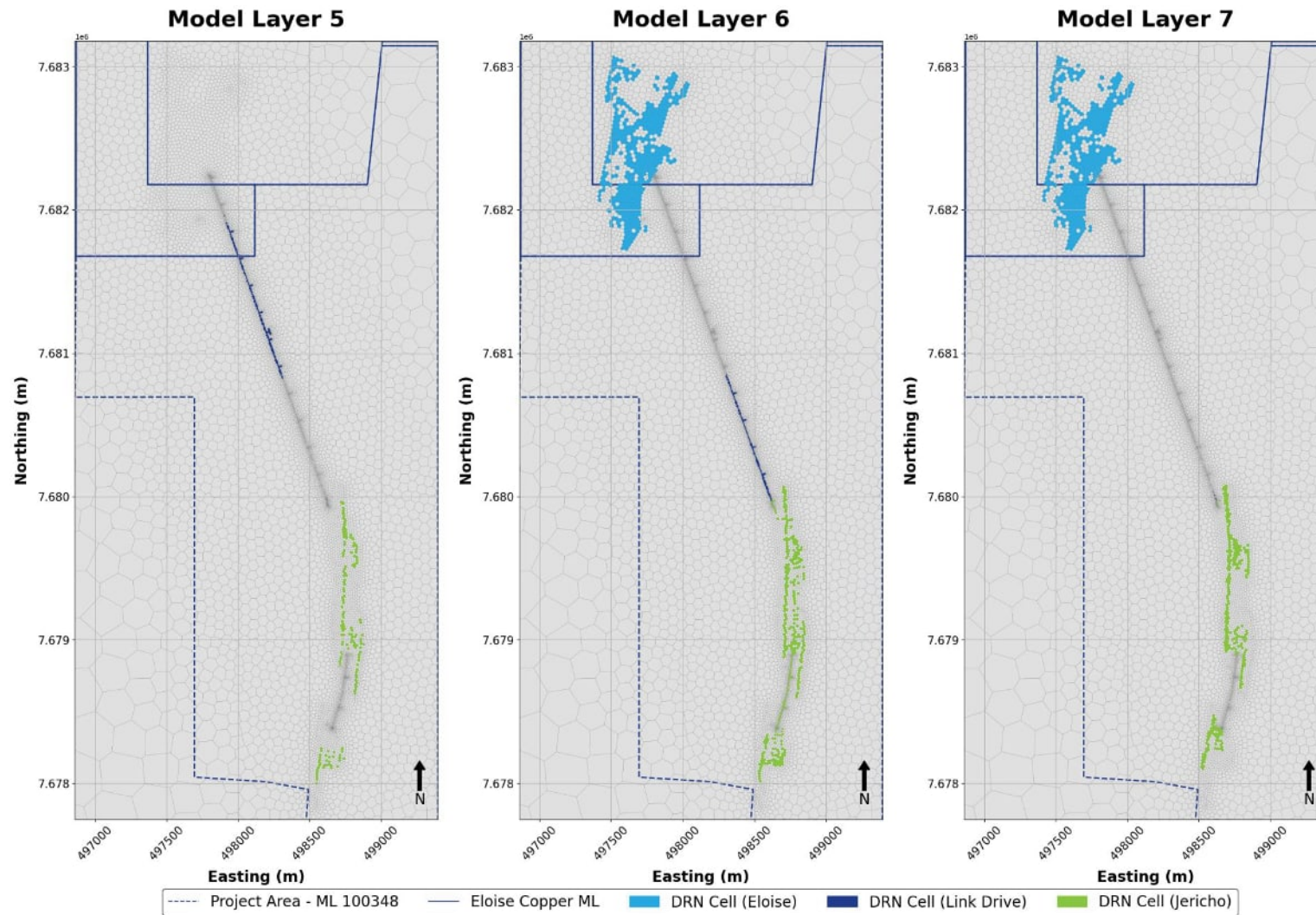


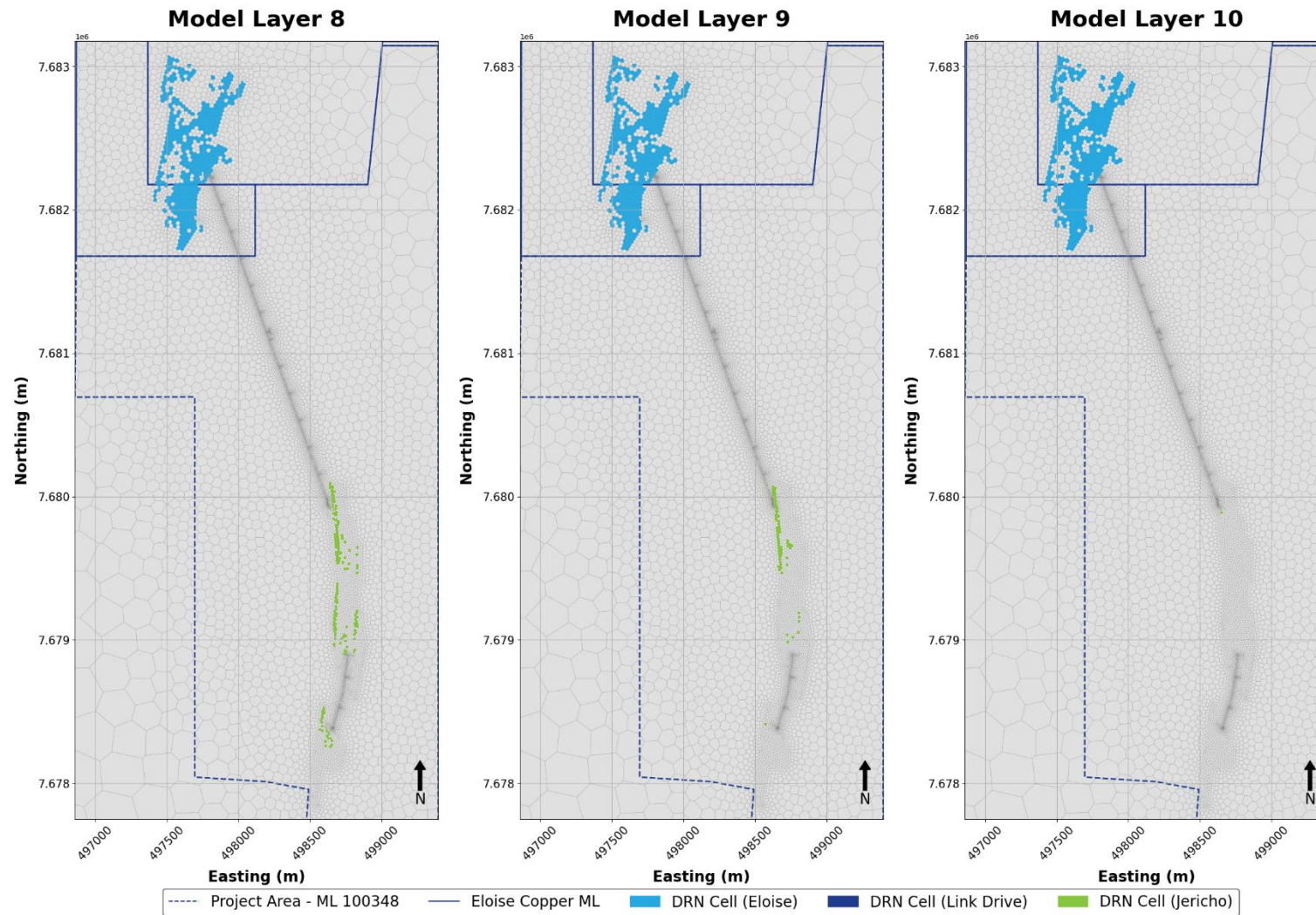
Appendix B Boundary conditions

Constant Head Boundary Condition by Model Layer



DRN Cells Applied by Model Layer





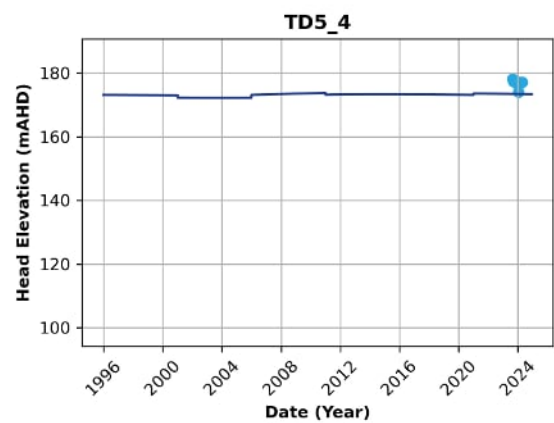
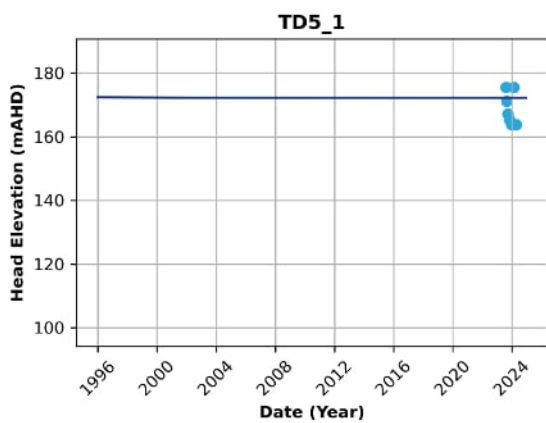
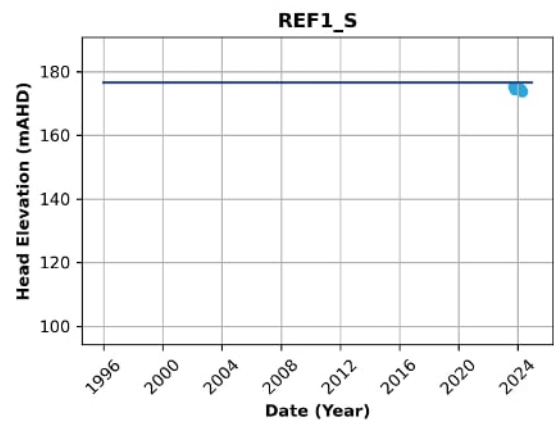
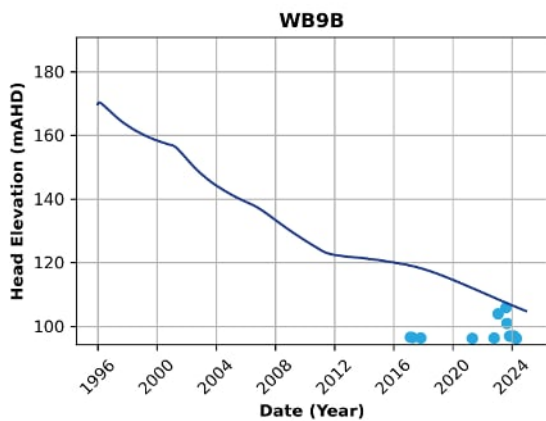
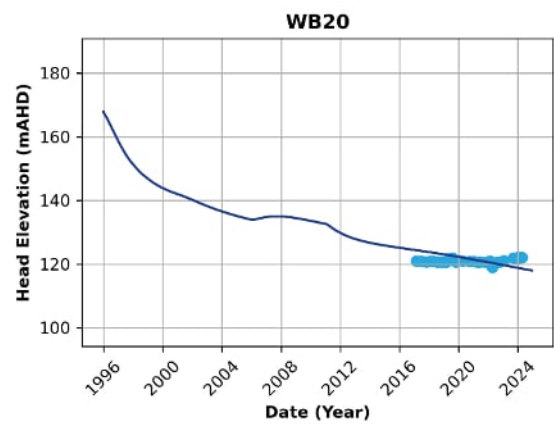
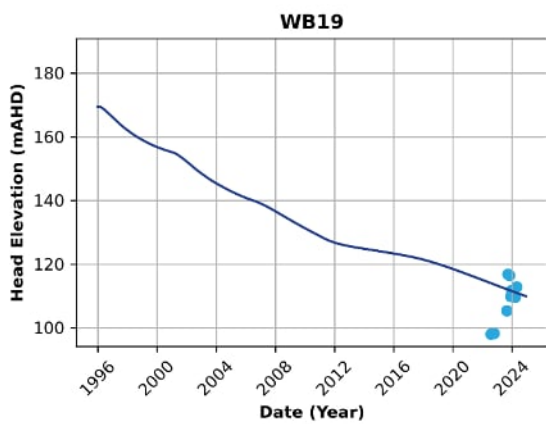
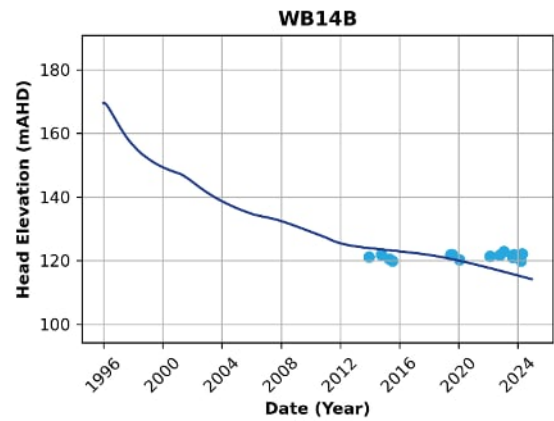
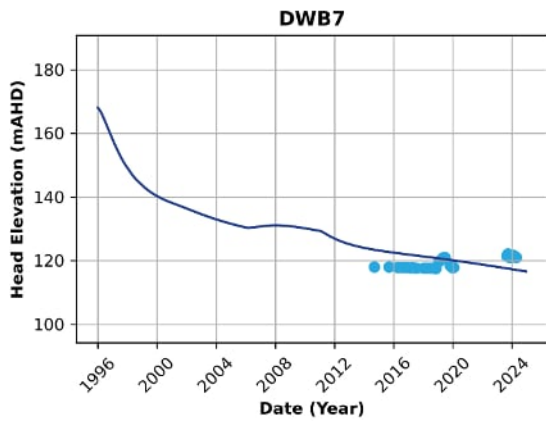
Appendix C Summary of transient model observations

Bore ID	Easting	Northing	Model layer	Date from	Date to	#obs ¹
23JEWB001	498517.4	7677906	2	21/11/2023	16/04/2024	7
23JEWB008	499377.7	7677478	2	29/10/2023	16/04/2024	7
23JEWB009	499342.6	7678508	1	29/10/2023	18/04/2024	8
DWB10	498750	7683976	3	18/10/2016	17/01/2020	15
DWB2	498178	7682995	4	24/07/2016	27/10/2019	9
DWB3	498546	7682910	3	24/07/2016	7/07/2017	7
DWB4	498547	7682439	3	8/05/2013	17/01/2020	13
DWB5	498023	7682222	4	18/02/2017	17/01/2020	12
DWB6	498147	7682530	4	24/07/2016	17/01/2020	17
DWB7	498656	7683538	3	3/09/2014	19/04/2024	26
LD1	497191	7683198	1	28/04/2021	10/06/2021	2
LD4	497132	7683784	1	28/04/2021	10/06/2021	2
LD6	497239	7683851	1	28/04/2021	10/06/2021	2
LDB05	497280	7683724	1	28/04/2021	17/04/2024	9
LDB07	497180	7683929	1	28/04/2021	17/04/2024	16
REF1_D	498813	7682200	2	20/09/2023	18/04/2024	6
REF1_S	498805	7682201	1	20/09/2023	18/04/2024	6
TD5_1	497542	7684051	1	30/07/2023	17/04/2024	10
TD5_11	497328	7683929	2	23/08/2023	23/08/2023	1
TD5_2	497025	7683599	2	23/08/2023	23/08/2023	1
TD5_3	497028	7683359	2	23/08/2023	23/08/2023	1
TD5_4	497128	7682942	1	23/08/2023	17/04/2024	9
TD5_5	497623	7683107	1	19/09/2023	17/04/2024	8
TD5_6	497155	7683299	1	23/08/2023	21/12/2023	4
TD5_7	497603	7684011	1	23/08/2023	18/04/2024	8
TD5_8	497152	7683656	1	23/08/2023	24/11/2023	3
TD5_9	497333	7683930	1	23/08/2023	17/04/2024	6
WB1	498171	7683158	2	1/01/2011	20/04/2024	30
WB10	497621	7684285	1	10/07/2017	18/04/2024	12
WB11A	498107	7684324	1	1/12/2013	20/04/2024	46
WB12	498426	7684238	1	8/04/2017	9/02/2024	3
WB13	498305	7683843	1	1/12/2013	19/04/2024	55
WB14A	498351	7683220	1	17/04/2022	18/04/2024	9
WB14B	498351	7683215	3	8/12/2013	20/04/2024	14
WB17	497908	7683049	2	8/12/2013	10/06/2021	20
WB19	497620	7684148	3	29/07/2022	21/04/2024	10
WB2	498200	7683431	2	1/07/2011	20/04/2024	43
WB20	498299	7684136	3	21/02/2017	20/04/2024	44
WB3	498197	7683652	2	1/01/2011	21/12/2023	34
WB4	498247	7683396	2	1/07/2011	8/04/2017	22
WB5	498176	7683900	2	1/08/2011	10/01/2017	19
WB6	498182	7684135	2	1/08/2011	8/04/2017	21
WB7	497959	7684165	2	1/08/2011	8/04/2017	24
WB8	497654	7683858	2	1/07/2011	10/06/2021	21
WB9B	497506	7683973	3	18/02/2017	19/04/2024	12

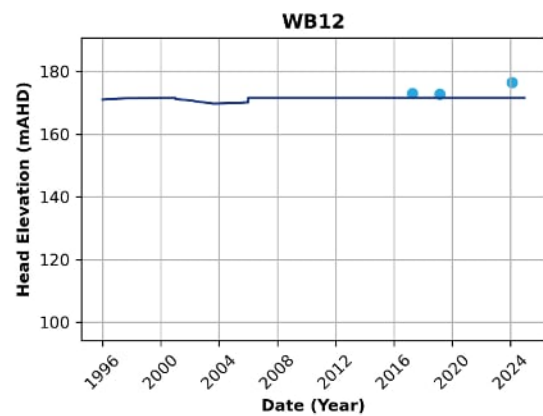
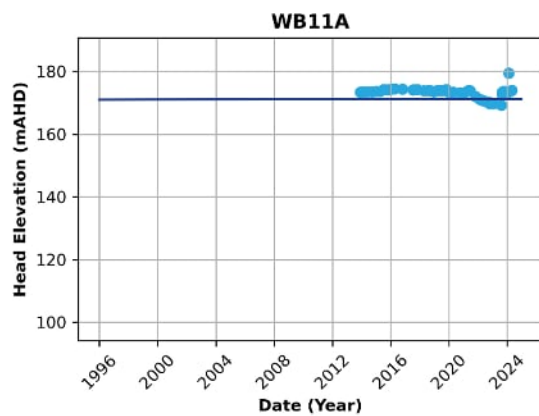
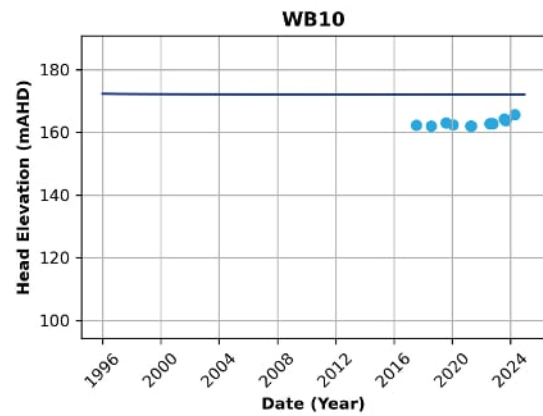
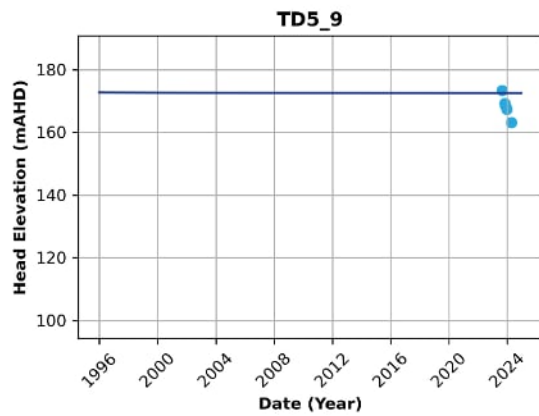
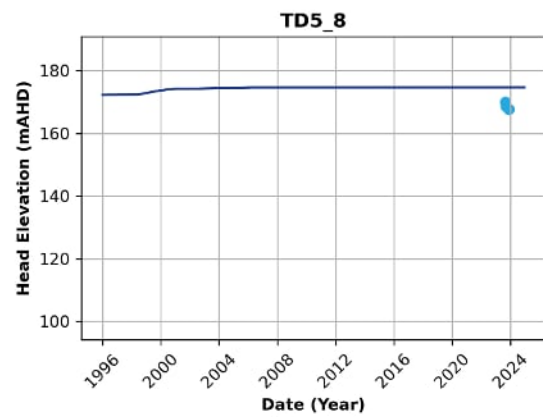
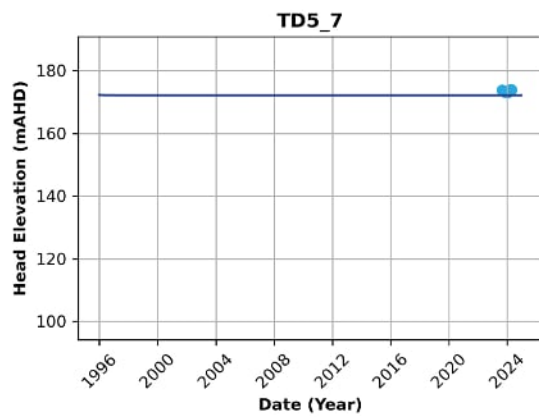
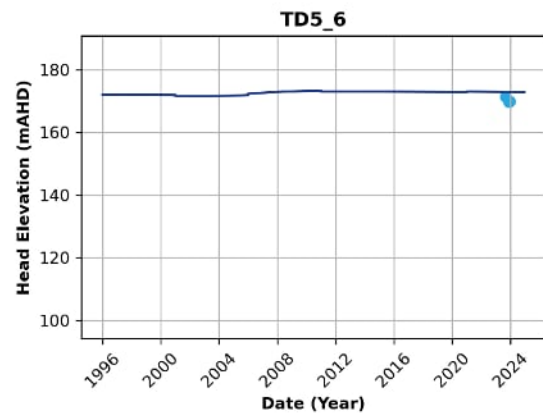
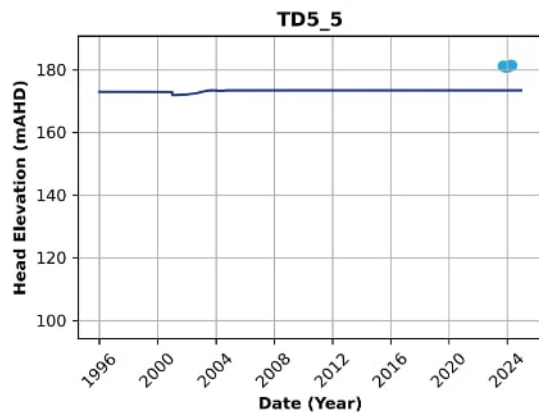
Note: ¹ #obs: number of observations

Appendix D Calibration hydrographs

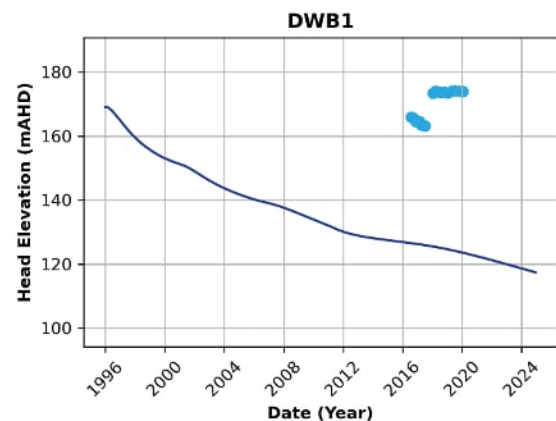
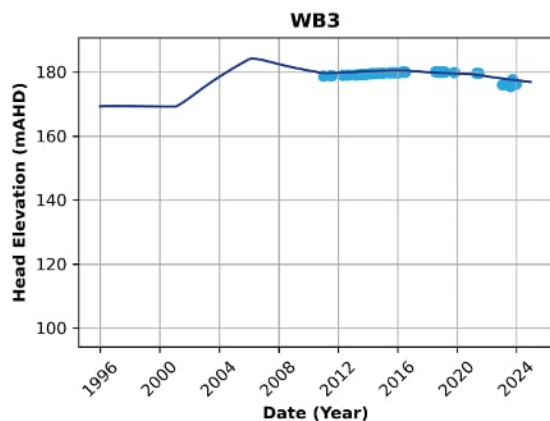
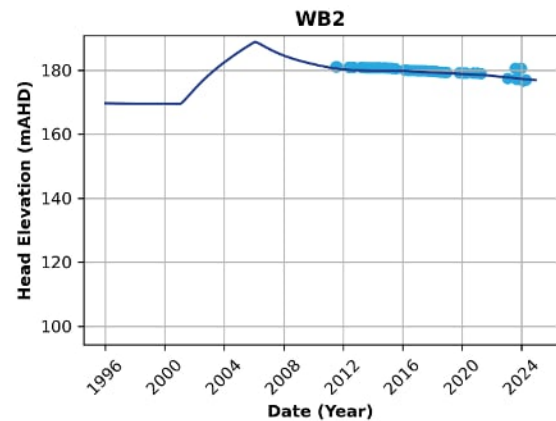
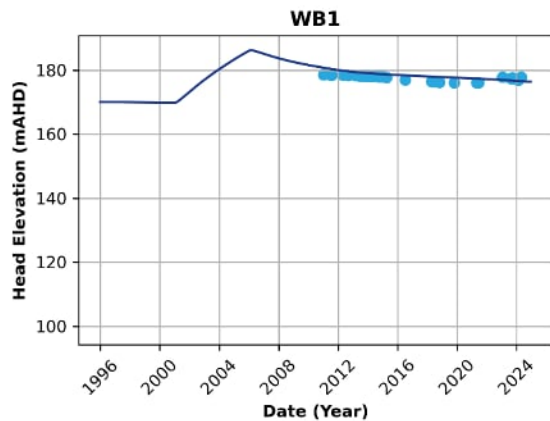
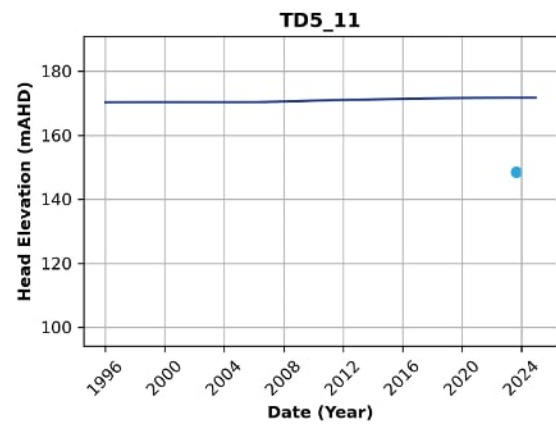
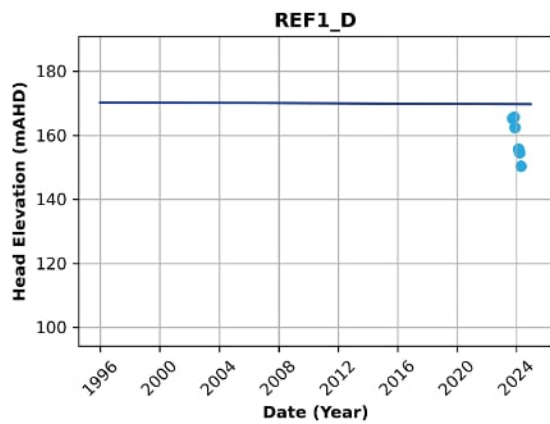
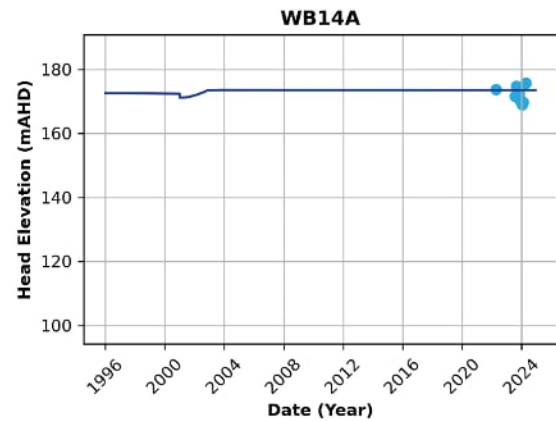
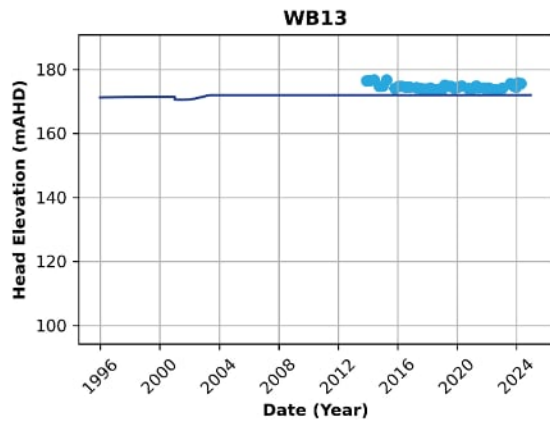
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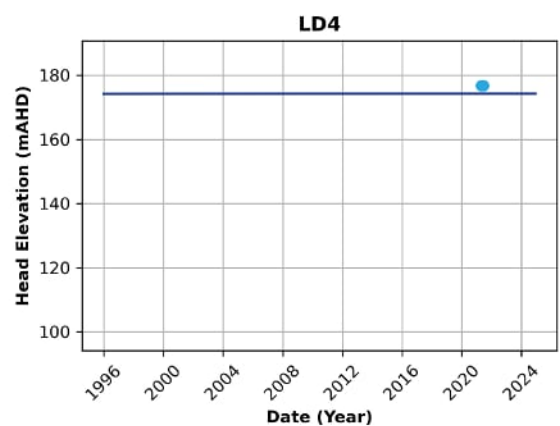
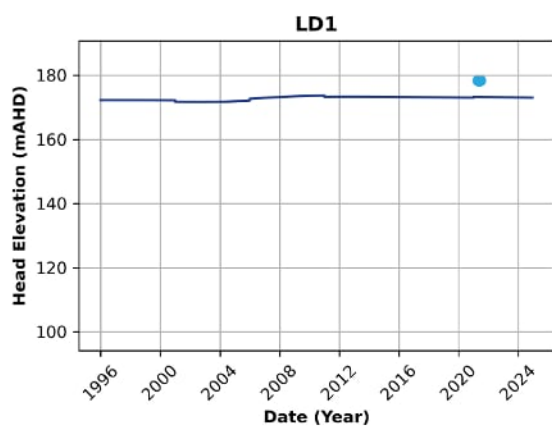
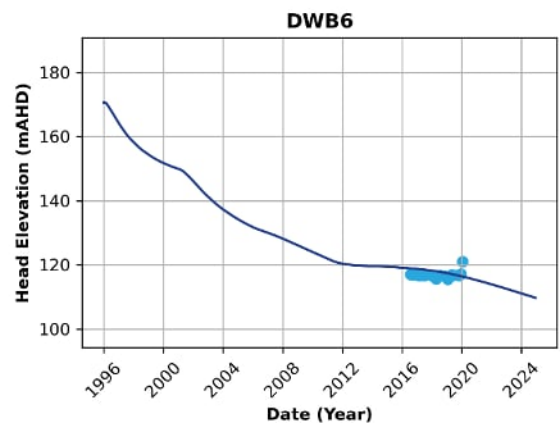
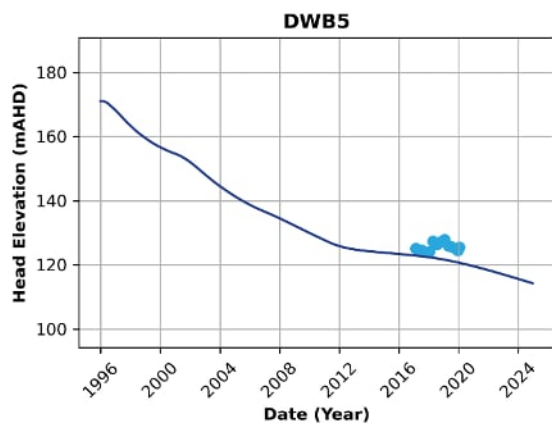
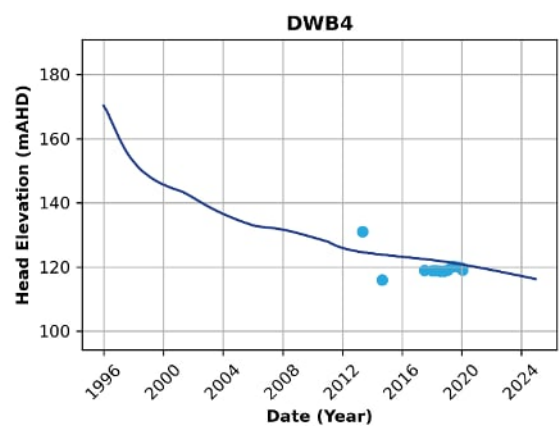
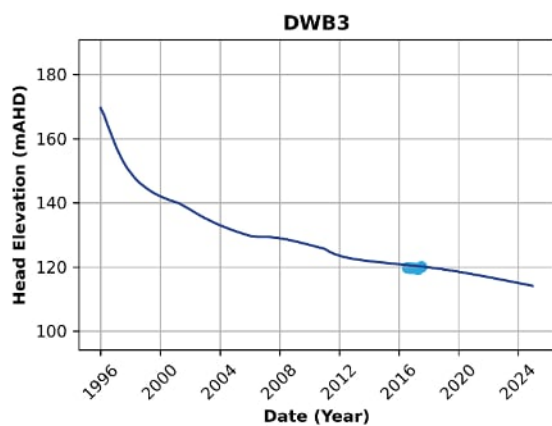
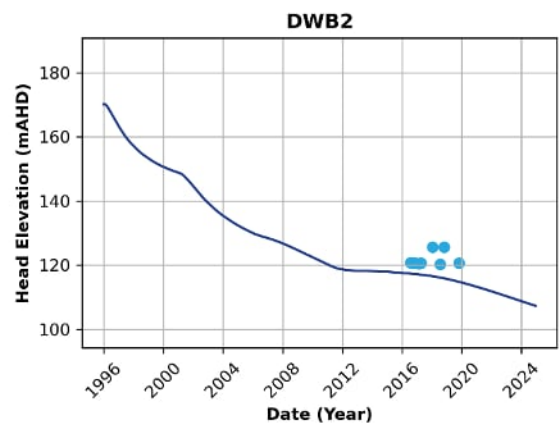
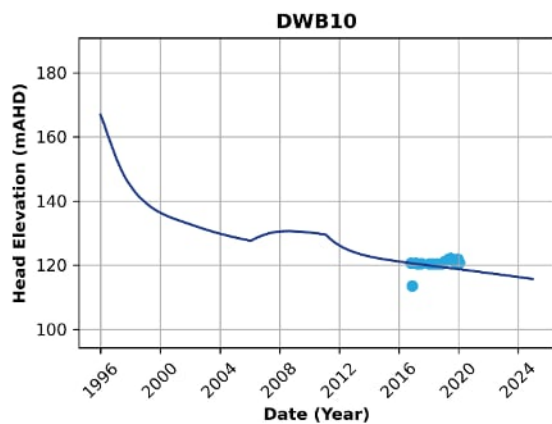
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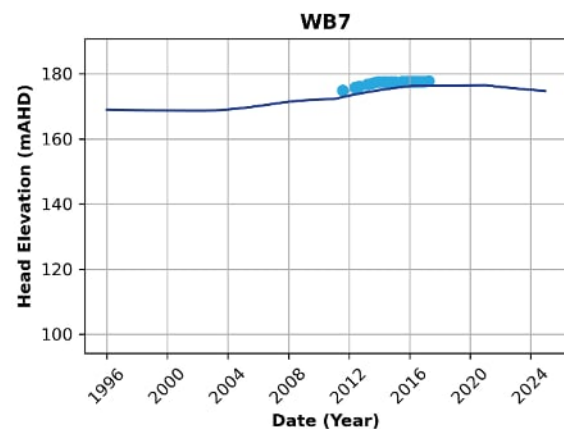
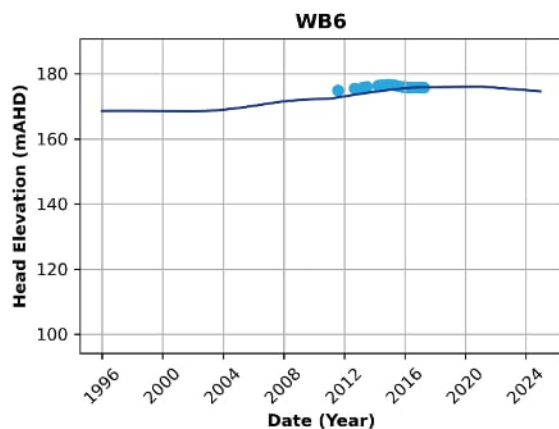
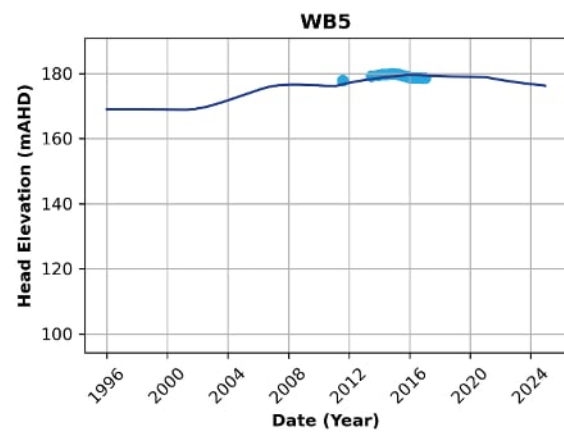
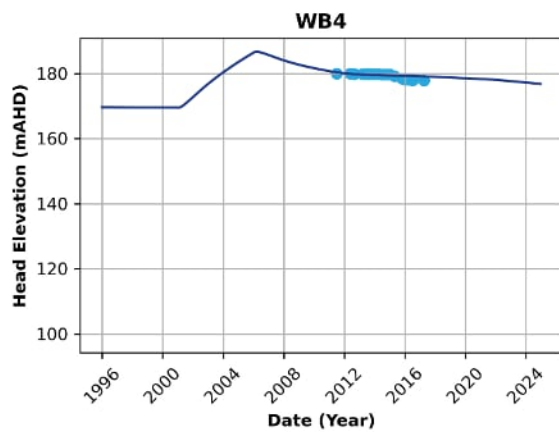
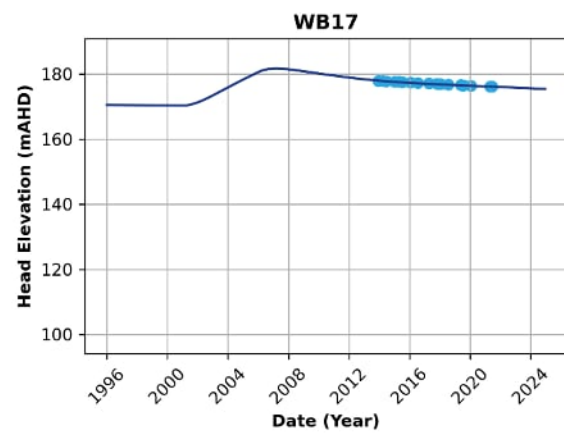
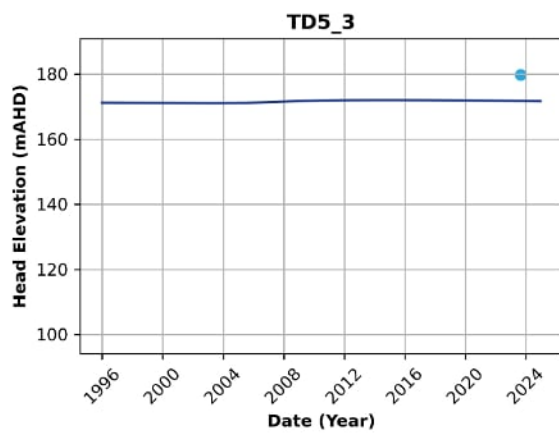
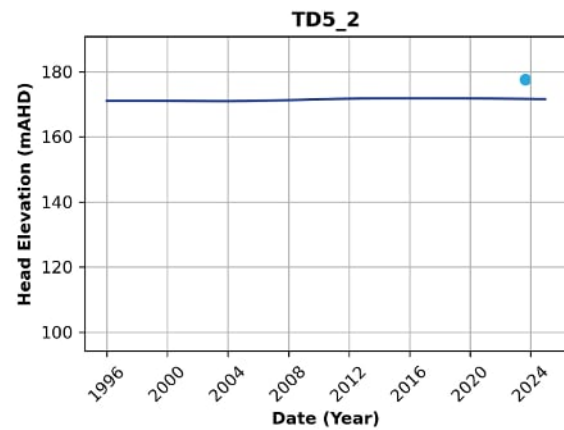
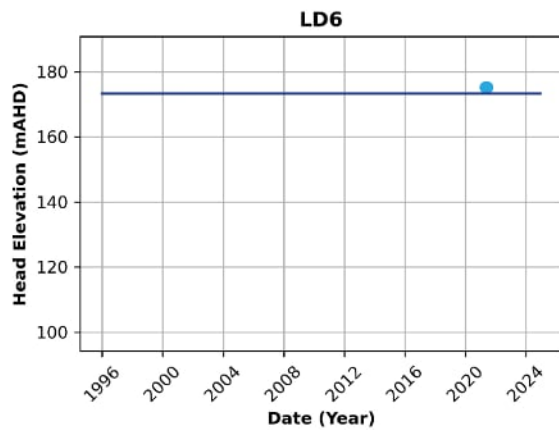
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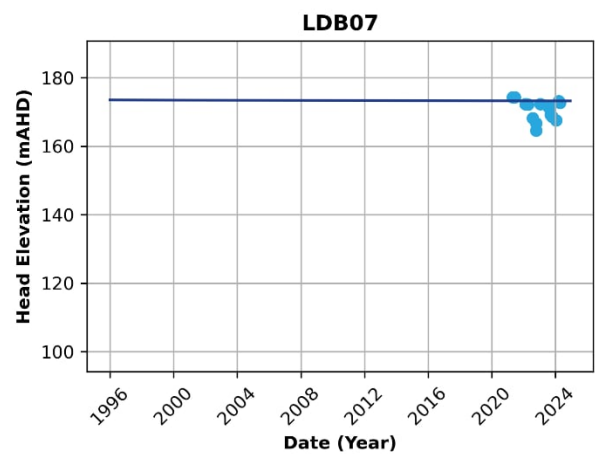
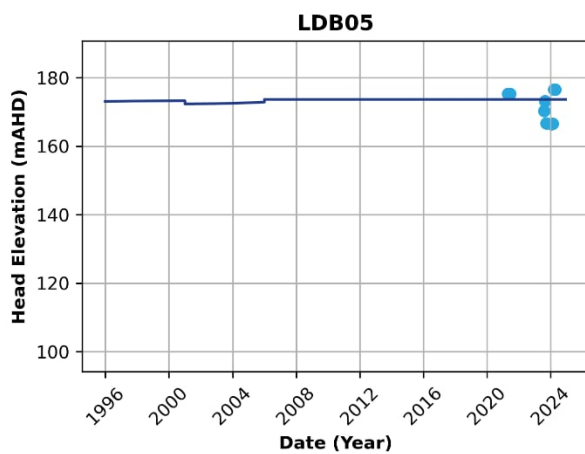
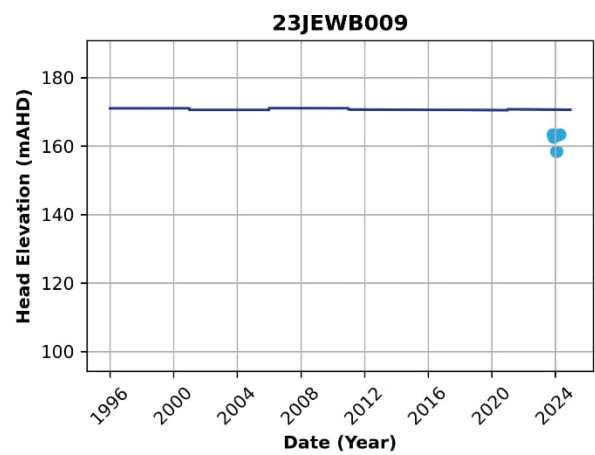
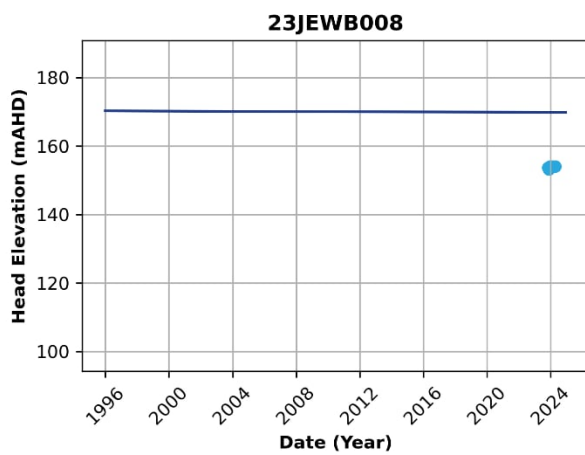
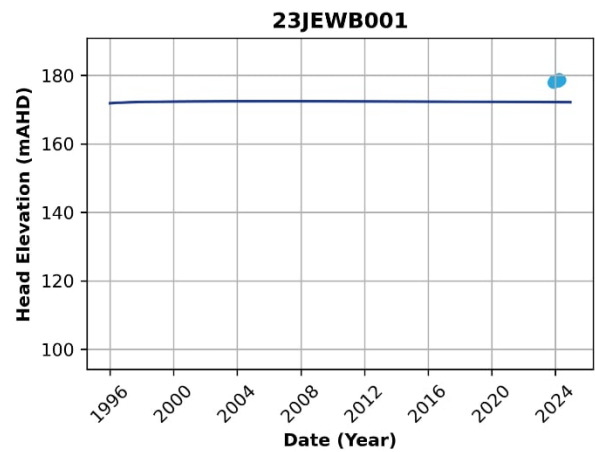
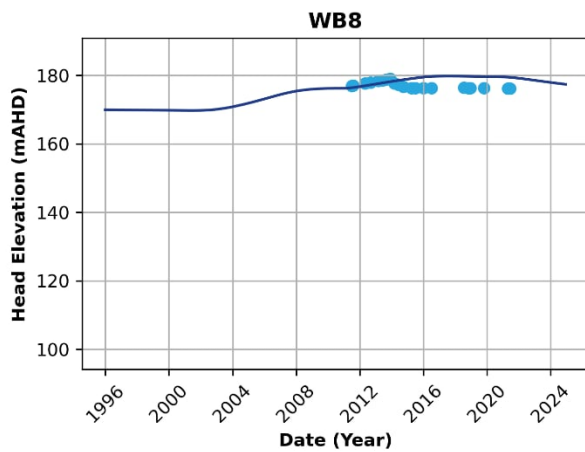
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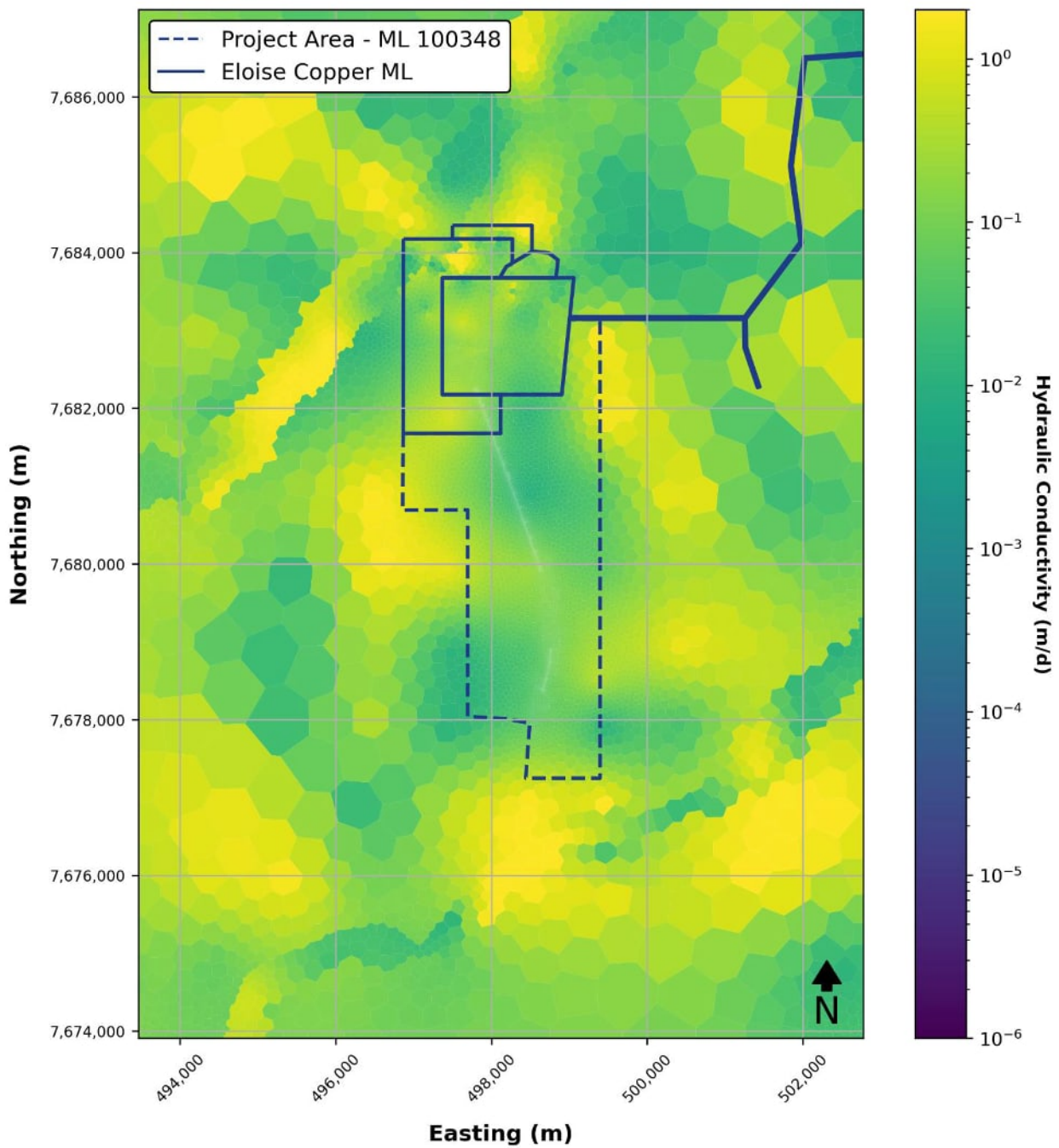


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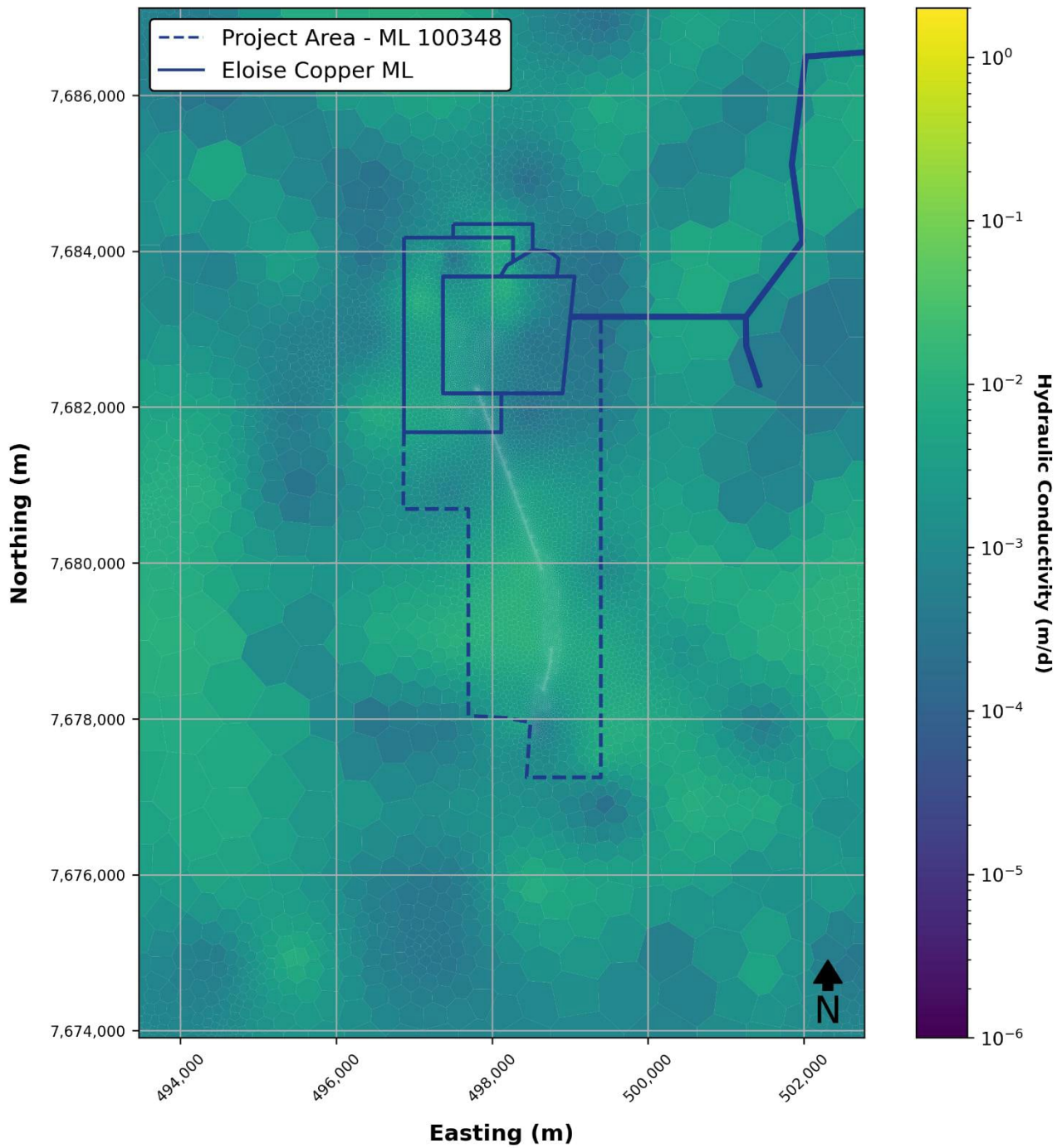


Appendix E Hydraulic conductivities (Kx and Kz)

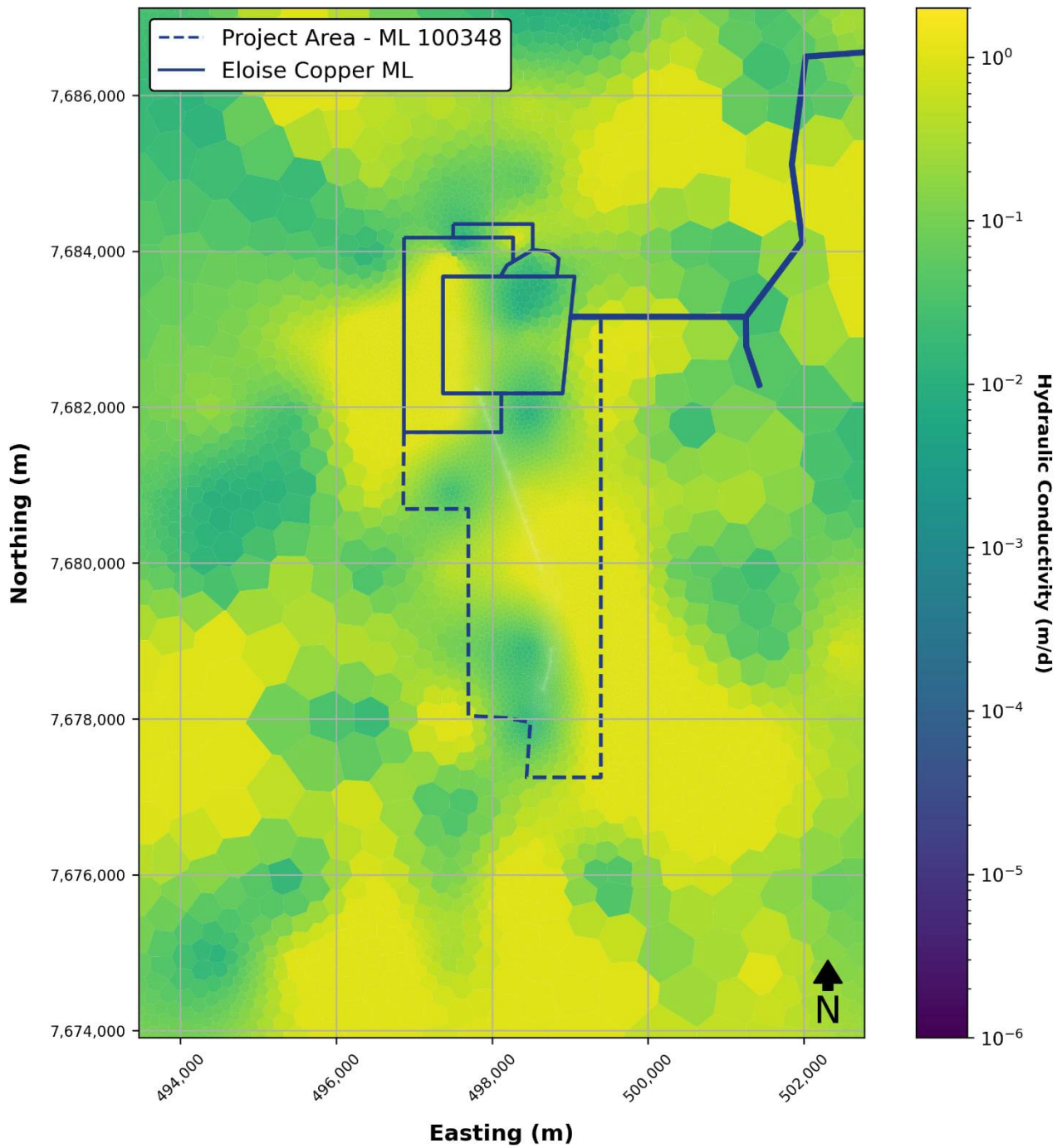
Hydraulic Conductivities – Layer 1



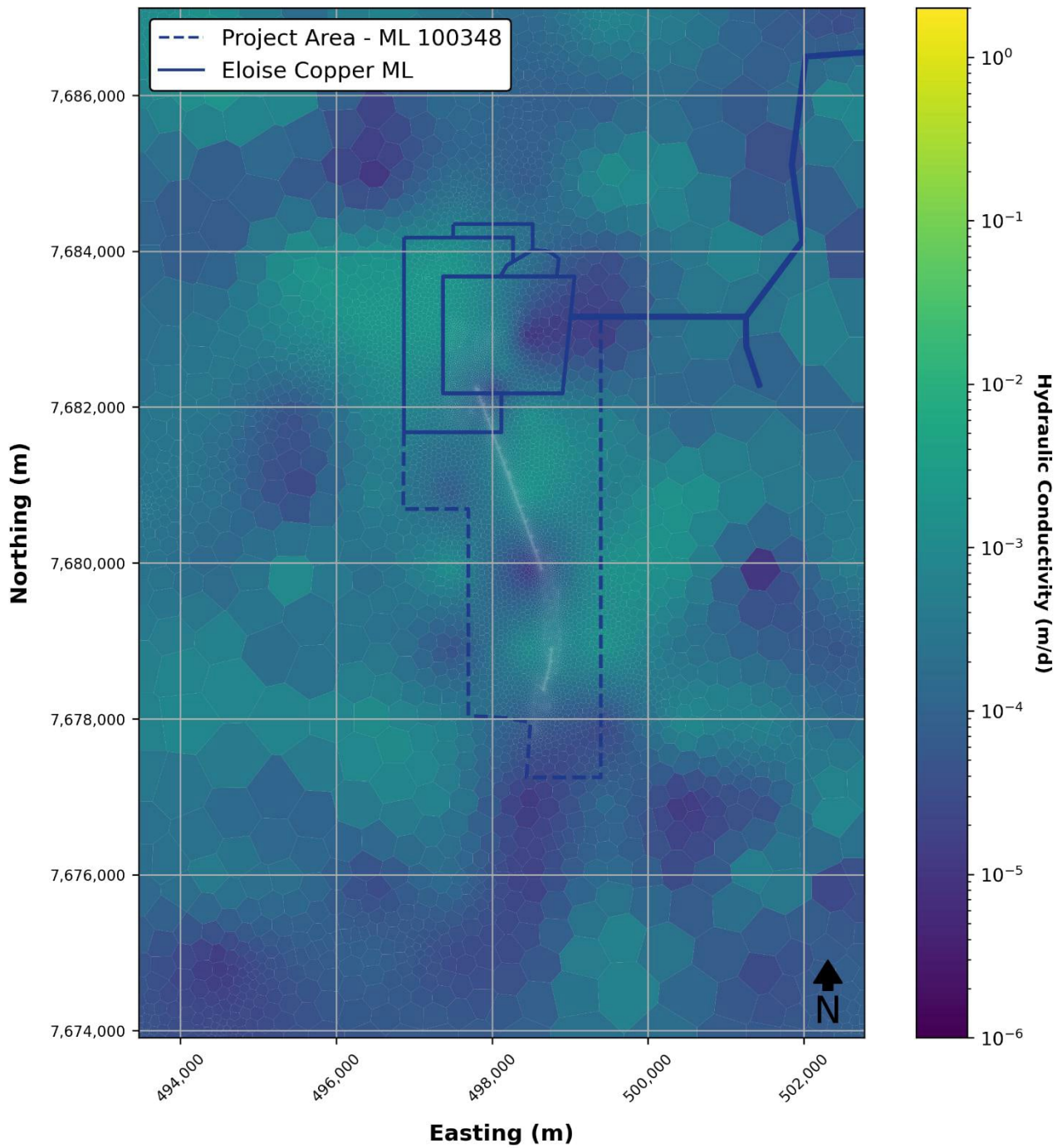
Hydraulic Conductivities – Layer 2



Hydraulic Conductivities – Layer 3

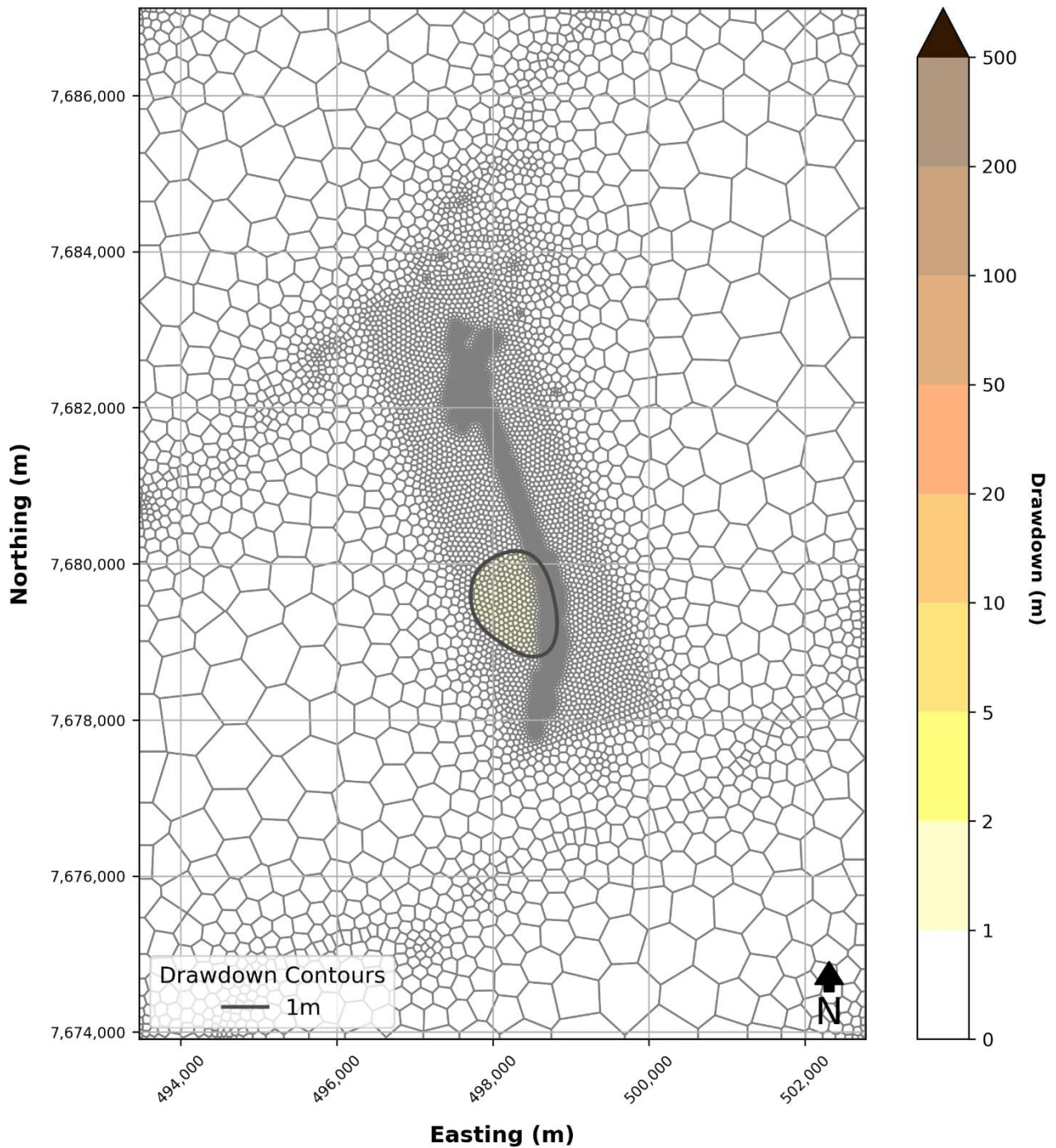


Hydraulic Conductivities – Layers 4 to 10

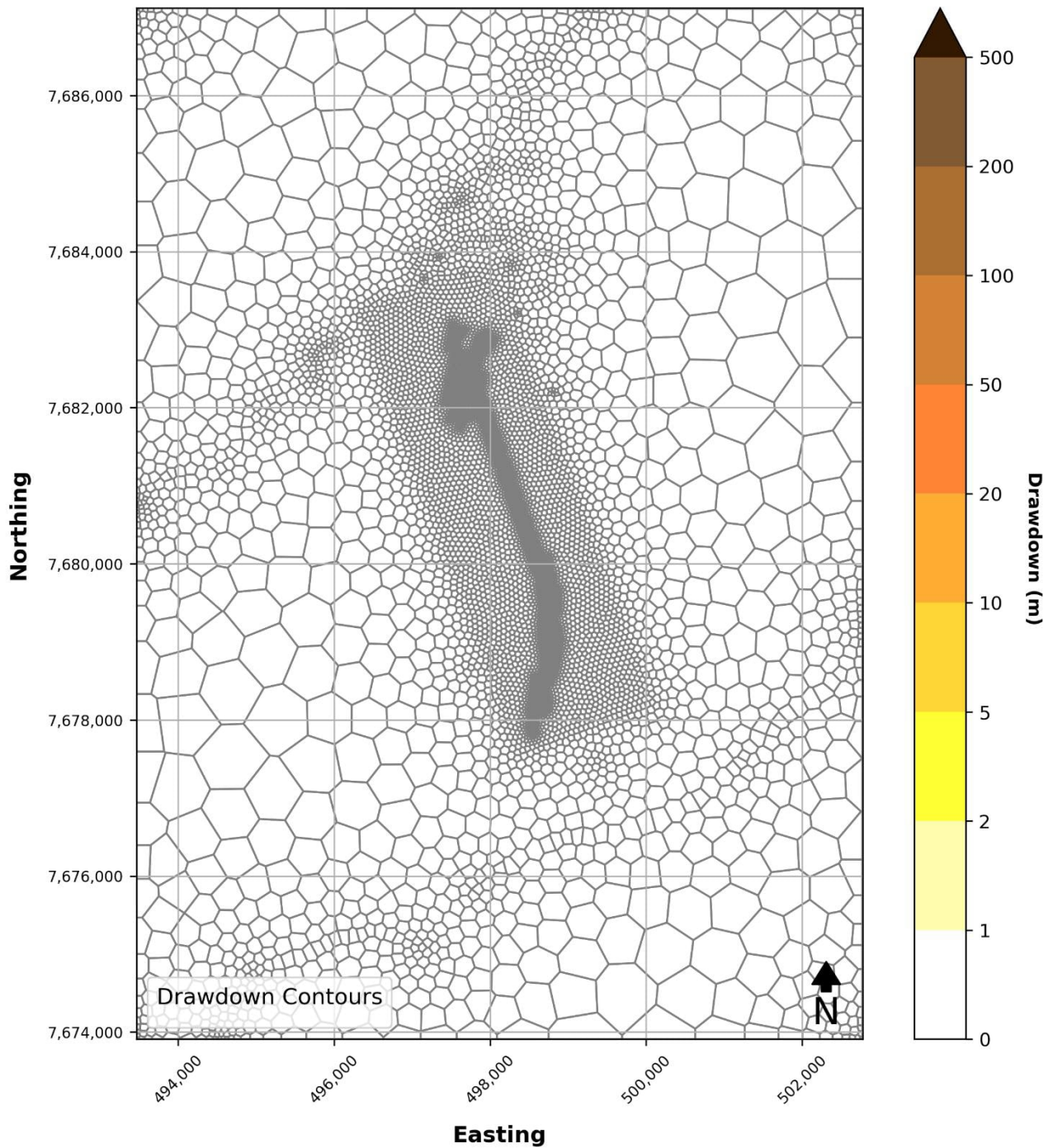


Appendix F Maximum project impacts

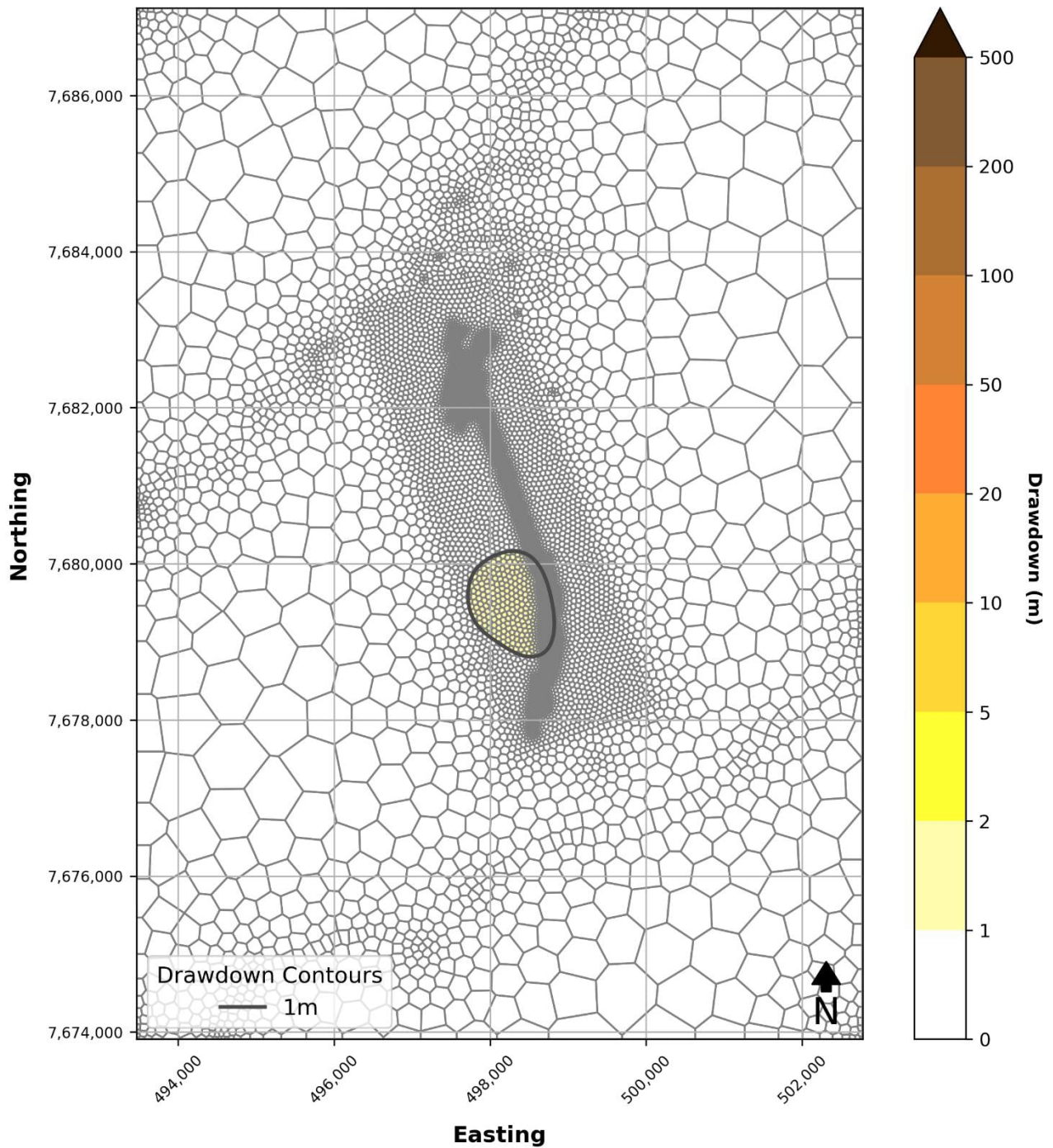
Water Table – Max. Project Only Impacts



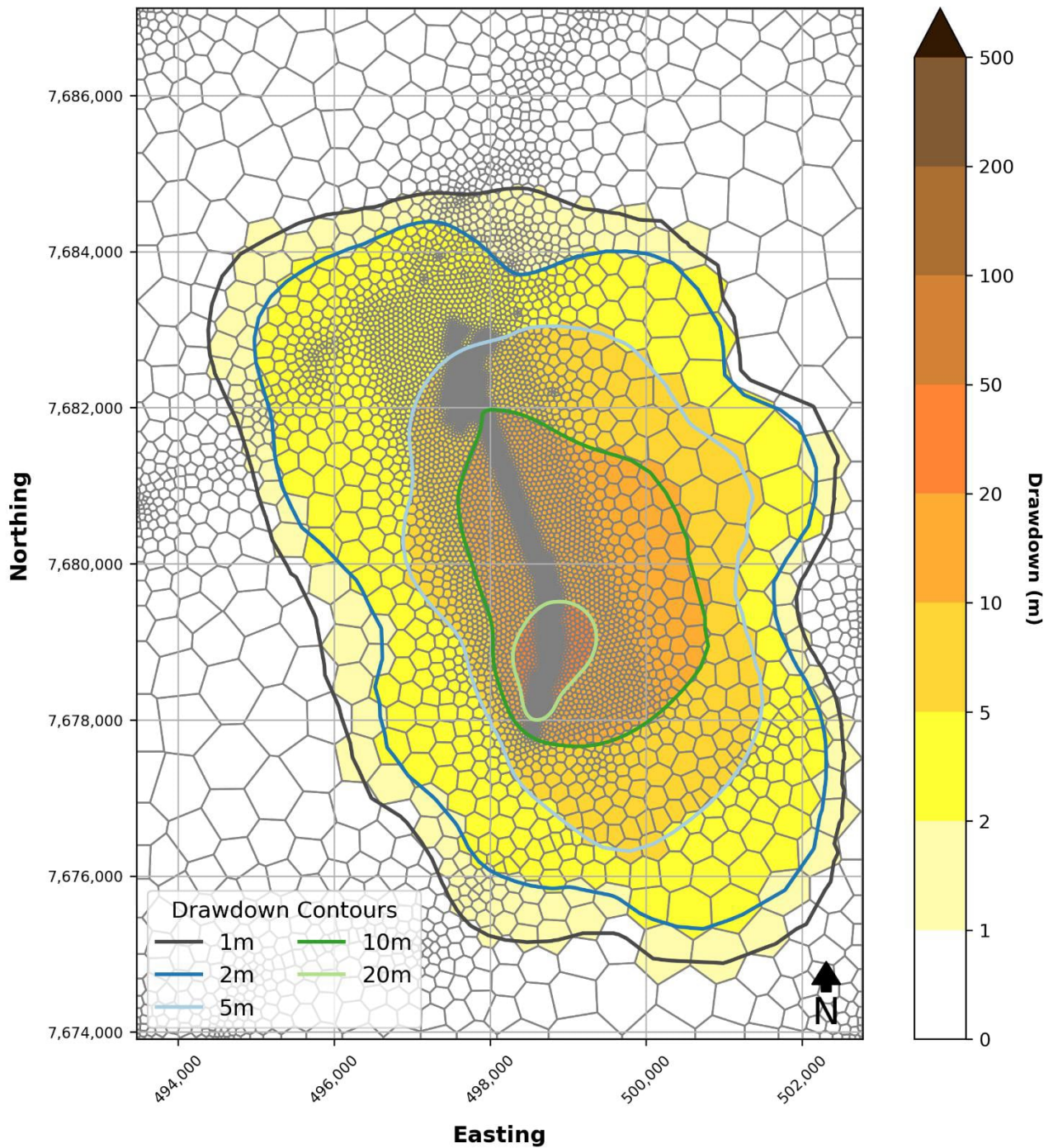
Model Layer 1 – Max. Project Only Impacts



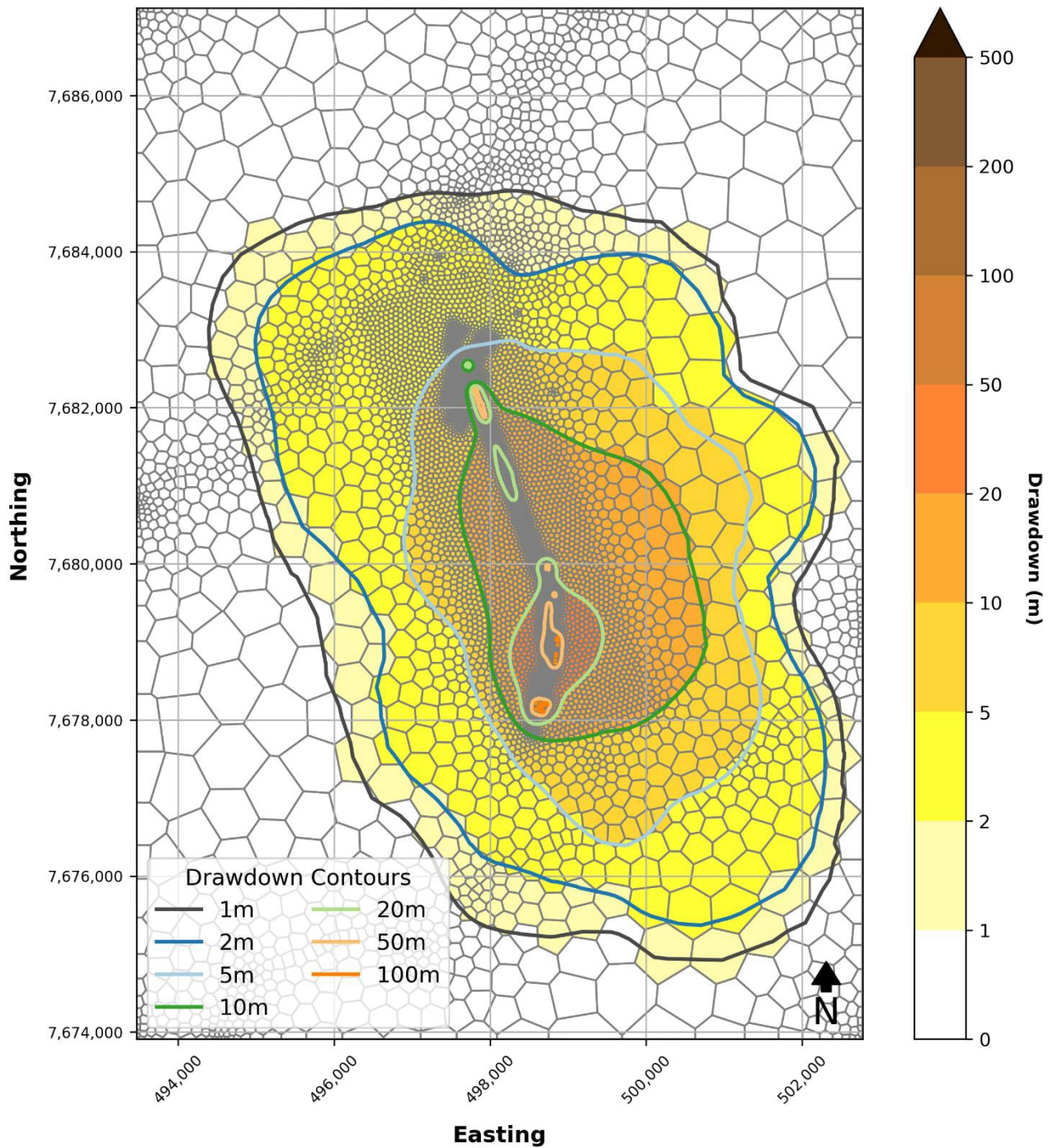
Model Layer 2 – Max. Project Only Impacts



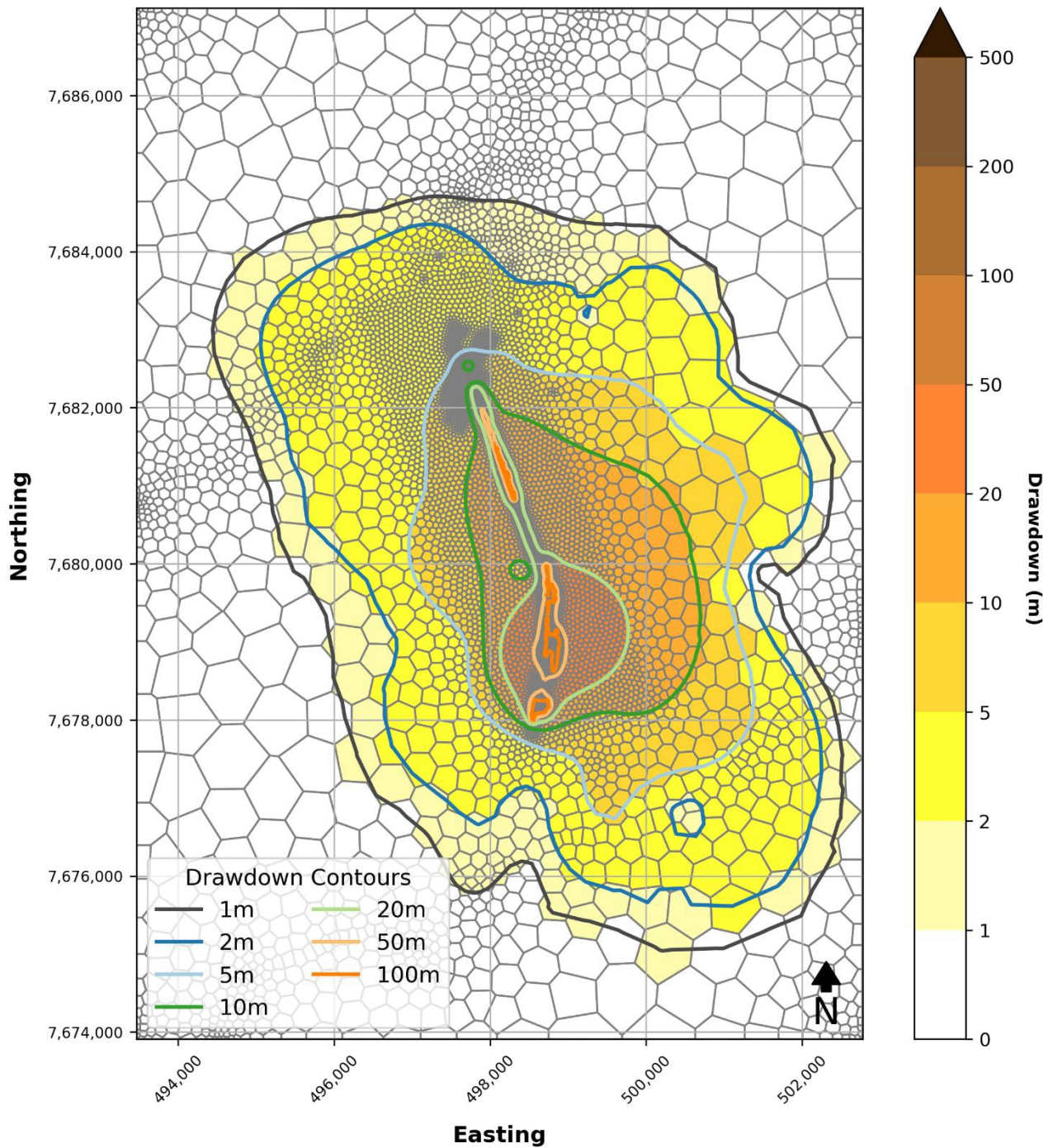
Model Layer 3 – Max. Project Only Impacts



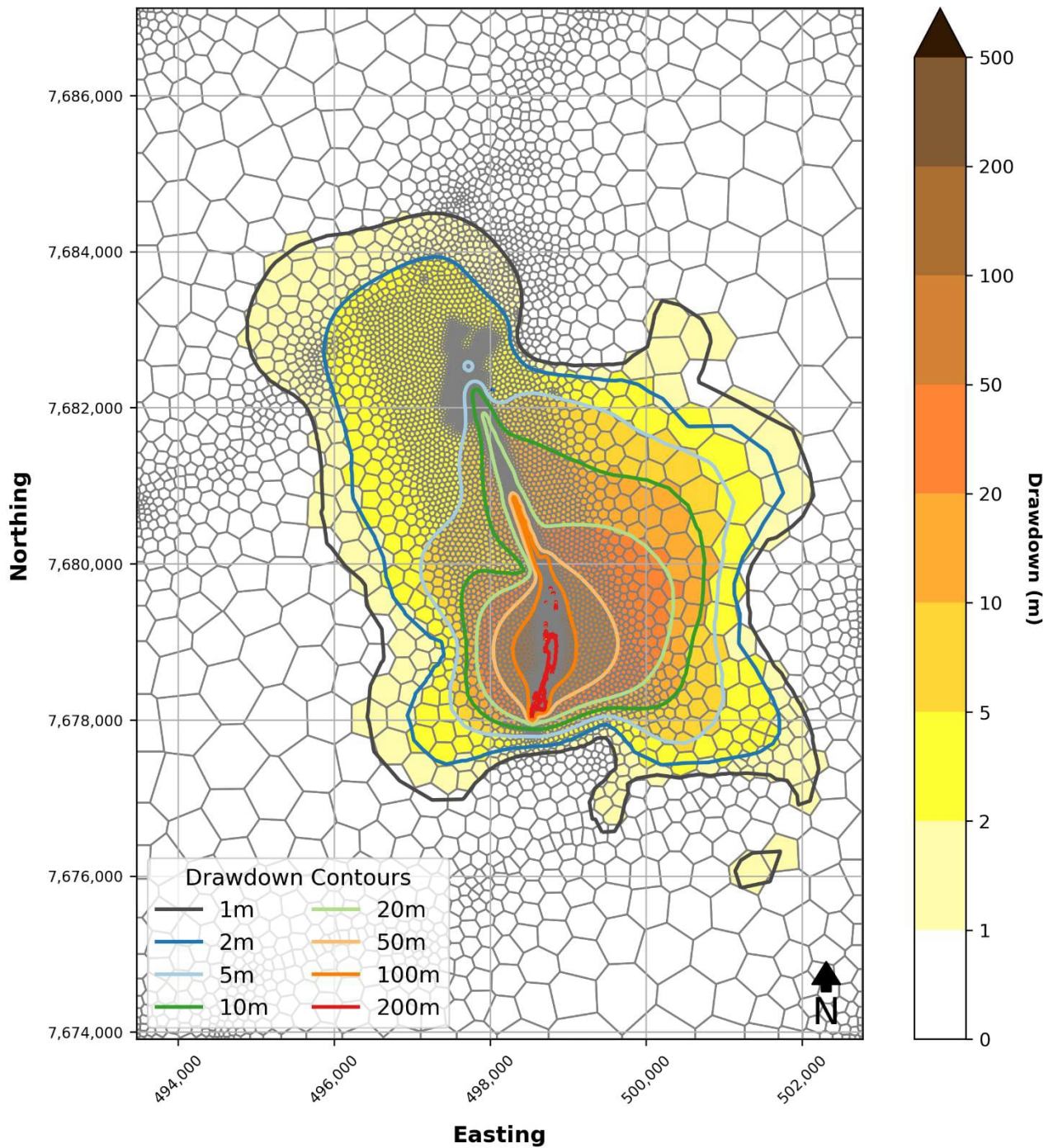
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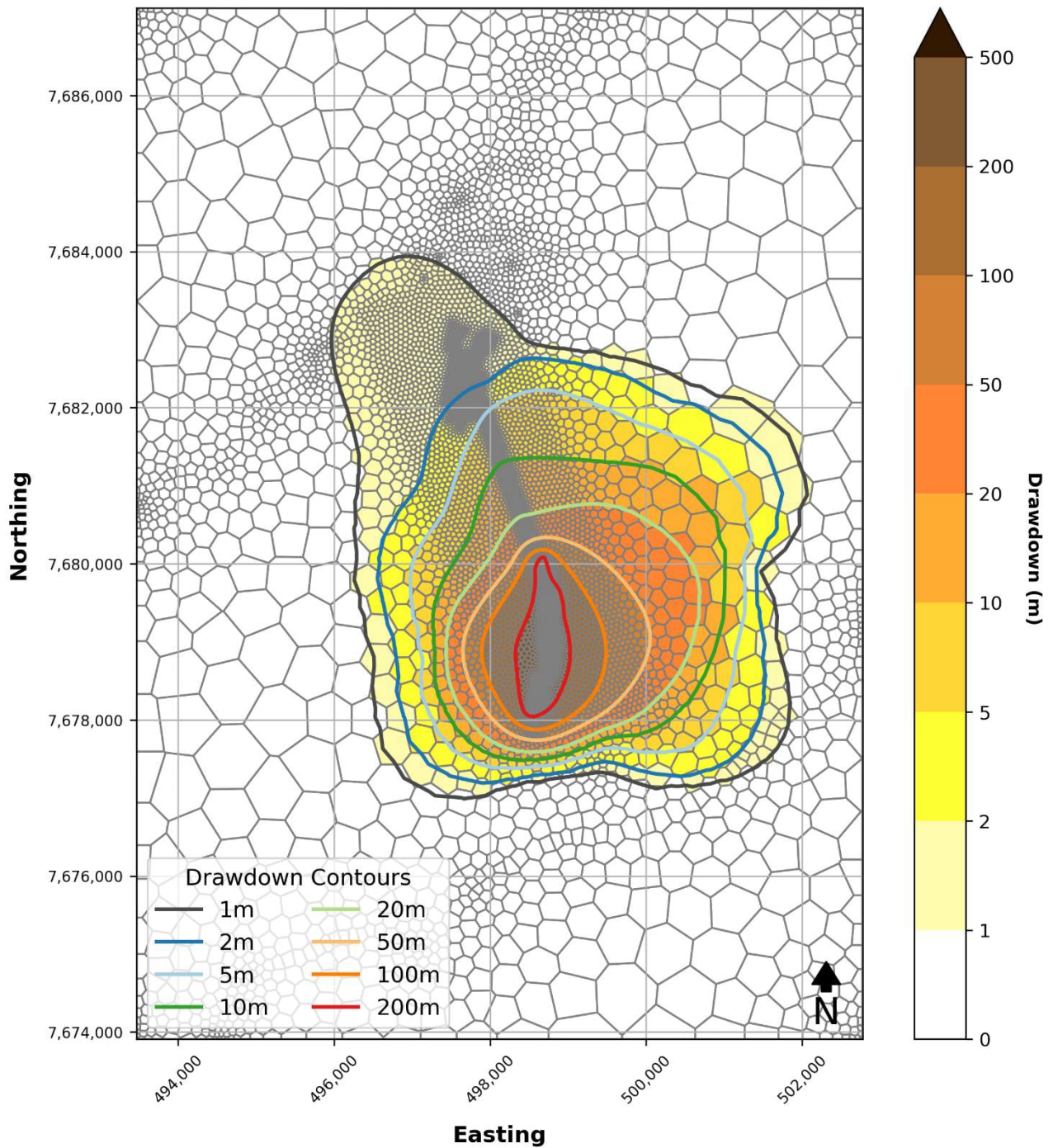
Model Layer 5 – Max. Project Only Impacts



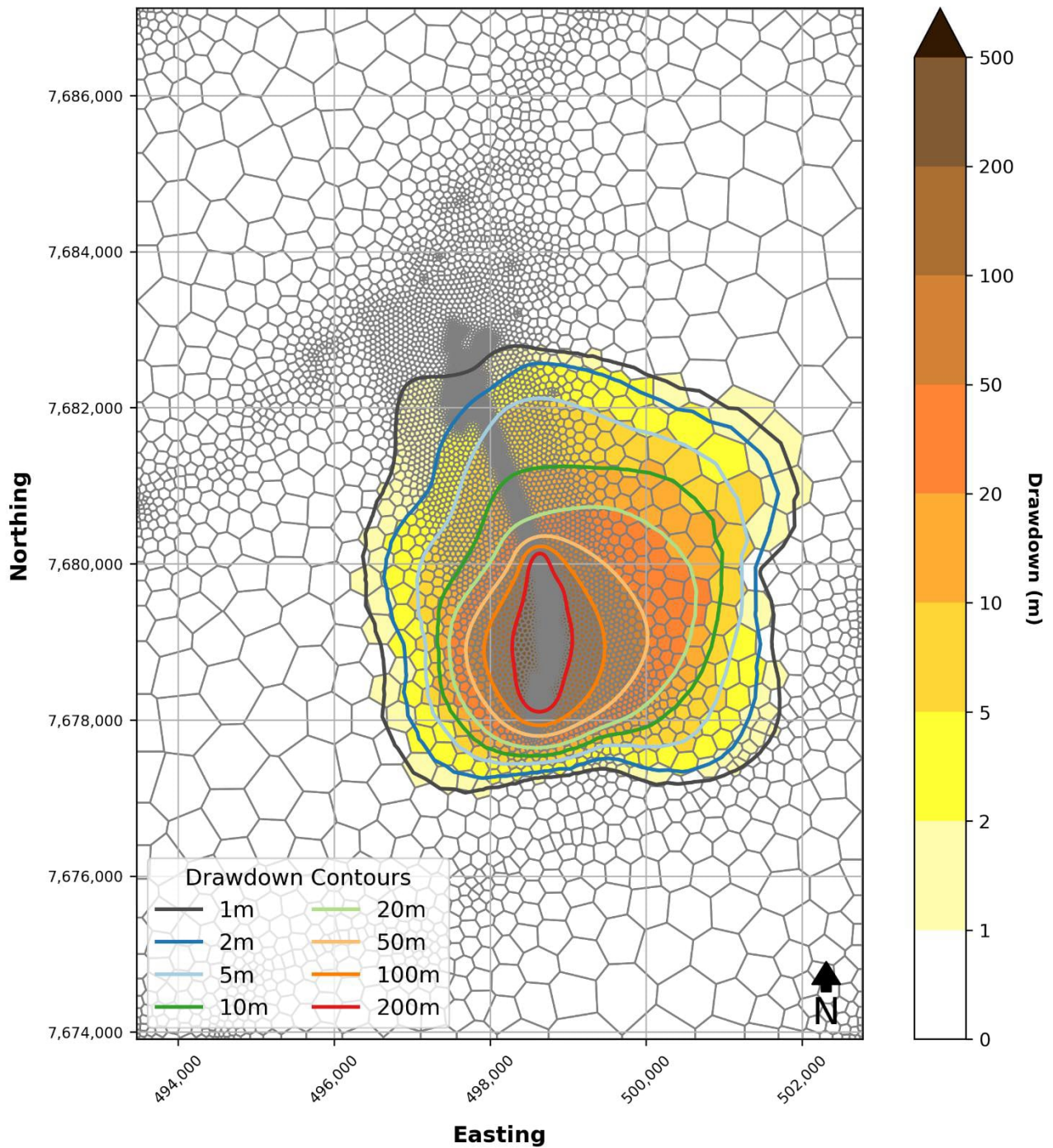
Model Layer 6 – Max. Project Only Impacts



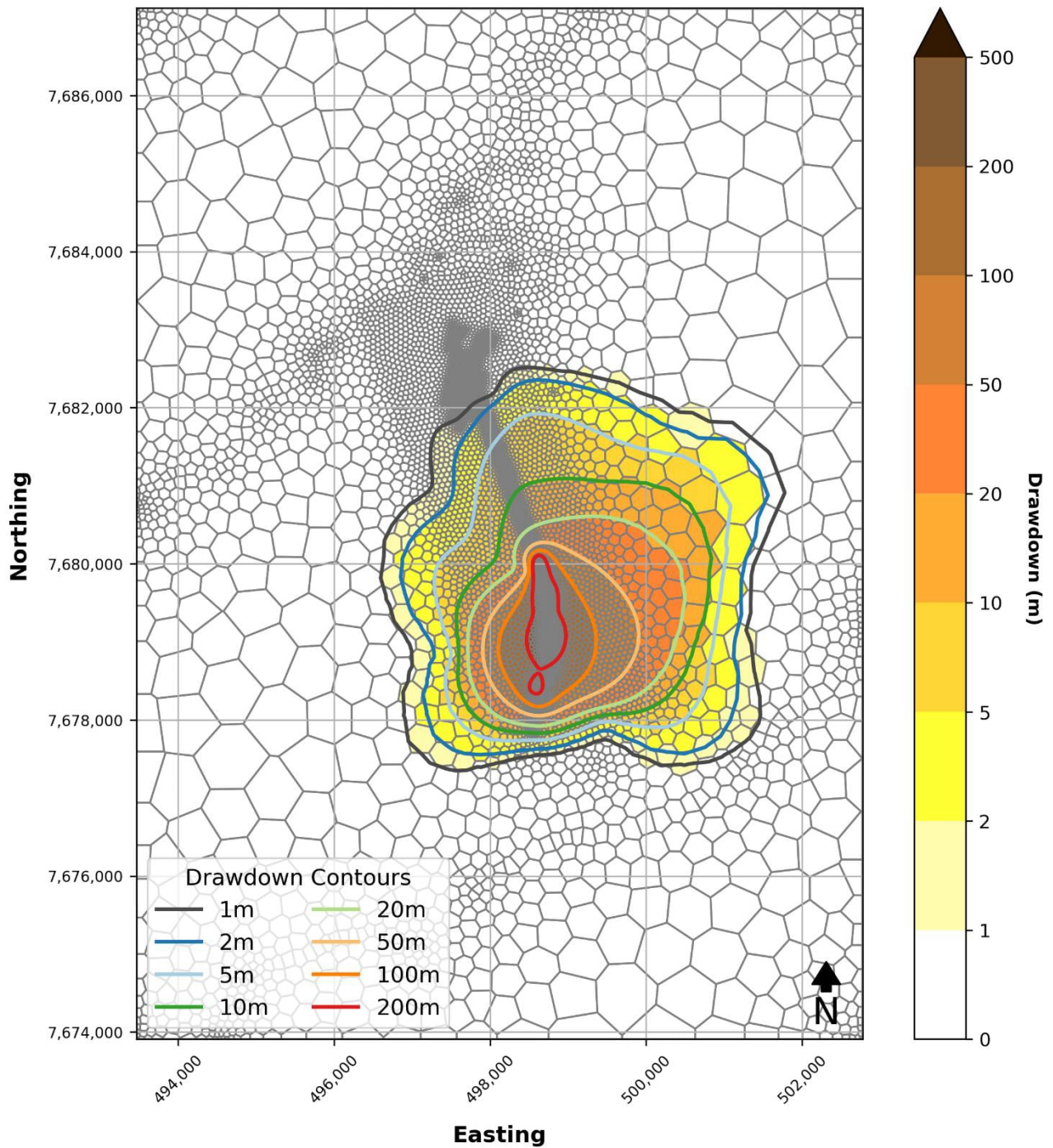
Model Layer 7 – Max. Project Only Impacts



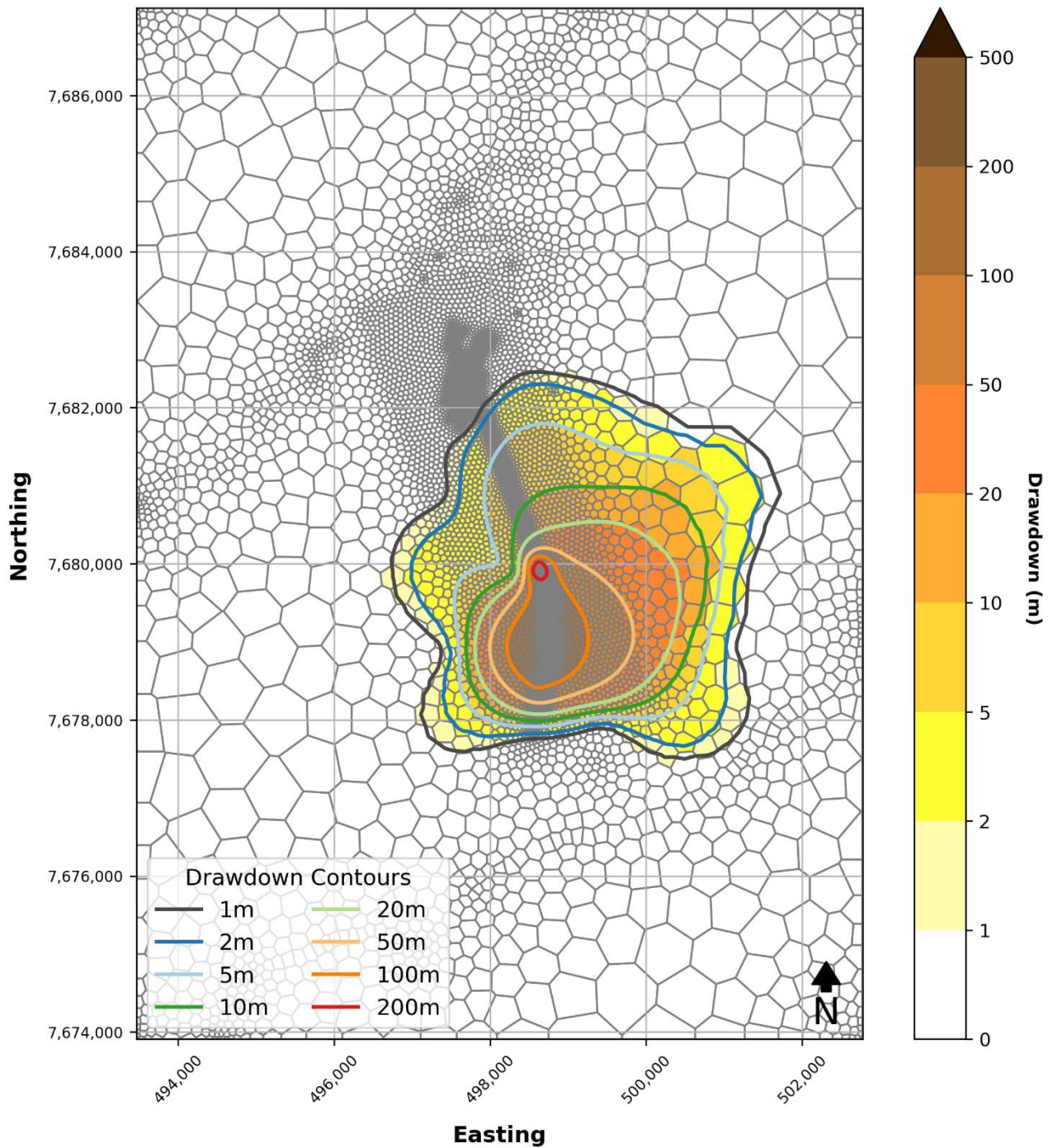
Model Layer 8 – Max. Project Only Impacts



Model Layer 9 – Max. Project Only Impacts

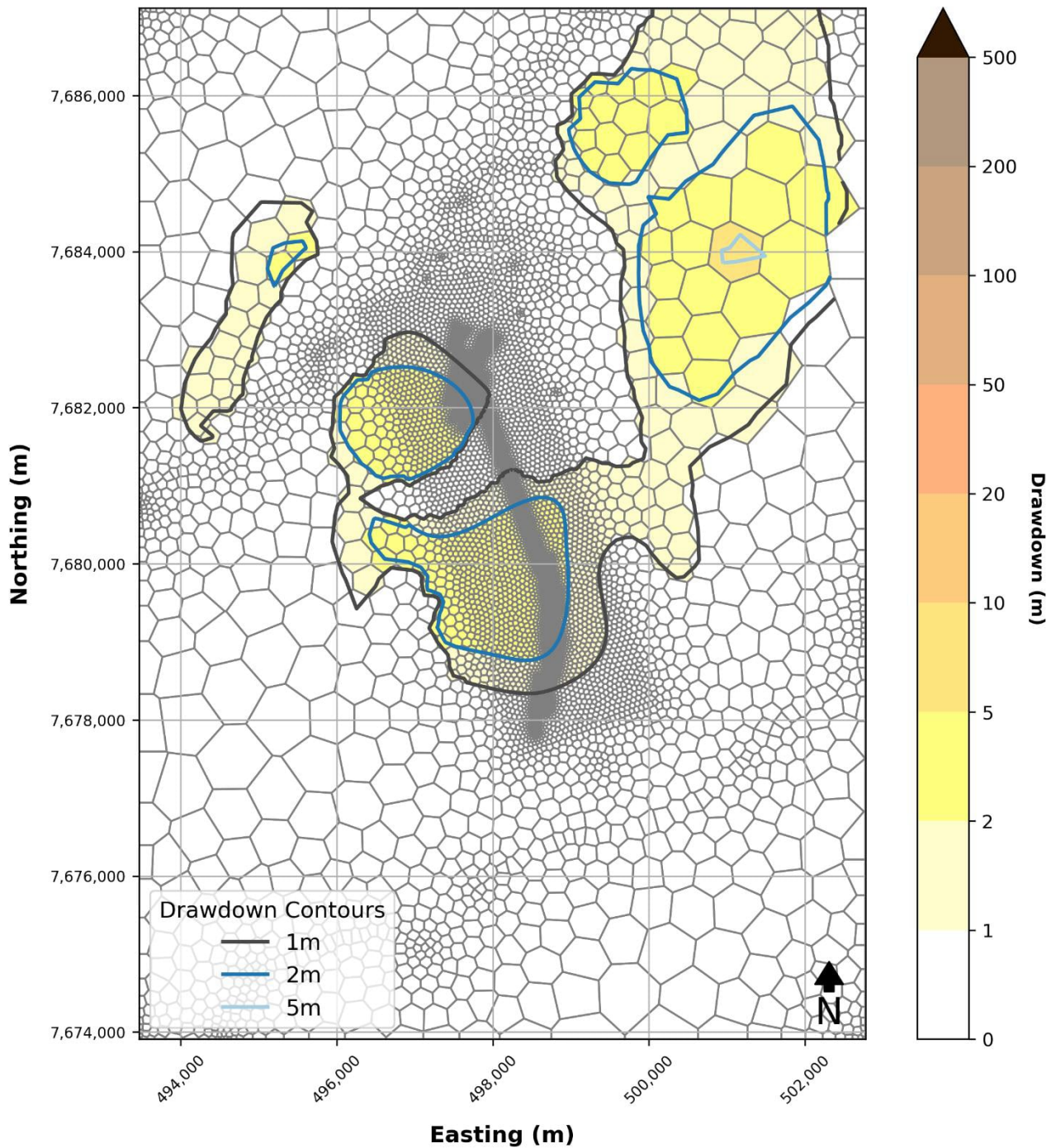


Model Layer 10 – Max. Project Only Impacts

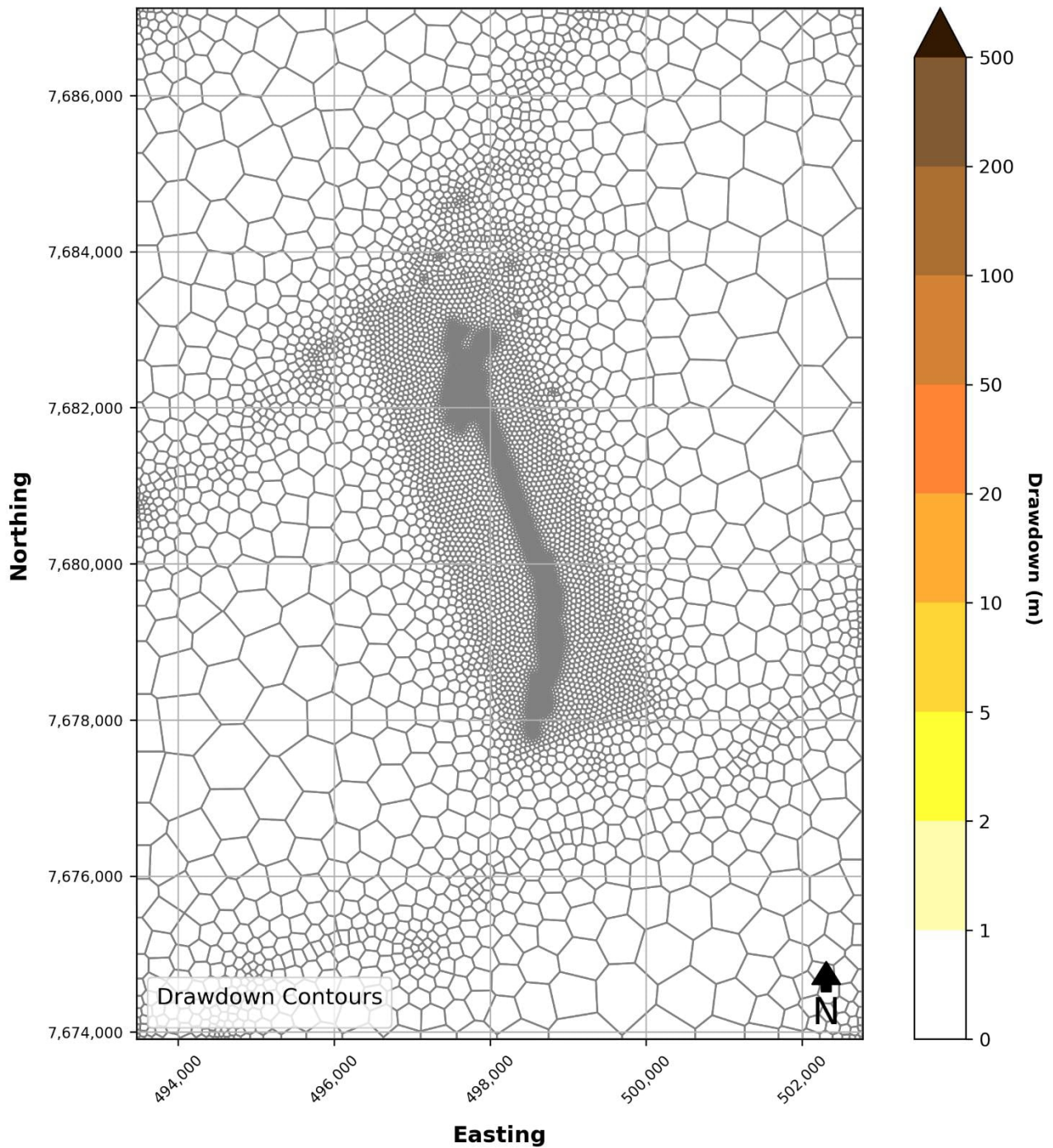


Appendix G Maximum cumulative mine impacts

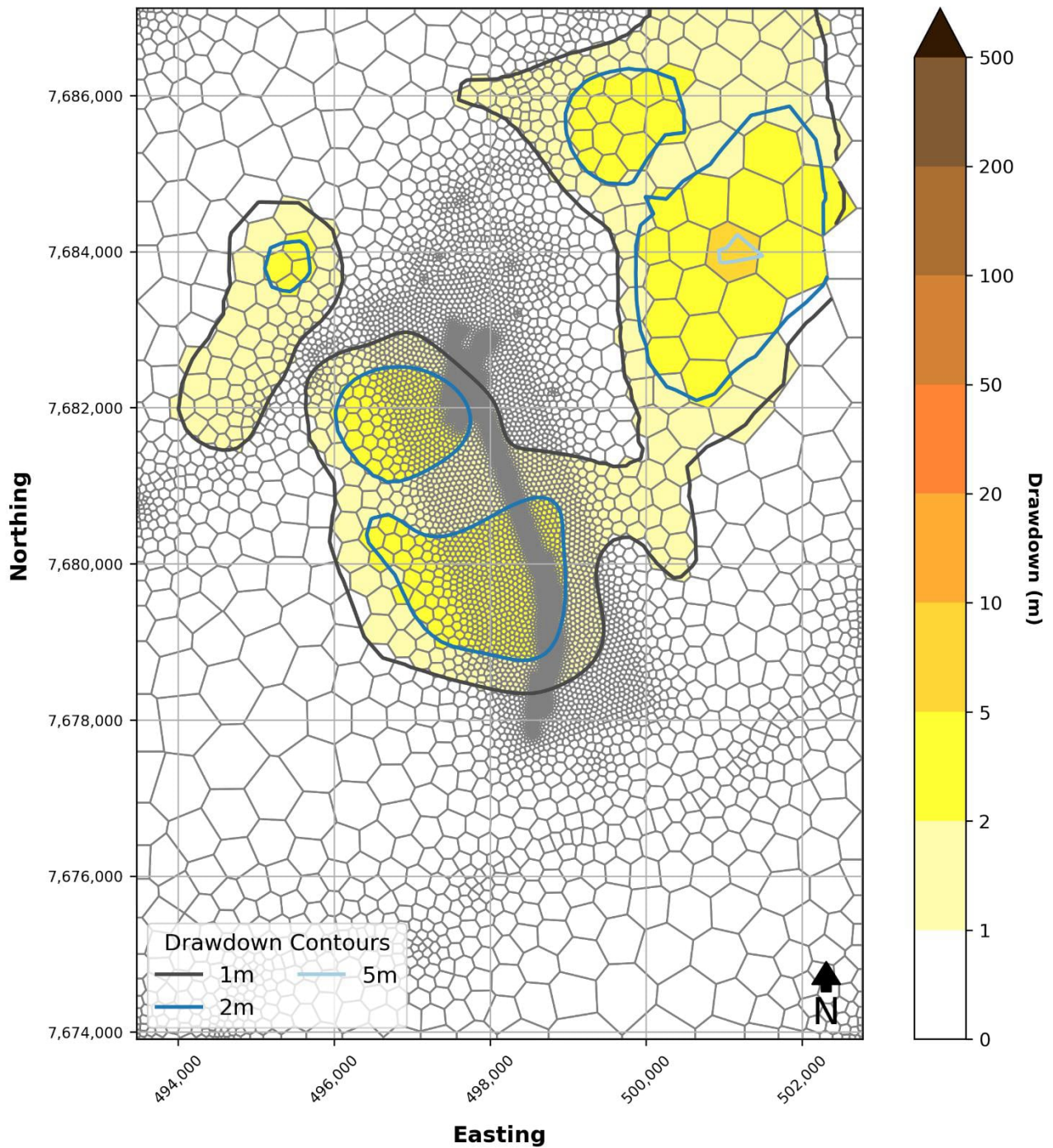
Water Table – Max. Cumulative Impacts



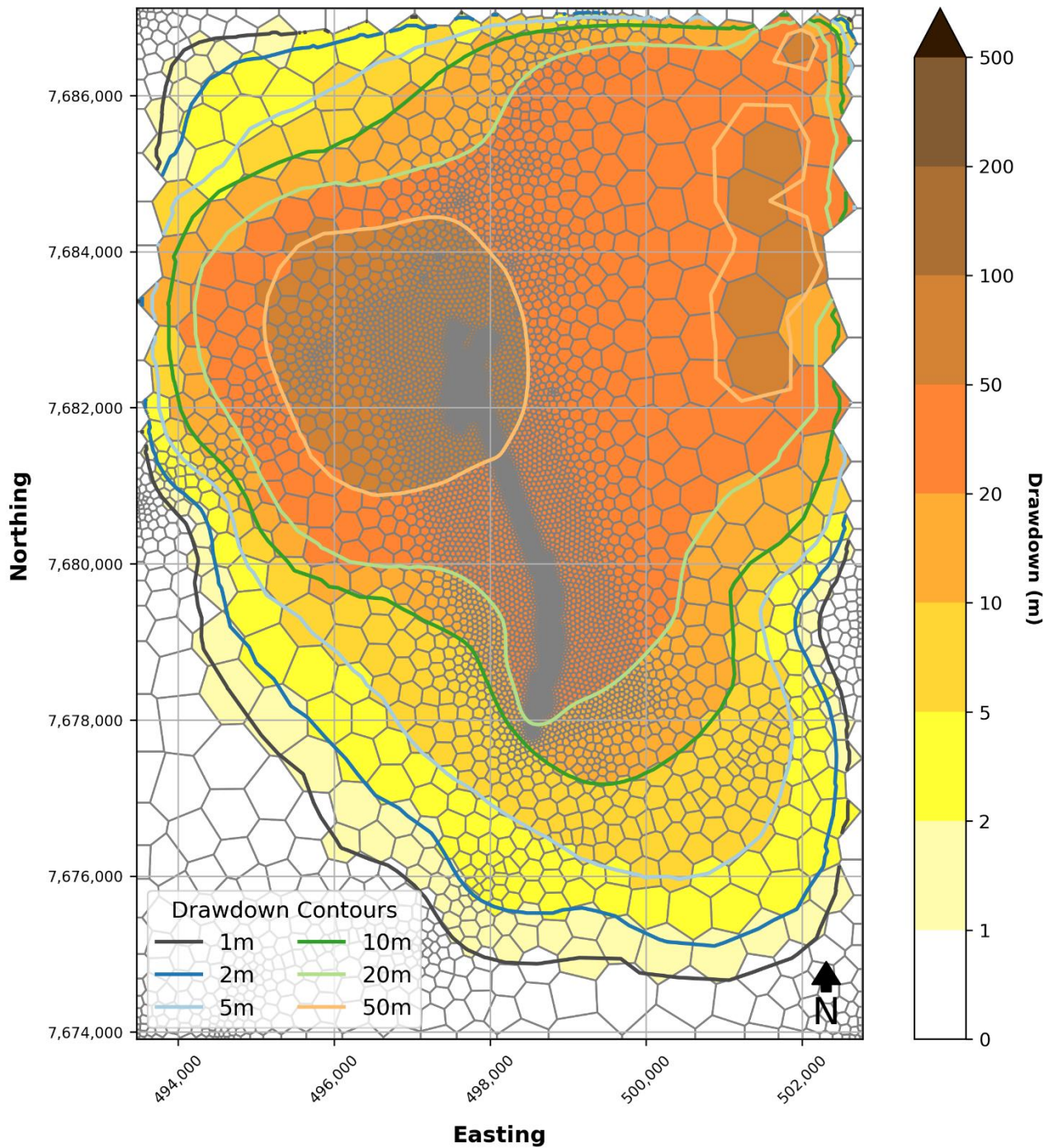
Model Layer 1 – Max. Cumulative Impacts



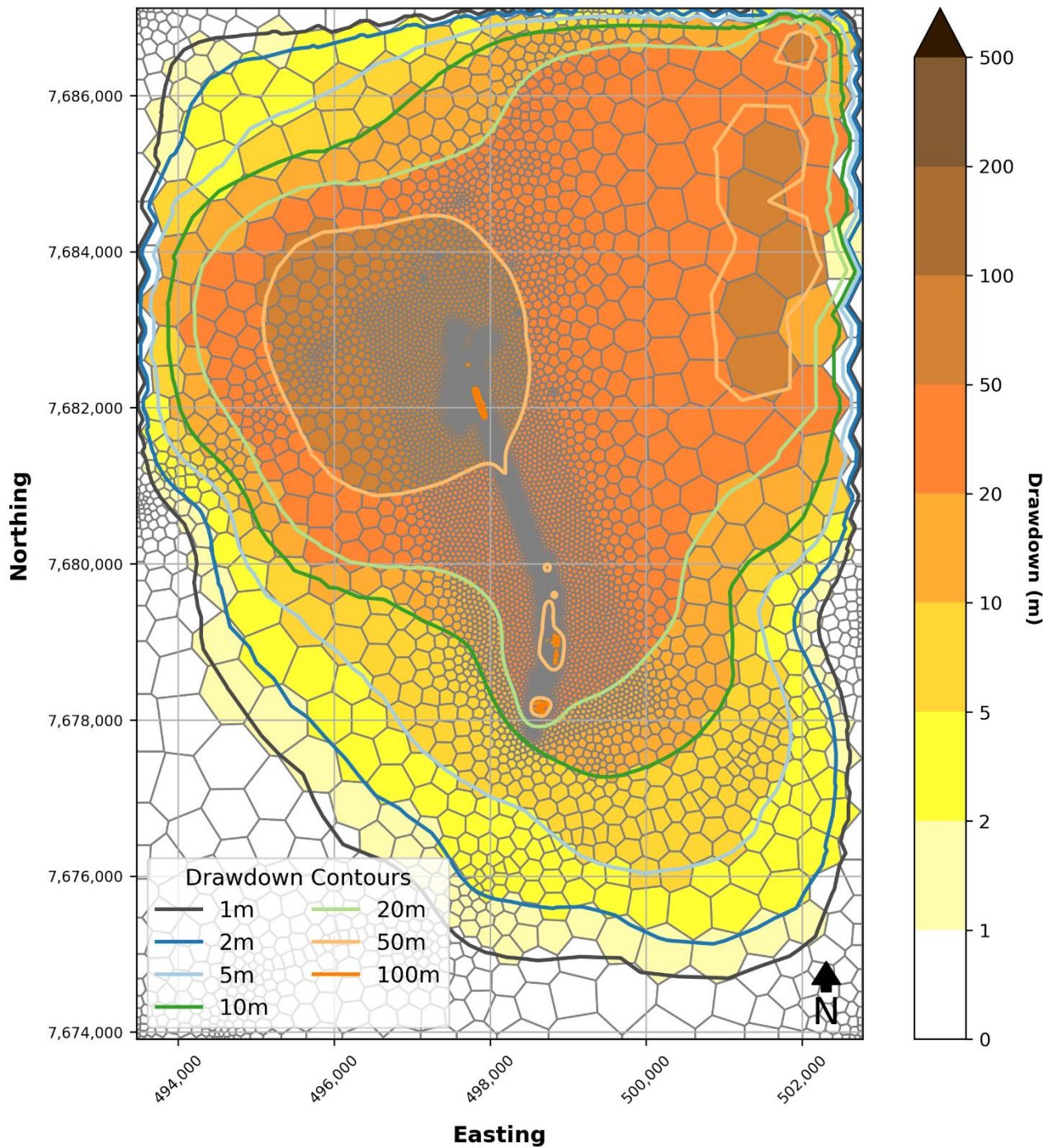
Model Layer 2 – Max. Cumulative Impacts



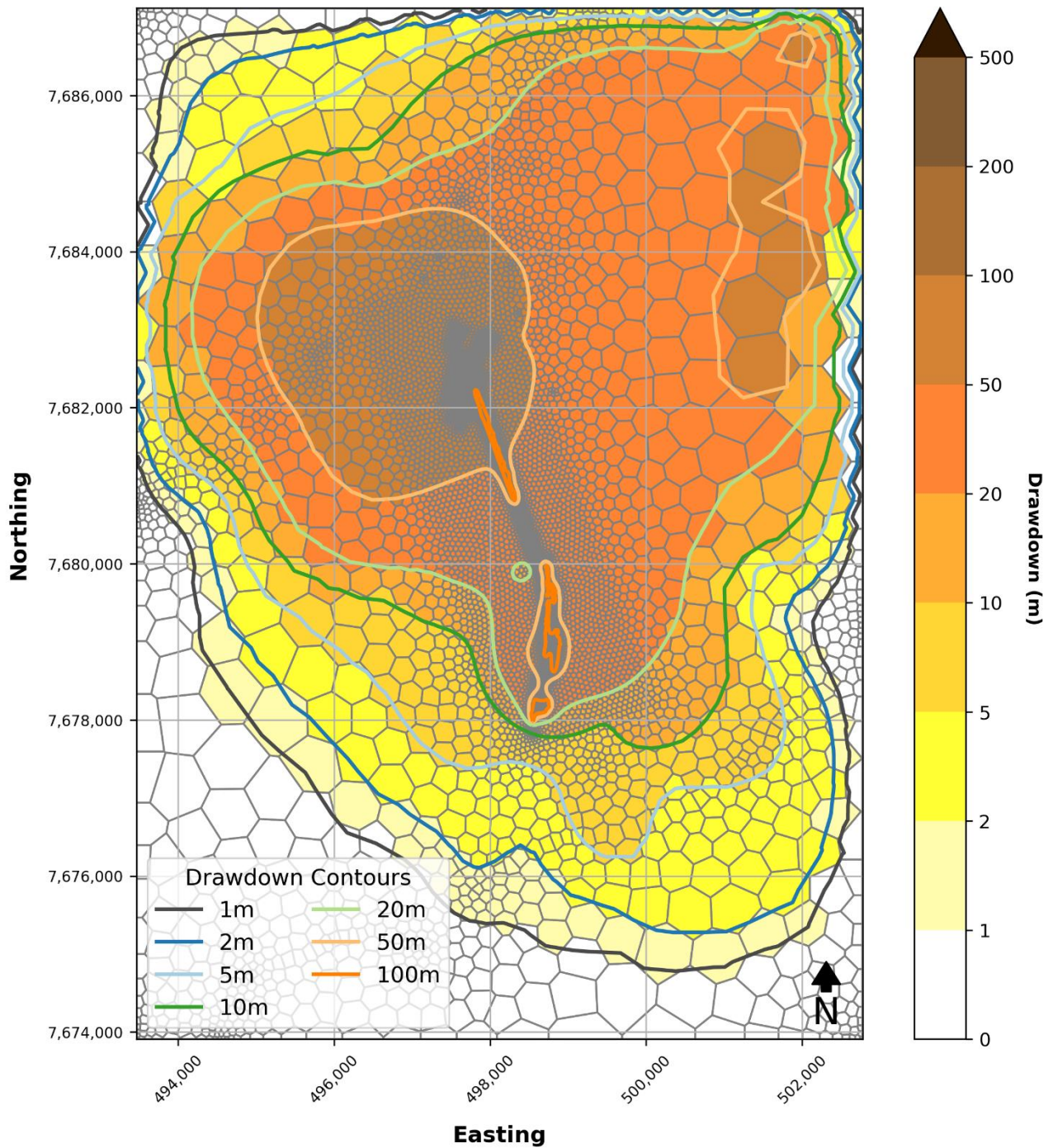
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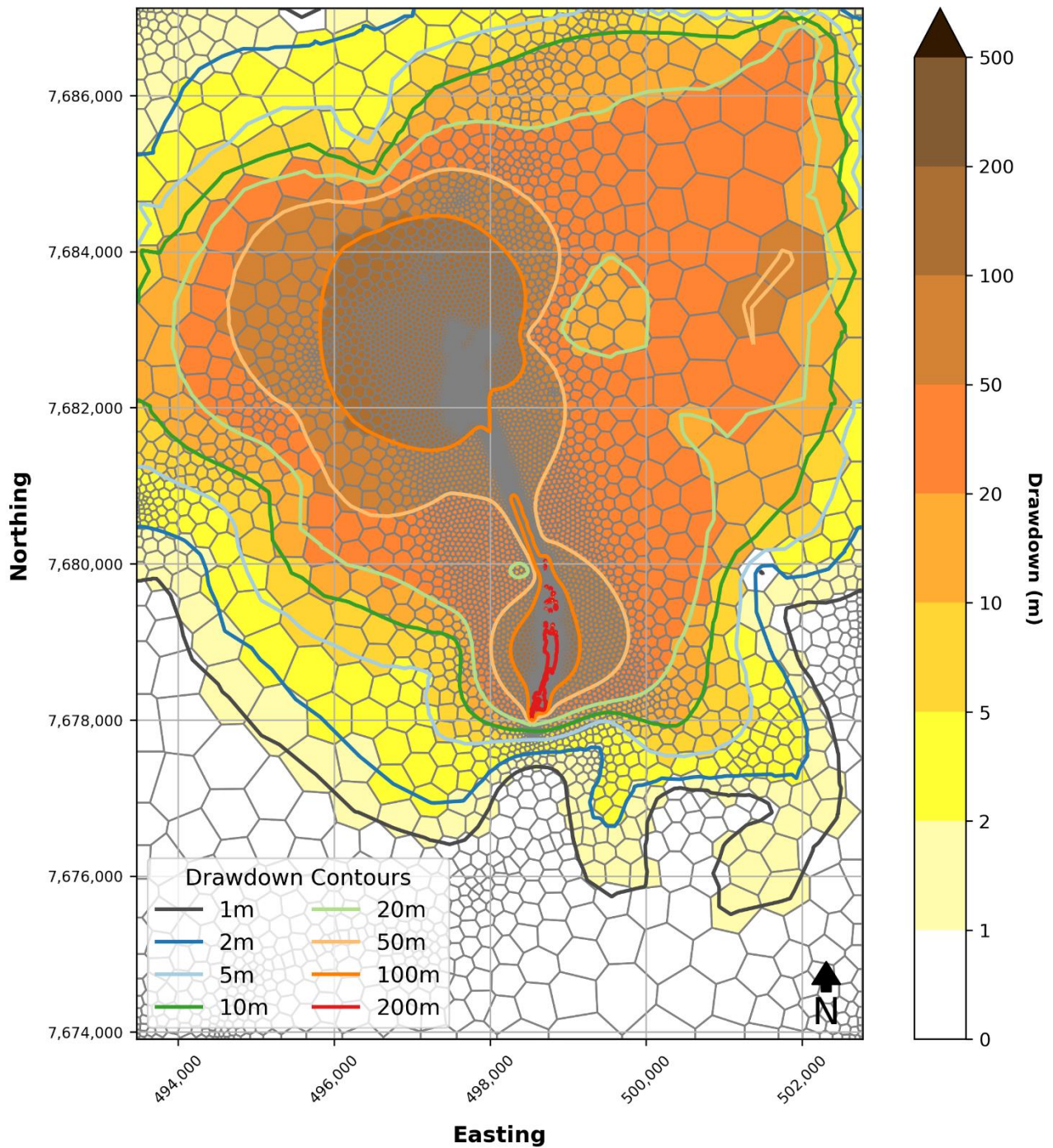
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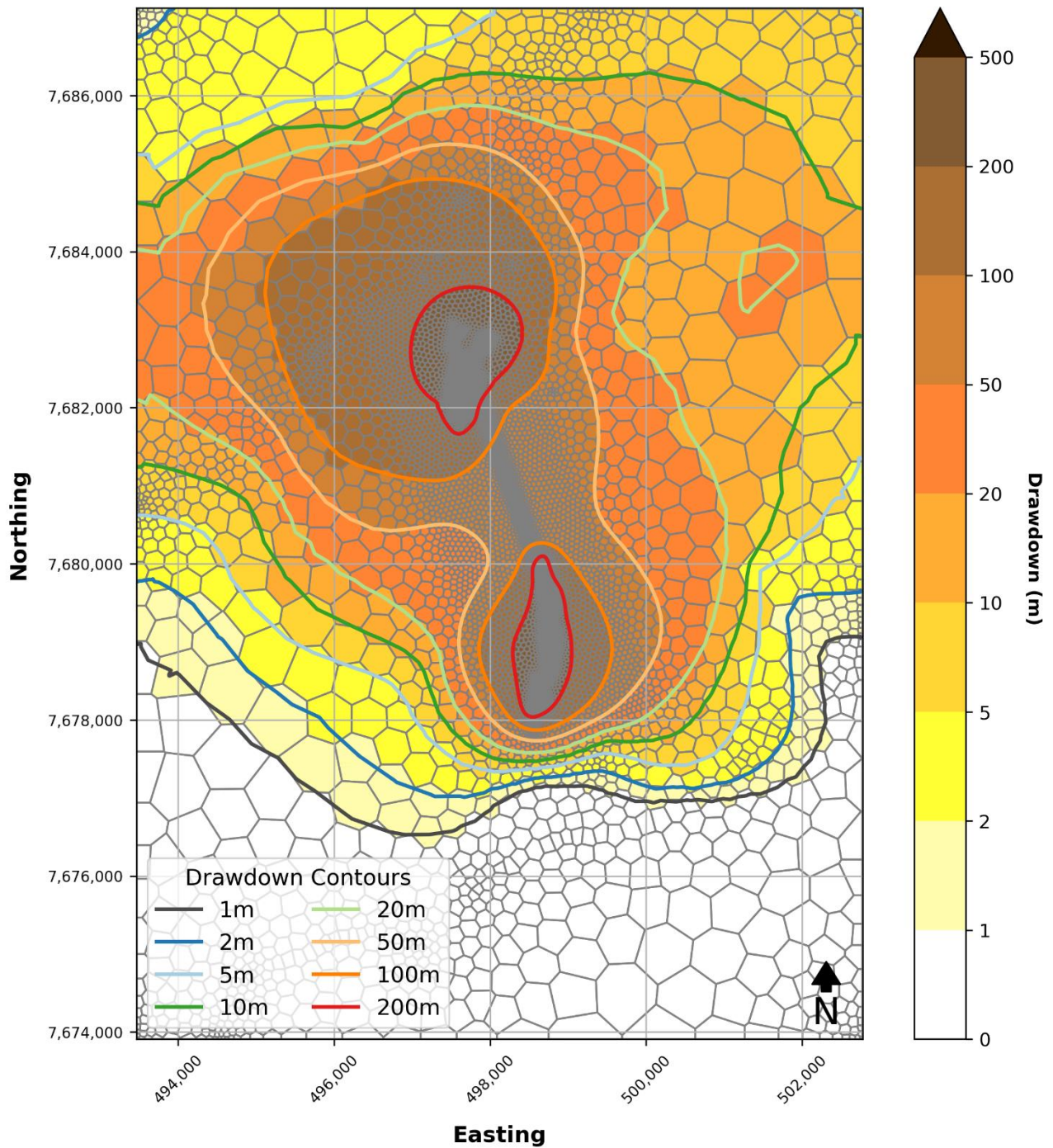
Model Layer 5 – Max. Cumulative Impacts



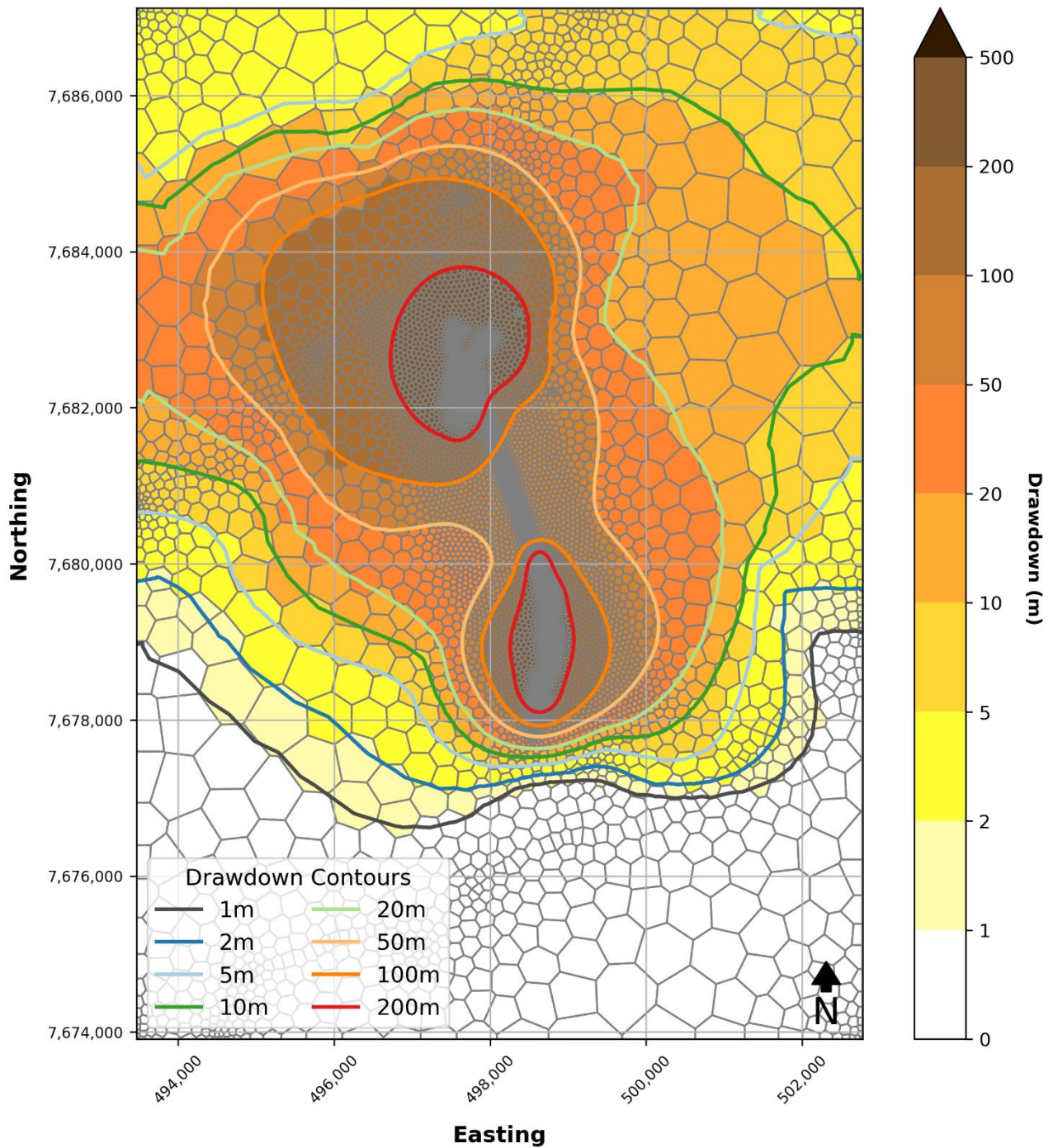
Model Layer 6 – Max. Cumulative Impacts



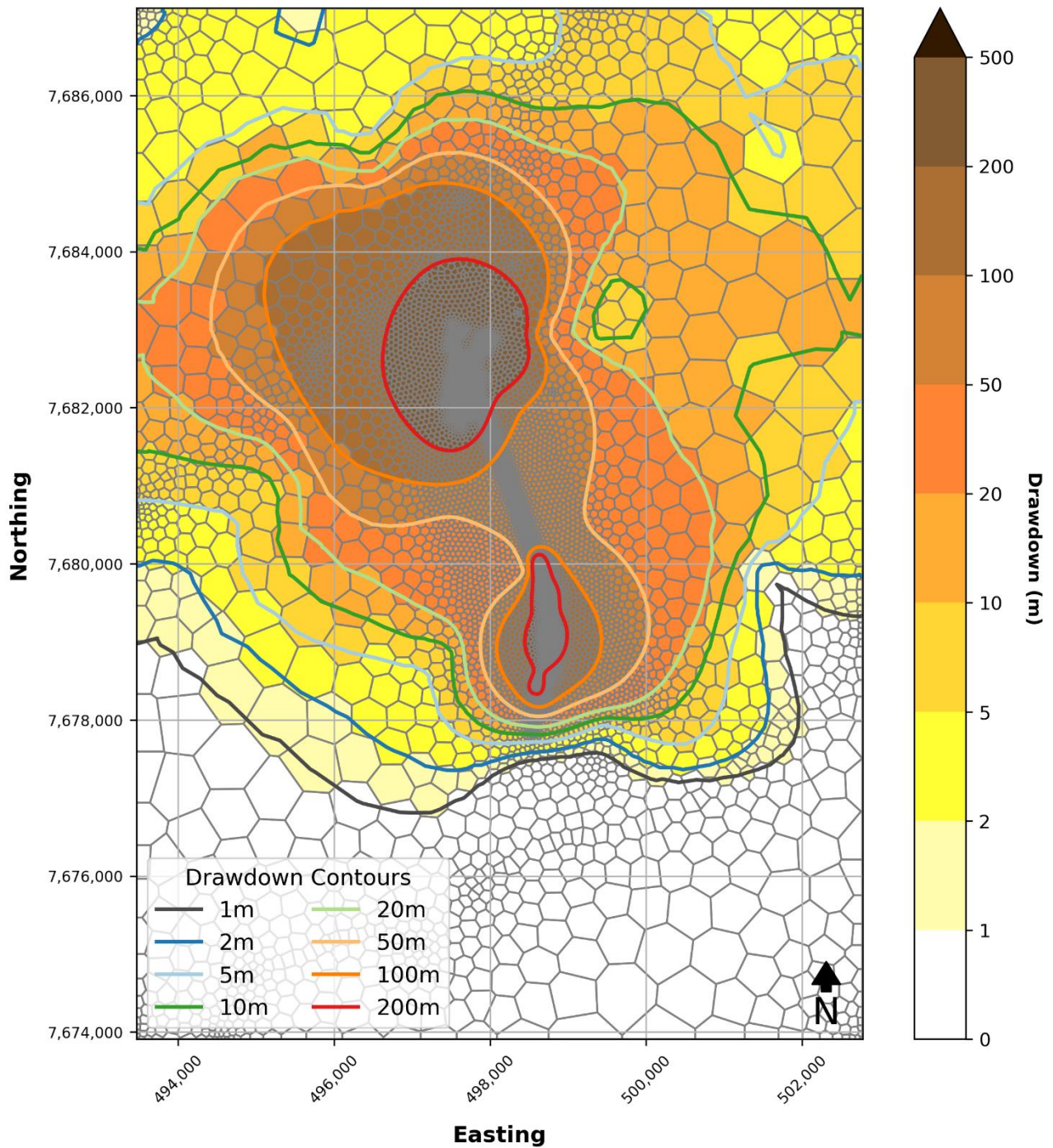
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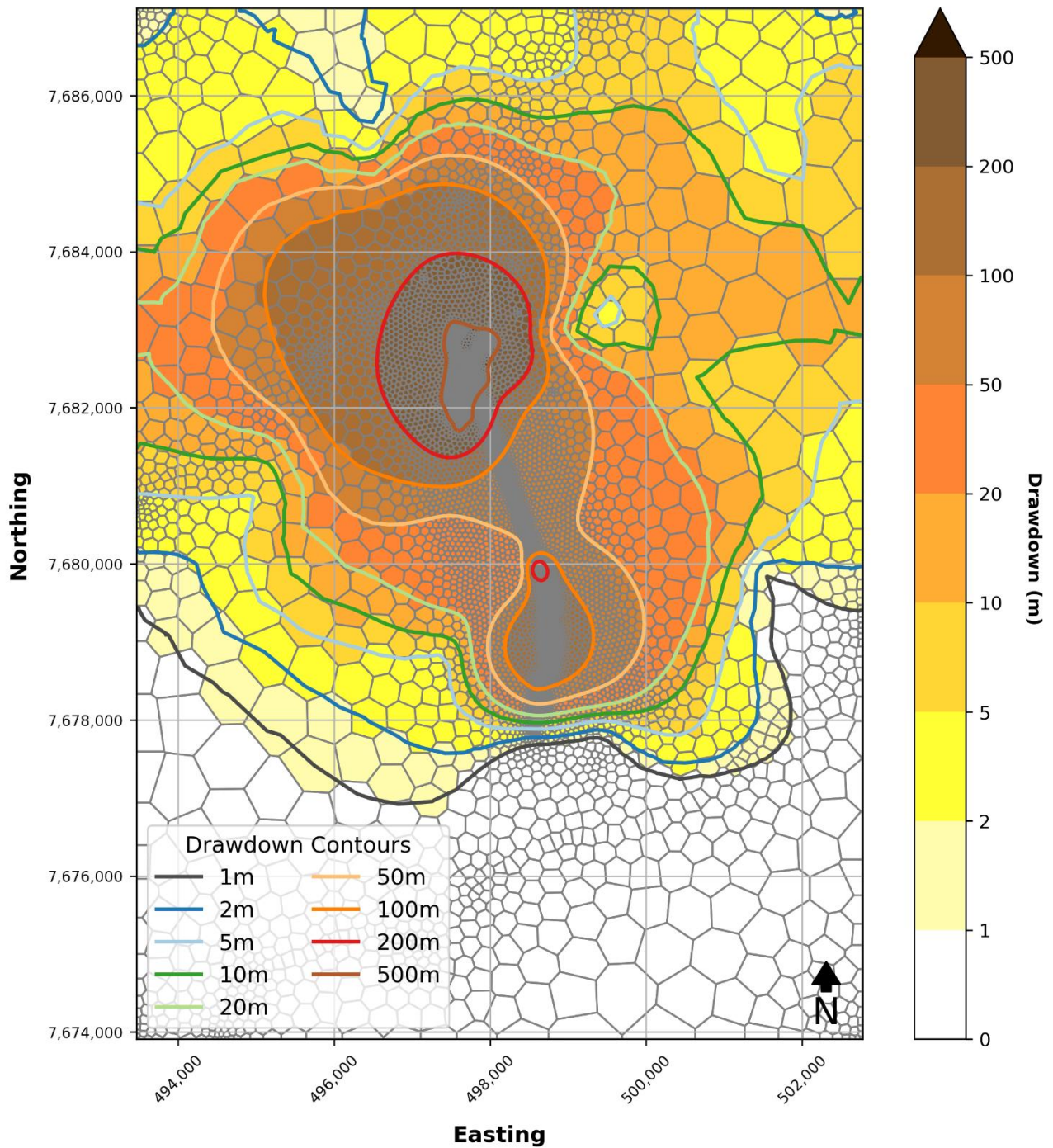
Model Layer 8 – Max. Cumulative Impacts



Model Layer 9 – Max. Cumulative Impacts



Model Layer 10 – Max. Cumulative Impacts



APPENDIX D: AIC SUMMARY OF PUBLIC CONSULTATION

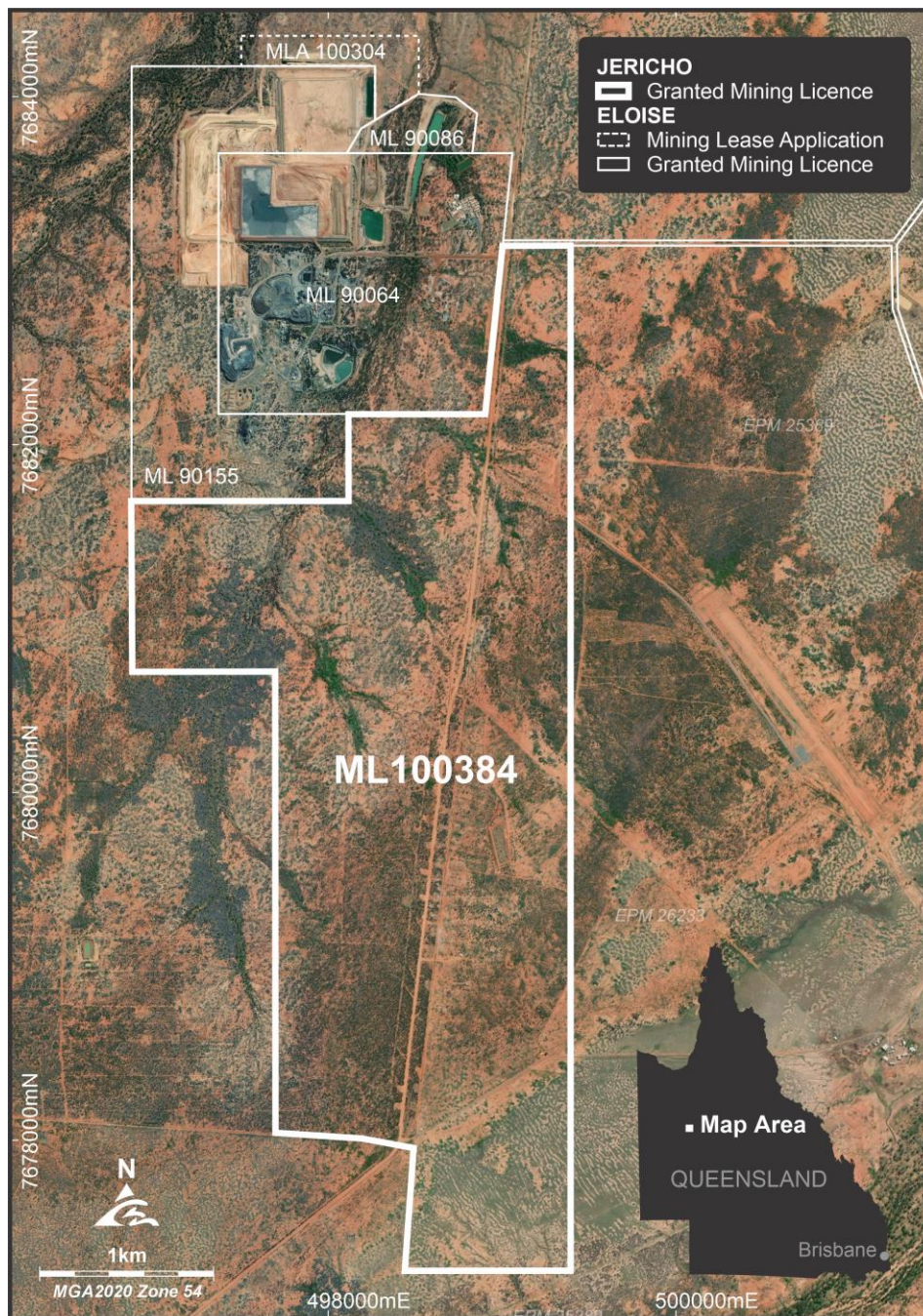


AIC JERICO PTY LTD

Underground Water Impact Report

Jericho Project

17 JANUARY 2025



1. Introduction

In accordance with section 381 of the Water Act 2000 (Water Act), AIC Jericho Pty Ltd (AICJ) and Engeny prepared the first Underground Water Impact Report (UWIR) for the Jericho Project and released a consultation draft for public consultation on 13 December 2024. All bore owners were notified of the availability of the report, public consultation sessions were held in December 2024 and January 2025. Consultation closed on 15 January 2024 and no written submissions were received by the close of business on the 17 January 2025 prior to submitting the final UWIR.

This section summarises the consultation process, the feedback received, and the way AIC Jericho Pty Ltd (AICJ) and Engeny has considered feedback in preparing the final UWIR for approval by the Department of the Environment, Tourism, Science and Innovation (DETSI).

2. Consultation Process

2.1 Release of the draft UWIR

The draft UWIR was released on 13 December 2024 by publication on the AIC Mines Limited website following an advertisement placed in the newspaper.

2.2 Public notification

In accordance with regulatory requirements, AIC Jericho Pty Ltd published a notice in the local newspaper (Table 1) and provided a copy of the notice to each owner of a water bore and each tenure holder within the Jericho Project. The notice contained: a description of the Jericho Project; information about how to access the draft UWIR and the submission form; and details about public information sessions. A copy of the notice is provided in Appendix 1.

Table 1: Newspaper in which the public notice was published

Newspaper	Publication day(s)	Publication date
North West Star Newspaper, Mount Isa	Thursday	Thursday 12 December 2024
North West Star Newspaper, Mount Isa	Thursday	Thursday 19 December 2024

The mailing list for the notice to the bore owners was developed from AIC Mines Limited stakeholder contact register. The notice was sent to two bore owners (Levuka and Elrose Stations) within the Jericho Project area and emailed to five landowners outside of the Jericho project area including Maronan, Arrolla, Barnsdale, Longford and Oorindi Stations (Appendix 2). Notices were also emailed to the McKinlay Council and the Traditional Owners, Mitakoodi Aboriginal Corporation. The contents of the proforma emails are provided in Appendix 3.

3. Notification and availability of the draft UWIR on the website

The AIC Mines Limited website (www.aicmines.com.au) provided the following:

- the draft UWIR
- companion documents related to the draft UWIR
- details on how to make a submission. See Appendix 1 and 3

A mailing address and email account were dedicated to receiving enquiries about the draft UWIR. No enquiries were received.

3.1 Consultation meetings

A pre lodgement meeting on the Jericho Project was held with the Susan Richards, Principal Project Officer, Department of Environment, Tourism, Science and Innovation (DETSI) and AIC representatives on the 2 August 2024. Items discussed included an overview of Jericho Project, the underground water management framework and the regional hydrogeological assessment. DETSI provided informal feedback on the tenement holder obligations and environmental values assessment (Chapter 6 of the draft UWIR).

During the public notification period in December 2024 and January 2025, information sessions were held with the landowners of Levuka and Elrose Stations, to explain the content of the draft UWIR and provide responses to landowners questions. The sessions discussed all aspects of the draft UWIR and was presented by Matthew Fallon (Executive General Manager – Development, AIC Mines Ltd) and Rodney Cooper (Contracting Environmental Officer, Eloise Copper Mine). A summary of the information sessions is shown in Table 2.

Table 2: Public information sessions

City/Town	Date	Venue	Time	Number of attendees
McKinlay	18 December	Levuka Station Teleconference	4.00 to 4.30 pm	1
Adelaide	20 December	Swiss Australian Farm Holding Office Video Conference	9.30 to 10.30 am	1
McKinlay	13 January 2025	Eloise Copper Mine, McKinlay – Oorindi Road, McKinlay	10.00 to 10.30 pm	1
Adelaide	10 January 2025	Swiss Australian Farm Holding Office Video Conference	9.30 to 10.30 am	1
TOTAL				2

The information sessions comprised of a PowerPoint presentation of the Jericho Project and a review of the UWIR report. Time was spent reviewing plan maps of the location of each landowner's bores relative to the predicted groundwater drawdown contours in the Immediately Affected Areas (IAA) and the Long Term Affected Areas (LTAA) within and outside of the Jericho Project Mining Lease (ML100348). None of the Landowner bores are located within the Jericho Mining Lease. Throughout and at the conclusion of the information sessions the landowners were invited to ask additional questions and provide feedback on the UWIR. During each consultation session, the landowners were informed of the process to submit verbal and written comments about the UWIR.

During the sessions, AIC requested permission to undertake bore assessments at Levuka Station for bores RN184894, RN163020, RN163019 and Elrose Station for bores RN118181, RN93345, RN93349. The Landowners consented to AIC personnel conducting bore assessments on their landholding.

3.2 Media coverage

No media interviews or social media was conducted following the release of the draft UWIR.

3.3 Written submissions

The period for written submissions closed on 15 January 2025 and no public verbal or written submissions were received by the close of business on the 17 January 2025.

An email response was received from Susan Richards, Principal Project Officer, Department of Environment, Tourism, Science and Innovation (DETSI) about the requirements for a Baseline Assessment on the 16 December 2024, the feedback included:

“Although a Baseline Assessment Plan is not required as per section 397(1) of the Water Act when there are no water bores in the area of the resource tenure.

A baseline assessment is still required for the bores you identify within the LTAA, but outside the tenement, as per the Baseline Assessment Guidelines (ESR/2016/1999):

The Water Act sets out a range of circumstances where a resource tenure holder must undertake a baseline assessment including:

- *in accordance with a resource tenure holder’s approved baseline assessment plan (BAP);*
- *if the chief executive of the Department of Environment and Science (the department) reasonably considers the bore is likely, in the future, to be affected by the exercise of a resource tenure holder’s underground water rights, the chief executive may direct that a baseline assessment be undertaken under section 402 of the Water Act; or*
- *if an underground water impact report (UWIR) identifies a long term affected area (LTAA)¹ and there are bores within the LTAA that are located outside the area of a resource tenure.*

Need to follow baseline assessment guidelines and no need for a Baseline Assessment Plan in this situation.”

3.4 Water Monitoring Strategy

During the consultation meetings with the landowners in December 2024 and January 2025, AIC discussed DETSI’s feedback (Section 3.3) about the requirement for a baseline assessment for bores outside of the Jericho Mining Lease (ML100348) and within predicted Long Term Affected Area (Appendix 5).

Accordingly, AIC made the following commitments to the landowners:

- 1) Undertake bore assessments within Levuka Station for bores RN184894, RN163020, RN163019 and Elrose Station for bores RN118181, RN93345, RN93349. AIC will follow the process outlined in the baseline assessment guideline (ESR/2016/2005 • Version 5.06 • L).
- 2) Following completion of the bore assessment, AIC will undertake bore readings and sampling on a three month basis. The timing will coincide with scheduled sampling of the monitor bores within the Jericho Mining Lease.
- 3) Advise the Landowners when the Chief Executive approves the UWIR, and the date AIC exercises its underground water rights within the Jericho Mining Lease.
- 4) Dependent on the UWIR Conditions of Approval by the chief executive, share and discuss the summary annual report with the Landowners.
 - a. The summary annual report must comply with section 376(e)(ii) of the Water Act 2000. The annual review must provide an analysis and a statement of whether there

has been a material change in the information or predictions used to determine the IAA.

- 5) Communicate with the landowners and provide updates on the progress of the Jericho Underground link drive and workings
- 6) Communicate with the landowners and provide feedback if any impacts are identified within the Long Term Affected Areas (LTAA) for the Levuka Station bores (RN184894, RN163020, RN163019) and Elrose Station bores (RN118181, RN93345, RN93349).

APPENDIX 1

PUBLIC NOTICE

Pursuant to Section 382 of the Water Act 2000



Release of Underground Water Impact Report

In accordance with the requirements of Section 381 and Section 382 of the Water Act 2000 (Water Act), AIC Mines Ltd has developed an underground water impact report (UWIR) for its operations within ML100348, located in the McKinlay Shire Local Government Area of the Eromanga Basin, approximately 60 km southeast of Cloncurry, Queensland.

You have the opportunity to review and comment on this UWIR.

From 13 December 2024 you can access the UWIR and provide submissions by visiting AIC Mines Ltd at: <https://www.aicmines.com.au/>

You can also email info@aicmines.com.au to arrange for a hard copy to be posted to you. Written submissions on any of the UWIRs may be made to AIC Mines Ltd and mailed or emailed to:

Attn: Jericho Project UWIR

Suite 3, 130 Hay Street, Subiaco, WA 6008

or info@aicmines.com.au

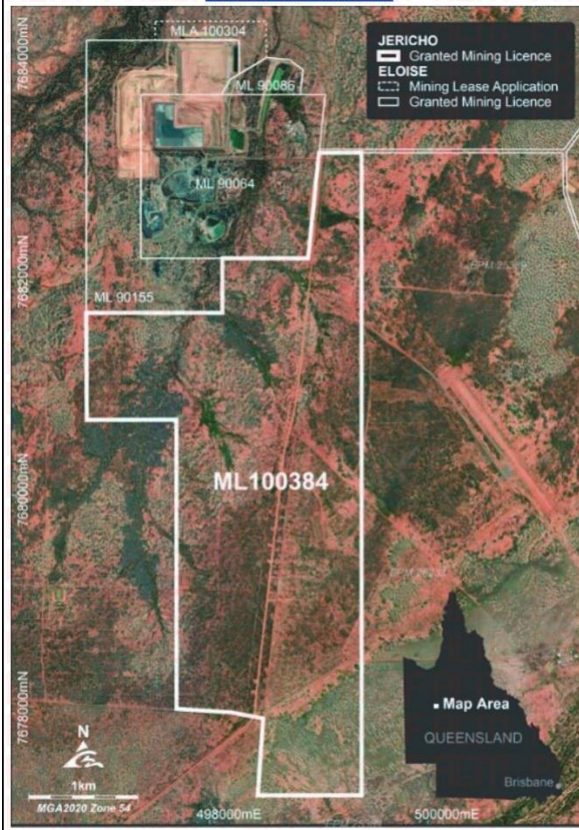
Your submission must be:

- In writing
- Received by COB 10th January 2025

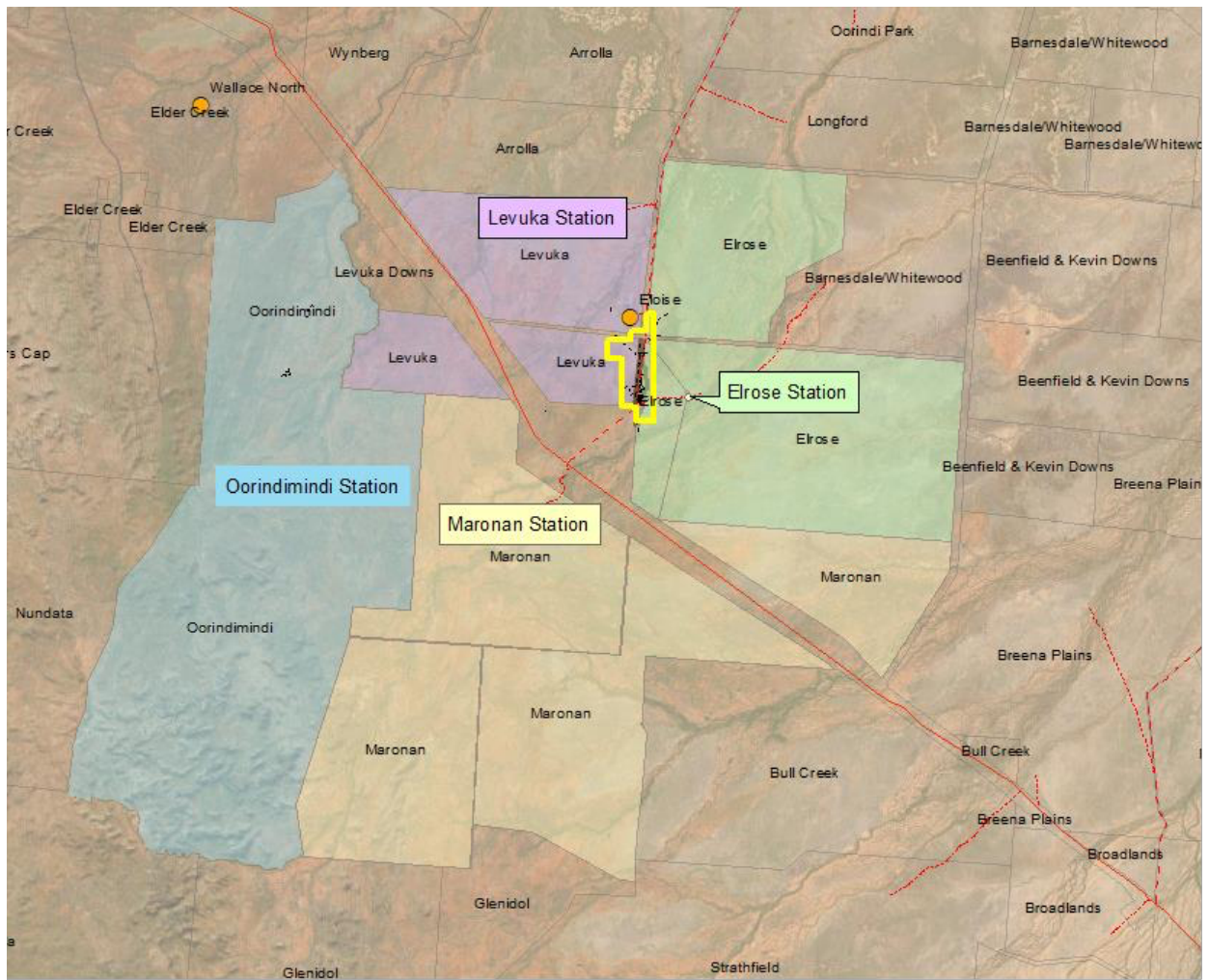
Please note that as required by Section 382(3)(d) of the Water Act, copies of all received submissions must be provided to the chief executive.

These submissions will be considered as part of the assessment process for the UWIR.

For more information please email info@aicmines.com.au



APPENDIX 2



APPENDIX 3

Dear ,

AIC Mines has commenced the public notification period for the Underground Water Impact Report (UWIR) for the Jericho Project. A Public Notice was placed in the North West Star Newspaper editions on the 12th and 19th December 2024. (see attachment).

The report attempts to predict the impact to groundwater as a result of the Eloise and Jericho underground mining projects after three years, 2027, and at the end of the mine life in 2036. The report also sets out future monitoring obligations and management strategies for the project. The report can be accessed and downloaded using the attached link: https://www.aicmines.com.au/downloads/AICMines_Jericho_Project_UWIR_20241213_v3.pdf

Under the Queensland Water Act (2000), AIC has a requirement to make the report available for public review and comment for a period of 20 business days or until the 15th January 2025. Accordingly, AIC Mines would like to offer the opportunity to discuss the report with you, either as a face-to-face meeting or a phone call discussion. AIC would also like to make you aware of the opportunity to review and make any public submissions, using the steps below.

PUBLIC NOTICE

Pursuant to Section 382 of the Water Act 2000

Release of Underground Water Impact Report

In accordance with the requirements of Section 381 and Section 382 of the Water Act 2000 (Water Act), AIC Mines Ltd has developed an underground water impact report (UWIR) for its operations within ML100348, located in the McKinlay Shire Local Government Area of the Eromanga Basin, approximately 60 km southeast of Cloncurry, Queensland.

You have the opportunity to review and comment on this UWIR. From 13 December 2024 you can access the UWIR and provide submissions by visiting AIC Mines Ltd at: <https://www.aicmines.com.au/>

You can also email info@aicmines.com.au to arrange for a hard copy to be posted to you. Written submissions on any of the UWIRs may be made to AIC Mines Ltd and mailed or emailed to:

Attn: Jericho Project UWIR

Suite 3, 130 Hay Street, Subiaco, WA 6008 or to info@aicmines.com.au

Your submission must be:

- In writing
- Received by COB 15th January 2025

Please note that as required by Section 382(3)(d) of the Water Act, copies of all received submissions must be provided to the chief executive. These submissions will be considered as part of the assessment process for the UWIR.

For more information please email info@aicmines.com.au

If you have any queries and would like to discuss the UWIR report, please don't hesitate to contact me. Thanks for your time

Kind Regards

Matt Fallon

EGM Development



Suite 3, 130 Hay St, Subiaco, WA 6008.

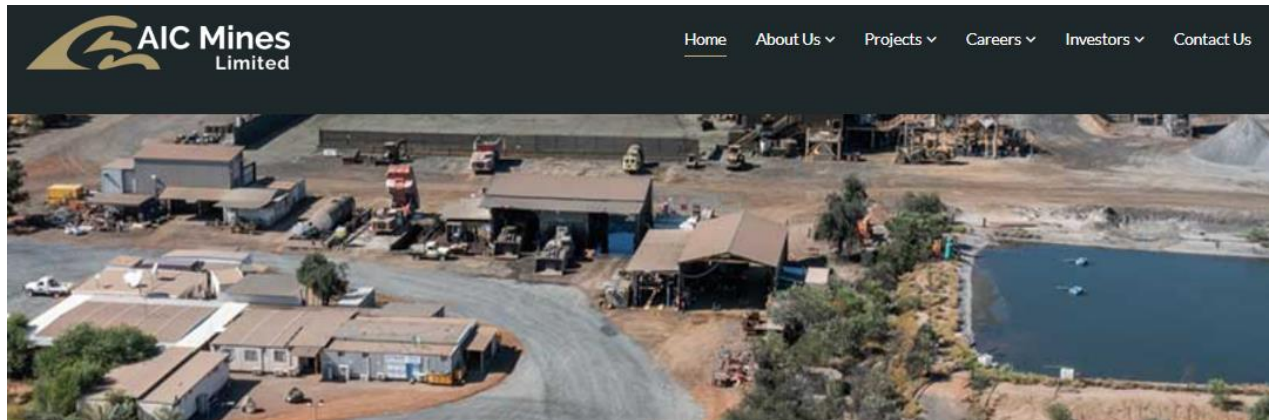
Mobile: 0419 926 345

Email: matt.fallon@aicmines.com.au

APPENDIX 4

AIC Mines Limited Website with the hyperlink to the Jericho Project Underground Water Impact Report

www.aicmines.com.au/downloads/AICMines_Jericho_Project_UWIR_20241213_v3.pdf



AIC Mines is a growth focused Australian resources company. The Company's strategy is to build a portfolio of gold and copper assets in Australia through exploration, development and acquisition.

AIC Mines owns the Eloise copper mine – a high-grade operating underground mine located in North Queensland. The mine commenced production in 1996 and has since produced over 376,000t of copper and 195,000oz of gold.

Current operations consist of an underground mine accessed via decline. Ore is treated on-site via conventional crushing, grinding and sulphide flotation, producing a high-quality copper concentrate with significant by-product gold and silver. The mine is producing approximately 12,500t of copper and 5,000oz of gold in concentrate per annum.

AIC Mines is working to expand the Eloise processing plant and extend the life of the operation through development of the Jericho deposit, located 4 kilometres southeast of Eloise. Development of the Jericho deposit commenced in June 2024 with the commencement of the Jericho link drive, a 3-kilometre underground drive connecting the Jericho deposit to the Eloise decline. The Eloise processing plant is being expanded from 725,000tpa to 1.1Mtpa to treat the additional ore from Jericho. Development of Jericho transforms Eloise into a true cornerstone asset for AIC Mines.

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 [Jericho Underground Water Impact Report](#)

From:

Sent: Friday, 13 December 2024 11:34 AM

To: Matt Fallon <matt.fallon@aicmines.com.au>

Cc: >

Subject: Re: Assistance - New Link on AIC website

Hi Matt,

Just letting you know that the PDF is now uploaded to the home page with a button under the main intro text.

Cheers,

SP Corporate - Business Solution Providers

On Fri, 13 Dec 2024 at 10:44, Matt Fallon <matt.fallon@aicmines.com.au> wrote:

Dear xxxx

Please find attached the final document for the Jericho Underground Water Impact Report

 [AICMines_Jericho Project_UWIR_20241213.pdf](#)

Is it possible to create a link on the home page <https://www.aicmines.com.au/> with a hyperlink to the **+ Jericho Underground Water Impact Report**

Can I please call you when convenient

Kind Regards

Matt Fallon

Mobile: 0419 926 345

Email: matt.fallon@aicmines.com.au

APPENDIX 5

