July 2024 Groundwater Monitoring Event and Logger Data Collection

Eramurra Salt Project

Leichhardt Salt Pty Ltd

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1 INTRODUCTION

1.1 OVERVIEW

Land and Water Consulting (LWC) was engaged by Leichhardt Salt Pty Ltd (Leichhardt) to undertake the July 2024 groundwater monitoring event (GME) and data logger retrieval program at the Eramurra Solar Salt Project located on the Pilbara Coast, Western Australia (the Site). A Site locality plan is presented as Figure 1 (at the rear of this document), with the project location presented in Figure 1-1, below.

Figure 1-1. Project Location (Source: Leichhardt)

1.2 BACKGROUND

Leichhardt Salt Pty Ltd (Leichhardt) is seeking to develop a solar salt project in the Cape Preston East area, approximately 55 kilometres (km) west-southwest of Karratha in Western Australia (WA) (the Proposal). The Proposal will utilise seawater and evaporation to produce a concentrated salt product for export.

The Proposal includes the development of a series of concentration ponds, crystallisers and processing plant. Supporting infrastructure includes bitterns outfall, drainage channels, product dewatering facilities, desalination plant, pumps, pipelines, power supply, access roads, administration buildings, workshops, laydown areas, landfill facility, communications facilities and other associated infrastructure. The Proposal also includes dredging at the Cape Preston East Port and both offshore and onshore disposal of dredge spoil material.

The perimeter embankment around the concentration ponds and the pad for crystalliser area will alter existing waterways flowing towards the Indian Ocean as well as tidal flooding of the project land parcels. The highly saline water within the concentrator area has potential to increase salinity of local surface water, as well as potentially impacting groundwater quality. In addition to the direct impacts from the addition of salinity to the groundwater and surface water environments, the construction of the evaporation ponds and associated infrastructure (bunds, roads, pipelines and culverts) may disturb acid sulfate soils, which in turn will provide an additional salinity source.

The groundwater monitoring event was undertaken in accordance with the Groundwater Monitoring and Management Plan (GMMP) prepared for the Eramurra Solar Salt Project:

- LWC (2023c) G*roundwater Monitoring and Management Plan - Eramurra Salt Project* Prepared by LWC for Leichhardt Salt Pty Ltd in December 2023

LWC has previously undertaken the December 2021, March 2022/ May 2022, November 2022, June 2023, November 2023/ February 2024 groundwater monitoring event monitoring events (LWC 2022a, LWC 2022b, LWC 2023a, LWC 2023b and LWC 2024), which alongside the results of the July 2024 monitoring event will inform further iterations of the groundwater model which has been developed to address impacts on the quantity and quality of the surrounding groundwater systems as a result of seepage and/ or mounding from the salt ponds which is currently being completed. Further, the results will feed into the characterisation of the baseline hydrogeological regimes and water quality both in a local and regional context to inform an assessment of the potential impacts and risks from construction and operation of the project in the context of groundwater and surface water contamination.

1.3 OBJECTIVES

The objective of monitoring program was to complete a groundwater monitoring event in accordance with the GMMP where collection of chemical and physical hydrogeological parameters at existing agreed locations across the site was completed.

1.4 SCOPE OF WORKS

The following scope of work was adopted for the July 2024 monitoring event:

- Completion of a groundwater elevation gauging and sampling event which targeted each of the existing groundwater monitoring wells (total of 21 groundwater wells);
- Collection of data from groundwater and surface water data loggers across the project area.
- Collection of surface water samples at accessible surface water sampling locations which were enroute to surface water data logger locations and at which water was present; and
- Submission of groundwater and surface water samples for laboratory analysis of key potential chemical substances of concern.

Provision of a factual report detailing the adopted approach and methodology, results of the monitoring events, assessment of the quality of groundwater/ surface water data with respect to environmental values/beneficial uses of groundwater and surface water and an assessment of the suitability of the data to be used as a basis of interpretation.

2 SITE SETTING

The current site use and environmental setting is summarised in Table 2-1.

Table 2-1. Site Environmental Setting

Item	Description
Topography	The Site fringes a low-lying coast. The central and eastern parts of the project area comprise a line of coastal beach ridges, dunes and cheniers forming a coastal barrier rising locally to over 12 m along the crest of the main dune. A backwater has formed behind the coastal barrier and this area is referred to as inter and supra tidal flats. Several small (high tide) islands are present in the backwater and these provide evidence of former coastlines which are now partially buried beneath the lagoonal sediments associated with the backwater. Mangroves fringe the western aspect of this area. Inland of inter and supra-tidal flats is an area of alluvial outwash. The land falls at a gradient of about 1 m in 300 m from the southeast towards the northwest.
Climate	The Site has an arid climate characterised by hot, humid summers with less than 350 mm of rain per year. Based on information collected at the Dampier Salt weather station (ID5061 located around 40 km north east of the Site), the mean maximum temperatures range from around 26°C in winter to 36°C in summer and the average annual rainfall is around 266 mm with most of the rainfall occurring January to June. Rainfall is lowest generally from July to December.
Geology	A desktop geological study was undertaken by CMW Geosciences in 2020. Field-based studies were completed in 2021, with an interpretive geotechnical report provided in March 2022 (CMW 2022). In summary, the Project area is located within the Pilbara Craton geological province which comprises Archean aged volcanic and sedimentary rocks of more than 3,600 Ma. The Pilbara Craton has been subject to a long history of tectonic and orogeny with various igneous intrusions occurring and deposition of shelf sediments such as the Hammersley Basin containing extensive banded iron-formation (BIF) deposits. Local to the Project area, the Pilbara Craton is overlain by a number of Cainozoic sedimentary units comprising marine muds and silts, coastal sands and beach deposits, limestone, alluvial/colluvial sands and clays as well as residual calcretes and eluvial sands from weathered granitoid rocks (Hickman and Strong, 2000). These sediments are underlain by granitic basement belonging to the Dampier Granitoid Complex which has been intruded by a series of cross cutting dolerite and gabbro dykes. Geological investigations by CMW (2020) indicate surface expressions of the basement exist within the central and eastern portions of the Project area often within eroded creek beds. However, in general, the depth to basement distribution is currently not well understood. Surface geology is expected to change with distance from the coast as mapped in Figure 2.
Hydrogeology	As per the outcomes of *Eramurra Solar Salt Project – Groundwater Effects Assessment and Seepage Modelling* provided by CDM Smith (CDM Smith 2023), the following was observed: ▪ The majority of the groundwater inflow occurs from the sea and rainfall. ▪ Groundwater outflow mostly occurs as groundwater evapotranspiration in lying backwater areas (only minor discharge to the sea) under pre-operation (baseline) conditions.
Hydrology	Several creeks dissect this alluvial outwash plain. The creeks are generally small as the catchment is not large and the watershed is roughly coincidental with the position of the Northwest Coastal Highway. However, along the eastern edge of the site is a larger creek called Devil Creek which drains a larger inland area, as does Eramurra Creek that follows the western side the project area. There is only one large named creek McKay Creek which cuts through the middle of the project area. This creek locally incised down about 1 m in the creek bed or about 3 m of incision across the 200 m wide floodplain.
Groundwater Use	A groundwater beneficial use assessment is detailed in LWC (2023c). Potential beneficial uses were considered to include: ▪ Groundwater Dependent Ecosystems ▪ Aquatic Ecosystems (Marine and Freshwater) ▪ Drinking Water

Item	Description
	▪ Non-Potable Use of Water ▪ Recreation ▪ Cultural and Spiritual ▪ Agricultural – Irrigation and Livestock Drinking Water
Acid Sulfate Soils (ASS)	The coastal soils at the site are described as possessing a high risk, moderate and low risk of containing acid sulfate soil (ASS) within 3 m of current ground surface, each risk ranking is dependent on the soil/sediment type and depth to groundwater (LWC 2021b). Comprehensive testing within the footprint of the proposed salt ponds confirmed that the dry elluvials/alluvials and igneous gravels are not ASS. ASS is likely to be present under the algal matt and samphire communities at the coast. Further sampling and analysis has been recommended should any disturbance (excavation and/or dewatering) of coastal sediments be necessary for construction (LWC 2022c).
Areas of Environmental Value	There are numerous areas of environmental value across the site. Section 3 provides a summary of each environmental value. We note that there are other terrestrial EVs at the site, such as Horseflat Priority Ecological Community (PEC) which are not considered in the GMMP or the groundwater effects assessment as they are not ones which have the potential to be impacted by a water affecting activity (WAA).
Surrounding Land Uses	The predominant land use in the area surrounding the Site appears to generally comprise pastoral land use. The Devil Creek Gas Plant pipeline (leading from the plant to the coast) transects the north eastern portion of the Site. The North Western Costal Highway bounds the project area along its south western to eastern boundary.
Current Land Use	The Site is currently designated as pastoral land and part of the Project Area is used for grazing purposes.
Proposed Land Use	Development as a salt production facility.

3 ENVIRONMENTAL VALUES AND THREAT ASSESSMENT

As documented in the GMMP (LWC, 2023c), studies completed to date have assisted in understanding the potential direct effects of alteration of groundwater levels and flow (volumes and direction) from seepage and resultant mounding of groundwater associated with the proposed project infrastructure to identified Environmental Values (EV's). As per the outcomes of *Eramurra Solar Salt Project – Groundwater Effects Assessment and Seepage Modelling* provided by CDM Smith (2023) and studies on benthic communities and habitats completed by O2 Environment (2023), Table 3-1 below summarises the considered EV's and predicted outcomes of the threat to these values (noting that EVs listed below are those that may be affected by water affecting activities (WAA) and not those disturbed by other activities such as construction of the ponds).

The outcomes of these assessments have assisted in refining the requirements of further baseline groundwater and surface water monitoring and the need for additional monitoring infrastructure to characterise areas predicted to be at risk.

Table 3-1. Environmental Values and Outcomes of Threat Assessment (CDM Smith, 2023)

Environmental value (receptor)	Direct effect (pathway)	Outcome of threat assessment
EV1 – Stygofauna	DE1 – Increased recharge DE2 – Increased salinity DE3 – Change in groundwater levels DE4 – Change in groundwater flow	Groundwater modelling has predicted that mounding of the water table will occur, however, this will not result in a reduction in stygofauna habitat. It is predicted that groundwater salinity within the Project area will increase by up to the point of salt saturation during operations. This will likely impact stygofauna habitat. Any change in groundwater from water impoundment is predicted to not result in a reduction in stygofauna habitat. Groundwater modelling predicts the Project will change groundwater flow resulting in greater discharge to the coast rather than the current condition where groundwater flows from the coast inland with only minor discharge to the ocean. This process, however, is unlikely to impact stygofauna habitat significantly, as stygofauna are thought to exist predominantly in areas further inland and outside of the hypersaline backwater zone adjacent to the coast. Overall, the threat to stygofauna as a result of the Project development is expected to be localised to the evaporation ponds and a small extent outside of these areas impacted by salinity increases and unlikely to have a significant impact in terms of the conservation of fauna communities more regionally.
EV2 – Groundwater dependent terrestrial vegetation (GDE Atlas)	DE1 – Increased recharge DE2 – Increased salinity DE3 – Change in groundwater levels DE4 – Change in groundwater flow	Groundwater levels are predicted to increase by around 3 m within the creeks and drainages within the Project area, notably Devil Creek to the Project's east and McKay Creek situated between the evaporation ponds in the centre of the Project area. This may cause water logging of the unsaturated root zone, impacting the reserve of fresher soil water used by the trees for transpiration, as these species cannot draw water from completely saturated soil (below the water table). *Eucalyptus* species within McKay and Devil Creek that occur within 1 km of the evaporation ponds, and within Eramurra Creek up to 3 km from the evaporation ponds will likely be threatened by the Project development and potentially result in permanent loss of vegetation. Permanent loss of vegetation is not expected provided an unsaturated zone remains (i.e. the eucalypts are not exposed to permanent inundation). The modelling predicts an unsaturated zone will remain, but there is uncertainty around this key prediction. Reducing this uncertainty will be a focus area for model refinement. Salinity increases to the groundwater at the predicted concentrations will likely affect the vadose zone and impact the water (groundwater) uptake during dry periods when fresher waters supplies are diminished. Eucalypt species are documented to viably use groundwater with salinity of less than around 13 g/L, while they have also been shown to use groundwater between 7 to 21 g/L (CDM Smith, 2023). These tolerance ranges are far below the predicted salinity increases at the Project creeks, for which increases of almost 350 g/L are expected in some locations. The consequence of such a direct effect is increased tree stress during dry periods and potential permanent loss of vegetation.

Environmental value (receptor)	Direct effect (pathway)	Outcome of threat assessment
EV2 – Groundwater dependent terrestrial vegetation (GDE Atlas) - continued	DE3 – Change in groundwater levels DE4 – Change in groundwater flow	Shallower groundwater levels will extend the periods of surface water inundation within creeks from the baseline condition. This effect alone generally will not result in an adverse effect unless it induces a prolonged period of water logging that entirely inundates the unsaturated zone or combines with direct effects associated with salinity increases, e.g., if the surface water becomes saline as a result of groundwater interactions, or groundwater from beneath the evaporation ponds seep to within these drainages. The consequence of such a direct effect is increased tree stress during dry periods, reduction of the number and frequency of emergent saplings and potential permanent loss of vegetation.
EV3 – Terrestrial vegetation (Coastal Priority Ecological Community (PEC))	DE1 – Increased recharge DE2 – Increased salinity DE3 – Change in groundwater levels DE4 – Change in Groundwater Flow	It is predicted that most of the increased recharge will be discharged via groundwater evapotranspiration (ET) and as outflow to the sea. Beyond the evaporation pond area, the zone of water level influence remains relatively constrained to within 1 km buffer zone and no expressions of groundwater or permanent wetting is predicted. The groundwater salinity in the region of the PEC is predicted to increase gradually over the operational period. Given the location of this environmental value close to the shore and adjacent to the algal mat communities, it is considered that the plant species residing in this area have a high degree of salt tolerance. The baseline depth to groundwater at this locality is around 4 m, it is unlikely the plants are accessing groundwater as their primary water source. If groundwater does rise to within the root zone of the plants, this is unlikely to affect the primary water source (rainfall) and the grasses would be expected to continue using this source and not groundwater. Groundwater flow is predicted to change resulting in greater discharge to the coast rather than the current condition where groundwater flow from the coast inland with limited discharge to the ocean. Groundwater flow conditions are not expected to impact the coastal PEC as the change in flow has minimal impact on the groundwater levels or recharge to the vegetation in this community.
EV4 – Algal mats and Samphire	DE1 – Increased recharge DE2 – Increased salinity DE3 – Change in groundwater levels DE4 – Change in Groundwater Flow	It is predicted most of the increased recharge will discharge via groundwater evapo-transpiration (ET, water loss) and as outflow to the sea. Outside of the evaporation pond areas, the zone of water level influence remains relatively constrained to within a kilometre buffer zone however, no expressions of groundwater or permanent wetting are predicted, suggesting the impact to algal mat and samphire communities from increased groundwater recharge is negligible, but possible. A minor increase to groundwater salinity in the areas immediately adjacent to the evaporation ponds in the northeast and northwest of the Project is predicted. As algal mats and samphire are groundwater dependant species, direct effects relating to groundwater quality (i.e., increased salinity) will only pose as an exposure pathway should groundwater become contacted with these EVs. Groundwater discharge is not expected in areas other than through groundwater ET or direct discharge to the coast. The salinity of groundwater discharging to the coast is predicted to be equal to seawater and slightly higher (up to 4 g/L) in very localised areas. The impact from increased groundwater salinity to algal mats is expected to be localised to areas along the coast where groundwater discharges, however, algal mats are expected to be resilient to the predicted salinity increases. Salinity impacts to samphire might occur should their habitat (i.e., the backwater areas) become permanently inundated. No change in groundwater levels is expected within 1 km distance (within the algal mat area) of the evaporation ponds. Minor change in groundwater levels is likely immediately adjacent to the evaporation ponds which may impact the wetting and drying processes of algal mats and samphire; however, permanent inundation is not predicted and groundwater mounding surrounding the evaporation ponds is unlikely to have a significant effect on the wetting and drying cycles within the backwater area. There is uncertainty around this key prediction. Reducing this uncertainty will be a focus area for model refinement. The predicted change in groundwater flow will result in some additional flow occurring towards the ocean (under the most likely operation scenario), which might impact algal mats that exist within tidal areas that coincide with groundwater discharge. This direct effect, however, will not change the overall flow process towards the backwater areas meaning an adverse effect is not expected to samphire. The impact to samphire will depend on water logging and salinity change and tolerance of this EV to those changes.

Environmental value (receptor)	Direct effect (pathway)	Outcome of threat assessment
EV5 – Aquatic vegetation (mangroves)	DE1 – Increased recharge DE2 – Increased salinity DE3 – Change in groundwater levels DE4 – Change in Groundwater Flow	It is predicted water levels within the mangrove areas will not increase as a result of water impoundment due to the hypersaline backwater zone buffering the increased recharge through increased groundwater ET. The mangrove site is likely to be relatively insensitive to the operations, possibly due to the buffer provided by ET in the low-lying area. Given its proximity to the sea, this area is more susceptible to sea water intrusion in the sea level rise scenario. The salinity level is further increased by evapo-concentration (hence it can go beyond the sea salinity of 35 g/L), although this is an effect of sea level rise, not of the operations. Wetting and drying cycles are unlikely to be impacted as groundwater levels in mangrove areas are unlikely to increase. It is predicted that the groundwater outflow to the sea will increase by around 500 kL/d under the mean sea level scenario and 300 kL/d under the sea level rise scenario.
EV6 – Stock water wells	DE1 – Increased recharge DE2 – Increased salinity DE3 – Change in groundwater levels DE4 – Change in Groundwater Flow	Two stock water wells (70910002 and 70910780) will likely become inoperable due to salinity increases in the groundwater. The salinity is expected to increase by around 50 g/L. Other stock water wells are unlikely to be impacted by groundwater salinity increases, however, the uncertainty in the salinity predictions is large and the baseline salinity is unknown and will need to be confirmed to understand the threat to stock water wells. Additionally, the influence of pumping from stock water wells has not been assessed to predict whether groundwater abstractions could draw hyper saline groundwater from under the evaporation ponds to these wells. The consequence of this direct effect is loss of stock watering infrastructure. Leichhardt will be relocating stock watering wells. This will eliminate the threat of stock watering infrastructure loss to pastoral lease owners.
EV7 - Cultural and spiritual (springs and pools)	DE1 – Increased recharge DE2 – Increased salinity DE3 – Change in groundwater levels DE4 – Change in Groundwater Flow	Devil's Pools, a surface water body located within Devil Creek to the east of the Project has the potential to be impacted by changes in groundwater salinity as a result of groundwater level increase. Note, an increase in salinity or groundwater levels alone would not produce an impact to the pools, it is the combination of water level rise and salinity increase that could change the character of the pools. Groundwater salinity in the Devil Creek area is predicted to increase by around 260 g/L after around 100 years of operation and under the worst case this increase could occur within 20 years of the beginning of operation. Groundwater levels are predicted to rise by around 3 m but remain 2 m below the ground surface. It is possible that the combination of these effects could cause the pools to switch from temporary fresh water to permanent saltwater pools. It should be noted that little is known about the current condition of this EV and whether the pools represent permanent expression of groundwater or if such a connection exists. It is understood that the pool does not contain water permanently and is therefore not currently likely to be supported by groundwater. The rise in predicted groundwater levels caused by mounding (increase of around 3 m) could increase the chances of connection at this EV and therefore, increases in salinity to the levels predicted will likely alter the current ecological condition of Devil's Pools and permanently disrupt the EVs reliant upon the pool to meet their environmental water requirement (EWR).

Environmental value (receptor)	Direct effect (pathway)	Outcome of threat assessment
EV8 – Cultural and spiritual (soaks)	DE1 – Increased recharge DE2 – Increased salinity DE3 – Change in groundwater levels DE4 – Change in Groundwater Flow	Site surveys have identified the presence of a soak (Noorea Soak) within elevated basement geology which outcrops west of the Santos Gas Pipeline in a gap between the proposed evaporation ponds. Remote sensing investigations (CDM Smith, 2023; Table 3-2) suggest this EV is not a permanent water feature and is unlikely to receive groundwater inflows. The soak is conceptualised to be supported by surface water runoff that collects during rainfall events due to its location within a natural landscape depression. Although not a groundwater EV, it is recognised this EV has potentially signific spiritual importance and as such, has been included further in this assessment to investigate the changes to the groundwater system beneath the soak. Groundwater modelling predicts there will be no change to the water levels in the soak therefore there is no mechanism for the project to alter water quality at the soak from interaction with groundwater under the current conceptual model which will be refined as additional monitoring data becomes available.
EV8 – Santos Gas Pipeline	DE1 – Increased recharge DE2 – Increased salinity DE3 – Change in groundwater levels DE4 – Change in Groundwater Flow	It is predicted that a substantial rise in groundwater level at the Santos Gas Pipeline transfer station (located upgradient of the ponds) of around 5 m and a smaller rise (less than 0.5 m) at the northern end of the pipeline may occur. The predicted groundwater level is below the land surface and below the elevation of the pipeline (1.2 m bgl) as the rise is dampened by ET and therefore no direct adverse effect is likely. There is uncertainty around this key prediction. Reducing this uncertainty will be a focus area for model refinement. Saline groundwater has the potential to impact the pipeline directly (depending on the material) should groundwater come into contact with the pipeline and the concrete formations (where they occur) causing corrosion that can be problematic should it reach the steel structure within. The pipeline is installed to 1.2 m bgl and groundwater is not expected to reach this level. In addition, the pipeline has been designed in consideration of the saline environment and in accordance with appropriate Australian Standards (AS2885.1) that address the matter of corrosion mitigation. Groundwater modelling predicts groundwater flow will occur as mounding slightly up gradient of the evaporation ponds and increase quantities of water beneath the Santos Gas Pipeline. However, this impact alone is unlikely to result in an adverse effect to this EV.

The below Table 3-2 provides a summary of the active exposure pathways and potentially threatened groundwater EV's (CDM, 2023). CDM Smith (2023) detail a total of eight EV's that are potentially threatened by the Project, however the impact is expected to be mostly limited to within a 1 km buffer zone surrounding the evaporation ponds and highly unlikely (although possible) to occur up to 3 km. The results suggest that EV's are likely to be impacted by direct effects relating to increased recharge, increased salinity, change in groundwater levels and change in groundwater flow. These direct effects will require monitoring and management to decrease the likelihood of the indirect effects occurring. As such ongoing baseline groundwater modelling and additional monitoring infrastructure as documented in this report has been proposed considering all the inputs of groundwater modelling (including modelled uncertainty) and, terrestrial and marine surveys completed to date.

Table 3-2. Summary of the Identified Potentially Threatened Environmental Values (CDM Smith, 2023)

Environmental Value (Receptor)	Direct Effect (Pathway)	WAAs (Source)
EV1 – Stygofauna	DE2 – Change in salinity	WAA1 – Water impoundment
EV2 – Groundwater dependent terrestrial vegetation (GDE Atlas)	DE1 – Increased recharge DE2 – Change in salinity DE3 – Change in groundwater levels	
EV3 – Terrestrial vegetation (Priority Ecological Community)	DE2 – Change in salinity	

Environmental Value (Receptor)	Direct Effect (Pathway)	WAAs (Source)
EV4 – Algal mats and Samphire	DE2 – Change in salinity DE4 – Change in groundwater flow	
EV5 – Aquatic vegetation (mangroves)	DE2 – Change in salinity DE4 – Change in groundwater flow	
EV6 – Stock water wells	DE2 – Change in salinity	
EV7 – Cultural and spiritual (springs and pools)	DE1 – Increased recharge DE2 – Change in salinity DE3 – Change in groundwater levels	

4 APPROACH AND METHODOLOGY

4.1 OVERVIEW

With reference to the SAQP (LWC, 2021a) and GMMP (LWC, 2023c) the following scope of works was undertaken:

- Completion of the July 2024 groundwater monitoring event.
- Collection of data from groundwater and surface water data loggers across the project area.
- Collection of surface water samples at accessible surface water sampling locations which were en route to surface water data logger locations and where water was present.

The methodology adopted to deliver the scope of works is detailed in the following sub-sections.

4.2 PREPARATION WORKS

Prior to commencing on ground works, LWC completed the required inductions. A comprehensive Work Health and Safety Management Plan (WHSMP) was prepared which included a Job Safety Environmental Analysis (JSEA) for all activities to be executed by LWC. Access to the Site was organised by Leichhardt.

4.3 GROUNDWATER MONITORING WELL NETWORK

The groundwater monitoring well network was first established in December 2021 comprising a total of eleven (11) groundwater wells. As of January 2024, an additional ten (10) groundwater monitoring wells were installed across the Site, providing a total of 21 groundwater wells within the monitoring well network. The current well network is considered suitable to establish both a baseline understanding of the system and ongoing monitoring assessments during operations. The current monitoring well network is shown in Figure 3a and Figure 3b (attached, at end of report).

As summarised in Table 4-1, the groundwater monitoring well locations were selected to provide a general spatial coverage of the Site as well as to target some key features.

Surveying of the groundwater monitoring well network was undertaken on the 27 January 2023 and 16 February 2024. This information provides accurate elevation data for each well, so that groundwater contours and flow direction could be determined. Groundwater well coordinates and elevation data are presented in Table 1 (at the end of this report) and reference the survey reports provided by Veris (Veris 2023 and 2024) on behalf of Leichhardt.

Table 4-1. Groundwater Monitoring Well Location Details

Reference	Location On Site	Target Feature	Well Type	Well Construction Depth/ Drill Depth*
December 2021 Monitoring Wells				
MBH01	Adjacent southern extent of gas pipeline	• Pressurised gas pipeline • Pond development area – Western Pond	Shallow	25.5 m BGL
MBH03	Adjacent northern extent of gas pipeline		Shallow	5.5 m BGL
MBH06	Central portion of the Site	• General spatial coverage • Pond development area – Western Pond	Shallow	22.5 m BGL
MBH08	Northern/ central portion of the Site		Shallow	13 m BGL
MBH09	Western portion of Site	• Possible plant/ processing area • Targeting the fractured rock aquifer	Shallow	13.5 m BGL
MBH10	North western portion of the Site	• General spatial coverage • Near Eramurra Creek	Shallow	15.8 m BGL
MBH12	South western portion of the Site	• General spatial coverage • Upgradient aspect of pond development area • Targeting the fractured rock aquifer	Shallow	9.5 m BGL
MBH13	Central portion of the Site	• General spatial coverage • Pond development area – Western Pond • Near McKay Creek	Shallow	14 m BGL
MBH17	Adjacent southern extent of gas pipeline	• Pressurised gas pipeline • Pond development area – Eastern Pond	Shallow	18 m BGL
MBH19	North eastern portion of the Site	• General spatial coverage • Pond development area – Eastern Pond	Shallow	22.5 m BGL
MBH20	North eastern portion of the Site	• General spatial coverage • Adjacent pond development area – Eastern Pond • Near Devil Creek	Shallow	22 m BGL
January 2024 Monitoring Wells				
MB21S	Eastern portion of Site/ adjacent west of Devil's Creek	• Devils Pools (shallow groundwater)	Shallow	24 m BGL
MB26D	North eastern portion of Site/ edge of proposed concentration pond	• Potential paleochannel	Deep	25 m BGL
MB33S	Southern portion of Site/ adjacent to the western side of McKay Creek	• Terrestrial Vegetation - Eucalypts (shallow groundwater)	Shallow	20 m BGL
MB34S	Southern portion of Site/ adjacent to the eastern side of McKay Creek	• Terrestrial Vegetation - Eucalypts (shallow groundwater)	Shallow	20 m BGL

Reference	Location On Site	Target Feature	Well Type	Well Construction Depth/ Drill Depth*
MB33D	Southern portion of Site/ adjacent to the western side of McKay Creek	• Basement (deeper groundwater)	Deep	60 m BGL
MB35S	Central portion of Site/ adjacent to the western side of McKay Creek	• Terrestrial Vegetation - Eucalypts (shallow groundwater)	Shallow	15 m BGL
MB37D	Central portion of Site/ within proposed crystallisation area	• Basement (deeper groundwater)	Deep	42 m BGL
MB38D	Central portion of Site/ within proposed crystallisation area	• Basement (deeper groundwater)	Deep	49.6 m BGL
MB39D	Central eastern portion of Site/ within proposed concentration pond	• Basement (deeper groundwater)	Deep	27 m BGL
MB40D	Eastern portion of Site/ within proposed concentration pond	• Basement (deeper groundwater)	Deep	60 m BGL

* well construction details for the January 2024 monitoring wells were obtained from the CDM Smith (2024) groundwater drilling report.

4.4 GROUNDWATER GAUGING AND SAMPLING

The methodology adopted for the July 2024 groundwater monitoring event is detailed in Table 4-2. The methodology was undertaken in accordance with the following Australian Standards and guidelines as per the GMMP (LWC, 2023c):

- Australian/ New Zealand Standard 5667.1 Water Quality Sampling Part 1: Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples.
- Australian/ New Zealand Standard 5667.11 Water Quality Sampling Part 11: Guidance on Sampling of Groundwaters.
- Australian Standard 2031-2012 Water Quality – Sampling for Microbiological Analysis.
- National Water Quality Monitoring Strategy: Australian Guidelines for Water Quality Monitoring and Reporting (2000).
- NEPC (1999). National Environment Protection (Assessment of Site Contamination) 2013 Amendment Measure, National Environment Protection Council (ASC NEPM), December 1999 (ASC NEPM).

Table 4-2. Summary of Groundwater Sampling Methodology

Activity	Details
Groundwater Elevation Gauging	Prior to sampling groundwater elevation gauging was undertaken. Monitoring wells were gauged using a calibrated electronic water level probe. Water levels were gauged from the top of the inner PVC casing. The water level probe was thoroughly decontaminated and rinsed between locations.
Groundwater Sampling	All groundwater monitoring wells were purged using industry standard low flow sampling techniques with dedicated LDPE Teflon tubing used per location. The low flow sampling method included placement of the pump at the midpoint of the slotted screen interval and pumping at the flow rate where the groundwater level did not decline significantly (i.e., greater than 10cm). Typically, rates of between 0.1 to 0.5 L/min are recommended in industry standard guidelines. If flow rates below the aquifer recharge capacity could not be

Activity	Details
	achieved, sampling occurred following two consecutive field quality parameters (within ranges detailed below). Note that due to a bend in the internal well casing at MB40D (which prevented the deployment of the pump), waterra tubing and footvalve were utilised to undertake the low flow sampling at this location. Prior to collection of field parameters, a flush through of groundwater entering the tubing material was undertaken. Groundwater elevation gauging during sampling was undertaken to ensure groundwater extracted from the well was fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Measurement of field water parameters was undertaken until field quality parameters stabilised (i.e., within 3% EC, 0.05 pH, 10% DO and 10mV redox and 0.5°C temperature). Parameters were measured using a flow through cell. Parameter measurements were obtained every 3 to 5 minutes until field parameters over 2 consecutive readings stabilised. A minimum of 4 readings were collected at each monitoring well. Field chemical parameters were recorded to ensure stable geochemical conditions exist prior to the collection of the groundwater sample. The pH, redox, electrical conductivity, dissolved oxygen and temperature meters were calibrated prior to the commencement of purging – i.e., at the start of each day of purging/ sampling.
Laboratory Analysis	Water samples were placed in laboratory provided bottles containing appropriate preservatives and then placed into a chilled esky for transport to the laboratories under standard LWC Chain of Custody protocols which are consistent with the requirements of Schedule B(2) of the ASC NEPM (NEPC,1999 as amended 2013). Groundwater samples to be analysed for metals were filtered in the field using a dedicated 0.45 micron filter for each location and placed in pre-acidified bottles. Table 4-3 details the analytical suite adopted. Eurofins ARL Pty Ltd (Eurofins) were utilised as the primary analytical laboratory with Australian Laboratory Services Pty Ltd (ALS) adopted as the secondary laboratory. ALS and Eurofins are National Association of Testing Authorities (NATA) accredited laboratories for the analytical suite as adopted. The laboratories adopted analytical methods suitable for the salinity of the sampled water, where required.
Quality Assurance/ Quality Control (QA/QC)	QA/QC samples were collected and analysed in accordance Australian Standards and NEPC (1999 – amended 2013). QA/QC samples collected for quality control purposes during each round of groundwater sampling included the following: ▪ 1 in 20 intra-laboratory field duplicates; ▪ 1 in 20 inter-laboratory field triplicates; ▪ Rinsate blanks (collected from the pump equipment only) per each day of groundwater sampling to ensure appropriate decontamination processes occurred (submitted for analysis of metal suite with results inferred across the broader program); and ▪ Trip blank for volatile analysis were sent to both laboratories to confirm the appropriate storage and transport of samples being tested for volatile hydrocarbons.
Decontamination Procedures	Monitoring equipment (water level probe and pumps) were decontaminated according to the following procedure: ▪ Wash with Decon 90 or similar decontaminant/ water solution and rinse. ▪ Triple wash with laboratory supplied clean deionised water.
Field Records/ Documentation	Field records are presented as follows: ▪ Photos of the groundwater well sampling locations – Appendix A ▪ Calibration certificates for the water quality meter – refer to Appendix B. ▪ Field purge and sampling sheets per well – refer to Appendix C. ▪ Groundwater elevations and groundwater field parameters – refer to Table 1, Table 2 and Table 3 (at the end of this report) and Appendix C ▪ Chain of custody (COC) documentation for all samples sent for laboratory analysis – refer to Appendix D.
Criteria/ Guidelines	The adopted guideline criteria are as per the GMMP (LWC, 2023c) and include the following: ▪ National guidelines for the potential environmental values as identified, including but not limited to: o Australian Drinking Water Guidelines (ADWG) (2011) Australian Drinking Water Guidelines 6 National Water Quality Management Strategy. o National Health and Medical Research Council (NHMRC) (2008) National Water Quality Management Strategy, Guidelines for Managing Risks in Recreational Water.

Activity	Details
	o Australian and New Zealand Guidelines (ANZG, 2018) for fresh and marine water quality: ▪ Fresh Water Quality at the 95% Protection; and ▪ Marine Water Quality at the 95% Protection Level. o Australian and New Zealand Environment and Conservation Council (ANZECC, 2000) Guidelines. ▪ Irrigation Long Term Trigger Value; and ▪ Livestock Drinking Water with long-term trigger values. o National Environmental Protection (Assessment of Site Contamination) Measure (ASC NEPM, 1999, as amended 2013), Groundwater Health Screening Levels (HSLs) for Vapour Intrusion D – Commercial/ Industrial. A factor of 10 was applied to the ADWG (2011) Drinking Water – Health criteria to obtain the guideline values for the NHMRC (2008) Recreational Water – Health (Primary Contact) criteria. This is to take account of accidental ingestion rates, as opposed to deliberate ingestion, during recreational activities. Cultural and spiritual values may relate to a range of uses and issues, including spiritual relationships, language, song lines, stories, sacred places, customary use, the plants and animals associated with water, drinking water, and recreational or commercial activities. Given the definition of cultural and spiritual values of waters, it is considered that the adopted criteria for drinking water, freshwater and marine ecosystems will be suitable for comparison.

The analytical schedule adopted for the groundwater investigation is detailed in Table 4-3.

Table 4-3. Analytical Schedule for Groundwater – July 2024 Groundwater Monitoring Event

Analytical Suite	Comment	Target Locations
The analytical schedule included the following: ▪ EC. ▪ Total dissolved solids (TDS) and Total Suspended Solids (TSS). ▪ Laboratory pH. ▪ Major Ions including calcium, sodium, potassium, magnesium, chloride, sulphate, bicarbonate and carbonate. ▪ Hydroxide alkalinity as $CaCO_3$, carbonate alkalinity as $CaCO_3$ and bicarbonate as $CaCO_3$. ▪ Water Hardness. ▪ Total and dissolved metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Hg, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO_2, Se, Sr, Th, Ti, U, V, Zn and Zr. ▪ Speciation of Ferric Iron and Ferrous Iron (actual and not calculated). ▪ Nutrients including total nitrogen, nitrate as N, nitrite as N, ammonia, TKN and filtered reactive phosphorous.	This laboratory suite provides a comprehensive assessment of key analytes (i.e., those that are sensitive to geochemical changes, for example variation in acidity and concomitant changes in pH). The suite is robust with respect to chemical substances likely to be associated with operations.	All locations.
Hydrocarbons: ▪ Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, total Xylenes, Naphthalene (BTEXN).	Petroleum hydrocarbons are a potential chemical substance of concern with respect to future operations around the plant area.	MBH09 (located near the proposed wash plant area) and MB34S (located in the southern portion of Site/ adjacent to the eastern side of McKay Creek).
Rinsate screen: ▪ Total metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO2, Se, Sr, Th, Ti, U, V, Zn and Zr.	Results were inferred across the broader analytical suite.	One sample per day of sampling with the groundwater pump.
Trip blank ▪ TRH Fraction C6-C10 and BTEXN.	-	One sample per batch of samples containing samples

Analytical Suite	Comment	Target Locations
		to be analysed for volatile compounds.

4.5 SURFACE WATER SAMPLING LOCATIONS

The surface water monitoring network is shown in Figure 3a and Figure 3b (attached, at end of report) and is summarised in Table 4-4. Note that during the July 2024 monitoring event only surface water monitoring locations that were enroute to data logger locations were inspected/ sampled. Of these locations, surface water was only present at two locations (SW01 and SW14). Historical surface water sampling locations from the previous March 2022, May 2022, November 2022, June 2023 and November 2023 monitoring events are also summarised in Table 4-4, below.

Table 4-4. Surface Water Monitoring Location Details

Ref	Creek Line	Targeted Feature	March 2022	May 2022	November 2022	June 2023	November 2023	July 2024
SW01	Mangrove area	Coastal outlet/ mangrove area in marine environment	Sampled	Not targeted	Sampled	Sampled	Sampled	Sampled
SW02	Eramurra Creek	Eramurra Creek outlet near marine environment	Sampled	Sampled	Sampled	Sampled	Sampled	Not Visited
SW03	McKay Creek	McKay Creek upstream location within project area	Dry	Not accessible	Dry	Dry	Dry	Not Visited
SW03R	McKay Creek	McKay Creek at the crossover with North West Coastal Highway	N/A	Sampled	N/A	N/A	N/A	Dry
SW04	McKay Creek	McKay Creek within central portion of the Site	Dry	Sampled	Dry	Dry	Dry	Dry
SW05	McKay Creek	McKay Creek within central portion of the Site	Dry	Sampled	Dry	Sampled	Dry	Dry
SW06	McKay Creek	McKay Creek outlet near marine environment	Sampled	Sampled	Sampled	Sampled	Sampled	Not Visited
SW07	McKay Creek Tributary	Upstream tributary of McKay Creek	Dry	Sampled	Dry	Dry	Dry	Not Visited
SW08	McKay Creek Tributary	Upstream tributary of McKay Creek	Dry	Sampled	Dry	Dry	Dry	Dry
SW09	Devil Creek	Devil Creek upstream of the project area	Dry	Dry	Dry	Dry	Dry	Dry
SW10	Eramurra Creek	Eramurra Creek within project area	Dry	Sampled (initially not accessible and so SW10R was also collected)	Dry	Dry	Dry	Dry
SW10R	Eramurra Creek	Eramurra Creek at the crossover with	N/A	Sampled	N/A	N/A	N/A	Not Visited

Ref	Creek Line	Targeted Feature	March 2022	May 2022	November 2022	June 2023	November 2023	July 2024
		North West Coastal Highway						
SW11	Devil Creek	Devil Creek within project area	Dry	Sampled (initially not accessible and so SW11R was also collected)	Dry	Dry	Dry	Dry
SW11R	Devil Creek	Devil Creek at the crossover with North West Coastal Highway	N/A	Sampled	N/A	N/A	N/A	Not Visited
SW12	Unnamed creek	General floodplain area in marine environment	Dry	Sampled	Dry	Dry	Dry	Dry
SW13	Unnamed creek	General floodplain area	Sampled	Sampled	Dry	Sampled	Dry	Dry
SW14	Unnamed creek	General floodplain area	Dry	Sampled	Dry	Sampled	Dry	Sampled

4.6 SURFACE WATER SAMPLING METHODOLOGY

The methodology adopted for the July 2024 surface water sampling events is detailed in Table 4-5.

Table 4-5. Summary of Surface Water Sampling Methodology

Activity	Details
Surface Water Sampling	Surface water samples were collected with the use of dedicated disposable bailer for each Site (where surface water depth was greater than 0.3 m) or directly into the sample container (where the surface water depth was less than 0.3 m). To the extent practicable, samples were collected from a minimum of 0.3 m below the water surface, with effort made not to collect disturbed sediments in the sample containers. Measurement of field water parameters was undertaken until field quality parameters stabilised (i.e., within 3% EC, 0.05 pH, 10% DO and 10m V redox and 0.5°C temperature). Parameters were measured from sub-samples (collected via bailer) in a decontaminated container. Parameter measurements were obtained following the collection of surface water from different areas within the surface water feature until two consecutive readings stabilised. A minimum of four readings were collected at each surface water location. Field parameters were recorded to ensure that the samples collected were representative of the creek water. The pH, redox, electrical conductivity, dissolved oxygen and temperature meters were calibrated prior to the commencement of sampling – i.e., at the start of each day of sampling. Samples were collected away from any stormwater drains/ inlet pipes.
Laboratory Analysis	Water samples were placed in laboratory provided bottles containing appropriate preservatives and then placed into a chilled esky for transport to the laboratories under standard LWC Chain of Custody protocols which are consistent with the requirements of Schedule B(2) of the ASC NEPM (NEPC,1999 as amended 2013). Samples for heavy metals were collected for both total metals and filtered metals. Samples analysed for dissolved metals were filtered in the field using dedicated 0.45 micron filters at each location and placed in pre-acidified bottles. Table 4-6 details the analytical suite adopted. Eurofins were utilised as the primary analytical laboratory with ALS adopted as the secondary laboratory. ALS and Eurofins-MGT are National Association of Testing Authorities (NATA) accredited laboratories for the analytical suite as adopted. The laboratories adopted analytical methods suitable for the salinity of the sampled water, where required.
Quality Assurance/ Quality Control (QA/QC)	QA/QC samples were collected and analysed in accordance with Australian Standards and NEPC (1999 – amended 2013). QA/QC samples collected for quality control purposes during each round of groundwater sampling included the following:

Activity	Details
	▪ 1 in 20 intra-laboratory field duplicates; ▪ 1 in 20 inter-laboratory field triplicates; ▪ Rinsate blanks were not collected for the surface water sampling programs as no sampling equipment was utilised between locations i.e., the potential for cross contamination was mitigated; and ▪ No volatile analysis was undertaken and so no trip blank sample was collected or analysed.
Decontamination Procedures	No sampling equipment was utilised between locations, mitigating the potential for cross contamination.
Field Records/ Documentation	Field records are presented as follows: ▪ Photos of the surface water data logger and sampling locations – Appendix A. ▪ Calibration certificates for the water quality meter – refer to Appendix B. ▪ Field sampling sheets per location – refer to Appendix C. ▪ Surface water field parameters – refer to Table 3 and Appendix C. ▪ Chain of custody (COC) documentation for all samples sent for laboratory analysis – refer to Appendix D.
Criteria/ Guidelines	The adopted guideline criteria are consistent with those adopted for previous surface water monitoring events undertaken at the Site and include the following: ▪ National guidelines for the potential environmental values as identified, including but not limited to: o National Health and Medical Research Council (NHMRC) (2008) National Water Quality Management Strategy, Guidelines for Managing Risks in Recreational Water. o Australian and New Zealand Guidelines (ANZG, 2018) for fresh and marine water quality: ▪ Fresh Water Quality at the 95% Protection; and ▪ Marine Water Quality at the 95% Protection Level; o Australian and New Zealand Environment and Conservation Council (ANZECC, 2000) Guidelines ▪ Irrigation Long Term Trigger Value; and ▪ Livestock Drinking Water with long-term trigger values. A factor of 10 is to be applied to the Australian Drinking Water Guidelines (ADWG - 2011) Drinking Water – Health criteria to obtain the guideline values for the NHMRC (2008) Recreational Water – Health (Primary Contact) criteria. This is to take account of accidental ingestion rates, as opposed to deliberate ingestion, during recreational activities.

The analytical schedule adopted for the surface water investigations is detailed in Table 4-6.

Table 4-6. Analytical Schedule for Surface Water Monitoring

Analytical Suite	Comment	Target Locations
The analytical schedule included the following: ▪ EC. ▪ Total dissolved solids (TDS) and Total Suspended Solids (TSS). ▪ Laboratory pH. ▪ Major Ions including calcium, sodium, potassium, magnesium, chloride, sulphate, bicarbonate and carbonate. ▪ Hydroxide alkalinity as $CaCO_3$, carbonate alkalinity as $CaCO_3$ and bicarbonate as $CaCO_3$. ▪ Water Hardness.	This laboratory suite provides a comprehensive assessment of key analytes (i.e., those that are sensitive to geochemical changes, for example changes in pH). The suite is robust with respect to chemical substances likely to be associated with operations.	All locations

Analytical Suite	Comment	Target Locations
▪ Total and dissolved metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Hg, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO_2, Se, Sr, Th, Ti, U, V, Zn and Zr. ▪ Speciation of Ferric Iron and Ferrous Iron (actual and not calculated). ▪ Nutrients including total nitrogen, nitrate as N, nitrite as N, ammonia, TKN and filtered reactive phosphorous.		

4.7 LOGGER DATA DOWNLOAD – JULY 2024

During the July 2024 monitoring event a total of 19 groundwater well logger locations (currently 21 wells total in the monitoring well network), 18 surface water locations and 1 dedicated barometric pressure logger were accessed and data downloaded. Electronic data was provided directly to Leichhardt.

The locations of all groundwater, surface water and barometric loggers and details of when the data was downloaded from each are summarised in Table 4-7 (groundwater), Table 4-8 (surface water) and Table 4-9 (barometric pressure logger) and presented in Figure 4 (attached, at end of report). All locations were inspected to confirm the presence of loggers as some have previously been reported as missing or unable to be located.

Figure 4-1 shows the difference in gauged water level and the data logger recorded level at the time of data logger retrieval (absolute values). During logger deployment, the water level was manually gauged to set a fixed value for each data logger unit. When retrieving logger for data download, the water level was gauged prior to removal. The difference or drift between the logger data water level and gauged water level upon retrieval was calculated. The difference between the two values was generally less than 0.5 m with the exception of MB33S, MB33D and MB35S. The highest difference was recorded for MB33D for which the absolute difference in water levels was approximately 2.9 m. Given the depth of MB33D, this perceived outlier could be attributed to the data logger cord sticking to the side of the well casing or due to discrepancies with respect to logger deployment, noting the relatively low recorded salinity level at this location. It is noted that salinity corrected groundwater elevation has not been considered and may contribute to the observed differences in water level, principally for wells with elevated salinity. Monitoring wells MB33S, MB33D and MB35S appeared to be in sound external condition and given that they are all new wells, the potential for biofouling or excessive sediment buildup that may influence readings is considered unlikely.

A review of the historical manual gauged water levels at each location was undertaken to further explore the differences in the gauged water levels. The following considerations are made for future data logger deployment/ retrieval programs:

- Periodic recalibration of the datalogger and sensor may be necessary to maintain accuracy.
- In some instances, the cord may ‘stick’ to the well casing (predominantly in deep wells). The data logger cord could be replaced with dedicated, low stretch cord during the next GME.
- LOG_MC03 is the only barometric logger installed at the Site (central portion of the Project Area, adjacent McKay Creek). Additional barometric loggers could be installed across the Project Area for improved accuracy and redundancy (e.g. in monitoring wells MBH20 in the northeastern portion of the project area and MBH10 in the western portion of the project area). Currently all loggers have been compensated with a single barometric logger and barometric pressure is likely to fluctuate across the Site, therefore, impacting on recorded well water levels.

The following considerations are made for the interpretation of the data logger data:

- As shown in Appendix E, there appears to have been some interference with the recorded water levels for MBH20 between May and June 2024 and this period should be excluded from interpretation.
- Following data logger deployment at MB33D, a slow increase in water level was recorded over an approximate one month period. This was likely associated with the recharge of the well following installation/ sampling (noting the well was not able to be developed following installation). This recharge is likely not reflective of the stabilised water level at this location and should be excluded from interpretation. Further monitoring at this location will assist in confirming this interpretation of data and how this data should be utilised in future.
- For monitoring wells MB38D, the data logger recorded stabilised water level was around 3 m higher than the manually recorded water level (collected during the gauging event) . This difference may be associated with the placement of the logger during deployment and the data logger recorded water levels should be adjusted to account for the manual readings during this period (as per the adjusted levels shown in Appendix E).
- Review of future data logger recordings will inform adjustments required for the MB40D data.
- With reference to Appendix E, the sharp downward spikes recorded for at most locations (for which data is available) around May 2022 and February 2023 appear to coincide with periods of rainfall, however, the cause for the reductions in recorded water levels is not clear.

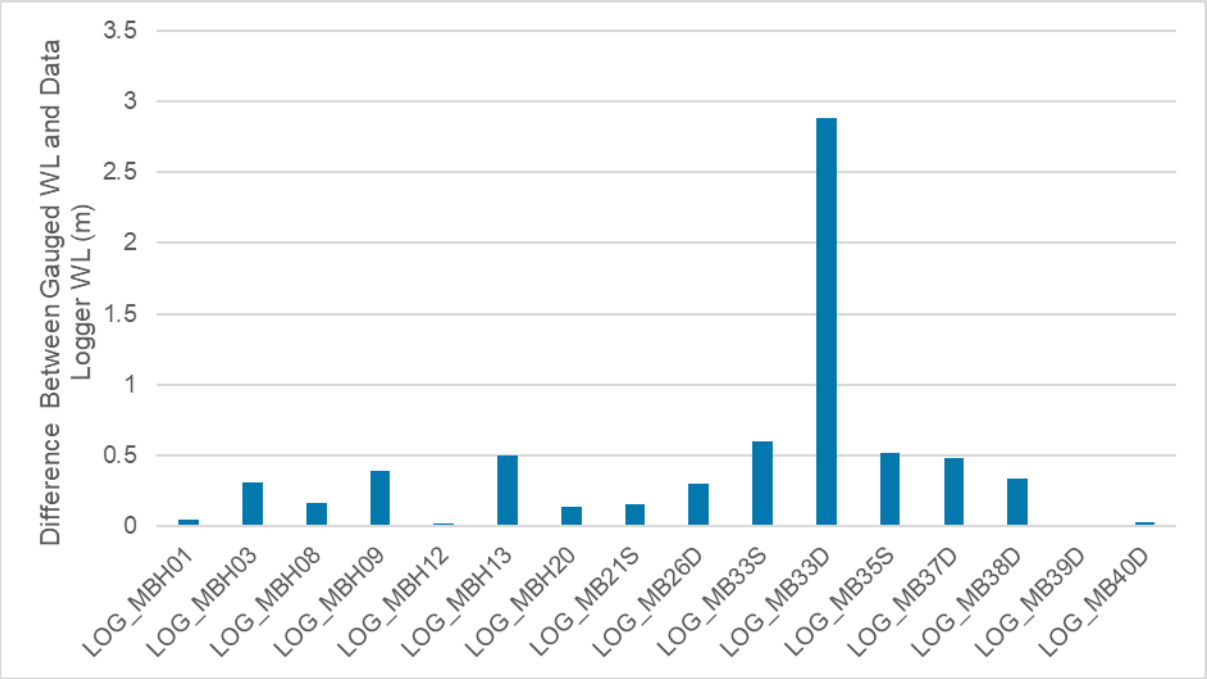

Figure 4-1 Difference in Measured and Recorded Water Levels – Groundwater Well Data Loggers

Table 4-7. Summary of Groundwater Data Logger Installation and Download Details – July 2024

Logger ID	Target Feature	Logger Serial Number	Type of Logger	Easting^	Northing^	Date Installed/ Time	Logger Install Depth (m PVC)	Gauged Water Level at Time of Deployment (m PVC)	Gauged Water Level at Time of Retrieval (m PVC)	Water Level at Time of Retrieval Recorded on Data Logger^^	Difference in Water Levels at Time of Retrieval	Well Depth (m PVC)	Presence/ Data last collected
LOG_MBH01	**MBH01^{LWC}**	Y4247	Diver-Logger	437748.85	7690196.42	21/02/2023/ 11:55 am	25.67	7.505	7.654	7.698	0.044	28.67	✓ **23/07/2024**
LOG_MBH03	**MBH03^{LWC}**	Y5452	Diver-Logger	434817.75	7694338.30	9/11/2023 3:20 pm	4.50	2.773	2.985	3.291	0.306	5.80	✓ **25/07/2024**
LOG_MBH08	**MBH08^{LWC}**	Y4254	Diver-Logger	430672.72	7692093.18	22/02/2023/ 6:30 am	11.75	3.984	4.235	4.396	0.161	13.26	✓ **25/07/2024**
LOG_MBH09	**MBH09^{LWC}**	Y4257	Diver-Logger	423794.00	7686355.71	21/02/2023/ 9:40 am	12.36	6.360	6.716	7.110	0.394	14.08	✓ **24/07/2024**
LOG_MBH10	**MBH10^{LWC}**	DP342	Barro-Logger*	423790.99	7687981.62	17/12/2021	10.05	5.261	5.224	Data only available from 4/12/2021 – 24/12/2023 (logger was full). Logger was reset on 26/07/2024 and currently recording data.	N/A	16.75	✓ **26/07/2024**
LOG_MBH12	**MBH12^{LWC}**	Y2591	Diver-Logger	428320.42	7682825.44	21/02/2023/ 8:46 am	7.76	4.885	5.147	5.124	0.023	9.76	✓ **24/07/2024**
LOG_MBH13	**MBH13^{LWC}**	Y3950	Diver-Logger	428069.77	7687412.70	21/02/2023/ 11:13 am	11.30	4.052	4.200	4.696	0.496	14.25	✓ **26/07/2024**

Logger ID	Target Feature	Logger Serial Number	Type of Logger	Easting^	Northing^	Date Installed/ Time	Logger Install Depth (m PVC)	Gauged Water Level at Time of Deployment (m PVC)	Gauged Water Level at Time of Retrieval (m PVC)	Water Level at Time of Retrieval Recorded on Data Logger^^	Difference in Water Levels at Time of Retrieval	Well Depth (m PVC)	Presence/ Data last collected
LOG_MBH19	**MBH19[LWC]**	DP349	Barro-Logger*	438637.89	7694509.09	17/12/2021	7.05	3.635	3.670	Data only available from 4/12/2021 – 16/12/2023 (logger was full). Logger was reset on 25/07/2024 and currently recording data.	N/A	22.30	✓ **25/07/2024**
LOG_MBH20	**MBH20[LWC]**	Y3962	Diver-Logger	441063.78	7694306.41	21/02/2023/ 1:13 pm	21.07	3.860	3.990	3.851	0.139	22.60	✓ **23/07/2024**
LOG_MB21S	**MB21S[LWC]**	Y4498	Diver-Logger	440329.47	7691542.83	30/01/2024/ 10:54 am	21.00	8.080	8.428	8.585	0.157	24.00	✓ **23/07/2024**
LOG_MB26D	**MB26D[LWC]**	Y4499	Diver-Logger	432867.19	7694530.24	30/01/2024/ 12:42 pm	23.00	4.950	4.912	5.217	0.305	26.05	✓ **25/07/2024**
LOG_MB33S	**MB33S[LWC]**	Y4489	Diver-Logger	427264.64	7682330.70	1/02/2024/ 12:05 pm	19.00	6.660	6.935	7.531	0.596	21.05	✓ **24/07/2024**
LOG_MB33D	**MB33D[LWC]**	W8663	Diver-Logger	427260.62	7682319.84	1/02/2024/ 11:05 am	57.00	23.085	7.260	4.376	2.884	60.00	✓ **24/07/2024**
LOG_MB34S	**MB34S[LWC]**	Y3661 *W9799[#]*	Diver-Logger	427608.12	7682311.84	1/02/2024/ 9:15 am	19.20	6.428	7.215	Data unable to be connected due to faulty logger (W9799). Y3661 currently recording data.	N/A	20.75	✓ **24/07/2024**
LOG_MB35S	**MB35S[LWC]**	Y4486	Diver-Logger	428312.66	7686043.06	31/01/2024/ 10:05 am	14.60	5.085	5.143	5.664	0.521	16.120	✓ **26/07/2024**
LOG_MB37D	**MB37D[LWC]**	W8653	Diver-Logger	427027.74	7684363.46	31/01/2024/ 11:05 am	41.00	7.391	7.516	7.035	0.481	43.90	✓ **24/07/2024**

Logger ID	Target Feature	Logger Serial Number	Type of Logger	Easting^	Northing^	Date Installed/ Time	Logger Install Depth (m PVC)	Gauged Water Level at Time of Deployment (m PVC)	Gauged Water Level at Time of Retrieval (m PVC)	Water Level at Time of Retrieval Recorded on Data Logger^^	Difference in Water Levels at Time of Retrieval	Well Depth (m PVC)	Presence/ Data last collected
LOG_MB38D	**MB38D[LWC]**	Y4496	Diver-Logger	433930.60	7685885.79	31/01/2024/ 8:41 am	47.50	17.769	17.872	17.537	0.335	50.55	✓ **26/07/2024**
LOG_MB39D	**MB39D[LWC]**	Y4512	Diver-Logger	435085.87	7688671.62	30/01/2024/ 1:55 pm	24.00	8.577	8.640	8.562	0.015	28.55	✓ **25/07/2024**
LOG_MB40D	**MB40D[LWC]**	W8655	Diver-Logger	437921.98	7692766.43	1/02/2024/ 7:50 am	57.00	6.406	5.217	6.438	0.032	60.00	✓ **25/07/2024**

^ Coordinates obtained from borehole survey reports (Coordinate system MGA2020 Zone 50)
[LWC] Installed by LWC
* Barro-Logger is utilised within groundwater well i.e. recording water level and not atmospheric pressure
[#] Historic logger ID
^^ note that disturbances in the data logger recorded water level at the time of logger retrieval were removed for this comparison

Table 4-8. Summary of Surface Water Data Logger Installation and Download Details – July 2024

Logger ID	Logger Serial Number	Type of Logger	Easting*	Northing*	Date Installed/ Time	Logger Install Depth (m TOC)	Water Present at Time of Retrieval	Presence/ Data last collected
LOG_DC01 Devil Creek#	AH963	Diver-Logger	438875.17	7685447.38	15/04/2021/ N/A	-1.00”	Creek beds were dry	✓
LOG_DC02 LWC	Y5850	Diver-Logger	440469.17	7691945.39	30/01/2024/ 1:57 pm	Creek bed surface	Creek beds were dry	✓
LOG_DC03 LWC	Y5743	Diver-Logger	441456.11	7694256.95	2/02/2024/ 11:13 am	Creek bed surface	Creek beds were dry	✓
LOG_DCANAB1 LWC	Y5814	Diver-Logger	439106.59	7686355.12	31/01/2024/ 3:20 pm	Creek bed surface	Creek beds were dry	✓
LOG_DCANAB2 LWC	Y5862	Diver-Logger	437964.27	7688053.1	31/01/2024/ 2:50 pm	Creek bed surface	Creek beds were dry	✓
LOG_EC01 LWC	Y5827	Diver-Logger	422424.23	7672606.93	2/02/2024/ 2:20 pm	Creek bed surface	Creek beds were dry	✓
LOG_EC02 LWC	Y5759	Diver-Logger	423059.05	7678885.24	2/02/2024/ 1:44 pm	Creek bed surface	Creek beds were dry	✓
LOG_EC03 Eramurra#	X0366 *CB929#*	Diver-Logger	422981.2^	7685221.7^	24/08/2021/ N/A	-0.741”	Creek beds were dry	✓
LOG_EC04 LWC	Y5847	Diver-Logger	423043.5	7686196.36	2/02/2024/ 12:50 pm	Creek bed surface	Creek beds were dry	✓
LOG_FMBR1 LWC	Y5839	Diver-Logger	438342.97	7689134.42	31/01/2024/ 2:21 pm	Creek bed surface	Creek beds were dry	✓
LOG_MC01 LWC	Y5835	Diver-Logger	427071.92	7673842.24	2/02/2024/ 3:10 pm	Creek bed surface	Creek beds were dry	✓

Logger ID	Logger Serial Number	Type of Logger	Easting*	Northing*	Date Installed/ Time	Logger Install Depth (m TOC)	Water Present at Time of Retrieval	Presence/ Data last collected
LOG_MC02	Y4417 Y4507#	Diver-Logger	427341.36	7681895.23	2/02/2024/ 12:11 pm	Creek bed surface	Creek beds were dry	✓
LOG_MC04 ***Pt 1#***	DP359	Barro-Logger*	425550.18	7687942.32	-	Creek bed surface	Creek beds were dry	✓
LOG_SW01 **Canal#**	Y1063	Diver-Logger	426568.0^	7690766.0^	26/10/2022	-1.038”	Water present	✓
LOG_SW13 ***Pt 2LWC***	Y2034	Diver-Logger	436043.79	7692223.55	22/02/2023/ 11:23 am	Creek bed surface	Creek beds were dry	✓
LOG_SW14 **Pt 3LWC**	Y4262	Diver-Logger	439460.28	7694437.62	21/02/2023/ 2:14 pm	Creek bed surface	Water present within creek	✓
LOG_YAN01 LWC	Y5798	Diver-Logger	442969.07	7694277.84	2/02/2024/ 10:33 am	Creek bed surface	Creek beds were dry	✓

^ Coordinates obtained by handheld GPS (Coordinate system MGA2020 Zone 50)
“ signifies m below top of casing to sensor line on the surface water data logger
* Barro-Logger is utilised to record surface water level and not atmospheric pressure
# Historic logger ID
LWC – Installed by LWC

Table 4-9. Summary of Barometric Pressure Data Logger Installation and Download Details – July 2024

Logger ID	Logger Serial Number	Type of Logger	Easting*	Northing*	Date Installed/ Time	Logger Install Depth	Presence/ Data last collected
LOG_MC03 ***Baro-diver#***	CB931	Barro-Logger	428503.86	7685582.82	- Installed by Leichhardt	N/A Logger installed to the side of creek bed	✓

4.8 DATA LOGGER INSTALLATION LOCATIONS – JULY 2024

During the July 2024 monitoring event, two groundwater well data loggers were installed (LOG_MBH06 & LOG_MBH17) – refer to Table 4-10, below.

Table 4-10. Summary of Groundwater Data Logger Installation – MBH06

Logger ID	Target Well	Logger Serial Number	Easting	Northing	Installation Date	Installation Time	Logger Deployment Depth (mPVC)	Gauged water Depth (mPVC)	Depth to bottom (mPVC)	Screened Interval (m BGL)
LOG_MBH06	MHB06	Y4510	431582.99	7688494.71	26/7/2024	9:15 am	20.00	8.753	22.213	19.5 – 22.5
LOG_MBH17	MBH17	Y4508	437939.67	7690291.58	23/07/2024	11:37 am	15.00	7.412	17.600	12 – 18

The methodology adopted for this scope of works was completed in due consideration of appropriate guidance and in general accordance with Australian Standards. The guidelines considered applicable to this scope were:

- NWQMS 2000. National Water Quality Monitoring Strategy: Australian Guidelines for Water Quality Monitoring and Reporting (2000).
- NEPM 2013. National Environmental Protection (Assessment of Site Contamination Measures) Schedule B2 (volume 3) as updated April 2014.
- NIG 2019a. National Industry Guidelines for hydrometric monitoring; Primary measured data. NI GL 100.1-2019
- NIG 2019b. National Industry Guidelines for hydrometric monitoring; Site establishment and operations. NI GL 100.2-2019.

4.9 DATA LOGGER REPLACEMENT LOCATIONS – JULY 2024

During the July 2024 monitoring event, 2 data loggers were replaced. This included a groundwater well logger (MBH34S) and a surface water logger (Y4417). The two faultily loggers (W9799 & Y4507) were returned to Leichhardt upon completion of the program.

5 RESULTS

5.1 GROUNDWATER ELEVATIONS

During the July 2024 monitoring event, groundwater elevation gauging was undertaken prior to sampling at each groundwater monitoring well. Groundwater elevation gauging results are presented in Table 1 (at the end of this report), salinity corrected elevations are presented in Table 2 at the end of this report.

The groundwater elevations are compared to monthly rainfall in Figure 5-1. The groundwater purge sheets are presented in Appendix C.

For the shallow wells, the equivalent freshwater head groundwater elevations measured in metres relative to Australian Height Datum (m AHD) and salinity corrected across the well network ranged from 1.136 m AHD at MBH03 (in the north-western extent of the project area, closest to the coast) to 11.507 m AHD at MBH12 (in the south-eastern extent of the project area, furthest from the coast). For the deeper wells, the equivalent freshwater head groundwater elevations (salinity corrected) ranged from 2.32 m AHD at MB26D (in the north-western extent of the project area, closest to the coast, just west of MBH03) to 10.713 m AHD at MB33D (southern portion of Site/ adjacent to the western side of McKay Creek).

Monitoring wells MB33S and MB33D are located adjacent each other and during the July 2024 GME, the groundwater elevation at MB33D (10.713 m AHD) was slightly higher than that recorded for MB33S (10.610 m AHD) indicating a possible upward hydraulic gradient between the groundwater in the deeper granodiorite basement unit and the shallower aquifer unit.

Groundwater flows are interpreted to be towards the coast in a westerly/ north westerly direction (refer to Figure 5a and 5b – attached, at end of report) for both the shallow and deep wells. The groundwater divide previously observed for the deeper groundwater wells during the February 2024 monitoring event was not observed during the July 2024 monitoring event. The previously observed divide was driven by a low groundwater elevation reported for monitoring well MB33D. The low groundwater level was recorded in the month following the well installation and it is noted that during the drilling program, minimal water was present within monitoring well MB33D and development was not able to be completed due to low water levels at such time. The water level recorded for monitoring well MB33D in February 2024 has subsequently been considered to be anomalous, noting that the July 2024 water level recorded at this location appears similar to the adjacent shallow well (MB33S) and other deeper wells. This was supported by the data logger data which showed a slow increase in groundwater elevation in MB33D before stabilising. Future monitoring will confirm, or otherwise the groundwater elevation at MB33D and the occurrence of a groundwater divide at this location.

Non-aqueous phase liquids/hydrocarbon sheens were not observed in groundwater gauged at any monitoring well. A sulfurous odour was observed in groundwater sampled from MBH20, MBH34S and MBH38D.

Hydrographs for each monitoring well (with continuous water monitoring data) and rainfall data are presented as Appendix E. The Eramurra Pool WA weather station (No. 005082) is located approximately 16 km southwest of Mckay Creek and the Karratha Aero weather station (No. 004083) is located approximately 40 km northeast of the Site. Since the previous November 2023/ January 2024 monitoring events, there appears to have been some rainfall in the area, predominantly in March, April and June 2024, however, the groundwater elevations recorded in July 2024 appear to be slightly lower compared to the previous monitoring events at all locations with the exception MB33D, MB37D, MB38D, MB40D and possibly MBH13. It is noted that the previous water level recorded for MB33D was considered to be anomalous (possibly due to insufficient well development upon construction. Future monitoring at these locations will confirm relationship with rainfall.

Note that the data logger data has been filtered to remove spikes in water levels associated with logger retrieval/ redeployment.

Based on review of the logger data within Appendix E, possible tidal fluctuation in groundwater elevation is apparent at monitoring locations MBH01, MBH03, MBH10, MBH19, MB26D and MB40D. These groundwater wells are situated near the coastline, where tidal influence is expected. To explore this, snapshots of diurnal water levels on the 25th of April (either 2023 or 2024, depending on when data was available) were generated which are presented in Appendix E along with the Gnoorea Point Tide data for the respective dates. The clearest tidal response was observed for MB26D, located close to the coast. Clear tidal influence was not observed for MBH08 and MBH20 which are also located in close proximity to the coast.

Figure 5-1 Groundwater well water levels (mAHD) across monitoring events compared against monthly rainfall data

5.2 GROUNDWATER HYDROCHEMICAL CONDITIONS

A summary of the field parameter ranges and hydro-geochemical conditions in groundwater beneath the Assessment Area from the July 2024 monitoring events is provided Table 5-1. Historical groundwater field parameters from the previous monitoring events are demonstrated in the respective bar graphs for key indicator species. All recent and historical field parameters are presented in Table 3 at the end of this report.

As noted in the table below, elevated pH was observed as MBH12, MB33D and MD40D. MBH12 and MB33D appeared to be in fair condition with no obvious damage to the wells able to be discerned, however, a bend in the internal well casing was observed for MB40D (pump could not be deployed). It is unclear if this bend occurred above or below the water level, however, effort will be made to determine the depth of the bend at the time of the next monitoring event.

During the June 2023 monitoring event, field pH was considered to vary from the laboratory pH at some locations. Upon review of the June 2023 data in conjunction with the data now available from November 2023 and July 2024, it was considered that the June 2023 field pH readings for monitoring wells MBH01, MBH06. MBH08, MBH09, MBH10, MBH13, MBH17, and MBH20 may be anomalous.

Table 5-1. Summary of Field Parameters Observed During July 2024 GME

Parameter	Results Range	Comment
Shallow Wells		
pH	5.95 (MBH19) to 7.22 (MBH12) with MBH12 reporting 11.45	Acidic to neutral conditions were observed in groundwater across the assessment area with the exception of groundwater sampled from MBH12, which reported a relatively elevated alkaline pH value, consistent with previous observations at this location. Refer to Figure 5-2. The low pH previously reported at MBH13 (4.5 in June 2023) was not confirmed during the November 2023 or the July 2024 monitoring event and is likely to be erroneous. Field results were generally confirmed by the laboratory analytical results.
Electrical Conductivity (µS/cm)	1,550 (MB33S) to 191,126 (MBH19)	Lower salinities (i.e., TDS <6,000 mg/L) were reported for groundwater sampled from MBH01, MBH09, MBH10, MBH12, MBH17, MB21S and MB33S. Consistent with previous events, the reported salinities were variable across the network. Field results were generally confirmed by the laboratory analytical results. Refer to Figure 5-4 and Figure 5-5.
Total Dissolved Solids (mg/L)	1,008 (MB33S) to 124,232 (MBH19)	
Redox (mV)	-117.4 (MBH20) to 46.1 (MBH19)	Converting these values to the Standard Hydrogen Electrode (e.g., addition of 199 mV), positive oxidation-reduction potentials (oxidising conditions) were observed at all locations during the July 2024 monitoring event. Refer to Figure 5-8 (noting that the values presented in this figure have not been converted to the Standard Hydrogen Electrode). .
Dissolved Oxygen (ppm)	0.0 (MBH06, MBH12, MBH20, MB21S, MB33S) to 6.19 (MBH01)	There does not appear to be a correlation between redox and dissolved oxygen using regression analysis.
Temperature (°C)	27.8 (MBH01) to 31.3 (MB33S)	Groundwater temperatures were considered representative of groundwater beneath the area/ consistent with atmospheric conditions.
Deep Wells		
pH	6.57 (MB26D) to 7.46 (MB37D), noting MB33D reported 11.97 and MB40D 12.31	Acidic to neutral conditions were observed in groundwater across the assessment area with the exception of groundwater sampled from MB33D and MB40D, which reported more alkaline pH values of 11.97 and 12.31, respectively. Refer to Figure 5-3.
Electrical Conductivity (µS/cm)	2,216 (MB37D) to 139,055 (MB26D)	Reported salinity were generally consistent with the previous monitoring event. Salinity was greatest at MB26D (near adjacent the coast). Field

Parameter	Results Range	Comment
Total Dissolved Solids (mg/L)	1,440 (MB37D) to 90,386 (MB26D)	results were generally confirmed by the laboratory analytical results. Refer to Figure 5-6 and Figure 5-7.
Redox (mV)	-37.5 (MB38D) to 28.5 (MB26D)	Converting these values to the Standard Hydrogen Electrode (e.g., addition of 199 mV), positive oxidation-reduction potentials (oxidising conditions) were observed at all locations during the July 2024 monitoring event. Refer to Figure 5-9 (noting that the values presented in this figure have not been converted to the Standard Hydrogen Electrode).
Dissolved Oxygen (ppm)	1.08 (MB37D) to 3.5 (MB40D)	There does not appear to be a correlation between redox and dissolved oxygen using regression analysis.
Temperature (°C)	26 (MB38D) to 30.4 (MB33D)	Groundwater temperatures were considered representative of groundwater beneath the area/ consistent with atmospheric conditions.

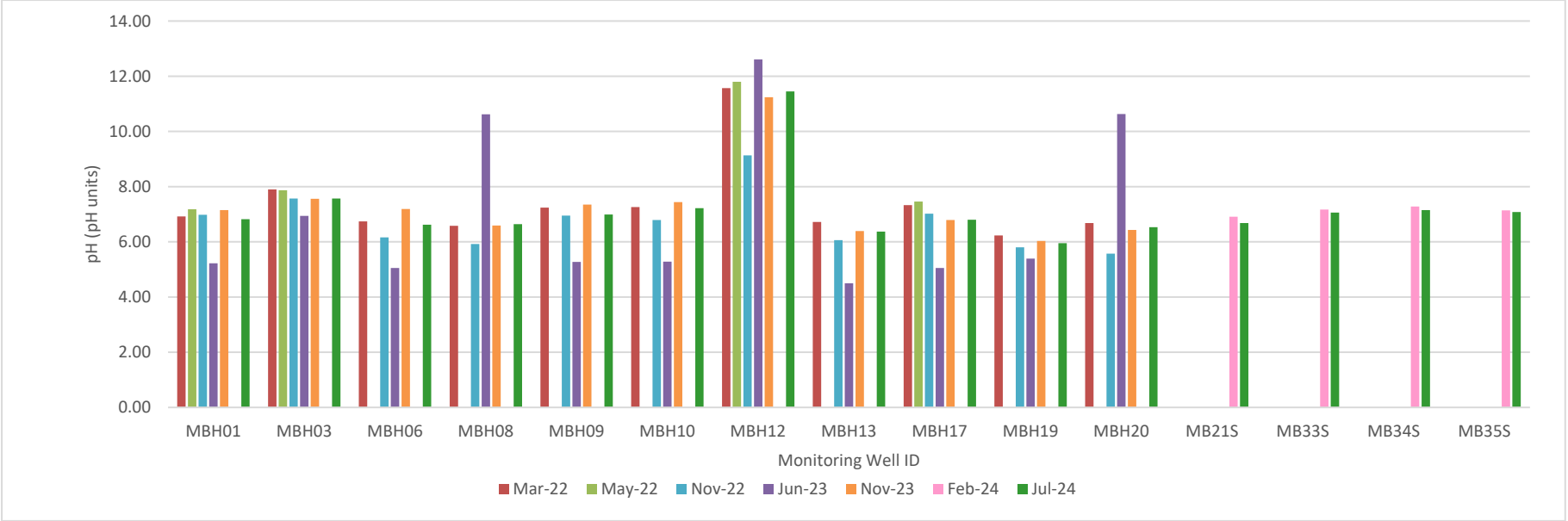

Figure 5-2 Field pH – Shallow Wells

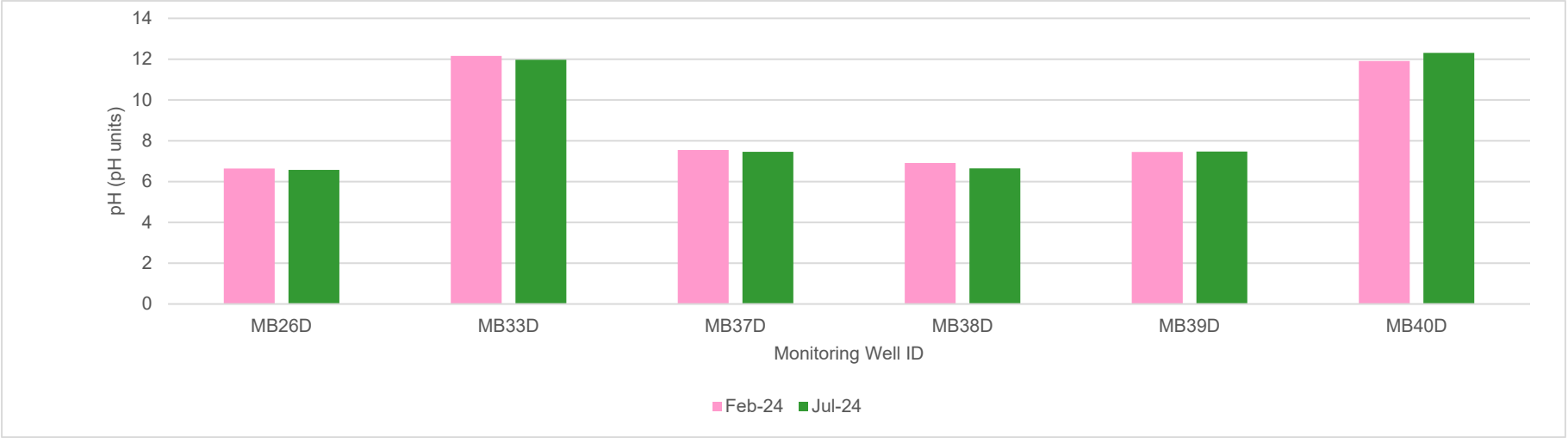

Figure 5-3 Field pH – Deep Wells

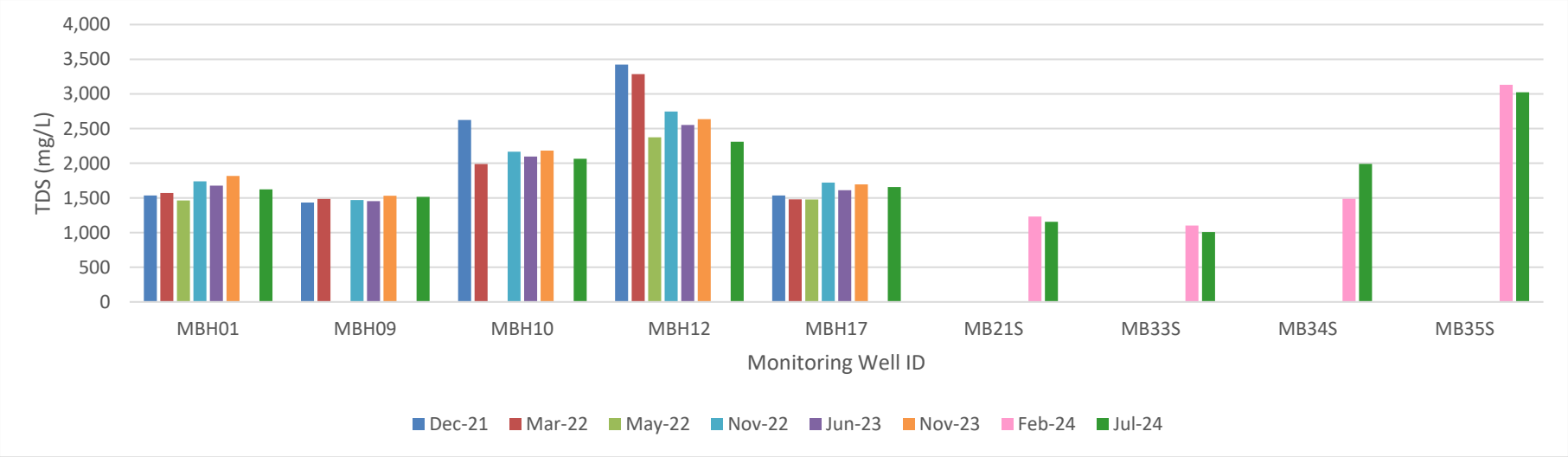

Figure 5-4 Field TDS <6,000 mg/L – Shallow Wells

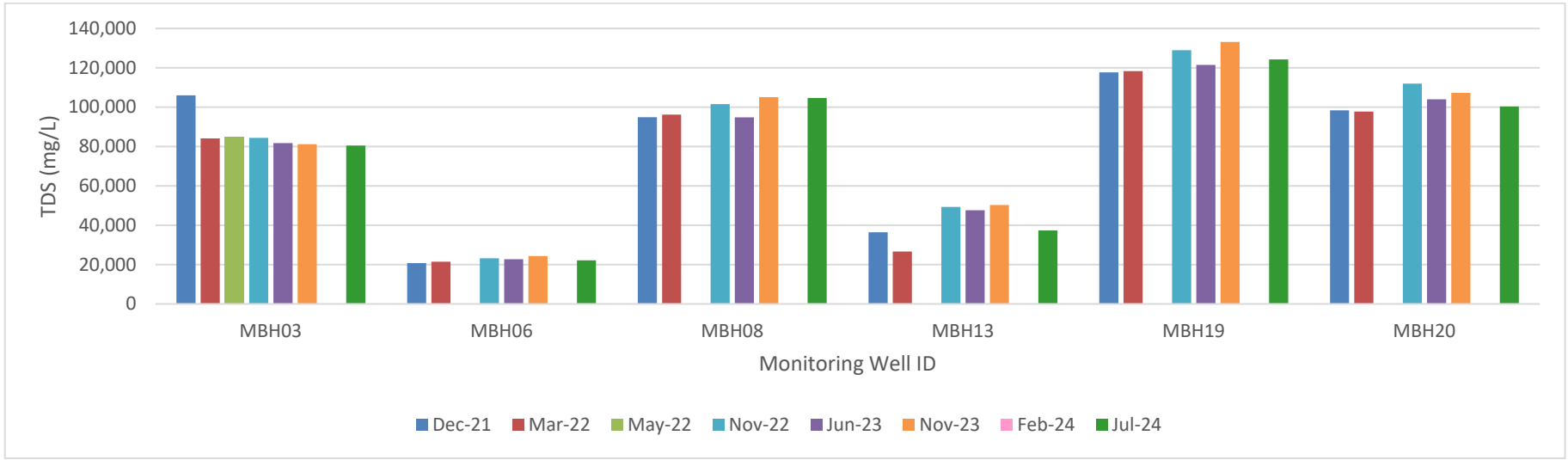

Figure 5-5 Field TDS >6,000 – Shallow Wells

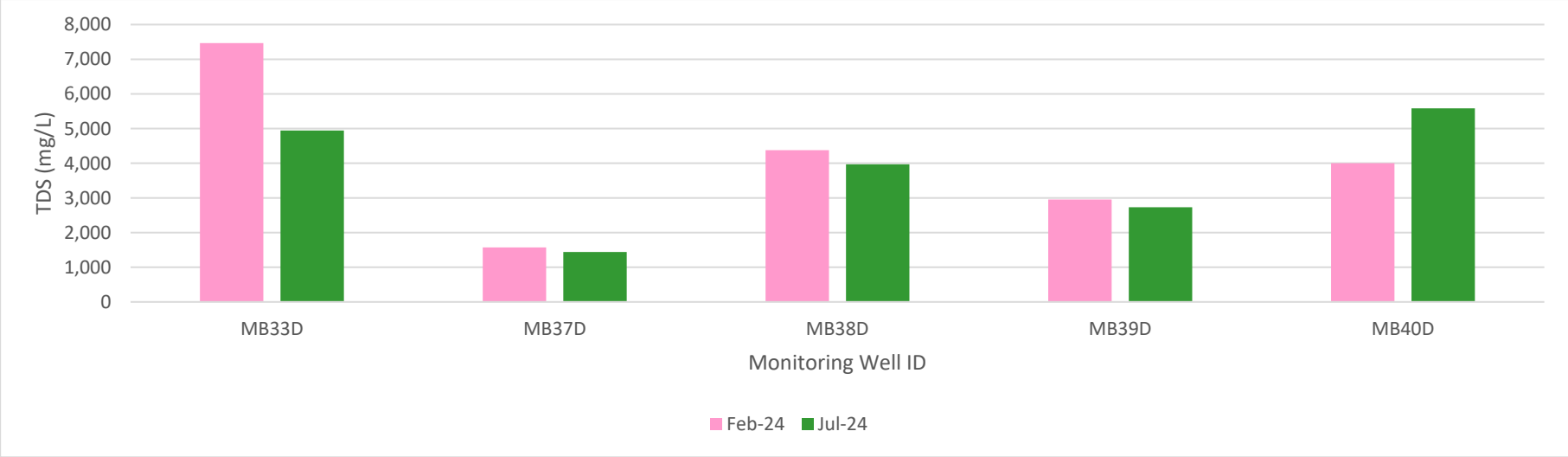

Figure 5-6 Field TDS <12,000 mg/L – Deep Wells

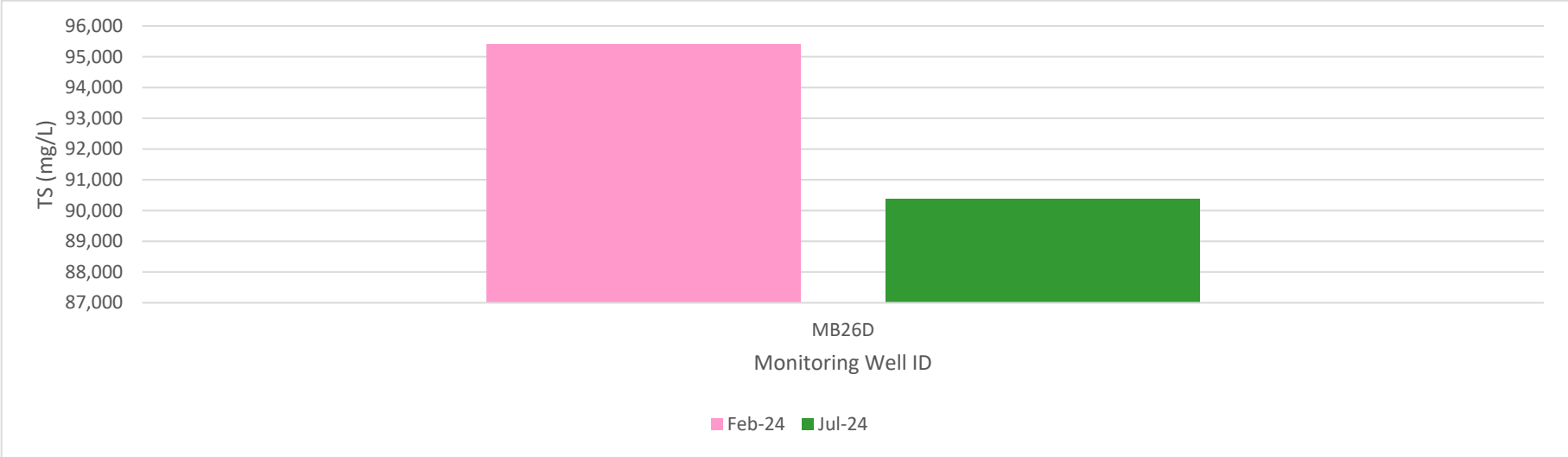

Figure 5-7 Field TDS >12,000 mg/L – Deep Wells

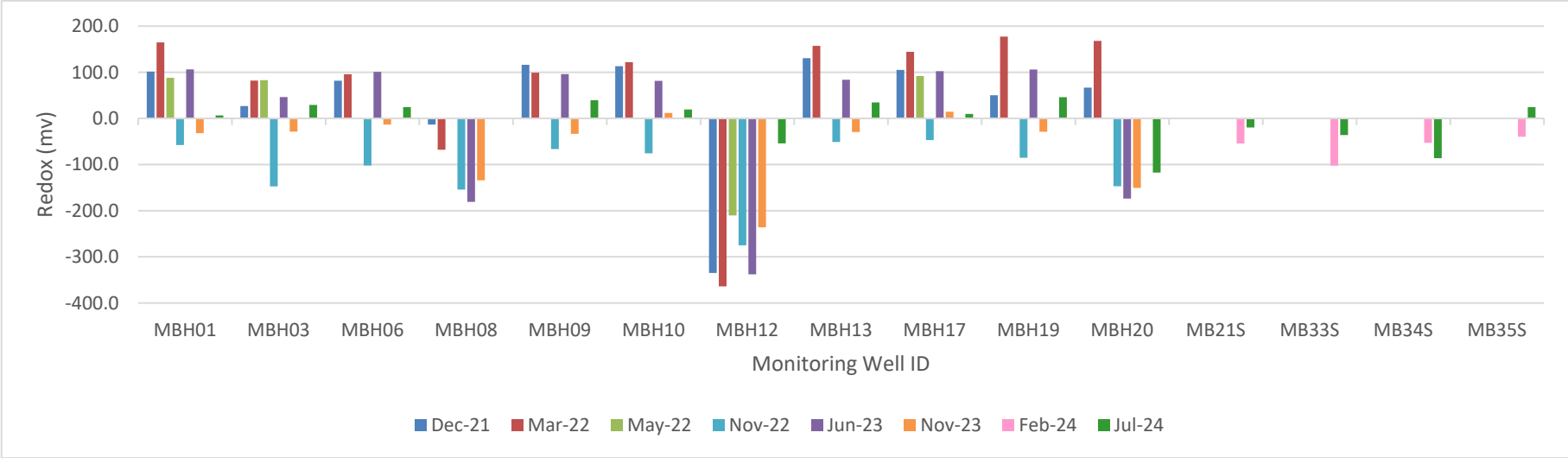

Figure 5-8 Field Redox Potential – Shallow Wells

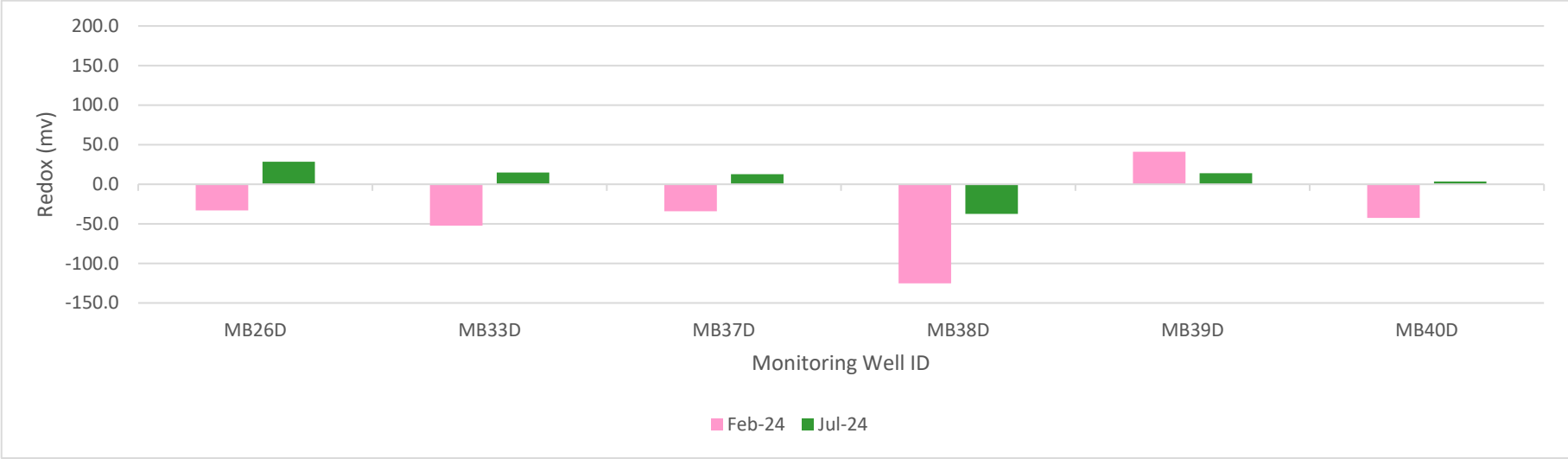

Figure 5-9 Field Redox Potential – Deep Wells

5.3 GROUNDWATER LABORATORY ANALYTICAL RESULTS

A summary of all groundwater analytical results for the Site are provided in Table 4 at rear of this report with certified analytical results presented in Appendix D. The laboratory analytical data was compared to the water screening criteria based on the interpreted potential environmental values of groundwater beneath/ surrounding the project area as described in the GMMP (LWC, 2023c).

5.3.1 Laboratory pH

Laboratory pH was reported as follows:

- For shallow wells, reported pH ranged from 6.7 (MBH19) to 7.9 (MB34S) with MBH12 reported a more alkaline pH of 11, consistent with field results.
- For deep wells, reported pH ranged from 6.8 (MBH38D) to 8.1 (MB37D and MB39D) with MBH33D and MB40D reporting a more alkaline pH of 11 which is consistent with field results.
- Groundwater reported for samples MBH12, MBH33D and MBH40D were outside of the DWG (2018)/ NHMRC (2008) Recreational – aesthetic acceptable range of 6.5-8.5.

A bubble plot showing the magnitude of reported pH across the project area (including shallow and deep wells) is presented as Figure 6 (attached, at end of report). Note that this also includes surface water data. Laboratory pH was fairly consistent across the Site with the exception of MBH12 (located in the south western portion of the Site), MBH33D (located in the southwestern portion of the Site, deep well targeting terrestrial vegetation) and MB40D (located in the northeastern portion of the Site) which were elevated compared to other locations. It is noted that alkalinity at MBH12, MB33D and MB40D is present as carbonate and hydroxide alkalinity as opposed to bicarbonate alkalinity (as reported elsewhere on Site). The TDS reported in waters from these locations are not distinctly higher than that reported at other locations and so the high pH does not appear to be associated with TDS. Whilst these wells appear to be in fair condition (with the exception of the bend in the internal well casing for MB40D), it is unclear if the elevated pH is associated with damage to the internal well casings. Inspection of the internal condition of the wells with a down hole camera would assist in confirming the internal condition of the wells (i.e. to assess if the screen has been impacted by bentonite plug/ grout from above).

The lower pH values were generally reported closer to the coastline/ near areas that have previously been interpreted as likely comprise acid sulfate soils. The exception to this is MBH13 which is located adjacent McKay Creek.

Appendix F details XY-plots for pH vs water level. At most locations, the reported pH appears to increase/ decrease with respect to groundwater level i.e. pH decreases as the groundwater elevation decreases), however, this is not as obvious at some locations (for example MBH12, MBH13, MBH17, MBH19, MB20, MB33D, MB40D).

5.3.2 Total Dissolved Solids

Laboratory TDS was reported as follows:

- For shallow wells, reported TDS ranged from 980 mg/L (MB21S) to 100,000 mg/L (MBH019).
- For deep wells, reported TDS ranged from 1,200 mg/L (MB37D) to 4,000 mg/L (MB40D) with MBH26D reporting a much higher TDS of 75,000 mg/L.
- The Drinking Water/ Recreational – Aesthetic criterion of 600 mg/L was exceeded in groundwater sampled from all locations (shallow and deep wells).

- Reported concentrations were generally within historical variation/ consistent with those reported during the previous GME with the exception of MB26D and MB33D. The difference observed for MB33D (3,900 mg/L in July 2024 compared to 17,000 mg/L in February 2024) is considered to be associated with the development of the well. Levels at this location appear to have stabilised following well installation and this will be confirmed at the time of the next monitoring event. The variation observed for MB26D is not well understood at this time (noting that well development at this location was noted to be adequate) and will be further explored with future monitoring. Following the next round of monitoring at these locations, an assessment of potential anomalous data to be Excluded from interpretation is to be undertaken.

A bubble plot showing the magnitude of reported TDS across the project area is presented as Figure 7 (attached, at end of report). Note that this also includes surface water data. TDS generally increases towards the coast and near the downgradient extents of the watercourses/ near the backwater zone, as demonstrated in Table 5-2 and Figure 7.

Table 5-2. TDS Concentrations in July 2024

Well ID	Screened Interval (m BGL)	Screened Lithology	Laboratory TDS (mg/L) –July 2024	Location On Site	Proximity to Marine Environment
Shallow Wells					
MBH001	19.5 – 25.5	Gravelly Clay	1,400	Adjacent southern extent of gas pipeline	Tending inland
MBH003	3.5 – 5.5	Gravelly. Clayey Sand	66,000	Adjacent northern extent of gas pipeline	Nearer coastline
MBH006	19.5 – 22.5	Clayey Gravelly Sand/ Gravel	19,000	Central portion of the Site	Tending inland
MBH008	10.0 -13.0	Clayey Sand	85,000	Northern/ central portion of the Site	Nearer coastline
MBH009	10.5 – 13.5	Gravel	1,300	Western portion of Site	Tending inland
MBH010	9.8 – 15.8	Clayey Gravelly Sand	1,700	North western portion of the Site	Nearer coastline
MBH012	5.5 – 9.5	Gravel	1,900	South western portion of the Site	Tending inland
MBH013	8.0 – 14.0	Clayey Sandy Gravel/ Gravel	30,000	Central portion of the Site	Inland near downstream end of McKay Creek
MBH017	12.0 – 18.0	Sandy Clay	1,400	Adjacent southern extent of gas pipeline	Tending inland
MBH019	20.5 – 22.5	Clayey Sand	100,000	North eastern portion of the Site	Nearer coastline
MBH020	19.0 – 22.0	Sandy Clay	85,000	North eastern portion of the Site	Nearer coastline
MB21S	17 – 23	d/o: Hard fractured dolerite	980	Eastern portion of Site/ adjacent west of Devil's Creek	Inland near Devil's Creek
MB33S	14 – 20	AgD and Qrg: Gravel and fractured/ heavily weathered granodiorite/diorite	850	Southern portion of Site/ adjacent to the western side of McKay Creek	Inland near McKay Creek
MB34S	17 – 20	Qrg: Clayey Gravel	1,700	Southern portion of Site/ adjacent to the eastern side of McKay Creek	Inland near McKay Creek
MB35S	12 – 15	Qrg: Clayey Sand	2,600	Central portion of Site/ adjacent to the western side of McKay Creek	Inland near McKay Creek

Well ID	Screened Interval (m BGL)	Screened Lithology	Laboratory TDS (mg/L) –July 2024	Location On Site	Proximity to Marine Environment
Deep Wells					
MB26D	19 – 25	Qhms: Sand	75,000	North eastern portion of Site/ edge of proposed concentration pond	Adjacent coastline
MB33D	54 – 60	AgD: Granodiorite and granitic gneiss	3,900	Southern portion of Site/ adjacent to the western side of McKay Creek	Inland near McKay Creek
MB37D	36 – 42	AgD: Diorite	1,200	Central portion of Site/ within proposed crystallisation area	Tending inland
MB38D	43.6 – 49.6	Czaa or Qrg?: Sandy Gravel	3,600	Central portion of Site/ within proposed crystallisation area	Tending inland
MB39D	21 – 27	AgD: Diorite	2,300	Central eastern portion of Site/ within proposed concentration pond	Tending inland
MB40D	57 – 60	AgD: Gravelly Sand	4,000	Eastern portion of Site/ within proposed concentration pond	Tending inland

AgD = Undivided Dampier Granitoid Complex

Qrg = Quartzofeldspathic eluvial sand derived from underlying granitoid rock

Czaa = consolidated alluvial sand, silt and clay

Appendix F details XY-plots for TDS vs water level. There does not appear to be a clear relationship between changes in TDS and groundwater elevation spatially across the Site. Considering only wells for which more than two data points exist, monitoring wells MBH01, MBH03, MBH06, MBH08, MBH19 and MBH20 generally demonstrate decreasing TDS concentrations since the beginning of monitoring at the Site.

5.3.3 Major Cations and Anions and Alkalinity

Piper diagram of major cations and anions reported for groundwater sampled from each of the monitoring wells is presented in Figure 5-10 (shallow wells) and Figure 5-11 (deep wells). The piper diagram represents the ratio of different major cations and anions in milliequivalents per litre and is used to characterise groundwater signatures.

Monitoring wells MB01 and MB17 are located in close proximity and the waters sampled from such locations appear to be very similar in nature as shown in Figure 5-10.

With reference to Figure 5-12, the characteristics of water sampled from shallow well MB33S (screening gravel and fractured/ heavily weathered granodiorite/diorite at a depth of around 14 to 20 m) and adjacent deep well MB33D (screening Granodiorite and granitic gneiss at a depth of around 54 to 60 m) appear to be distinct with MB33D reporting alkalinity as carbonate/ hydroxide and lower portion of chloride and higher portion of calcium and sodium. Groundwater sampled from nearby monitoring well MB34S (located to the west of McKay Creek) appears similar in nature to that sampled from MB33S.

Noting the similar trends in pH and bicarbonate concentrations for groundwater sampled from monitoring wells MBH12, MB33D and MB40D, these waters appear to have similar signatures (as shown in Figure 5-13 despite MBH012 screening a much shallower gravel unit. Each of these monitoring wells have no carbonate or bicarbonate, however, they do have differing calcium concentrations.

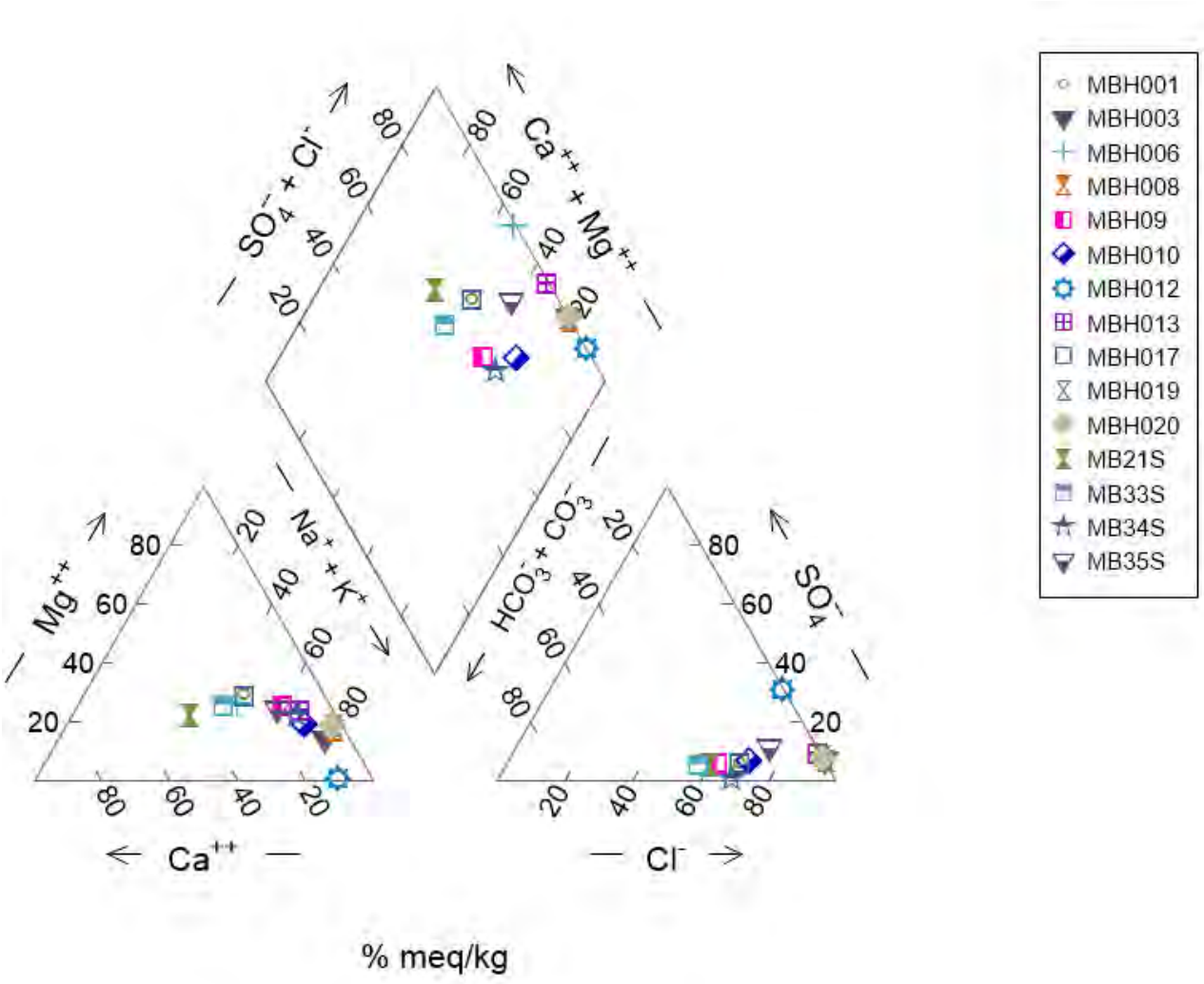

Figure 5-10 Piper Diagram of Groundwaters – All Shallow Wells

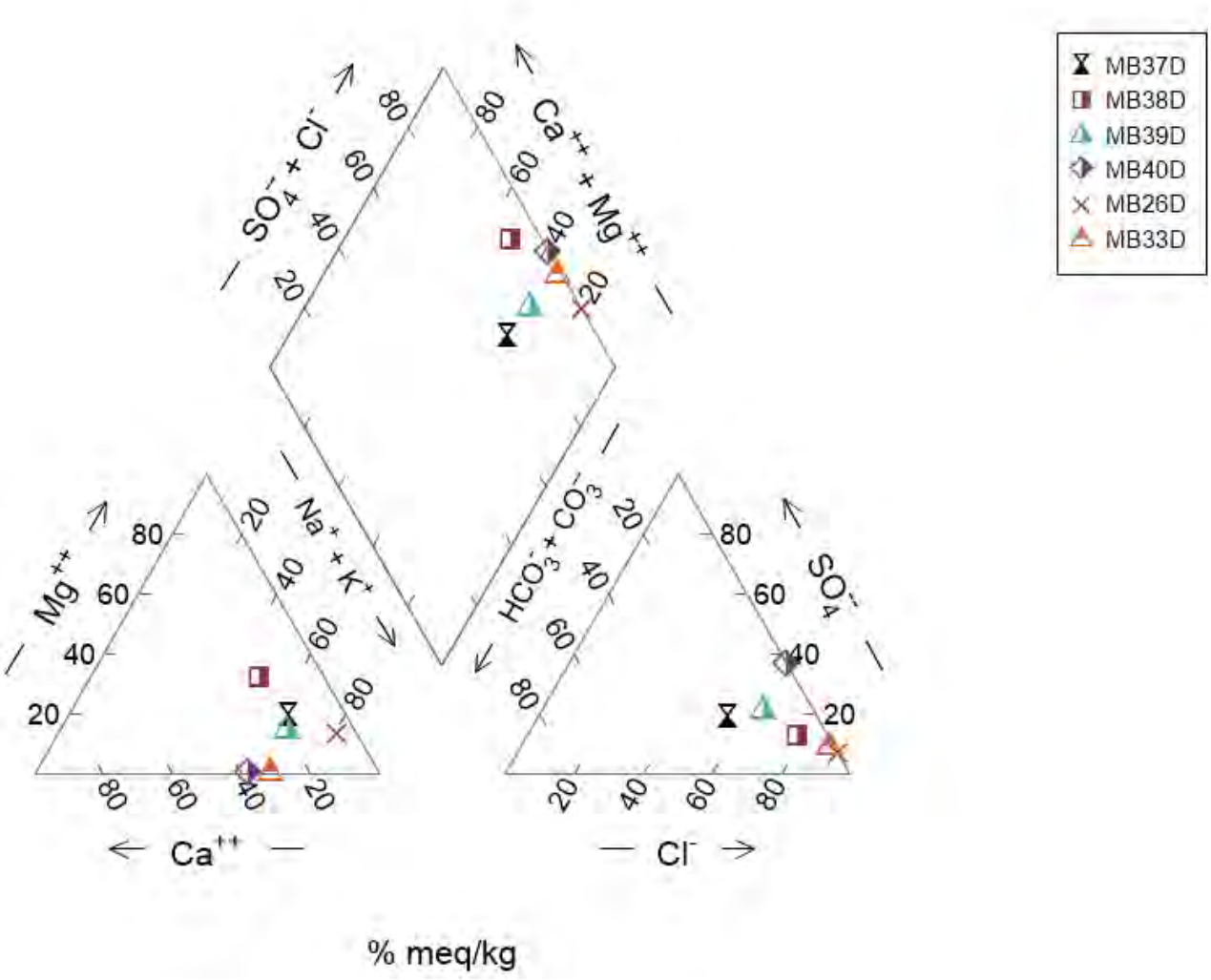

Figure 5-11 Piper Diagram of Groundwaters – All Deep Wells

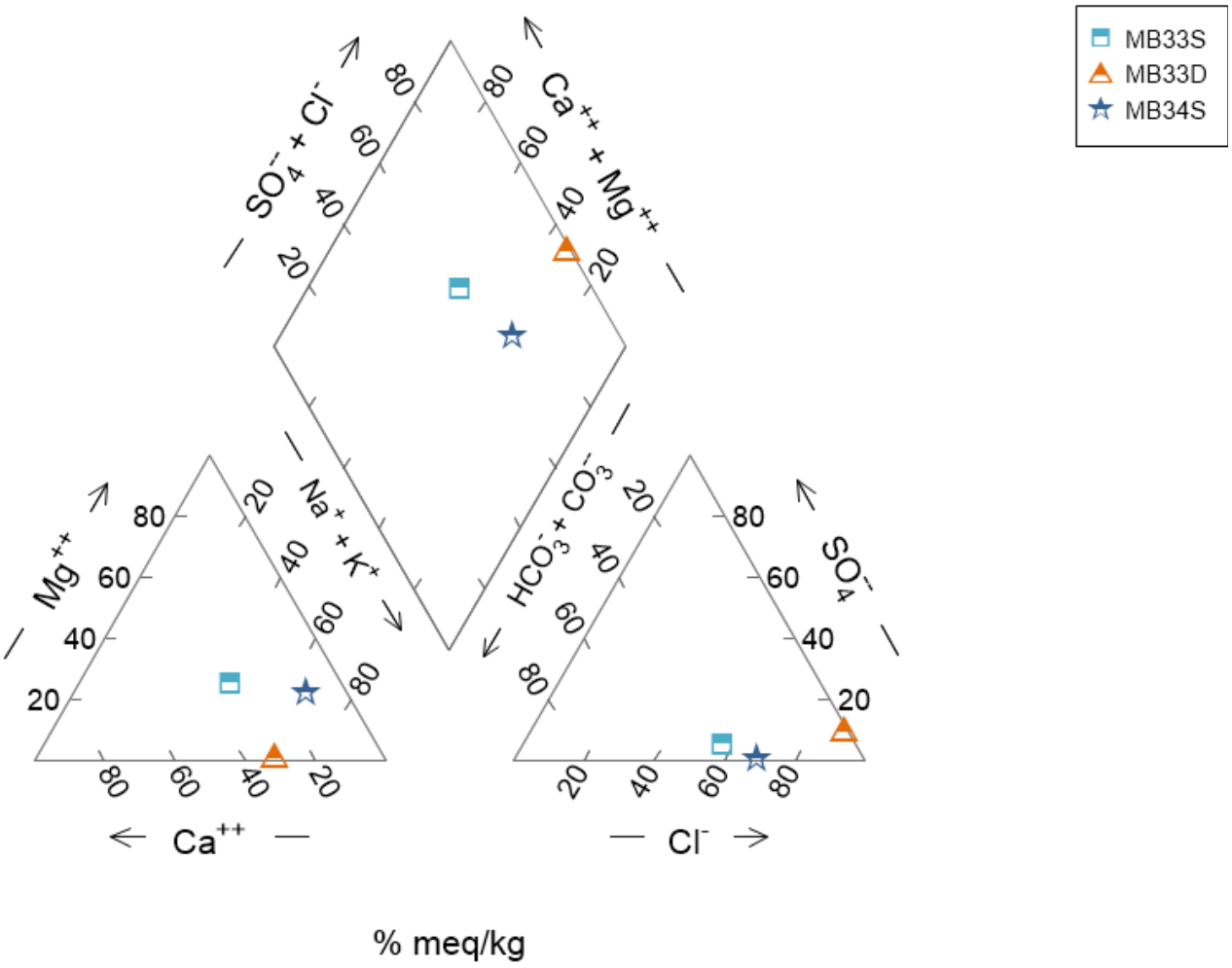

Figure 5-12 Piper Diagram of Groundwaters Sampled from MB33S, MB33D and MB34S

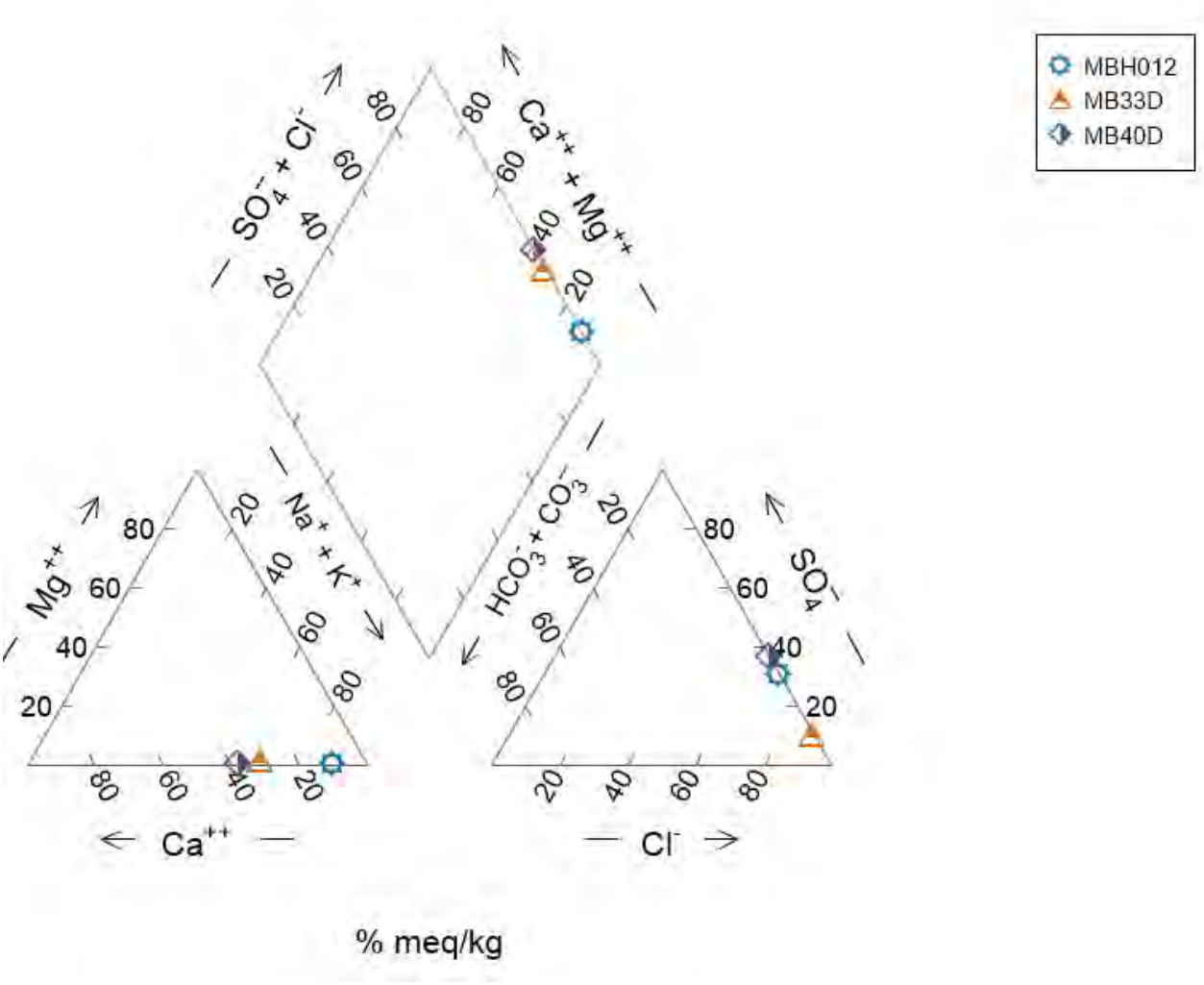

Figure 5-13 Piper Diagram of Groundwaters Sampled from MBH012, MB33D and MB40D

The following exceedances of the adopted guideline criteria were reported for major cations/ anions:

- Reported concentrations of calcium ranged from 56 mg/L (MBH12) to 2,400 mg/L (MBH03). The ANZECC (2000) Livestock drinking water criterion (1,000 mg/L) was exceeded in groundwater sampled from shallow wells (MBH03, MBH06, MBH08, MBH013, MBH019, MBH020) and deep well (MB26D).
- Reported concentrations of chloride ranged from 180 mg/L (MB33D) to 100,000 mg/L (MBH19). The Drinking Water/ Recreational – Aesthetic criterion of 250 mg/L was exceeded in groundwater sampled from all locations except MB33D.
- Reported concentrations of sodium ranged from 120 mg/L (MBH21S) to 52,000 mg/L (MBH019). The Drinking Water/ Recreational – Aesthetic criterion of 180 mg/L was exceeded in groundwater sampled from all locations except MB21S (120 mg/L) and MB33S (140 mg/L).
- Reported concentrations of sulphate ranged from 4.3 mg/L (MB34S) to 8,900 mg/L (MBH08 & MBH19). The Drinking Water/ Recreational – Aesthetic criterion of 250 mg/L and the ANZECC (2000) Livestock drinking water criterion of 1,000 mg/L were exceeded in groundwater sampled from MBH003, MBH006, MBH008, MBH013, MBH019, MBH020 and MB26D. Groundwater sample MBH012, MB38D, MB39D and MB40D only exceeded the Drinking Water/ Recreational – Aesthetic

criterion of 250 mg/L. In general, with the exception of MB26D, sulfate concentrations were lower in the deep wells.

- Reported concentrations of hardness ranged from 140 mg/L (MBH012) to 30,000 mg/L (MBH019). The Drinking Water/ Recreational – Aesthetic criterion of 200 mg/L was exceeded in groundwater sampled from all locations except MBH012.

Reported concentrations were generally consistent with previous monitoring events with the exception of MB33D which reported reduced alkalinity and hardness compared to the previous monitoring event (likely associated with the poor development of the well following installation).

5.3.4 Nutrients

All groundwater samples were submitted for the analysis of nutrients including nitrogen and phosphorous species.

In general, the sampled groundwater reports a higher portion of inorganic nitrogen (ammonia plus nitrate & nitrite [NOx]) compared to organic nitrogen (calculated as TKN minus ammonia) with the exception of groundwater sampled from monitoring wells MBH012, MB33D, MB34S, MB37D, MB38D and MB40D.

It is noted that for samples MBH03, MBH08, MBH19, MBH20 and MBH26D (which reported the highest concentrations of ammonia) the laboratory reports (reports 1122482 and 1121132) state that the ammonia results may be elevated due to the high salinity of the samples. At other locations, the low concentrations of ammonia correlate with the generally positive redox conditions measured as would be expected.

Exceedances of the adopted guideline criteria for nutrients are summarised in Table 5-3.

Table 5-3. Summary of Adopted Guideline Exceedances – Nutrients

Analyte	Concentration Range	Guideline Values	Exceedances
Shallow Wells			
Ammonia as N	<0.02 mg/L (MBH01, MBH06, MBH09, MBH10, MBH17, , MB21S, MB34S and MB35S) to 3.4 mg/L (MBH08, MBH19, MBH20)	Drinking Water/ Recreation-Aesthetic – 0.41 mg/L	MBH03, MBH08, MBH12, MBH19, MBH20, MBH26D, MB33D, MB39D, MB40D
		Freshwater – 0.9 mg/L	MBH03, MBH08, MBH19, MBH20, MBH26D, MB33D, MB40D
		Marine water – 0.91 mg/L	MBH03, MBH08, MBH19, MBH20, MBH26D, MB33D, MB40D
Nitrate as N	<0.01 mg/L (MBH08, MBH20, MB34S) to 10 mg/L (MBH006)	Freshwater – 0.7 mg/L	MBH01, MBH06, MBH09, MBH10, MBH12, MBH13, MBH17, MB33S, MB35S
Total Nitrogen as N	<0.2 mg/L (MBH20) to 17 mg/L (MBH06)	ANZECC (2000) Irrigation – 5 mg/L	MBH06, MBH12
Reactive Phosphorous	<0.01 mg/L (MBH06 and MBH13) to 0.1 mg/L (MBH09 and MBH010)	ANZECC (2000) Irrigation – 0.05 mg/L	MBH09, MBH10, MBH12, MB33S, MB34S and MB35S

Analyte	Concentration Range	Guideline Values	Exceedances
Deep Wells			
Ammonia as N	<0.02 mg/L (MB37D) to 2.8 mg/L (MB26D)	Drinking Water/ Recreation- Aesthetic – 0.41 mg/L	MBH26D, MB33D, MB39D, MB40D
		Freshwater – 0.9 mg/L	MBH26D, MB33D, MB40D
		Marine water – 0.91 mg/L	MBH26D, MB33D, MB40D
Nitrate as N	<0.01 mg/L (MB37D, MB38D) to 0.98 mg/L (MB26D)	Freshwater – 0.7 mg/L	MB26D
Total Nitrogen as N	0.5 mg/L (MB37D and MB38D) to 13 mg/L (MB40D)	ANZECC (2000) Irrigation – 5 mg/L	MB40D
Reactive Phosphorous	0.03 mg/L (MB40D) to 0.08 mg/L (MB37D and MB39D)	ANZECC (2000) Irrigation – 0.05 mg/L	MB37D, MB38D and MB39D

5.3.5 Metals/ Metalloids (Total and Dissolved)

The metal/metalloid signature (with the exception of those in the major ion suite) within groundwater is dominated by aluminium, iron and manganese where concentrations in the range of <0.05 – 28 mg/L (aluminium) have been recorded during this monitoring event.

For all other metals/metalloids assessed, concentrations are significantly lower, although exceedances of the adopted guideline values were reported. Exceedances of the adopted guideline criteria are presented in Table 5-4, below.

Table 5-4. Summary of Adopted Guideline Exceedances – Metals/ Metalloids

Analyte	Concentration Range (Total)	Guideline Values	Exceedances
Aluminium	<0.05 mg/L to 7.22 mg/L	Drinking Water/ Recreation - Aesthetic – 0.2 mg/L	**Shallow Wells** Total – MBH01, MBH03, MBH10, MBH12, MBH13, MBH17, MBH20 and MB34S Dissolved – MBH12 and MBH17 **Deep Wells** Total – MB33D, MB37D, MB38D, MB39D, MB40D Dissolved – MB33D, MB40D
Antimony	<0.001 mg/L to 0.0528 mg/L	Drinking water – Health – 0.003 mg/L	**Shallow Wells** Total and dissolved – MB34S **Deep Wells** Total and dissolved – MB33D and MB40D
		Recreation – Health – 0.03 mg/L	**Shallow Wells** Total – MB34S

Analyte	Concentration Range (Total)	Guideline Values	Exceedances
			Dissolved – MB34S – the primary result was equal to but did not exceed the guideline. Both the intra-and inter- laboratory duplicates exceeded the guideline.
Arsenic	<0.001 mg/L to 0.0215 mg/L	Drinking water – Health – 0.01 mg/L	**Shallow Wells** Total and dissolved – MBH03, MBH08, MBH12, MB34S **Deep Wells** Total and dissolved – MB38D
		Freshwater – 0.013 mg/L	**Shallow Wells** Total – MBH03, MBH08, MBH12 and MB34S Dissolved – MBH03, MBH08 and MB34S **Deep Wells** Total and dissolved – MB38D
Cadmium	<0.0001 to 0.0026 mg/L	Freshwater – 0.0002 mg/L	**Shallow Wells** Total and dissolved – MBH03, MBH06, MBH13 and MBH19 **Deep Wells** Total and dissolved – MB26D
		Drinking water – Health – 0.002 mg/L	**Shallow Wells** Total and dissolved – MBH19 **Deep Wells** Total and dissolved – MB26D
Chromium (III + VI)	<0.001 to 0.073 mg/L	Freshwater – 0.001 mg/L	**Shallow Wells** Total – MBH03, MBH06, MBH10, MBH13, MBH17, MBH19, MBH20 and MB34S Dissolved - MBH03 **Deep Wells** Total – MB33D, MB37D, MB38D, MB39D and MB40D Dissolved – MB33D and MB40D
		Drinking water – health – 0.05 mg/L	**Shallow Wells** Total and dissolved– MBH03
Cobalt	<0.001 to 0.028 mg/L	Marine water – 0.001 mg/L	**Shallow Wells** Total – MBH06, MBH08, MBH10, MBH13, MBH19, MBH20 and MB34S Dissolved – MBH06, MBH08 and MBH19 **Deep Wells** Total – MB26D, MB33D, MB38D, MB39D and MB40D Dissolved - MB26D, MB33D and MB40D

Analyte	Concentration Range (Total)	Guideline Values	Exceedances
Copper	<0.001 to 0.11 mg/L	Marine water – 0.0013 mg/L	**Shallow Wells** Total – MBH01, MBH03, MBH06, MBH08, MBH10, MBH12, MBH13, MBH17, MBH19, MBH20, MB21S, MB34S, MB35S Dissolved – MBH03, MBH06, MBH08, MBH13 and MBH19 **Deep Wells** Total – MB26D, MB33D, MB37D, MB38D, MB39D and MB40D Dissolved - MB26D, MB33D, MB39D and MB40D
		Freshwater – 0.0014 mg/L	**Shallow Wells** Total – MBH01, MBH03, MBH06, MBH08, MBH10, MBH12, MBH13, MBH17, MBH19, MBH20, MB21S, MB34S, MB35S Dissolved – MBH03, MBH06, MBH08, MBH13 and MBH19 **Deep Wells** Total – MB26D, MB33D, MB37D, MB38D, MB39D and MB40D Dissolved - MB26D, MB33D, MB39D and MB40D
Iron	<0.01 to 28 mg/L	Irrigation LTV – 0.2 mg/L	**Shallow Wells** Total – MBH03, MBH06, MBH08, MBH10, MBH13, MBH17, MBH20, MB21S, MB33S and MB34S Dissolved – MBH08, MB33S and MB34S **Deep Wells** Total – MB33D, MB37D, MB38D and MB39D Dissolved - MB38D
		Drinking water/ recreation – aesthetic – 0.3 mg/L	**Shallow Wells** Total – MBH03, MBH06, MBH08, MBH10, MBH13, MBH17, MBH20, MB21S, MB33S and MB34S Dissolved – MBH08, MB33S and MB34S **Deep Wells** Total – MB33D, MB37D, MB38D and MB39D Dissolved - MB38D
Lead	<0.001 to 0.027 mg/L	Freshwater – 0.0034 mg/L	**Shallow Wells** Total –MBH03 and MBH19 and MB34S Dissolved – MBH19 **Deep Wells** Total – MB33D and MB38D
		Marine water – 0.0044 mg/L	**Shallow Wells** Total –MBH03 and MBH19 and MB34S (DUP2) Dissolved – MBH19 **Deep Wells**

Analyte	Concentration Range (Total)	Guideline Values	Exceedances
			Total – MB33D and MB38D
		Drinking water – health – 0.01 mg/L	**Shallow Wells** Total – MBH19 **Deep Wells** Total – MB38D
Manganese	<0.005 to 3.0 mg/L	Drinking water/ recreation – aesthetic – 0.1 mg/L	**Shallow Wells** Total – MBH03, MBH06, MBH08, MBH20, MB21S, MB33S and MB34S Dissolved – MBH06, MBH08, MBH20, MB21S, MB33S and MB34S **Deep Wells** Total – MB37D, MB38D and MB39D Dissolved - MB38D and MB39D
		Irrigation LTV – 0.2 mg/L	**Shallow Wells** Total – MBH06, MBH08, MBH20, MB21S, MB33S and MB34S Dissolved – MBH06, MBH08, MBH20, MB33S and MB34S **Deep Wells** Total and dissolved – MB39D
		Drinking water – health – 0.5 mg/L	**Shallow Wells** Total – MBH08, MBH20, MB33S and MB34S Dissolved –MBH08, MBH20, MB33S and MB34S **Deep Wells** Total and dissolved – MB39D
		Freshwater – 1.9 mg/L	**Shallow Wells** Total – MBH08 and MBH20 Dissolved – MBH20
Molybdenum	<0.001 to 0.53 mg/L	Irrigation LTV – 0.01 mg/L	**Shallow Wells** Total – MBH03, MBH06, MBH08, MBH12 and MBH19 Dissolved – MBH03, MBH08 and MBH12 **Deep Wells** Total – MB26D, MB33D, MB37D and MB40D Dissolved - MB26D, MB33D and MB40D
		Livestock drinking water – 0.15 mg/L	**Deep Wells** Total and dissolved – MB40D
		Drinking water – health – 0.5 mg/L	**Deep Wells** Total and dissolved – MB40D
Nickel	<0.001 to 0.13 mg/L	Freshwater – 0.011 mg/L	**Shallow Wells**

Analyte	Concentration Range (Total)	Guideline Values	Exceedances
			Total – MBH06, MBH08, MBH10, MBH12, MBH13, MBH19, MBH20 and MB34S Dissolved – MBH06, MBH08, MBH10, MBH13, MBH19 and MB34S **Deep Wells** Total – MB26D, MB37D, MB38D and MB39D Dissolved - MB26D, MB37D, MB38D and MB39D
		Drinking water – health – 0.02 mg/L	**Shallow Wells** Total – MBH06, MBH08, MBH10, MBH13, MBH19, and MB34S Dissolved – MBH06, MBH08, MBH10, MBH13, MBH19, and MB34S **Deep Wells** Total and dissolved – MB38D and MB39D
		Marine water – 0.07 mg/L	**Shallow Wells** Total and dissolved – MBH13
Selenium	0.001 to 0.061 mg/L	Drinking water – health – 0.01 mg/L	**Shallow Wells** Total and dissolved – MBH03, MBH08 and MBH19 **Deep Wells** Total – MB26D, MB39D and MB40D Dissolved – MB26D and MB39D
		Irrigation LTV/ Livestock drinking water – 0.02 mg/L	**Shallow Wells** Total and dissolved – MBH03, MBH08 and MBH19 **Deep Wells** Total – MB26D and MB39D Dissolved – MB26D
Silver	0.001 to 0.003 mg/L	Marine water – 0.0014 mg/L	**Shallow Wells** Dissolved – MBH20 Note that the reported concentration for total metals was lower than the dissolved metals concentration but was considered by the laboratory to be within an acceptable error range.
Uranium	<0.001 to 0.051 mg/L	Irrigation LTV – 0.01 mg/L	**Shallow Wells** Total – MBH06, MBH13, MBH20 and MB35S Dissolved – MBH06, MBH13 and MBH20 **Deep Wells** Total – MB37D, MB38D and MB39D Dissolved - MB38D
		Drinking water – health – 0.02 mg/L	**Shallow Wells** Total and dissolved – MBH06 **Deep Wells**

Analyte	Concentration Range (Total)	Guideline Values	Exceedances
			Total – MB38D
Vanadium	<0.005 to 0.38 mg/L	Irrigation LTV – 0.1 mg/L	**Shallow Wells** Total and dissolved – MBH12 **Deep Wells** Total – MB38D
Zinc	<0.005 to 0.12mg/L	Freshwater – 0.008 mg/L	**Shallow Wells** Total – All wells Dissolved – MBH01, MBH03, MBH06, MBH08, MBH09, MBH10, MBH13, MBH19, MBH20 and MB35S **Deep Wells** Total – All wells Dissolved - MB26D and MB39D
		Marine water – 0.008 mg/L	**Shallow Wells** Total – All wells Dissolved – MBH01, MBH03, MBH06, MBH08, MBH09, MBH10, MBH13, MBH19, MBH20 and MB35S **Deep Wells** Total – All wells Dissolved - MB26D and MB39D

The following should be noted for future consideration:

- Filtering of samples with a finer filter (0.22 µm, for example) might address the concentrations of dissolved aluminium in groundwater where exceedance of guideline criteria may be due to the presence of colloids (the larger filter size adopted as standard practice for field filtration does not remove colloids). This may also address concentrations of other analytes for which dissolved concentrations were in exceedance of guideline criteria for example zinc.

To assist with interpretation of any changes or trends to the concentrations of metals/ metalloids (as well as TDS and pH) in groundwater across the Project Area, a statistical trend analysis using Mann-Kendall Trend test (US EPA, 2006) was undertaken. The results of the trend assessment are presented as Appendix G and summarised in Table 5-5. The statistical trend test determines long term trends that are either exclusively increasing or decreasing. Note, Mann-Kendall statistical analysis is only possible where 4 or more data points exist and, and therefore, was not completed for the new monitoring wells that were installed in January/ February 2024. Note that these trends are those determined with >90% confidence level.

Table 5-5 Summary of Mann-Kendall Statistical Trend Analysis

Wells/ Analyte	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10	MBH12	MBH13	MBH17	MBH19	MBH20
Al	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	**Decreasing Trend**	No Trend	No Trend	No Trend	No Trend
Sb	No Trend	No Trend	**No Trend**	**No Trend**	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
As	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend

Wells/ Analyte	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10	MBH12	MBH13	MBH17	MBH19	MBH20
Be	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Bi	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Cd	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Cr	No Trend	Decreasing Trend	No Trend	Decreasing Trend	No Trend	No Trend	No Trend	No Trend	No Trend	Decreasing Trend	No Trend
Co	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	Decreasing Trend
Cu	No Trend	No Trend	No Trend	Decreasing Trend	No Trend	No Trend	Decreasing Trend	No Trend	No Trend	No Trend	No Trend
Fe	No Trend	No Trend	Decreasing Trend	No Trend	No Trend	No Trend	Decreasing Trend	No Trend	No Trend	No Trend	No Trend
Pb	No Trend	No Trend	No Trend	Decreasing Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Li	No Trend	No Trend	Decreasing Trend	No Trend	Decreasing Trend	No Trend	Decreasing Trend	No Trend	No Trend	No Trend	No Trend
Mn	No Trend	No Trend	Decreasing Trend	No Trend	No Trend	Decreasing Trend	Decreasing Trend	Decreasing Trend	No Trend	No Trend	No Trend
Hg	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Mo	No Trend	Decreasing Trend	Decreasing Trend	No Trend	Decreasing Trend	Decreasing Trend	No Trend	No Trend	No Trend	Decreasing Trend	No Trend
Ni	No Trend	Decreasing Trend	No Trend	No Trend	No Trend	Increasing Trend	No Trend	Increasing Trend	No Trend	No Trend	No Trend
Se	No Trend	No Trend	Decreasing Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Ag	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	Decreasing Trend	No Trend
Sr	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	Decreasing Trend	No Trend	No Trend	Increasing Trend	Increasing Trend
Th	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Ti	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	Decreasing Trend	No Trend	Trend	No Trend	No Trend
U	No Trend	No Trend	Decreasing Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
V	Decreasing Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	Decreasing Trend
Zn	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	Increasing Trend	No Trend	No Trend	No Trend
Zr	Decreasing Trend	No Trend	Decreasing Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
SiO2	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
pH	No Trend	Decreasing Trend	No Trend	No Trend	No Trend	No Trend	Decreasing Trend	Decreasing Trend	No Trend	No Trend	No Trend
TDS	Decreasing Trend	Decreasing Trend	Decreasing Trend	Decreasing Trend	Increasing Trend	No Trend	Decreasing Trend	No Trend	No Trend	Decreasing Trend	Decreasing Trend

Based on the results from the statistical assessment, groundwater concentrations are generally showing no trend or a downward trend with the exception of those indicated in the table above. Where increasing trends were identified, the most recent reported concentrations were within historical variation and are considered to be reflective of temporal variability with the exception of the following:

- In groundwater sampled from MBH13, the reported nickel concentrations (dissolved and total) were an order of magnitude greater than the concentration range previously reported at this location.

There was no reported significant change in water level, pH or redox conditions at this location, however, laboratory TDS was decreased, to a similar level as the April 2022 GME during which the previous highest nickel concentrations were reported at this location. Future monitoring will confirm nickel concentration trends at this location.

- Similarly, nickel concentrations at MBH10 were elevated compared to previous results. pH appears to have reduced at this location since the beginning of monitoring, however, not similar in patterns or water level were observed at this location. Future monitoring will confirm nickel concentration trends at this location.

5.3.6 Hydrocarbons

Groundwater sampled from monitoring well MBH09 (located in close proximity to the future wash plant area) and MB34S (located in the southern portion of Site/ adjacent to the eastern side of McKay Creek) were submitted for the analysis of TRH and BTEXN. Concentrations of TRH and BTEXN were below laboratory LOR for MBH09. Concentrations of TRH were reported marginally above LOR in sample MB34S (TRH C_{10}-C_{36} of 300 mg/kg and TRH C_{10}-C_{40} of 250 mg/kg). TRH with silica gel cleanup analysis was requested for this sample, however, there was insufficient sample remaining for this to be completed. The laboratory was requested to identify the potential nature of the TRH by assessing the chromatogram for sample MB34S. The laboratory advised that the TRH fingerprint shows *possible* presence of Creosote, but no other matches across the 60 compounds in their database, however, because the sample was only slightly positive for certain TRH fractions it was considered that the sample did not have a high enough concentration for a more accurate fingerprint match. If TRH is identified at this location in future, TRH with silica gel cleanup analysis should be undertaken to determine if the identified TRH is biogenic in nature rather than petrogenic.

5.4 SURFACE WATER HYDROCHEMICAL CONDITIONS

Surface water field parameters are presented in Table 3 (at the end of this report) with sampling sheets presented in Appendix C. Note that during the July 2024 GME, surface water samples were only collected at SW01 and SW14.

A summary of the field parameter ranges and hydro-geochemical conditions in surface water across the project area is also provided in Table 5-6. Historical groundwater field parameters from the previous March 2022, May 2022, November and June 2023 and monitoring events are also summarised.

Table 5-6 Summary of Surface Water Field Parameters

Parameter	Results Range	Comment
pH	6.85 (SW01) and 8.48 (SW14)	Slightly acidic to alkaline conditions were observed in surface waters. Field results were generally confirmed by the laboratory analytical results.
Electrical Conductivity (µS/cm)	1,050 (SW14) and 66,644 (SW01)	Higher salinity (i.e., TDS >1,000 mg/L) was reported for SW01 which is located near the marine/ estuary environment. SW14 reported low salinity (i.e., TDS <1,000 mg/L) which is located in a general floodplain area, less influenced by seawater. Field results were generally confirmed by the laboratory analytical results.
Total Dissolved Solids (mg/L)	683 (SW14) and 43,319 (SW01)	
Redox (mV)	31.2 (SW01) and 52.0 (SW14)	Converting these values to the Standard Hydrogen Electrode (e.g., addition of 199 mV), positive oxidation-reduction potentials (oxidising conditions) were observed at both locations.

Parameter	Results Range	Comment
Dissolved Oxygen (ppm)	1.60 (SW01) and 3.90 (SW14)	Dissolved oxygen levels were variable between locations. Both reported concentrations were within historical variation at the respective locations.
Temperature (°C)	13.5 (SW14) and 18.6 (SW01)	Temperatures were considered representative of atmospheric conditions at the time of sampling.

5.5 SURFACE WATER LABORATORY ANALYTICAL RESULTS

A summary of the analytical results for the July 2024 surface water monitoring event is provided in Table 5 at the end of this report with certified analytical results presented in Appendix D.

The laboratory analytical data was compared to the water screening criteria based on the interpreted potential environmental values of surface water across and down-stream of the project area.

5.5.1 Laboratory pH

The reported pH ranged from 7.2 (SW01) to 8.6 (SW14). The reported concentrations were generally consistent with the recorded field parameters.

5.5.2 Total Dissolved Solids

Salinity distribution across the sampled location appears to be variable. Generally, those locations sampled closer to the coast/ marine environment, reported the highest salinity (refer to Table 5-7).

Table 5-7. Distribution of Laboratory TDS Concentrations (mg/L) in Surface Water

Sample Location	Creek Line	Targeted Feature	March 2022	May 2022	November 2022	June 2023	November 2023	July 2024
SW01	Mangrove area	Coastal outlet/ mangrove area in marine environment	64,000	-	42,000	45,000	40,000	44,000
SW02	Eramurra Creek	Eramurra Creek outlet near marine environment	72,000	38,000	230,000	89,000	91,000	-
SW03	McKay Creek	McKay Creek upstream location within project area	-	-	-	-	-	-
SW03R	McKay Creek	McKay Creek at the crossover with North West Coastal Highway	-	350	-	-	-	-

Sample Location	Creek Line	Targeted Feature	March 2022	May 2022	November 2022	June 2023	November 2023	July 2024
SW04	McKay Creek	McKay Creek within central portion of the Site	-	66	-	-	-	-
SW05	McKay Creek	McKay Creek within central portion of the Site	-	99	-	560	-	-
SW06	McKay Creek	McKay Creek outlet near marine environment	120,000	98,000	380,0000	110,000	91,000	-
SW07	McKay Creek Tributary	Upstream tributary of McKay Creek	-	66	-	-	-	-
SW08	McKay Creek Tributary	Upstream tributary of McKay Creek	-	140	-	-	-	-
SW09	Devil Creek	Devil Creek upstream of the project area	-	-	-	-	-	-
SW10	Eramurra Creek	Eramurra Creek within project area	-	89	-	-	-	-
SW10R	Eramurra Creek	Eramurra Creek at the crossover with North West Coastal Highway	-	84	-	-	-	-
SW11	Devil Creek	Devil Creek within project area	-	230	-	-	-	-
SW11R	Devil Creek	Devil Creek at the crossover with North West Coastal Highway	-	48	-	-	-	-
SW12	Unnamed creek	General floodplain area in marine environment	-	61,000	-	-	-	-
SW13	Unnamed creek	General floodplain area	130	84	-	390	-	-

Sample Location	Creek Line	Targeted Feature	March 2022	May 2022	November 2022	June 2023	November 2023	July 2024
SW14	Unnamed creek	General floodplain area	-	200	-	550	-	810

5.5.3 Major Cations and Anions

Piper diagrams of major cations and anions reported for surface water sampled during the July 2024 monitoring event are presented as Figure 5-14. The piper diagram represents the ratio of different major cations and anions in milligrams per litre and is used to characterise surface water signatures.

During the July 2024 monitoring event, the signatures of surface water sampled from SW01 and SW14 were variable. SW01 is located at the coastal outlet/ mangrove area in the marine environment whereas SW14 is located within a general floodplain area, hence the difference in the observed water signatures.

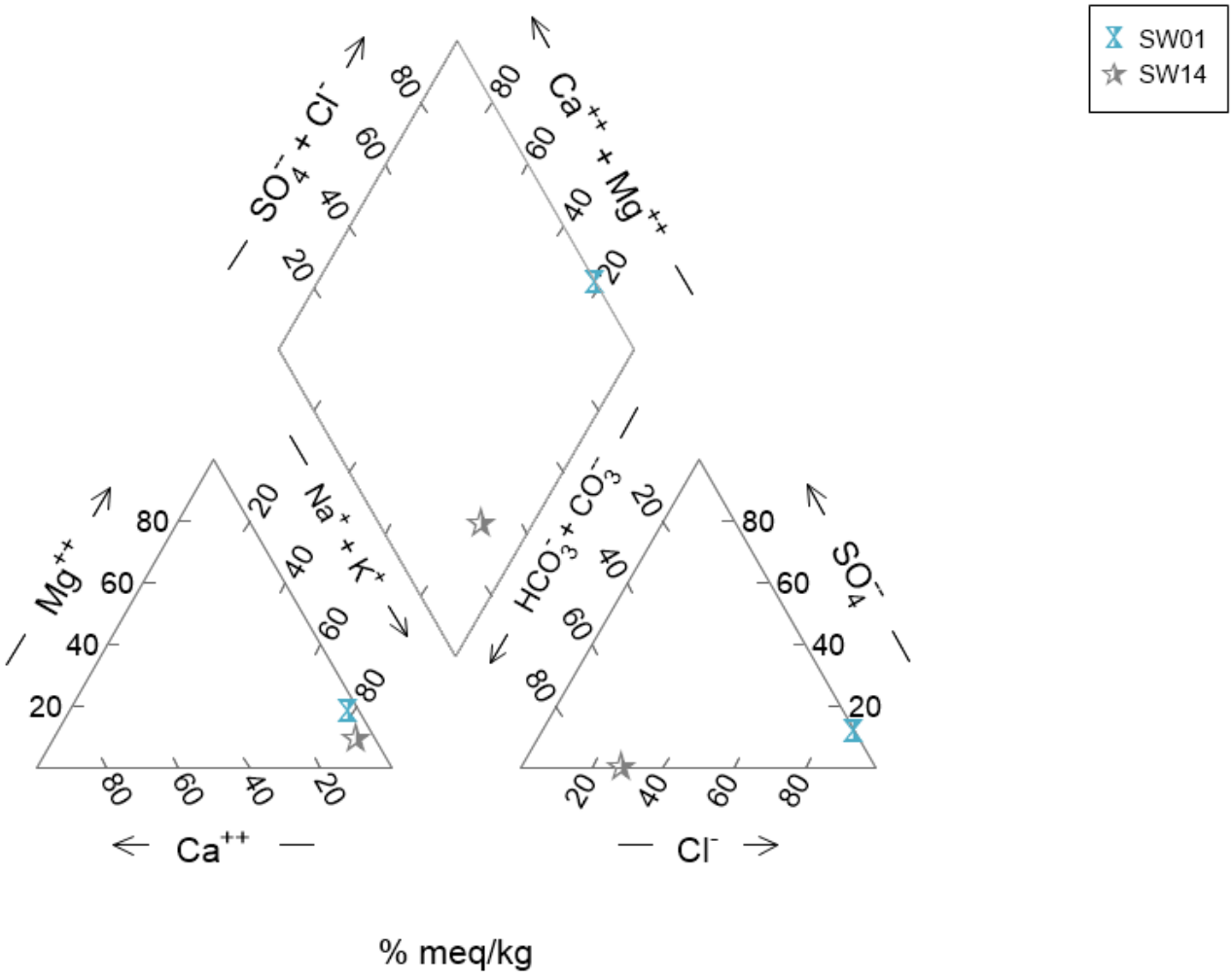

Figure 5-14 Piper Diagram of Surface Waters July 2024

The following exceedances of the adopted guideline criteria were reported for major cations/ anions:

- Reported concentration of chloride was 130 mg/L at SW14 and 27,000mg/L at SW01. The Recreational – Aesthetic criterion of 250 mg/L was exceeded only for surface water sample SW01.
- Reported concentration of sodium was from 280 mg/L atSW14 and 16,000 mg/L at SW01. The Recreational – Aesthetic criterion of 180 mg/L was exceeded for both samples.
- Reported concentration of sulphate was below LOR (< 1 mg/L) at SW14 and 4,900 mg/L at SW01. The Recreational – Aesthetic criterion of 250 mg/L was exceeded only for surface water sample SW01.
- Reported concentration of hardness was 110 mg/L at SW14 and 9,700 mg/L at SW01. The Recreational – Aesthetic criterion of 200 mg/L was exceeded only for surface water sample SW01.

5.5.4 Nutrients

All surface water samples were submitted for the analysis of nutrients including nitrogen and phosphorous species.

The reported analyte concentrations are as follows:

- Concentration of nitrite (as N) was reported <0.01 mg/L at each location.
- Concentration of ammonia (as N) was <0.02 mg/L at SW14 and 0.13 mg/L at SW01.
- Concentration of total nitrogen (as N) was 0.2 mg/L atSW01 to 3.4 mg/L at SW14.

5.5.5 Metals/ Metalloids (Total and Dissolved)

Exceedances of the adopted guideline criteria have been summarised in Table 5-8.

Table 5-8 Summary of Adopted Guideline Exceedances – Metals/ Metalloids – Total and Dissolved Concentrations

Analyte	Concentration Range (Total)	Guideline Exceedances	Exceedances – July 2024
Aluminium	SW01 - 0.48 mg/L SW14 - 8.4 mg/L	Recreation - Aesthetic – 0.2 mg/L	Total – SW01 & SW14 Dissolved – SW01
		Irrigation LTV – 5 mg/L	Total – SW14
		Livestock drinking water– 5 mg/L	Total – SW14
Arsenic	SW01 - 0.03 mg/L SW14 - 0.006 mg/L	Health – 0.01 mg/L	Total and dissolved – SW01
		Freshwater – 0.013 mg/L	Total and dissolved – SW01
Chromium (III + VI)	SW01 - 0.002 mg/L SW14 - 0.041 mg/L	Freshwater – 0.001 mg/L	Total – SW01 & SW14
Cobalt	SW01 - <0.01 mg/L SW14 - 0.011 mg/L	Marine water – 0.001 mg/L	Total – SW14
Copper	SW01 - <0.001 mg/L SW14 - 0.028 mg/L	Marine water – 0.0013 mg/L	Total and dissolved – SW14
		Freshwater – 0.0014 mg/L	Total and dissolved – SW14
Iron	SW01 – 0.69 mg/L SW14 - 17 mg/L	Irrigation LTV – 0.2 mg/L	Total – SW01 & SW14
		Recreation – Aesthetic – 0.3 mg/L	Total – SW01 & SW14
Lead	SW01 – <0.001 mg/L	Freshwater – 0.0034 mg/L	Total – SW14

Analyte	Concentration Range (Total)	Guideline Exceedances	Exceedances – July 2024
	SW14 - 0.007 mg/L	Marine water – 0.0044 mg/L	Total – SW14
Manganese	SW01 – 0.065 mg/L SW14 - 0.32 mg/L	Recreational – Aesthetic – 0.1 mg/L	Total – SW14
		Irrigation LTV – 0.2 mg/L	Total – SW14
Molybdenum	SW01 – 0.017 mg/L SW14 – 0.004 mg/L	Irrigation LTV – 0.01 mg/L	Total and dissolved – SW01
Nickel	SW01 – 0.004 mg/L SW14 - 0.02 mg/L	Freshwater – 0.0011 mg/L	Total – SW14
Vanadium	SW01 – 0.11 mg/L SW14 – 0.041 mg/L	Irrigation LTV – 0.1 mg/L	Total – SW01
Zinc	SW01 – 0.014mg/L SW14 – 0.053 mg/L	Freshwater – 0.008 mg/L	Total – SW01 & SW14 Dissolved – SW01
		Marine water – 0.008 mg/L	Total – SW01 & SW14 Dissolved – SW01

5.6 Assessment Of Ionic Balance

Ionic balances were calculated based on the reported concentrations of major cations and anions using Geochemist's Workbench Community Edition 17.0. These values are reported in Appendix H. The ionic balances were generally below 10% NATA threshold with the exception of the following:

- MB33D – 75%
- MB35S – 11%
- MB40D – 41%

These results were queried with the primary laboratory and the following was advised:

- There are uncertainties related to laboratory results which can lead to elevated ion balances. For example, if the chloride result is on the higher side of the uncertainty range and the sodium is on the lower side of the uncertainty range then an ionic balance of up to 20% may be required without there being a significant issue with the quality of the results.
- Relating to the above, rounding can cause reasonable errors in ionic balance calculations. Due to the inherent uncertainty in laboratory analysis, the laboratory rounds reported results to the nearest 2 significant figures which can exacerbate the calculated ionic balances.
- The ionic balances were calculated using bicarbonate alkalinity results and there can be issues with this for samples with high pH. In samples with a high pH, alkalinity can be present as carbonate or hydroxide alkalinity, so using bicarbonate alkalinity will underestimate anions. This is evident for samples MB33D and MB40D which reported high pH and low bicarbonate alkalinity (but higher carbonate and hydroxide alkalinity).

Noting that the July 2024 GME was only the second sampling event for monitoring wells MB33D, MB35S and MB40D, an assessment of the historical variation of reported concentrations of major cations and cations/ comparison to calculated ionic balances were limited. For MB33D, reported concentrations of calcium and sulfate were around half of that previously reported at this location. Contrastingly, for MB40D, concentrations of calcium and sulfate were around double that previously reported at this location. Future monitoring events will confirm the concentrations reported at these locations.

5.7 DATA QUALITY ASSESSMENT

The quality of analytical data produced for this project has been assessed with reference to the following issues:

- Sampling technique;
- Preservation and storage of samples upon collection and during transport to the laboratory;
- Sample holding times;
- Analytical procedures;
- Laboratory limits of reporting;
- Field duplicate agreement;
- Laboratory quality assurance/quality control (QA/QC) procedures; and
- The occurrence of apparently unusual or anomalous results.

All samples were collected, stored and transported to the laboratory in accordance with the requirements of Schedule B(2) of the NEPM (NEPC, 1999, as amended 2013). Laboratory analysis was undertaken in accordance with National Association of Testing Authorities (NATA) accepted analytical procedures and the requirements of Schedule B(3) of the NEPM (NEPC, 1999, as amended 2013).

Laboratory QA/QC procedures and results are detailed in the certified laboratory results contained in Appendix D.

Elevated relative percentage differences (RPDs) were reported for some analytes for the groundwater and surface water monitoring program. The breaches were considered to only be minor and not significant. The elevated RPDs were not considered to significantly impact upon the overall interpretation of results as the primary sample generally reported higher (more conservative results) for metals. Further, the differences observed for the surface water samples are considered to be reflective of the disconnected/ stagnant nature of the sampled water i.e. the duplicate samples were not sampled from a continuously flowing/ mixing water body.

Based on the available information regarding the laboratories' internal QA/QC procedures and the field duplicate, rinsate and trip blank assessment, it is considered that an acceptable degree of QA/QC information was collected and reported providing confidence in the accuracy and precision of reported results subject to the limitations of the data discussed in Appendix I.

6 CONCLUSIONS

Land and Water Consulting was engaged by Leichhardt Salt Pty Ltd to undertake the July 2024 groundwater monitoring event and data logger retrieval program at the Eramurra Solar Salt Project located on the Pilbara Coast, Western Australia.

The objective of the monitoring events was to collect chemical and physical hydrogeological parameters to inform baseline water quality conditions as part of the hydrogeological assessment for the project.

Key findings of the monitoring events included the following:

- Groundwater levels are generally stable over the period of assessment. Groundwater flow direction is generally towards the coast in a westerly/ north westerly direction.
- Groundwater quality is generally stable over the period of assessment but is variable across this Site, with salinity generally increasing towards the coast and near the downgradient extents of the watercourses/ near the backwater zone.
- Surface water quality is highly variable, this is typical of the semi-arid conditions of the Pilbara. Concentrations of chemical substances are affected by these evaporative conditions and thus effects from other site attributes such as location or geology cannot be determined.
- Exceedances of guideline concentrations for chemical substances in both groundwater and surface water were observed. Given the highly saline nature of both groundwater and surface water this is not unexpected and is not considered detrimental to the project. The exceedances are reported for information purposes.
- The purpose of this assessment was to establish baseline conditions in groundwater beneath/ surrounding and surface water existing within the Project Area i.e., as opposed to the assessment of risk to environmental values. The reported concentrations of chemical substances will likely be used, in future, to establish site specific trigger levels which will be used for interpretation of risk to the identified environmental values.
- The data quality assessment indicates that the chemical and physical hydrogeological data reported for the July 2024 program of work is suitable to inform the baseline hydrogeological assessment for the Project. An acceptable degree of field and laboratory QAQC was collected and reported, providing confidence in the accuracy and precision of all reported results.

Recommendations have been made regarding the following:

- Amendments to the future management of the data loggers at the Site including the installation of additional barometric loggers and replacement of the current data logger cords with low stretch cords. In addition to this, periodic recalibration of the data logger and sensors as well as removing sampling tubing (and storing this locally) from the inside of the wells to assist with Leichhardt's interim data logger retrieval.
- Inspection of the internal condition of monitoring wells MBH12, MB33D and MB40D for which elevated pH has been reported (i.e. to assess if the screen has been impacted by bentonite plug/ grout from above).

Please refer to the statement of limitations associated with these works (presented as Appendix J).

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FIGURES

Legend

- Development Envelope March 2023
- Concentration
- Crystallisation
- Expansion
- Recovery
- Proposed Infrastructure - Nov 23
- Gas Pipeline
- Watercourse

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Project: Erramurra Salt Project

Figure Title:

Site Locality Plan

Date: October 2024	Projection: GDA 2020 - MGA 50
Scale: See Plan	Figure in Set: 1 of 7

Site Address:
Mardie, Western Australia

Figure 1 Revision A

Drawing Reference QI-01

Legend

- Development Envelope March 2023
- Gas Pipeline
- Watercourse
- Alluvial Outwash/Residual Surface with low relief rock outcrop
- Beach
- Deflated Dunes, Sand Plains and Sandy Islands
- Former Coastal Rock Ledges
- Fringing Dune
- Intertidal Flats and Creeks
- Islands with rock outcrops or rocky fringes
- Mangrove (dense and scattered)
- Rocky Hills and associated talus
- Supra-Tidal Flats (with some low relief igneous rock outcrop)

Erramurra Creek

McKay Creek

Devil Creek

Scenario 7.2.1

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Project: Erramurra Salt Project

Figure Title:

Surface Geomorphology

Date: October 2024	Projection: GDA 2020 - MGA 50
Scale: See Plan	Figure in Set: 2 of 7

Site Address:
Mardie, Western Australia

Figure 2 Revision A

Drawing Reference QI-01

South West Regnard Island

Gnoorea

MBH19 SW14 MBH20 70910002 MB26D MBH03 SW11 MB40D SW13 MB21S Devil's Pool (EV7) 70910003 MBH08 Noorea Soak (EV8) MBH01 MBH17 SW01 MB39D MBH06 SW06 SW02 SW12 MBH10 MBH13 North West Coastal Highway Devil Creek SW09 MB38D MB35S SW05 MBH09 70910005 SW10 MB37D SW04 SW08 70910006 1 Eramurra Creek MBH12 SW07 70910780 MB33D MB34S MB33S McKay Creek 70910007 SW03 Coastal Highway

Legend

- Development Envelope March 2023
- Watercourse
- Gas Pipeline
- Eucalyptus Forest (EV2)
- Coastal PEC (EV3)
- Algal Mats (EV4)
- Samphire Shrubland (EV4)
- Mangal Community (EV5)
- Stock Water Wells (EV6)
- Devil's Pool (EV7)
- Noorea Soak (EV8)
- Groundwater Monitoring Wells - Installed January 2024 (Shallow Wells)
- Groundwater Monitoring Wells - Installed January 2024 (Deep Wells)
- Groundwater Monitoring Wells - Installed December 2021
- Current Surface Water Sample Locations

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Project: Eramurra Salt Project

Figure Title:

Current Groundwater and Surface Water Monitoring Locations

Date: October 2024

Projection: GDA 2020 - MGA 54

Scale: See Plan

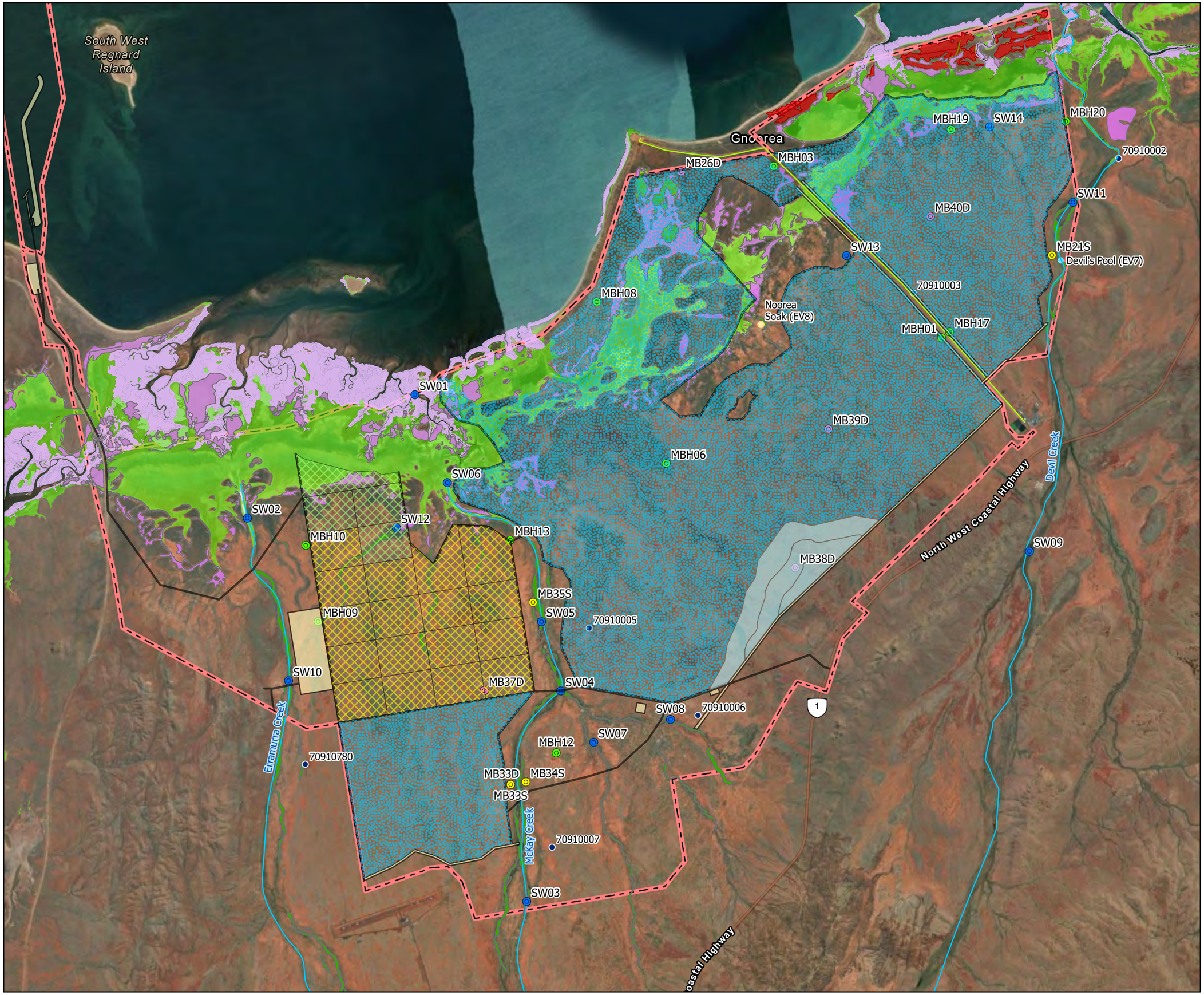
Figure in Set: 3 of 7

Site Address:
Mardie, Western Australia

Figure 3a

Revision A

Drawing Reference QI-01



Legend

- Development Envelope March 2023
- Watercourse
- Gas Pipeline
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- Coastal PEC (EV3)
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- Groundwater Monitoring Wells - Installed December 2021
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Project: Eramurra Salt Project

Figure Title:
Current Groundwater and Surface Water Monitoring Locations and Project Infrastructure

Date: October 2024

Projection:
GDA 2020 - MGA 54

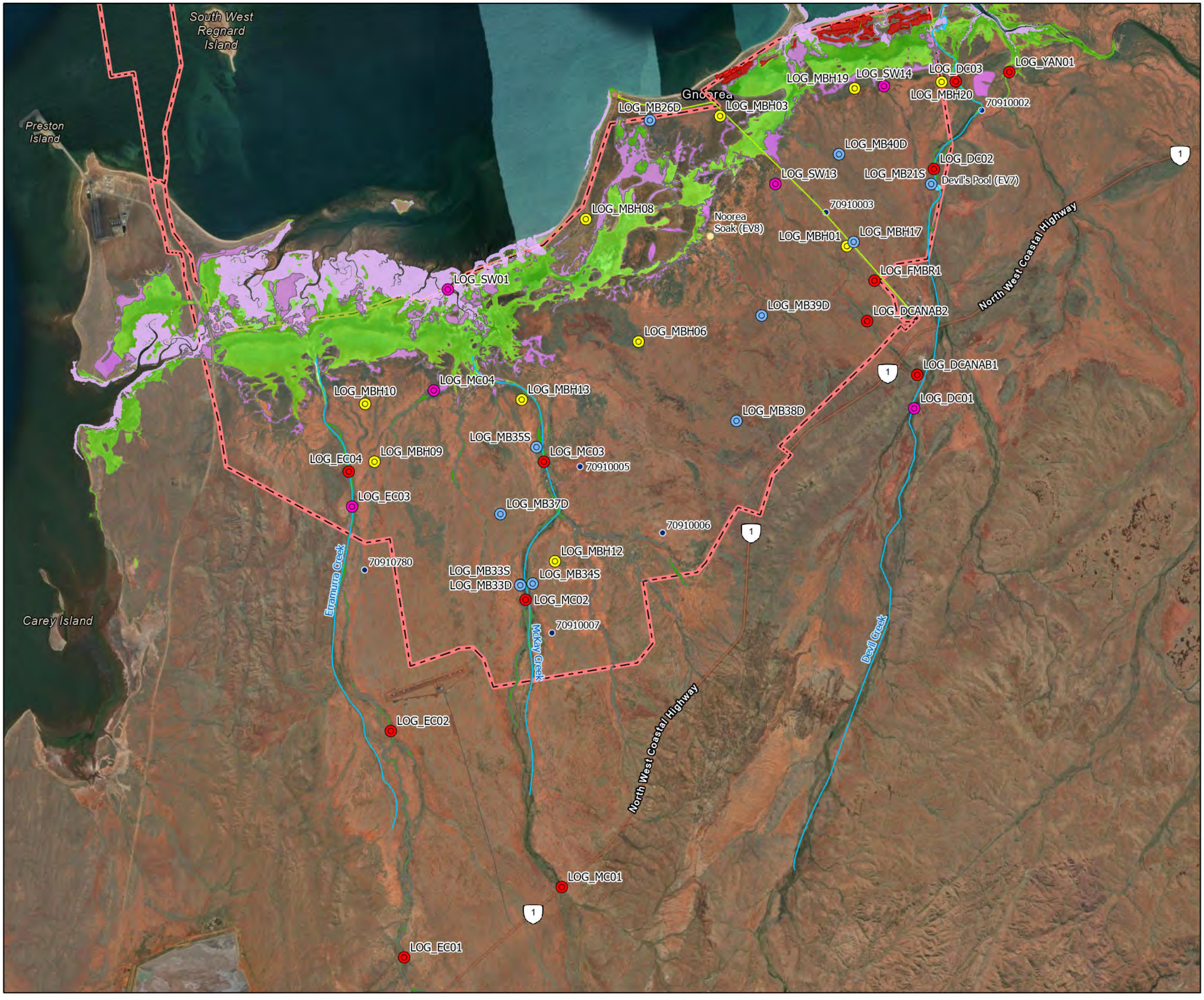
Scale: See Plan

Figure in Set: 3 of 7

Site Address:
Mardie, Western Australia

Figure
3b
Revision
A

Drawing Reference QI-01



Legend

- Development Envelope March 2023
- Gas Pipeline
- Watercourse
- Eucalyptus Forest (EV2)
- Coastal PEC (EV3)
- Algal Mats (EV4)
- Samphire Shrubland (EV4)
- Mangal Community (EV5)
- Stock Water Wells (EV6)
- Devil's Pool (EV7)
- Noorea Soak (EV8)
- Priority 1 Surface Water Logger Locations - Installed January 2024
- New Well Logger Locations - Installed Janurary 2024
- Well Logger Locations - Installed Prior to 2024
- Surface Water Logger Locations - Installed Prior to 2024

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Project: Eramurra Salt Project

Figure Title:

Current Groundwater and Surface Water Logger Locations

Date: October 2024	Projection: GDA 2020 - MGA 54
Scale: See Plan	Figure in Set: 4 of 7

Site Address:
Mardie, Western Australia

Figure 4 Revision A

Drawing Reference QI-01

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sland

Gnoorea

MBH03

MBH19

MBH20

70910002

MBH08

Noorea
Soak (EV8)

70910003

MB21S

Devil's Pool (EV7)

MBH01

MBH17

2.0 mAHD

MBH06

MBH10

MBH13

4.0 mAHD

6.0 mAHD

MB35S

MBH09

8.0 mAHD

70910005

Eramurra Creek

McKay Creek

10.0 mAHD

70910006

MBH12

70910780

MB33S

MB34S

70910007

Devil Creek

North West Coastal Highway

1

Coastal Highway

Legend

- Development Envelope March 2023
- Gas Pipeline
- Watercourse
- Eucalyptus Forest (EV2)
- Coastal PEC (EV3)
- Algal Mats (EV4)
- Samphire Shrubland (EV4)
- Mangal Community (EV5)
- Stock Water Wells (EV6)
- Devil's Pool (EV7)
- Noorea Soak (EV8)
- Groundwater Monitoring Wells - Installed January 2024 (Shallow Wells)
- Groundwater Monitoring Wells - Installed December 2021
- Interpreted Groundwater Contour (mAHD)
- Inferred Groundwater Contour (mAHD)
- Groundwater Flow Direction

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Project: Eramurra Salt Project

Figure Title:
Interpreted Groundwater Contours and Flow Direction - July 2024

Date: October 2024

Projection: GDA 2020 - MGA 54

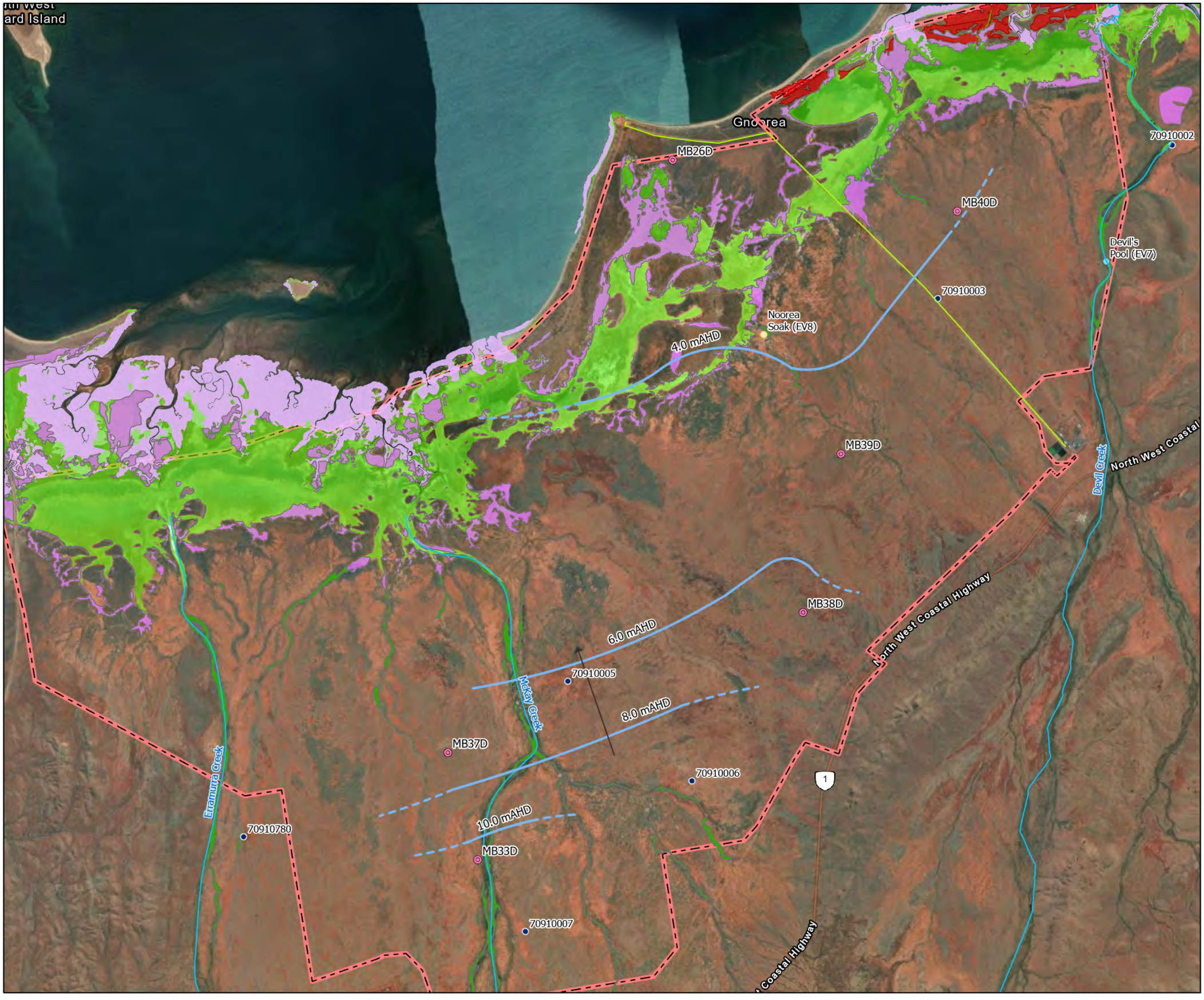
Scale: See Plan

Figure in Set: 5 of 7

Site Address:
Mardie, Western Australia

Figure 5a Revision A

Drawing Reference QI-01



Legend

- Development Envelope March 2023
- Gas Pipeline
- Watercourse
- Eucalyptus Forest (EV2)
- Coastal PEC (EV3)
- Algal Mats (EV4)
- Samphire Shrubland (EV4)
- Mangal Community (EV5)
- Stock Water Wells (EV6)
- Devil's Pool (EV7)
- Noorea Soak (EV8)
- Groundwater Monitoring Wells - Installed January 2024 (Deep Wells)
- Interpreted Groundater Contour (mAHD)
- Inferred Groundwater Contour (mAHD)
- Groundwater Flow Direction

0 500 1,000 2,000 3,000 4,000

Metres

LWC Land & Water Consulting

Land & Water Consulting
Email: enquiries@lwconsulting.com.au
Web: www.lwconsulting.com.au

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Project: Eramurra Salt Project

Figure Title:

Interpreted Groundwater Contours and Flow Direction - July 2024 (Deep Wells)

Date: October 2024	Projection: GDA 2020 - MGA 50
Scale: See Plan	Figure in Set: 5 of 7

Site Address:
Mardie, Western Australia

Figure 5b Revision A

Drawing Reference QI-01

South West Regnard Island

Noorea

MB26D
MBH03
MBH19
SW14
MBH20
70910002
SW11
MB40D
SW13
MB21S
Devil's Pool (EV7)
70910003
MBH08
Noorea Soak (EV8)
MBH01
MBH17
SW01
MB39D
North West Coastal
Devil Creek
MBH06
SW06
SW02
SW12
MBH10
MBH13
1
SW09
MB38D
MB35S
SW05
70910005
MBH09
SW10
MB37D
SW04
SW08
70910006
Eramurra Creek
SW07
MBH12
70910780
MB33D
MB34S
MB33S
McKay Creek
70910007
SW03

pH (at 25 °C)
6.5 - 7.5
7.5 - 8.5
8.5 - 10.0
>10.0

Legend

- Development Envelope March 2023
- Gas Pipeline
- Watercourse
- Eucalyptus Forest (EV2)
- Coastal PEC (EV3)
- Algal Mats (EV4)
- Samphire Shrubland (EV4)
- Mangal Community (EV5)
- Stock Water Wells (EV6)
- Devil's Pool (EV7)
- Noorea Soak (EV8)
- Groundwater Monitoring Wells - Installed January 2024 (Shallow Wells)
- Groundwater Monitoring Wells - Installed January 2024 (Deep Wells)
- Groundwater Monitoring Wells - Installed December 2021
- Current Surface Water Sample Locations

0 500 1,000 2,000 3,000 4,000
Metres

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Project: Eramurra Salt Project

Figure Title:
Bubble Plots of pH at Groundwater and Surface Water Locations - July 2024

Date: October 2024
Projection: GDA 2020 - MGA 50
Scale: See Plan
Figure in Set: 6 of 7

Site Address:
Mardie, Western Australia

Figure 6 Revision A

Drawing Reference QI-01

South West Regnard Island

Gnoorea

MBH19
SW14
MBH20
70910002
MB26D
MBH03
SW11
MB40D
SW13
MB21S
Devil's Pool (EV7)
70910003
MBH08
Noorea Soak (EV8)
MBH01
MBH17
North West Coastal
SW01
MB39D
Devil Creek
MBH06
SW06
SW02
SW12
MBH10
MBH13
1
SW09
MB38D
MB35S
SW05
MBH09
70910005
SW10
MB37D
SW04
SW08
70910006
Eramurra Creek
SW07
MBH12
70910780
MB33D
MB34S
MB33S
McKay Creek
70910007
SW03

TDS
- 0- 2,000
- 2,000 - 5,000
- 5,000 - 50,000
- 50,000 - 100,000
- >100,000

Legend
- Development Envelope March 2023
- Gas Pipeline
- Watercourse
- Eucalyptus Forest (EV2)
- Coastal PEC (EV3)
- Algal Mats (EV4)
- Samphire Shrubland (EV4)
- Mangal Community (EV5)
- Stock Water Wells (EV6)
- Devil's Pool (EV7)
- Noorea Soak (EV8)
- Groundwater Monitoring Wells - Installed January 2024 (Shallow Wells)
- Groundwater Monitoring Wells - Installed January 2024 (Deep Wells)
- Groundwater Monitoring Wells - Installed December 2021
- Current Surface Water Sample Locations

0 500 1,000 2,000 3,000 4,000
Metres

Land & Water Consulting
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Web: www.lwconsulting.com.au

N

Project: Eramurra Salt Project

Figure Title:
Bubble Plots of TDS at Groundwater and Surface Water Locations - July 2024

Date: October 2024
Projection: GDA 2020 - MGA 50
Scale: See Plan
Figure in Set: 7 of 7

Site Address:
Mardie, Western Australia

Figure 7 Revision A

Drawing Reference QI-01

TABLES

Table 1 - Summary of Groundwater Monitoring Well Construction and Elevation Gauging Details

Project: Hydrogeological Investigation
Client: Leichhardt Salt Pty Ltd
Job Number: W-AO-11

														Dec-21			Mar-22			May-22			Nov-22		
Well ID	Latitude*	Longitude*	Easting*	Northing*	Approximate Standpipe Height (m)	Surveyed Elevation mPVC (mAHD)	Ground Elevation (m AHD) Interpreted from Lidar Data**	Drilled Date	Drilled Bore Diameter (mm)	Well Casing/ Screen Diameter (mm)	Maximum Drilled Depth (m BGL)	Screened Interval (m BGL)	Screened Lithology	Gauged Well Depth (mPVC)	Gauged Water Level (m PVC)	Approximate Groundwater Elevation (m AHD)^	Gauged Well Depth (mPVC)	Gauged Water Level (m PVC)	Approximate Groundwater Elevation (m AHD)^	Gauged Well Depth (mPVC)	Gauged Water Level (m PVC)	Groundwater Elevation (m AHD)	Gauged Well Depth (mPVC)	Gauged Water Level (m PVC)	Approximate Groundwater Elevation (m AHD)^
Shallow Wells																									
MBH01	-20.887415	116.401492	437750	7690196	0.6	Unknown	12.6	1/12/2021	105	50	28.5	19.5 - 25.5	Gravelly Clay	26.15	7.792	5.365	26.15	7.865	5.292	28.900	7.875	5.282	-	7.460	5.697
MBH03	-20.849892	116.373486	434821	7694338	0.6	Unknown	3.5	10/12/2021	105	50	13.0	3.5 - 5.5	Gravelly. Clayey Sand	6.47	2.920	1.153	6.45	2.990	1.083	6.45	2.175	1.898	-	2.287	1.786
MBH06	-20.902578	116.342139	431584	7688494	0.6	Unknown	10.0	6/12/2021	110	50	22.5	19.5 - 22.5	Clayey Gravelly Sand/ Gravel	22.35	8.872	1.729	22.31	9.086	1.515	-	-	-	-	8.570	2.031
MBH08	-20.870053	116.333548	430675	7692090	0.6	Unknown	4.8	10/12/2021 -11/12/2021	110	50	13.0	10.0 -13.0	Clayey Sand	13.25	4.241	1.175	13.26	4.251	1.165	-	-	-	-	3.828	1.588
MBH09	-20.921582	116.267144	423794	7686357	0.6	Unknown	9.5	12/12/2021 -13/12/2021	105	50	13.5	10.5 - 13.5	Gravel	14.08	6.922	3.223	14.08	7.124	3.021	-	-	-	-	6.515	3.630
MBH10	-20.906902	116.267189	423791	7687982	0.6	Unknown	7.0	12/12/2021	105	50	16.8	9.8 - 15.8	Clayey Gravelly Sand	17.01	5.261	2.367	17	5.377	2.251	-	-	-	-	5.010	2.618
MBH12	-20.953694	116.310539	428322	7682823	0.6	Unknown	15.9	29/11/2021	105	50	20.0	5.5 - 9.5	Gravel	9.8	5.105	11.353	9.76	5.181	11.277	9.635	5.302	11.156	-	4.935	11.523
MBH13	-20.912220	116.308308	428070	7687412	0.6	Unknown	5.4	3/12/2021 - 4/12/2021	105	50	28.5	8.0 - 14.0	Clayey Sandy Gravel/ Gravel	14.47	4.179	1.824	14.44	4.330	1.673	-	-	-	-	4.235	1.768
MBH17	-20.886577	116.403319	437940	7690290	0.6	Unknown	12.6	8/12/2021	105	50	18.0	12.0 - 18.0	Sandy Clay	17.65	7.490	5.726	17.64	7.605	5.611	17.640	7.625	5.591	-	7.052	6.164
MBH19	-20.848477	116.410178	438638	7694509	0.6	Unknown	4.4	7/12/2021	105	50	22.5	20.5 - 22.5	Clayey Sand	22.4	3.635	1.406	22.38	3.549	1.492	-	-	-	-	3.600	1.441
MBH20	-20.850413	116.433494	441065	7694304	0.6	Unknown	4.8	7/12/2021 - 8/12/2021	105	50	22.0	19.0 - 22.0	Sandy Clay	22.6	3.363	2.028	22.6	3.915	1.476	-	-	-	-	3.830	1.561
MB21S			440329.47	7691542.83	0.6	12.539	11.7	1/12/2023	125	50	24.0	17.0 - 23.0	Fractured Dolerite	-	-	-	-	-	-	-	-	-	-	-	-
MB33S			427264.64	7682330.70	0.6	17.537	16.7	7/12/2023	125	50	20.0	14.0 - 20.0	Granodiorite/ Diorite	-	-	-	-	-	-	-	-	-	-	-	-
MB34S			427608.12	7682311.84	0.6	17.656	17.0	6/12/2023	125	50	20.0	17.0 - 20.0	Clayey Gravel	-	-	-	-	-	-	-	-	-	-	-	-
MB35S			428312.66	7686043.06	0.6	7.855	7.0	10/12/2023	125	50	15.0	12.0 - 15.0	Clayey Sand	-	-	-	-	-	-	-	-	-	-	-	-
Deep Wells																									
MB26D			432867.19	7694530.24	0.6	5.328	4.4	12/12/2023	125	50	36.0	19.0 - 25.0	Sand/ Gravelly Sand	-	-	-	-	-	-	-	-	-	-	-	-
MB33D			427260.62	7682319.84	0.6	17.789	16.9	11/01/2024	125	50	60.0	54.0 - 60.0	Granodiorite/ Granitic Gneiss	-	-	-	-	-	-	-	-	-	-	-	-
MB37D			427027.74	7684363.46	0.6	13.564	12.6	10/01/2024	125	50	42.0	36.0 - 42.0	Diorite	-	-	-	-	-	-	-	-	-	-	-	-
MB38D			433930.60	7685885.79	0.6	24.342	23.37	4/12/2023	125	50	48.0	43.6 - 49.6	Sandy Gravel	-	-	-	-	-	-	-	-	-	-	-	-
MB39D			435085.87	7688671.62	0.6	13.144	12.3	5/12/2023	125	50	27.0	21.0 - 27.0	Diorite	-	-	-	-	-	-	-	-	-	-	-	-
MB40D			437921.98	7692766.43	0.6	8.968	8.2	2/12/2023	125	50	60.0	56.0 - 60.0	Gravelly Sand	-	-	-	-	-	-	-	-	-	-	-	-

* Latitude/ Longitude are recorded in WGS84, Easting/ Northing are recorded in GDA20 Zone 50
** Consistent with ground elevation data adopted by CDM Smith
^ Calculated by subtractnig the Gauged Water Level from the Interpreted Ground Elevation plus the Approximate Standpipe Height

Table 1 - Summary of Groundwater Monitoring Well Construction and Elevation Gauging Details

Project: Hydrogeological Investigation
Client: Leichhardt Salt Pty Ltd
Job Number: W-AO-11

														Jun-23			Nov-23			Jan-24			Jul-24		
Well ID	Latitude*	Longitude*	Easting*	Northing*	Approximate Standpipe Height (m)	Surveyed Elevation mPVC (mAHD)	Ground Elevation (m AHD) Interpreted from Lidar Data**	Drilled Date	Drilled Bore Diameter (mm)	Well Casing/ Screen Diameter (mm)	Maximum Drilled Depth (m BGL)	Screened Interval (m BGL)	Screened Lithology	Gauged Well Depth (mPVC)	Gauged Water Level (m PVC)	Approximate Groundwater Elevation (m AHD)^	Gauged Well Depth (mPVC)	Gauged Water Level (m PVC)	Approximate Groundwater Elevation (m AHD)^	Gauged Well Depth (mPVC)	Gauged Water Level (m PVC)	Approximate Groundwater Elevation (m AHD)^	Gauged Well Depth (mPVC)	Gauged Water Level (m PVC)	Approximate Groundwater Elevation (m AHD)^
Shallow Wells																									
MBH01	-20.887415	116.401492	437750	7690196	0.6	Unknown	12.6	1/12/2021	105	50	28.5	19.5 - 25.5	Gravelly Clay	-	7.202	5.955	-	7.202	5.955	-	-	-	25.50	7.654	5.503
MBH03	-20.849892	116.373486	434821	7694338	0.6	Unknown	3.5	10/12/2021	105	50	13.0	3.5 - 5.5	Gravelly. Clayey Sand	-	2.660	1.413	-	2.660	1.413	-	-	-	5.80	2.985	1.088
MBH06	-20.902578	116.342139	431584	7688494	0.6	Unknown	10.0	6/12/2021	110	50	22.5	19.5 - 22.5	Clayey Gravelly Sand/ Gravel	-	8.139	2.462	-	8.139	2.462	-	-	-	22.21	8.753	1.848
MBH08	-20.870053	116.333548	430675	7692090	0.6	Unknown	4.8	10/12/2021 -11/12/2021	110	50	13.0	10.0 -13.0	Clayey Sand	-	4.080	1.336	-	4.080	1.336	-	-	-	13.26	4.235	1.181
MBH09	-20.921582	116.267144	423794	7686357	0.6	Unknown	9.5	12/12/2021 -13/12/2021	105	50	13.5	10.5 - 13.5	Gravel	-	6.065	4.080	-	6.065	4.080	-	-	-	14.08	6.716	3.429
MBH10	-20.906902	116.267189	423791	7687982	0.6	Unknown	7.0	12/12/2021	105	50	16.8	9.8 - 15.8	Clayey Gravelly Sand	-	4.814	2.814	-	4.814	2.814	-	-	-	16.75	5.224	2.404
MBH12	-20.953694	116.310539	428322	7682823	0.6	Unknown	15.9	29/11/2021	105	50	20.0	5.5 - 9.5	Gravel	-	4.695	11.763	-	4.695	11.763	-	-	-	9.70	5.147	11.311
MBH13	-20.912220	116.308308	428070	7687412	0.6	Unknown	5.4	3/12/2021 - 4/12/2021	105	50	28.5	8.0 - 14.0	Clayey Sandy Gravel/ Gravel	-	4.170	1.833	-	4.170	1.833	-	-	-	14.25	4.200	1.803
MBH17	-20.886577	116.403319	437940	7690290	0.6	Unknown	12.6	8/12/2021	105	50	18.0	12.0 - 18.0	Sandy Clay	-	6.707	6.509	-	6.707	6.509	-	-	-	17.60	7.412	5.804
MBH19	-20.848477	116.410178	438638	7694509	0.6	Unknown	4.4	7/12/2021	105	50	22.5	20.5 - 22.5	Clayey Sand	-	3.496	1.545	-	3.496	1.545	-	-	-	22.30	3.670	1.371
MBH20	-20.850413	116.433494	441065	7694304	0.6	Unknown	4.8	7/12/2021 - 8/12/2021	105	50	22.0	19.0 - 22.0	Sandy Clay	-	3.727	1.664	-	3.727	1.664	-	-	-	22.60	3.990	1.401
MB21S			440329.47	7691542.83	0.6	12.539	11.7	1/12/2023	125	50	24.0	17.0 - 23.0	Fractured Dolerite	-	-	-	-	-	-	24.000	8.080	4.170	24.00	8.428	3.822
MB33S			427264.64	7682330.70	0.6	17.537	16.7	7/12/2023	125	50	20.0	14.0 - 20.0	Granodiorite/ Diorite	-	-	-	-	-	-	21.050	6.660	10.670	21.05	6.935	10.395
MB34S			427608.12	7682311.84	0.6	17.656	17.0	6/12/2023	125	50	20.0	17.0 - 20.0	Clayey Gravel	-	-	-	-	-	-	20.750	6.428	11.202	20.75	7.215	10.415
MB35S			428312.66	7686043.06	0.6	7.855	7.0	10/12/2023	125	50	15.0	12.0 - 15.0	Clayey Sand	-	-	-	-	-	-	16.120	5.085	2.475	16.12	5.143	2.417
Deep Wells																									
MB26D			432867.19	7694530.24	0.6	5.328	4.4	12/12/2023	125	50	36.0	19.0 - 25.0	Sand/ Gravelly Sand	-	-	-	-	-	-	26.050	4.950	0.000	26.05	4.912	0.038
MB33D			427260.62	7682319.84	0.6	17.789	16.9	11/01/2024	125	50	60.0	54.0 - 60.0	Granodiorite/ Granitic Gneiss	-	-	-	-	-	-	~60.000	23.085	-5.625	60.00	7.260	10.200
MB37D			427027.74	7684363.46	0.6	13.564	12.6	10/01/2024	125	50	42.0	36.0 - 42.0	Diorite	-	-	-	-	-	-	43.900	7.391	5.759	43.90	7.156	5.994
MB38D			433930.60	7685885.79	0.6	24.342	23.37	4/12/2023	125	50	48.0	43.6 - 49.6	Sandy Gravel	-	-	-	-	-	-	50.550	17.769	6.201	50.55	17.872	6.098
MB39D			435085.87	7688671.62	0.6	13.144	12.3	5/12/2023	125	50	27.0	21.0 - 27.0	Diorite	-	-	-	-	-	-	28.550	8.577	4.333	28.55	8.640	4.270
MB40D			437921.98	7692766.43	0.6	8.968	8.2	2/12/2023	125	50	60.0	56.0 - 60.0	Gravelly Sand	-	-	-	-	-	-	~60.000	6.406	2.344	60.00	5.217	3.533

* Latitude/ Longitude are recorded in WGS84, Easting/ Northing are recorded in GDA20 Zone 50
** Consistent with ground elevation data adopted by CDM Smith
^ Calculated by subtractnig the Gauged Water Level from the Interpreted Ground Elevation plus the Approximate Standpipe Height

Table 2 - Summary of Groundwater Monitoring Well Construction and Salinity Corrected Groundwater Elevations - July 2024

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: W-AO-13

Monitoring Well Details					Gauging from Top of PVC						Relative Levels			Salinity Calculations				
Well ID	Easting	Northing	Elevation PVC	Type of	SWL (Corrected for LNAPL)	LNAPL Thickness (m)	Bore	Screen	Top of	Base of	Measured	Bore	Slotted Interval	Water Column Thickness (m)	Salinity			Corrected
			Top of PVC	Completion	Jul-24		Depth	Length	Screen	Screen	rSWL/ Hs	Depth	Midpoint (Hp)		EC	TDS	Ps	rSWL
			(mAHD)	(P or G)	(mPVC)		(m)	(m)	(mAHD)	(mAHD)	(mAHD)	(mAHD)	(mAHD)		(µS/cm)	(mg/L)		(mAHD)
MBH01	437748.850	7690196.420	13.170	P	7.654	-	25.5	6.0	-6.330	-12.330	5.516	-12.33	-9.330	17.846	2,496	1,622	1.001	5.534
MBH03	434817.750	7694338.300	4.030	P	2.985	-	5.5	2.0	0.530	-1.470	1.045	-1.47	-0.470	2.515	123,801	80,471	1.060	1.136
MBH06	431582.990	7688494.710	10.710	P	8.753	-	22.5	3.0	-8.790	-11.790	1.957	-11.79	-10.290	13.747	34,080	22,152	1.017	2.160
MBH08	430672.720	7692093.180	5.350	P	4.235	-	13.0	3.0	-4.650	-7.650	1.115	-7.65	-6.150	8.765	161,063	104,691	1.079	1.685
MBH09	423794.000	7686355.710	10.240	P	6.716	-	13.5	3.0	-0.260	-3.260	3.524	-3.26	-1.760	6.784	2,331	1,515	1.001	3.530
MBH10	423792.010	7687984.080	7.780	P	5.224	-	15.8	6.0	-2.020	-8.020	2.556	-8.02	-5.020	10.576	3,175	2,064	1.002	2.568
MBH12	428320.420	7682825.440	16.650	P	5.147	-	9.5	4.0	11.150	7.150	11.503	7.15	9.150	4.353	3,554	2,310	1.002	11.507
MBH13	428069.770	7687412.700	6.140	P	4.200	-	14.0	6.0	-1.860	-7.860	1.940	-7.86	-4.860	9.800	57,448	37,341	1.028	2.130
MBH17	437939.670	7690291.580	13.190	P	7.412	-	18.0	6.0	1.190	-4.810	5.778	-4.81	-1.810	10.588	2,548	1,656	1.001	5.787
MBH19	438641.250	7694510.220	4.990	P	3.670	-	22.5	2.0	-15.510	-17.510	1.320	-17.51	-16.510	18.830	191,126	124,232	1.093	2.981
MBH20	441063.780	7694306.410	5.400	P	3.990	-	22.0	3.0	-13.600	-16.600	1.410	-16.6	-15.100	18.010	154,329	100,314	1.075	2.652
MB21S	440329.47	7691542.83	12.539	P	8.428	-	24.0	6.0	-5.461	-11.461	4.111	-11.461	-8.461	15.572	1,777	1,155	1.001	4.122
MB26D	432867.19	7694530.24	5.328	P	4.912	-	36.0	6.0	-24.672	-30.672	0.416	-30.672	-27.672	31.088	139,055	90,386	1.068	2.320
MB33S	427264.64	7682330.70	17.537	P	6.935	-	20.0	6.0	3.537	-2.463	10.602	-2.463	0.537	13.065	1,550	1,008	1.001	10.610
MB33D	427260.62	7682319.84	17.789	P	7.260	-	60.0	6.0	-36.211	-42.211	10.529	-42.211	-39.211	52.740	7,608	4,945	1.004	10.713
MB34S	427608.12	7682311.84	17.656	P	7.215	-	20.0	3.0	0.656	-2.344	10.441	-2.344	-0.844	12.785	3,064	1,992	1.001	10.458
MB35S	428312.66	7686043.06	7.855	P	5.143	-	15.0	3.0	-4.145	-7.145	2.712	-7.145	-5.645	9.857	4,652	3,024	1.002	2.731
MB37D	427027.74	7684363.46	13.564	P	7.156	-	42.0	6.0	-22.436	-28.436	6.408	-28.436	-25.436	34.844	2,216	1,440	1.001	6.442
MB38D	433930.60	7685885.79	24.342	P	17.872	-	49.6	6.0	-19.258	-25.258	6.470	-25.258	-22.258	31.728	6,104	3,968	1.003	6.555
MB39D	435085.87	7688671.62	13.144	P	8.640	-	27.0	6.0	-7.856	-13.856	4.504	-13.856	-10.856	18.360	4,200	2,730	1.002	4.535
MB40D	437921.98	7692766.43	8.968	P	5.217	-	60.0	3.0	-48.032	-51.032	3.751	-51.032	-49.532	54.783	8,590	5,584	1.004	3.974

Notes:

$Hf = Hs + ((Ps-Pf)/ Pf)(Hs-Hp)$

Hf	Equivalent freshwater head (mAHD)
Hs	Level of saline groundwater measured in peizometer (mAHD)
Hp	if RSWL > Top of Screen (mAHD, Screen is fully Saturated): Relative Level of the Midpoint of the Screen (mAHD)
	if RSWL < Top of Screen (mAHD, screen intersects SWL): mid-point between the SWL and the base of the screen (m AHD)
Pf	Density of fresh water (=1, kg/L)
Ps	density of saline groundwater (as a rule of thumb: TDS (mg/L) * $7.5x10^{-7}$ + 1)
1	Density of FRESH Water (Pf)
0.65	Conversion factor (EC to TDS)

mAHD = metres relative to Australian Height Datum
SWL = Standing Water Level
P = Standpipe
G = Gatic cover

Table 3a - Summary of Recent and Historic Groundwater Field Parameters

Project: Hydrogeological Investigation
Client: Leichhardt Salt Pty Ltd
Job Number: QI-01

Monitoring Wells	Sample Date	pH	Electrical Conductivity (µS/cm)	TDS* (mg/L)	Redox (mV)	Temperature (°C)	Dissolved Oxygen (ppm)
MBH01	Dec-21	7.17	2,362	1,535	101.5	32.4	10.87
	Mar-22	6.92	2,416	1,570	164.7	30.8	8.21
	May-22	7.18	2,250	1,463	87.9	29.4	5.18
	Nov-22	6.98	2,675	1,739	-57.6	30.3	6.45
	Jun-23	5.22	2,579	1,676	106.1	28.7	5.89
	Nov-23	7.15	2,794	1,816	-31.8	33.2	7.31
	Jul-24	**6.82**	**2,496**	**1,622**	**6.4**	**27.8**	**6.19**
MBH03	Dec-21	8.90	163,024	105,966	26.8	32.5	2.43
	Mar-22	7.90	129,421	84,124	82.0	32.8	3.55
	May-22	7.87	130,643	84,918	82.8	31.8	1.95
	Nov-22	7.57	129,785	84,360	-147.2	29.6	0.41
	Jun-23	6.94	125,707	81,710	46.4	28.8	0.00
	Nov-23	7.56	124,886	81,176	-28.5	31.0	0.98
	Jul-24	**7.57**	**123,801**	**80,471**	**29.3**	**29.6**	**1.50**
MBH06	Dec-21	6.99	31,919	20,747	81.6	33.2	3.57
	Mar-22	6.74	33,008	21,455	95.7	33.6	0.30
	Nov-22	6.16	35,657	23,177	-102.0	30.1	0.38
	Jun-23	5.05	34,890	22,679	100.8	28.9	2.73
	Nov-23	7.19	37,411	24,317	-13.4	34.1	5.70
	Jul-24	**6.62**	**34,080**	**22,152**	**24.3**	**28.0**	**0.00**
MBH08	Dec-21	6.72	145,972	94,882	-13.4	31.7	0.00
	Mar-22	6.58	148,037	96,224	-67.8	32.7	0.18
	Nov-22	5.92	156,221	101,544	-154.2	29.9	1.07
	Jun-23	10.62	145,809	94,776	-181.0	26.1	0.00
	Nov-23	6.59	161,715	105,115	-134.2	31.7	0.12
	Jul-24	**6.64**	**161,063**	**104,691**	**0.7**	**29.1**	**0.17**
MBH09	Dec-21	7.63	2,204	1,433	116.2	31.5	7.10
	Mar-22	7.24	2,285	1,485	99.1	31.1	6.31
	Nov-22	6.95	2,261	1,470	-66.3	31.7	4.73
	Jun-23	5.27	2,235	1,453	96.0	29.5	3.58
	Nov-23	7.35	2,357	1,532	-33.4	32.0	5.66
	Jul-24	**6.99**	**2,331**	**1,515**	**39.3**	**30.6**	**4.67**
MBH10	Dec-21	7.56	4,036	2,623	113.2	30.9	8.41
	Mar-22	7.26	3,060	1,989	121.8	30.8	6.04
	Nov-22	6.79	3,332	2,166	-75.7	31.6	4.18
	Jun-23	5.28	3,224	2,096	81.3	28.8	5.82
	Nov-23	7.44	3,357	2,182	11.9	31.5	5.71
	Jul-24	**7.22**	**3,175**	**2,064**	**19.2**	**30.1**	**2.92**
MBH12	Dec-21	11.76	5,266	3,423	-335.0	33.9	6.03
	Mar-22	11.57	5,055	3,286	-364.0	34.3	0.19
	May-22	11.80	3,654	2,375	-210.3	31.7	0.97
	Nov-22	9.13	4,225	2,746	-275.0	32.0	0.05
	Jun-23	12.61	3,927	2,553	-337.9	28.4	2.40
	Nov-23	11.24	4,054	2,635	-236.0	34.2	6.20
	Jul-24	**11.45**	**3,554**	**2,310**	**-54.1**	**28.7**	**0.00**
MBH13	Dec-21	7.02	55,986	36,391	130.5	35.0	6.30
	Mar-22	6.72	40,982	26,638	157.1	32.7	1.08
	Nov-22	6.06	75,790	49,264	-51.1	32.0	2.08
	Jun-23	4.50	73,249	47,612	83.9	30.1	0.21
	Nov-23	6.39	77,350	50,278	-29.6	33.7	2.14
	Jul-24	**6.37**	**57,448**	**37,341**	**34.5**	**29.9**	**2.57**
MBH17	Dec-21	7.04	2,361	1,535	104.9	30.4	6.25
	Mar-22	7.33	2,276	1,479	144.3	31.1	6.34
	May-22	7.46	2,274	1,478	91.9	30.5	3.00
	Nov-22	7.02	2,649	1,722	-47.0	31.9	8.55
	Jun-23	5.05	2,479	1,611	102.2	28.5	5.32
	Nov-23	6.79	2,608	1,695	14.4	31.9	6.90
	Jul-24	**6.80**	**2,548**	**1,656**	**9.7**	**30.5**	**5.15**
MBH19	Dec-21	6.14	181,011	117,657	50.3	32.9	0.00
	Mar-22	6.23	182,001	118,301	177.4	32.1	0.00
	Nov-22	5.80	198,317	128,906	-85.2	30.0	0.40
	Jun-23	5.39	186,895	121,482	105.9	26.8	0.11
	Nov-23	6.03	204,834	133,142	-28.8	33.0	0.77
	Jul-24	**5.95**	**191,126**	**124,232**	**46.1**	**28.6**	**0.50**
MBH20	Dec-21	6.67	151,318	98,357	66.7	34.1	3.90
	Mar-22	6.68	150,414	97,769	168.0	32.1	0.00
	Nov-22	5.57	172,181	111,918	-146.9	32.1	0.32
	Jun-23	10.63	159,987	103,992	-173.7	28.6	0.04
	Nov-23	6.43	164,966	107,228	-150.7	32.0	0.22
	Jul-24	**6.53**	**154,329**	**100,314**	**-117.4**	**28.1**	**0.00**
MB21S	Jan-24	6.91	1,895	1,232	-54.3	32.9	2.58
	Jul-24	**6.68**	**1,777**	**1,155**	**-19.6**	**30.5**	**0.00**
MB33S	Feb-24	7.17	1,694	1,101	-102.5	32.7	1.54
	Jul-24	**7.06**	**1,550**	**1,008**	**-36.0**	**31.3**	**0.09**
MB34S	Feb-24	7.28	2,289	1,488	-53.0	31.9	2.14
	Jul-24	**7.15**	**3,064**	**1,992**	**-86.1**	**28.6**	**1.83**
MB35S	Jan-24	7.14	4,818	3,132	-39.8	31.1	5.44
	Jul-24	**7.08**	**4,652**	**3,024**	**24.5**	**29.1**	**2.65**

Table 3a - Summary of Recent and Historic Groundwater Field Parameters

Project: Hydrogeological Investigation
Client: Leichhardt Salt Pty Ltd
Job Number: QI-01

Monitoring Wells	Sample Date	pH	Electrical Conductivity (µS/cm)	TDS* (mg/L)	Redox (mV)	Temperature (°C)	Dissolved Oxygen (ppm)
Groundwater - Deep Wells							
MB26D	Jan-24	6.64	146,800	95,420	-33.0	32.9	4.97
	Jul-24	**6.57**	**139,055**	**90,386**	**28.5**	**28.8**	**2.89**
MB33D	Feb-24	12.16	11,489	7,468	-52.3	33.3	7.20
	Jul-24	**11.97**	**7,608**	**4,945**	**14.9**	**30.4**	**3.08**
MB37D	Jan-24	7.55	2,421	1,574	-34.2	34.2	6.85
	Jul-24	**7.46**	**2,216**	**1,440**	**12.7**	**30.3**	**1.08**
MB38D	Jan-24	6.91	6,731	4,375	-125.2	31.5	2.21
	Jul-24	**6.65**	**6,104**	**3,968**	**-37.5**	**26.0**	**2.10**
MB39D	Jan-24	7.45	4,547	2,956	41.1	33.5	2.61
	Jul-24	**7.47**	**4,200**	**2,730**	**13.9**	**30.0**	**1.10**
MB40D	Feb-24	11.91	6,159	4,003	-42.6	30.8	5.91
	Jul-24	**12.31**	**8,590**	**5,584**	**3.4**	**27.3**	**3.50**

Table 3b - Summary of Recent and Historic Surface Water Field Parameters

Project: Hydrogeological Investigation
Client: Leichhardt Salt Pty Ltd
Job Number: QI-01

Monitoring Wells	Sample Date	pH	Electrical Conductivity (µS/cm)	TDS* (mg/L)	Redox (mV)	Temperature (°C)	Dissolved Oxygen (ppm)
SW01	Mar-22	7.37	66,306	43,099	36.8	26.9	2.65
	Nov-22	7.57	61,698	40,104	-90.2	25.3	5.10
	Jun-23	5.27	58,667	38,134	78.0	18.2	0.01
	Nov-23	7.97	65,772	42,752	-97.9	27.1	5.20
	Jul-24	**6.85**	**66,644**	**43,319**	**31.2**	**18.6**	**1.60**
SW02	Mar-22	8.66	91,416	59,420	109.5	30.8	4.66
	May-22	8.06	67,380	43,797	64.0	25.3	5.97
	Nov-22	7.38	204,939	133,210	-73.2	1.7	23.90
	Jun-23	5.30	97,612	63,448	70.6	17.0	0.10
	Nov-23	8.22	147,867	96,114	69.4	22.4	3.14
SW03R	May-22	7.59	593	385	-4.7	27.4	0.20
SW04	May-22	8.96	102	66	46.9	23.0	5.30
SW05	May-22	8.79	192	125	40.2	26.7	3.91
	Jun-23	6.00	865	562	66.6	22.3	6.20
SW06	Mar-22	8.98	141,399	91,909	19.1	35.6	5.30
	May-22	7.94	179,665	116,782	55.9	36.5	0.00
	Nov-22	5.99	179,323	116,560	-70.4	27.8	0.60
	Jun-23	5.07	102,834	66,842	99.5	14.4	0.01
	Nov-23	8.19	170,156	110,601	-73.7	30.2	3.55
SW07	May-22	8.47	89	58	67.9	24.1	6.23
SW08	May-22	8.07	189	123	36.5	22.0	3.04
SW10	May-22	6.99	148	96	129.1	23.4	3.40
SW10R	May-22	7.59	123	80	70.6	24.80	3.63
SW11	May-22	7.94	380	247	47.3	22.7	3.11
SW11R	May-22	6.26	92	60	36.0	27.3	0.23
SW12	May-22	7.77	92,646	60,220	73.0	34.1	3.95
SW13	Mar-22	8.82	256	167	68.2	36.6	4.10
	May-22	8.08	135	88	88.7	26.9	5.35
	Jun-23	5.45	215	140	74.0	19.1	5.73
SW14	May-22	7.90	81	53	349.4	23.7	2.77
	Jun-23	5.53	598	389	79.3	16.9	4.21
	Jul-24	**8.48**	**1,050**	**683**	**52.0**	**13.5**	**3.90**

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water
Heavy Metals									
Aluminium	mg/L	0.2		0.2				5	5
Aluminium (filtered)	mg/L	0.2		0.2				5	5
Antimony	mg/L		0.003		0.03				
Antimony (filtered)	mg/L		0.003		0.03				
Arsenic	mg/L		0.01		0.1	0.013		0.1	0.5
Arsenic (filtered)	mg/L		0.01		0.1	0.013		0.1	0.5
Beryllium	mg/L		0.06		0.6			0.1	
Beryllium (filtered)	mg/L		0.06		0.6			0.1	
Bismuth	mg/L								
Bismuth (filtered)	mg/L								
Cadmium	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01
Cadmium (filtered)	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01
Chromium (III+VI)	mg/L		0.05		0.5	0.001		0.1	1
Chromium (III+VI) (filtered)	mg/L		0.05		0.5	0.001		0.1	1
Cobalt	mg/L						0.001	0.05	1
Cobalt (filtered)	mg/L						0.001	0.05	1
Copper	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4
Copper (filtered)	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4
Iron	mg/L	0.3		0.3				0.2	
Iron (filtered)	mg/L	0.3		0.3				0.2	
Lead	mg/L		0.01		0.1	0.0034	0.0044	2	0.1
Lead (filtered)	mg/L		0.01		0.1	0.0034	0.0044	2	0.1
Lithium	mg/L							2.5	
Lithium (filtered)	mg/L							2.5	
Manganese	mg/L	0.1	0.5	0.1	5	1.9		0.2	
Manganese (filtered)	mg/L	0.1	0.5	0.1	5	1.9		0.2	
Mercury	mg/L		0.001		0.01	0.0006		0.002	0.002
Mercury (filtered)	mg/L		0.001		0.01	0.0006		0.002	0.002
Molybdenum	mg/L		0.5		5			0.01	0.15
Molybdenum (filtered)	mg/L		0.5		5			0.01	0.15
Nickel	mg/L		0.02		0.2	0.011	0.07	0.2	1
Nickel (filtered)	mg/L		0.02		0.2	0.011	0.07	0.2	1
Selenium	mg/L		0.01		0.1			0.02	0.02
Selenium (filtered)	mg/L		0.01		0.1			0.02	0.02
Silver	mg/L		0.1		1		0.0014		
Silver (filtered)	mg/L		0.1		1		0.0014		
Strontium	mg/L								
Strontium (filtered)	mg/L								
Thorium*	mg/L								
Thorium* (filtered)	mg/L								
Tin	mg/L								
Tin (filtered)	mg/L								
Titanium	mg/L								
Titanium (filtered)	mg/L								
Uranium	mg/L		0.02		0.2			0.01	0.2
Uranium (filtered)	mg/L		0.02		0.2			0.01	0.2
Vanadium	mg/L							0.1	
Vanadium (filtered)	mg/L							0.1	
Zinc	mg/L	3		3		0.008	0.008	2	20
Zinc (filtered)	mg/L	3		3		0.008	0.008	2	20
Zirconium	mg/L								
Zirconium (filtered)	mg/L								
BTEX									
Benzene	µg/L		1		1	950	700		
Ethylbenzene	µg/L	3	300	3	300				
m&p-Xylenes	µg/L					75			
o-Xylene	µg/L					350			
Toluene	µg/L	25	800	25	800				
Xylenes - Total	µg/L	20	600	20	600				
TRH									
TRH C6-C10	µg/L								
TRH C6-C10 less BTEX (F1)	µg/L								
TRH C10-C14	µg/L								
TRH C10-C36 (Total)	µg/L								
TRH C15-C28	µg/L								
TRH C29-C36	µg/L								
TRH C6-C9	µg/L								
Naphthalene	µg/L					16			
TRH >C10-C16	µg/L								
TRH >C10-C16 less Naphthalene (F2)	µg/L								
TRH >C10-C40 (total)	µg/L								
TRH >C16-C34	µg/L								
TRH >C34-C40	µg/L								
Alkalinity									
Bicarbonate Alkalinity (as CaCO3)	mg/L								
Carbonate Alkalinity (as CaCO3)	mg/L								
Hydroxide Alkalinity (as CaCO3)	mg/L								
Total Alkalinity (as CaCO3)	mg/L								
Alkali Metals									
Calcium	mg/L								1000
Chloride	mg/L	250		250					
Magnesium	mg/L								
Potassium	mg/L								
Sodium	mg/L	180		180					
Sulphate (as SO4)	mg/L	250		250					1000
Ionic Balance									
Calculated Ionic balance	%								
Inorganics									
Hardness mg equivalent CaCO3/L	mg/L	200		200					
Total Dissolved Solids	mg/L	600		600					
Total Suspended Solids	mg/L								
Ammonia (as N)	mg/L	0.41[1]		0.41[1]		0.9	0.91		
Conductivity (at 25°C)	uS/cm								
Ferric Iron - Fe3+	mg/L								
Ferrous Iron - Fe2+	mg/L								
Nitrate & Nitrite (as N)	mg/L								
Nitrate (as N)	mg/L		11.30[3]		113.0[3]	0.7			400
Nitrite (as N)	mg/L		0.91[2]		9.1[2]				30
pH (at 25°C)	pH Units	6.5-8.5		6.5-8.5					
Phosphate total (as P)	mg/L								
Phosphorus reactive (as P)	mg/L							0.05	
Silica (calculation from Si filtered)	mg/L	80		80					
Silica (calculation from Si)	mg/L	80		80					
Total Kjeldahl Nitrogen (as N)	mg/L								
Total Nitrogen (as N)	mg/L							5	

Field ID	MBH01	MBH01	MBH01	MBH01	MBH01	**MBH01**	MBH03	MBH03	MBH03	MBH03	MBH03	**MBH03**	MBH06	MBH06	MBH06	MBH06	MBH06	**MBH06**	MBH08	MBH08	MBH08	MBH08
Date	15/12/2021	2/04/2022	19/11/2022	22/06/2023	8/11/2023	**23/07/2024**	16/12/2021	1/04/2022	16/11/2022	27/06/2023	9/11/2023	**25/07/2024**	14/12/2021	1/04/2022	19/11/2022	22/06/2023	8/11/2023	**26/07/2024**	16/12/2021	1/04/2022	16/11/2022	27/06/2023
Lab Name	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	Eurofins	Eurofins
Lab Report Number	851738	877251	943244	1002271	1043049	**1121332**	851898	867913	942263	1003528	1043857	**1122482**	851738	867913	943244	1002271	1043049	**1122734**	851898	867913	942263	1003528
Duplicate	Primary	Primary	Primary	Primary	Primary	**Primary**	Primary	Primary	Primary	Primary	Primary	**Primary**	Primary	Primary	Primary	Primary	Primary	**Primary**	Primary	Primary	Primary	Primary
Heavy Metals																						
Aluminium	< 0.05	**0.24**	**1.8**	**0.24**	**0.10**	**0.21**	**5.6**	**1.2**	**7.7**	< 0.05	< 0.5	**0.79**	**0.17**	**0.1**	**1.1**	< 0.05	< 0.05	0.2	**0.74**	**0.15**	< 0.2	< 0.05
Aluminium (filtered)	< 0.05	**0.07**	< 0.5	< 0.05	< 0.05	< 0.05	**2.8**	**0.02**	< 0.2	< 0.05	< 0.5	< 0.05	< 0.05	< 0.01	< 0.5	< 0.05	< 0.05	< 0.05	< 0.5	< 0.01	< 0.2	< 0.05
Antimony	< 0.005	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.05	**0.006**	**0.02**	**0.001**	< 0.05	**0.003**	< 0.005	**0.005**	< 0.05	< 0.001	**0.001**	**0.001**	< 0.05	**0.009**	**0.01**	< 0.001
Antimony (filtered)	< 0.005	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.05	**0.005**	< 0.01	**0.001**	< 0.05	**0.003**	< 0.005	**0.005**	< 0.05	< 0.001	< 0.001	< 0.001	< 0.05	**0.01**	< 0.01	< 0.001
Arsenic	< 0.001	**0.001**	< 0.05	**0.001**	< 0.001	**0.001**	< 0.01	**0.009**	**0.04**	**0.002**	**0.014**	**0.014**	**0.002**	**0.007**	< 0.05	**0.003**	**0.001**	**0.005**	< 0.01	**0.015**	**0.03**	**0.002**
Arsenic (filtered)	< 0.001	**0.002**	< 0.05	< 0.001	< 0.001	< 0.001	< 0.01	**0.007**	< 0.02	**0.001**	< 0.01	**0.014**	**0.002**	**0.007**	< 0.05	**0.002**	**0.001**	**0.003**	< 0.01	**0.026**	< 0.02	**0.002**
Beryllium	< 0.001	< 0.01	< 0.05	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	**0.01**	< 0.001	< 0.01	< 0.001	< 0.001	< 0.01	< 0.05	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	< 0.001
Beryllium (filtered)	< 0.001	< 0.01	< 0.05	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	< 0.001	< 0.01	< 0.001	< 0.001	< 0.01	< 0.05	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	< 0.01	< 0.001
Bismuth	< 0.005	< 0.01	< 0.05	< 0.005	< 0.005	< 0.005	< 0.05	< 0.01	< 0.02	< 0.005	< 0.05	< 0.005	< 0.005	< 0.01	< 0.05	< 0.005	< 0.005	< 0.005	< 0.05	< 0.01	< 0.02	< 0.005
Bismuth (filtered)	< 0.005	< 0.01	< 0.05	< 0.005	< 0.005	< 0.005	< 0.05	< 0.01	< 0.02	< 0.005	< 0.05	< 0.005	< 0.005	< 0.01	< 0.05	< 0.005	< 0.005	< 0.005	< 0.05	< 0.01	< 0.02	< 0.005
Cadmium	< 0.0002	< 0.0001	**0.008**	< 0.0001	< 0.0001	< 0.0001	< 0.002	**0.0009**	**0.003**	**0.0004**	< 0.0001	**0.0009**	**0.0003**	**0.0005**	**0.007**	**0.0007**	**0.0006**	**0.0006**	< 0.002	**0.0002**	**0.001**	**0.0003**
Cadmium (filtered)	< 0.0002	< 0.0001	< 0.002	< 0.0001	< 0.0001	< 0.0001	< 0.002	**0.0007**	< 0.001	**0.0003**	< 0.0001	**0.0009**	**0.0004**	**0.0004**	< 0.002	**0.0006**	**0.0005**	**0.0008**	< 0.002	< 0.0001	< 0.001	< 0.0001
Chromium (III+VI)	< 0.001	**0.004**	**0.06**	**0.003**	< 0.001	**0.001**	**0.47**	**0.6**	**0.28**	**0.3**	**0.14**	< 0.001	**0.073**	< 0.001	**0.002**	**0.05**	**0.004**	**0.002**	< 0.01	**0.009**	**0.25**	**0.003**
Chromium (III+VI) (filtered)	< 0.001	**0.002**	< 0.01	< 0.001	< 0.001	< 0.001	**0.46**	**0.57**	**0.23**	**0.29**	**0.11**	**0.063**	< 0.001	**0.001**	< 0.01	< 0.001	< 0.001	< 0.001	< 0.01	**0.43**	**0.23**	**0.002**
Cobalt	< 0.001	< 0.001	**0.06**	< 0.001	< 0.001	< 0.001	< 0.01	**0.003**	**0.02**	< 0.001	< 0.001	< 0.001	**0.004**	**0.005**	**0.04**	**0.001**	**0.003**	**0.0012**	**0.051**	**0.079**	**0.03**	**0.016**
Cobalt (filtered)	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	**0.004**	**0.005**	< 0.01	**0.001**	**0.002**	**0.0011**	**0.047**	**0.068**	< 0.01	**0.011**
Copper	< 0.001	**0.005**	< 0.01	**0.003**	< 0.001	**0.003**	**0.03**	**0.048**	**0.03**	**0.005**	**0.035**	**0.079**	**0.002**	**0.015**	< 0.01	**0.017**	**0.049**	**0.008**	**0.027**	**0.26**	< 0.01	< 0.001
Copper (filtered)	< 0.001	**0.01**	< 0.01	< 0.001	< 0.001	< 0.001	**0.024**	**0.036**	< 0.01	**0.005**	**0.016**	**0.02**	**0.002**	**0.017**	< 0.01	**0.01**	**0.042**	**0.005**	**0.027**	**0.043**	< 0.01	**0.001**
Iron	< 0.05	**0.42**	**1.7**	**0.44**	**0.07**	**0.25**	**9.6**	**2.2**	**6.3**	**0.1**	< 0.5	**0.57**	**0.18**	**0.15**	**1.2**	**0.23**	**0.03**	**0.31**	**1.2**	**1.8**	**2.5**	**2.4**
Iron (filtered)	< 0.05	**0.09**	< 0.5	< 0.01	< 0.01	< 0.01	**2**	**0.03**	< 0.5	**0.05**	< 0.5	< 0.01	< 0.05	**0.02**	< 0.5	< 0.01	< 0.01	**0.01**	< 0.5	**1.2**	< 0.5	**2.4**
Lead	< 0.001	< 0.001	**0.04**	< 0.001	< 0.001	< 0.001	< 0.01	**0.005**	**0.02**	< 0.001	< 0.001	**0.005**	< 0.001	**0.001**	**0.01**	**0.002**	< 0.001	**0.001**	< 0.01	**0.01**	< 0.01	< 0.001
Lead (filtered)	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.01	**0.002**	< 0.01	< 0.001
Lithium	**0.007**	**0.008**	**0.11**	**0.007**	**0.006**	**0.006**	**0.55**	**1**	**0.43**	**1.5**	**0.53**	**0.41**	**0.17**	**0.23**	**0.19**	**0.14**	**0.14**	**0.1**	**0.41**	**0.73**	**0.36**	**1.3**
Lithium (filtered)	**0.007**	**0.011**	**0.11**	**0.005**	**0.005**	**0.006**	**0.54**	**1**	**0.48**	**1.1**	**0.43**	**0.41**	**0.17**	**0.22**	**0.19**	**0.11**	**0.13**	**0.1**	**0.39**	**0.67**	**0.39**	**1.1**
Manganese	< 0.005	< 0.01	**0.08**	**0.018**	< 0.005	**0.023**	**0.085**	**0.03**	**0.09**	< 0.005	**0.067**	**0.11**	**0.6**	**0.63**	**0.26**	**0.31**	**0.31**	**0.27**	**0.68**	**5.4**	**4**	**4.1**
Manganese (filtered)	< 0.005	< 0.01	< 0.05	< 0.005	< 0.005	< 0.005	**0.077**	< 0.01	< 0.01	< 0.005	< 0.05	**0.046**	**0.58**	**0.65**	**0.26**	**0.28**	**0.27**	**0.25**	**0.62**	**5.2**	**0.01**	**3.2**
Mercury	< 0.0001	-	< 0.001	< 0.0001	< 0.0001	**0.0003**	< 0.001	-	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.001	-	< 0.001	**0.0001**
Mercury (filtered)	< 0.0001	-	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.001	-	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.001	-	< 0.001	< 0.0001
Molybdenum	< 0.005	**0.004**	**0.11**	**0.001**	< 0.001	< 0.001	**0.07**	**0.16**	**0.07**	**0.044**	**0.046**	**0.036**	**0.03**	**0.047**	< 0.05	**0.014**	**0.017**	**0.015**	< 0.05	**0.11**	**0.03**	**0.014**
Molybdenum (filtered)	< 0.005	**0.006**	< 0.05	< 0.001	< 0.001	< 0.001	**0.06**	**0.12**	**0.04**	**0.036**	**0.036**	**0.036**	**0.017**	**0.036**	< 0.05	**0.012**	**0.011**	**0.006**	< 0.05	**0.21**	**0.03**	**0.01**
Nickel	**0.001**	**0.028**	**0.06**	**0.006**	**0.003**	**0.001**	**0.011**	**0.016**	**0.03**	**0.002**	< 0.001	**0.006**	**0.008**	**0.11**	**0.03**	**0.04**	**0.019**	**0.05**	**0.044**	**0.11**	**0.03**	**0.021**
Nickel (filtered)	**0.001**	**0.032**	< 0.01	**0.004**	**0.002**	< 0.001	< 0.01	**0.011**	< 0.01	**0.002**	< 0.001	**0.005**	**0.008**	**0.14**	**0.01**	**0.035**	**0.017**	**0.05**	**0.038**	**0.11**	< 0.01	**0.016**
Selenium	**0.002**	**0.003**	**0.1**	**0.002**	**0.003**	**0.002**	< 0.01	**0.022**	< 0.05	**0.005**	**0.015**	**0.044**	**0.005**	**0.027**	< 0.05	**0.005**	**0.006**	**0.005**	< 0.01	**0.033**	< 0.05	< 0.001
Selenium (filtered)	**0.002**	**0.005**	< 0.05	**0.002**	**0.002**	**0.002**	< 0.01	**0.022**	< 0.05	**0.007**	**0.016**	**0.027**	**0.005**	**0.032**	< 0.05	**0.004**	**0.004**	**0.003**	< 0.01	**0.065**	< 0.05	< 0.001
Silver	< 0.005	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	**0.001**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001
Silver (filtered)	< 0.005	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001
Strontium	**1.4**	**1.6**	**1.8**	**1.9**	**1.9**	**1.6**	**39**	**74**	**54**	**56**	**54**	**50**	**47**	**56**	**29**	**61**	**57**	**54**	**24**	**33**	**30**	**25**
Strontium (filtered)	**1.6**	**1.9**	**1.8**	**1.6**	**1.8**	**1.6**	**38**	**73**	**45**	**56**	**44**	**47**	**47**	**57**	**29**	**51**	**46**	**51**	**22**	**31**	**29**	**25**
Thorium*	< 0.05	< 0.01	**0.7**	< 0.05	< 0.05	< 0.05	**0.21**	< 0.01	< 0.01	< 0.05	< 0.05	< 0.05	**0.13**	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	**0.3**	< 0.01	< 0.01	< 0.05
Thorium* (filtered)	< 0.05	< 0.01	**0.7**	< 0.05	< 0.05	< 0.05	**0.21**	< 0.01	< 0.01	< 0.05	< 0.05	< 0.05	**0.13**	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	**0.3**	< 0.01	< 0.01	< 0.05
Tin	< 0.005	-	-	-	-	-	< 0.05	-	-	-	-	-	< 0.005	-	-	-	-	-	< 0.05	-	-	-
Tin (filtered)	< 0.005	-	-	-	-	-	< 0.05	-	-	-	-	-	< 0.005	-	-	-	-	-	< 0.05	-	-	-
Titanium	< 0.005	**0.01**	< 0.05	**0.012**	< 0.005	**0.006**	**0.2**	**0.05**	**0.21**	**1.1**	< 0.05	**0.031**	**0.012**	**0.04**	< 0.05	< 0.005	< 0.005	**0.011**	< 0.05	< 0.01	**0.01**	**0.66**
Titanium (filtered)	< 0.005	< 0.01	< 0.05	< 0.005	< 0.005	< 0.005	**0.14**	**0.04**	< 0.01	**0.89**	< 0.05	< 0.005	< 0.005	**0.02**	< 0.05	< 0.005	< 0.005	< 0.005	< 0.05	**0.1**	< 0.01	**0.62**
Uranium	< 0.005	**0.003**	**0.07**	**0.004**	**0.004**	**0.003**	< 0.05	**0.003**	**0.02**	**0.006**	< 0.05	**0.006**	**0.067**	**0.065**	**0.06**	**0.047**	**0.057**	**0.051**	< 0.05	**0.028**	**0.02**	**0.011**
Uranium (filtered)	< 0.005	**0.003**	< 0.05	**0.003**	**0.003**	**0.003**	< 0.05	**0.003**	< 0.01	**0.007**	< 0.05	**0.006**	**0.06**	**0.06**	< 0.05	**0.041**	**0.049**	**0.041**	< 0.05	**0.028**	< 0.01	**0.01**
Vanadium	**0.018**	**0.02**	< 0.05	**0.018**	**0.016**	**0.011**	< 0.05	**0.02**	**0.03**	< 0.005	< 0.005	**0.029**	< 0.005	< 0.01	< 0.05	< 0.005	< 0.005	**0.005**	< 0.05	< 0.01	< 0.01	< 0.005
Vanadium (filtered)	**0.018**	**0.02**	< 0.05	**0.015**	**0.007**	< 0.005	< 0.05	< 0.01	< 0.01	< 0.005	< 0.005	**0.023**	< 0.005	< 0.01	< 0.05	< 0.005	< 0.005	< 0.005	< 0.05	< 0.01	< 0.01	< 0.005
Zinc	**0.011**	**0.052**	< 0.05	**0.026**	**0.016**	**0.024**	**0.064**	**0.4**	**0.2**	**0.006**	< 0.005	**0.043**	**0.013**	**0.069**	< 0.05	**0.063**	**0.30**	**0.12**	< 0.05	**0.56**	<0.2	< 0.005
Zinc (filtered)	**0.011**	**0.17**	< 0.05	**0.017**	**0.014**	**0.01**	**0.056**	**0.27**	< 0.2	< 0.005	< 0.005	**0.021**	**0.012**	**0.089**	< 0.05	**0.047**	**0.26**	**0.11**	< 0.05	**0.35**	<0.2	< 0.005
Zirconium	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	**0.06**	< 0.05	< 0.01	< 0.01	< 0.01
Zirconium (filtered)	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01
BTEX																						
Benzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m&p-Xylenes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes - Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH																						
TRH C6-C10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6-C10 less BTEX (F1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10-C14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10-C36 (Total)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C15-C28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C29-C36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6-C9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16 less Naphthalene (F2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C40 (total)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity																						
Bicarbonate Alkalinity (as CaCO3)	**390**	**360**	**350**	**390**	**350**	**350**	< 20	**38**	**57**	**60**	**60**	**71**	**190**	**170**	**170**	**180**	**180**	**160**	**230**	**210**	**220**	**230**
Carbonate Alkalinity (as CaCO3)	< 20	< 5	< 5	< 5	< 5	< 5	**26**	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	**390**	**360**	**350**	**390**	**350**	**350**	**39**	**38**	**57**	**60**	**60**	**71**	**190**	**170**	**170**	**180**	**180**	**160**	**230**	**210**	**220**	**230**
Alkali Metals																						
Calcium	**100**	**97**	**130**	**120**	**150**	**99**	**5100**	**4000**	**3400**	**2400**	**2800**	**2400**	**1800**	**1900**	**1000**	**2300**	**2600**	**1900**	**1200**	**1600**	**1500**	**1100**
Chloride	**540**	**530**	**490**	**520**	**560**	**550**	**84000**	**55000**	**56000**	**65000**	**46000**	**49000**	**10000**	**13000**	**11000**	**12000**	**11000**	**9800**	**57000**	**66000**	**67000**	**79000**
Magnesium	**75**	**81**	**99**	**86**	**110**	**75**	**1800**	**1600**	**2900**	**2200**	**2100**	**2500**	**1000**	**1100**	**700**	**1400**	**1500**	**1100**	**3900**	**4700**	**5400**	**3400**
Potassium	**2.3**	**3.6**	< 50	**3**	**2.4**	**2.2**	**1100**	**1100**	**1200**	**860**	**900**	**860**	**23**	**31**	< 50	**15**	**18**	**21**	**1300**	**1400**	**1700**	**1200**
Sodium	**240**	**440**	**180**	**260**	**330**	**230**	**43000**	**38000**	**43000**	**27000**	**25000**	**28000**	**4200**	**4300**	**2200**	**3900**	**5300**	**3800**	**36000**	**52000**	**50000**	**30000**
Sulphate (as SO4)	**56**	**61**	**64**	**56**	**64**	**63**	**2700**	**3300**	**4500**	**4200**	**3800**	**4400**	**950**	**1200**	**1100**	**940**	**1100**	**1100**	**7300**	**9600**	**9100**	**10000**
Ionic Balance																						
Calculated Ionic balance	**-3%**	**17%**	**7%**	**5%**	**16%**	**-3%**	**-3%**	**12%**	**17%**	**-13%**	**2%**	**3%**	**8%**	**-3%**	**-26%**	**6%**	**20%**	**8%**	**6%**	**16%**	**15%**	**-21%**
Inorganics																						
Hardness mg equivalent CaCO3/L	**560**	**580**	**730**	**590**	**770**	**560**	**20000**	**17000**	**14000**	**15000**	**16000**	**16000**	**8600**	**9300**	**5500**	**11000**	**13000**	**9400**	**19000**	**23000**	**21000**	**17000**
Total Dissolved Solids	**1800**	**1600**	**1400**	**1400**	**1400**	**1400**	**180000**	**120000**	**92000**	**98000**	**67000**	**66000**	**30000**	**33000**	**24000**	**22000**	**22000**	**19000**	**190000**	**150000**	**120000**	**120000**
Total Suspended Solids	**17**	< 5	**57**	**5**	**12**	**23**	**760**	**85**	**160**	**82**	**50**	**93**	< 5	**18**	**17**	< 5	**10**	**43**	< 5	**23**	**13**	**20**
Ammonia (as N)	< 0.01	< 0.02	< 0.02	< 0.02	**0.11**	< 0.02	**7.2**	**3.7**	**0.08**	< 0.02	< 0.02	**1.7**	**1.5**	**0.71**	**0.12**	< 0.02	**0.19**	< 0.02	**0.17**	**0.28**	**0.3**	**0.29**
Conductivity (at 25°C)	**2,200**	**2,300**	**2,300**	**2,400**	**2400**	**2,400**	**150,000**	**120,000**	**120000**	**110,000**	**96000**	**110,000**	**29,000**	**30,000**	**31,000**	**32,000**	**31000**	**32,000**	**140,000**	**130,000**	**140000**	**140,000**
Ferric Iron - Fe3+	< 0.05	**0.42**	< 0.5	< 0.5	< 0.5	-	**9.6**	**0.08**	< 0.5	< 0.5	< 0.5	<0.05	**0.18**	**2.2**	< 0.5	< 0.5	< 0.5	< 0.05	**1.2**	**4.3**	< 0.5	**1.8**
Ferrous Iron - Fe2+	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	**0.07**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water
Field ID									
Date									
Lab Name									
Lab Report Number									
Duplicate									
Heavy Metals									
Aluminium	mg/L	0.2		0.2				5	5
Aluminium (filtered)	mg/L	0.2		0.2				5	5
Antimony	mg/L		0.003		0.03				
Antimony (filtered)	mg/L		0.003		0.03				
Arsenic	mg/L		0.01		0.1	0.013		0.1	0.5
Arsenic (filtered)	mg/L		0.01		0.1	0.013		0.1	0.5
Beryllium	mg/L		0.06		0.6			0.1	
Beryllium (filtered)	mg/L		0.06		0.6			0.1	
Bismuth	mg/L								
Bismuth (filtered)	mg/L								
Cadmium	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01
Cadmium (filtered)	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01
Chromium (III+VI)	mg/L		0.05		0.5	0.001		0.1	1
Chromium (III+VI) (filtered)	mg/L		0.05		0.5	0.001		0.1	1
Cobalt	mg/L						0.001	0.05	1
Cobalt (filtered)	mg/L						0.001	0.05	1
Copper	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4
Copper (filtered)	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4
Iron	mg/L	0.3		0.3				0.2	
Iron (filtered)	mg/L	0.3		0.3				0.2	
Lead	mg/L		0.01		0.1	0.0034	0.0044	2	0.1
Lead (filtered)	mg/L		0.01		0.1	0.0034	0.0044	2	0.1
Lithium	mg/L							2.5	
Lithium (filtered)	mg/L							2.5	
Manganese	mg/L	0.1	0.5	0.1	5	1.9		0.2	
Manganese (filtered)	mg/L	0.1	0.5	0.1	5	1.9		0.2	
Mercury	mg/L		0.001		0.01	0.0006		0.002	0.002
Mercury (filtered)	mg/L		0.001		0.01	0.0006		0.002	0.002
Molybdenum	mg/L		0.5		5			0.01	0.15
Molybdenum (filtered)	mg/L		0.5		5			0.01	0.15
Nickel	mg/L		0.02		0.2	0.011	0.07	0.2	1
Nickel (filtered)	mg/L		0.02		0.2	0.011	0.07	0.2	1
Selenium	mg/L		0.01		0.1			0.02	0.02
Selenium (filtered)	mg/L		0.01		0.1			0.02	0.02
Silver	mg/L		0.1		1		0.0014		
Silver (filtered)	mg/L		0.1		1		0.0014		
Strontium	mg/L								
Strontium (filtered)	mg/L								
Thorium*	mg/L								
Thorium* (filtered)	mg/L								
Tin	mg/L								
Tin (filtered)	mg/L								
Titanium	mg/L								
Titanium (filtered)	mg/L								
Uranium	mg/L		0.02		0.2			0.01	0.2
Uranium (filtered)	mg/L		0.02		0.2			0.01	0.2
Vanadium	mg/L							0.1	
Vanadium (filtered)	mg/L							0.1	
Zinc	mg/L	3		3		0.008	0.008	2	20
Zinc (filtered)	mg/L	3		3		0.008	0.008	2	20
Zirconium	mg/L								
Zirconium (filtered)	mg/L								
BTEX									
Benzene	µg/L		1		1	950	700		
Ethylbenzene	µg/L	3	300	3	300				
m&p-Xylenes	µg/L					75			
o-Xylene	µg/L					350			
Toluene	µg/L	25	800	25	800				
Xylenes - Total	µg/L	20	600	20	600				
TRH									
TRH C6-C10	µg/L								
TRH C6-C10 less BTEX (F1)	µg/L								
TRH C10-C14	µg/L								
TRH C10-C36 (Total)	µg/L								
TRH C15-C28	µg/L								
TRH C29-C36	µg/L								
TRH C6-C9	µg/L								
Naphthalene	µg/L					16			
TRH >C10-C16	µg/L								
TRH >C10-C16 less Naphthalene (F2)	µg/L								
TRH >C10-C40 (total)	µg/L								
TRH >C16-C34	µg/L								
TRH >C34-C40	µg/L								
Alkalinity									
Bicarbonate Alkalinity (as CaCO3)	mg/L								
Carbonate Alkalinity (as CaCO3)	mg/L								
Hydroxide Alkalinity (as CaCO3)	mg/L								
Total Alkalinity (as CaCO3)	mg/L								
Alkali Metals									
Calcium	mg/L								1000
Chloride	mg/L	250		250					
Magnesium	mg/L								
Potassium	mg/L								
Sodium	mg/L	180		180					
Sulphate (as SO4)	mg/L	250		250					1000
Ionic Balance									
Calculated Ionic balance	%								
Inorganics									
Hardness mg equivalent CaCO3/L	mg/L	200		200					
Total Dissolved Solids	mg/L	600		600					
Total Suspended Solids	mg/L								
Ammonia (as N)	mg/L	0.41[1]		0.41[1]		0.9	0.91		
Conductivity (at 25°C)	uS/cm								
Ferric Iron - Fe3+	mg/L								
Ferrous Iron - Fe2+	mg/L								
Nitrate & Nitrite (as N)	mg/L								
Nitrate (as N)	mg/L		11.30[3]		113.0[3]	0.7			400
Nitrite (as N)	mg/L		0.91[2]		9.1[2]				30
pH (at 25 °C)	pH Units	6.5-8.5		6.5-8.5					
Phosphate total (as P)	mg/L								
Phosphorus reactive (as P)	mg/L							0.05	
Silica (calculation from Si filtered)	mg/L	80		80					
Silica (calculation from Si)	mg/L	80		80					
Total Kjeldahl Nitrogen (as N)	mg/L								
Total Nitrogen (as N)	mg/L							5	

Field ID	MBH08	**MBH08**	MBH09	DUP2	DUP2	MBH09	DUP1	DUP1	MBH09	DUP2	DUP2	MBH09	DUP1	DUP1	MBH09	DUP1	DUP1
Date	9/11/2023	**25/07/2024**	14-15/12/2021	15/12/2021	15/12/2021	31/03/2022	31/03/2022	31/03/2022	20/11/2022	20/11/2022	20/11/2022	25/06/2023	25/06/2023	25/06/2023	8/11/2023	8/11/2023	8/11/2023
Lab Name	Eurofins	**Eurofins**	Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS
Lab Report Number	1043857	**1122482**	851738	851738	EP2115675	877286	877286	EP2203944	943244	943244	EP2216117	1002605	1002605	EP2308597	1043049	1043049	EP2315880
Duplicate	Primary	**Primary**	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory
Aluminium	< 0.5	< 0.05	**0.06**	-	-	**0.01**	**0.02**	**0.01**	**0.9**	**0.7**	<0.01	< 0.05	< 0.05	**0.02**	< 0.05	-	**0.04**
Aluminium (filtered)	< 0.5	< 0.05	< 0.05	-	-	< 0.01	< 0.01	<0.01	< 0.05	< 0.05	-	< 0.05	< 0.05	<0.01	< 0.05	-	<0.01
Antimony	< 0.05	< 0.001	< 0.005	-	-	< 0.001	< 0.001	<0.001	< 0.05	< 0.05	<0.001	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Antimony (filtered)	< 0.05	< 0.001	< 0.005	-	-	< 0.001	< 0.001	<0.001	< 0.05	< 0.05	-	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Arsenic	**0.022**	**0.021**	**0.002**	-	-	**0.003**	**0.0036**	**0.003**	< 0.05	< 0.05	**0.002**	**0.002**	**0.002**	**0.002**	**0.002**	-	**0.002**
Arsenic (filtered)	< 0.01	**0.021**	< 0.001	-	-	**0.0027**	**0.004**	**0.002**	< 0.05	< 0.05	-	**0.002**	**0.002**	**0.002**	**0.002**	-	**0.002**
Beryllium	< 0.01	< 0.001	< 0.001	-	-	< 0.01	< 0.01	<0.001	< 0.05	< 0.05	<0.001	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Beryllium (filtered)	< 0.01	< 0.001	< 0.001	-	-	< 0.01	< 0.01	<0.001	< 0.05	< 0.05	-	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Bismuth	< 0.05	< 0.005	< 0.005	-	-	< 0.01	< 0.01	<0.001	< 0.05	< 0.05	<0.001	< 0.005	< 0.005	<0.001	< 0.005	-	<0.001
Bismuth (filtered)	< 0.05	< 0.005	< 0.005	-	-	< 0.01	< 0.01	<0.001	< 0.05	< 0.05	-	< 0.005	< 0.005	<0.001	< 0.005	-	<0.001
Cadmium	< 0.0001	< 0.0001	< 0.0002	-	-	< 0.0001	< 0.0001	<0.0001	**0.006**	< 0.002	<0.0001	< 0.0001	< 0.0001	<0.0001	< 0.0001	-	<0.0001
Cadmium (filtered)	< 0.0001	< 0.0001	< 0.0002	-	-	< 0.0001	< 0.0001	<0.0001	< 0.002	< 0.002	-	< 0.0001	< 0.0001	<0.0001	< 0.0001	-	<0.0001
Chromium (III+VI)	**0.012**	< 0.001	< 0.001	-	-	< 0.001	< 0.001	<0.001	**0.03**	**0.01**	<0.001	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Chromium (III+VI) (filtered)	< 0.001	< 0.001	< 0.001	-	-	< 0.001	< 0.001	<0.001	< 0.01	< 0.01	-	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Cobalt	**0.017**	**0.028**	< 0.001	-	-	< 0.001	< 0.001	<0.001	**0.03**	< 0.01	<0.001	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Cobalt (filtered)	**0.012**	**0.027**	< 0.001	-	-	< 0.001	< 0.001	<0.001	< 0.01	< 0.01	-	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Copper	< 0.001	**0.024**	**0.002**	-	-	**0.002**	**0.001**	**0.001**	< 0.01	< 0.01	<0.001	**0.002**	**0.003**	**0.001**	**0.043**	-	**0.002**
Copper (filtered)	< 0.001	**0.004**	< 0.001	-	-	**0.002**	< 0.001	**0.001**	< 0.01	< 0.01	-	**0.002**	**0.003**	**0.001**	**0.001**	-	**0.002**
Iron	**1.4**	**1.3**	< 0.05	-	-	< 0.01	< 0.01	<0.05	**0.8**	< 0.5	<0.05	< 0.01	< 0.01	**0.04**	<0.05	< 0.01	**0.16**
Iron (filtered)	**1.0**	**1.2**	< 0.05	-	-	< 0.01	< 0.01	<0.05	< 0.5	< 0.5	-	< 0.01	< 0.01	<0.05	< 0.01	-	<0.05
Lead	< 0.001	**0.002**	< 0.001	-	-	< 0.001	< 0.001	<0.001	< 0.01	< 0.01	<0.001	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Lead (filtered)	< 0.001	< 0.001	< 0.001	-	-	< 0.001	< 0.001	<0.001	< 0.01	< 0.01	-	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Lithium	**0.48**	**0.37**	**0.014**	-	-	**0.019**	**0.014**	**0.016**	**0.06**	**0.015**	**0.015**	**0.015**	**0.014**	**0.015**	**0.015**	-	**0.013**
Lithium (filtered)	**0.41**	**0.37**	**0.014**	-	-	**0.019**	**0.015**	**0.014**	**0.013**	**0.014**	-	**0.015**	**0.014**	**0.014**	**0.013**	-	**0.013**
Manganese	**2.7**	**2**	**0.042**	-	-	< 0.01	< 0.01	**0.008**	< 0.05	< 0.05	<0.001	< 0.005	< 0.005	**0.003**	< 0.005	-	**0.014**
Manganese (filtered)	**2.1**	**1.9**	< 0.005	-	-	< 0.01	< 0.01	<0.001	< 0.05	< 0.05	-	< 0.005	< 0.005	<0.001	< 0.005	-	<0.001
Mercury	< 0.0001	< 0.0001	< 0.0001	-	-	-	-	-	< 0.001	< 0.001	-	< 0.0001	< 0.0001	-	< 0.0001	-	<0.0001
Mercury (filtered)	< 0.0001	< 0.0001	< 0.0001	-	-	-	-	-	< 0.001	< 0.001	-	< 0.0001	< 0.0001	<0.0001	< 0.0001	-	<0.0001
Molybdenum	**0.013**	**0.015**	< 0.005	-	-	**0.004**	**0.004**	**0.004**	< 0.05	< 0.05	**0.002**	**0.003**	**0.002**	**0.003**	**0.003**	-	**0.003**
Molybdenum (filtered)	**0.012**	**0.013**	< 0.005	-	-	**0.004**	**0.005**	**0.003**	< 0.05	< 0.05	-	**0.003**	**0.002**	**0.002**	**0.002**	-	**0.003**
Nickel	**0.066**	**0.06**	**0.003**	-	-	**0.014**	**0.009**	**0.012**	< 0.01	< 0.01	<0.001	**0.002**	**0.002**	**0.003**	**0.003**	-	**0.004**
Nickel (filtered)	**0.048**	**0.06**	< 0.001	-	-	**0.014**	**0.008**	**0.010**	< 0.01	< 0.01	-	**0.002**	**0.002**	**0.003**	**0.003**	-	**0.003**
Selenium	**0.016**	**0.049**	**0.002**	-	-	**0.002**	**0.002**	<0.01	< 0.05	**0.05**	<0.01	**0.001**	**0.002**	<0.01	**0.001**	-	<0.01
Selenium (filtered)	**0.016**	**0.026**	**0.002**	-	-	**0.0024**	**0.0023**	<0.01	< 0.05	**0.05**	-	**0.001**	**0.002**	<0.01	**0.002**	-	<0.01
Silver	< 0.001	< 0.001	< 0.005	-	-	< 0.001	< 0.001	<0.001	< 0.01	< 0.01	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Silver (filtered)	< 0.001	< 0.001	< 0.005	-	-	< 0.001	< 0.001	<0.001	< 0.01	< 0.01	-	< 0.001	< 0.001	<0.001	< 0.001	-	<0.001
Strontium	**31**	**35**	**1.5**	-	-	**1.6**	**1.5**	**1.51**	**1.6**	**1.6**	**1.31**	**1.5**	**1.8**	**1.43**	**1.6**	-	**1.54**
Strontium (filtered)	**28**	**31**	**0.86**	-	-	**1.6**	**1.6**	**1.46**	**1.6**	**1.3**	-	**1.4**	**1.4**	**1.40**	**1.6**	-	**1.50**
Thorium*	< 0.05	< 0.05	< 0.05	-	-	< 0.01	< 0.01	<0.001	< 0.05	< 0.05	<0.001	< 0.05	< 0.05	<0.001	< 0.05	-	<0.001
Thorium* (filtered)	< 0.05	< 0.05	< 0.05	-	-	< 0.01	< 0.01	<0.001	< 0.05	< 0.05	-	< 0.05	< 0.05	<0.001	< 0.05	-	<0.001
Tin	-	-	< 0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (filtered)	-	-	< 0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium	< 0.05	< 0.005	< 0.005	-	-	< 0.01	< 0.01	<0.01	< 0.05	< 0.05	<0.01	**0.02**	**0.023**	<0.01	< 0.005	-	<0.01
Titanium (filtered)	< 0.05	< 0.005	< 0.005	-	-	< 0.01	< 0.01	<0.01	< 0.05	< 0.05	-	**0.02**	**0.023**	<0.01	< 0.005	-	<0.01
Uranium	< 0.05	**0.007**	**0.005**	-	-	**0.005**	**0.008**	**0.005**	< 0.05	< 0.05	**0.005**	**0.008**	**0.008**	**0.005**	**0.005**	-	**0.005**
Uranium (filtered)	< 0.05	**0.006**	< 0.005	-	-	**0.005**	**0.008**	**0.003**	< 0.05	< 0.05	-	**0.008**	**0.008**	**0.004**	**0.004**	-	**0.005**
Vanadium	**0.075**	**0.034**	**0.03**	-	-	**0.04**	**0.04**	**0.04**	< 0.05	< 0.05	**0.04**	**0.037**	**0.033**	**0.04**	**0.035**	-	**0.04**
Vanadium (filtered)	< 0.005	**0.034**	< 0.005	-	-	**0.04**	**0.03**	**0.03**	< 0.05	< 0.05	-	**0.037**	**0.033**	**0.04**	**0.033**	-	**0.04**
Zinc	< 0.005	**0.024**	< 0.005	-	-	**0.008**	**0.008**	**0.007**	< 0.05	< 0.05	<0.005	**0.007**	**0.009**	**0.014**	**0.009**	-	**0.010**
Zinc (filtered)	< 0.005	**0.017**	< 0.005	-	-	< 0.005	< 0.005	**0.007**	< 0.05	< 0.05	-	**0.007**	**0.009**	**0.012**	**0.007**	-	**0.005**
Zirconium	< 0.01	**0.01**	< 0.05	-	-	< 0.01	< 0.01	<0.005	< 0.01	< 0.01	<0.005	< 0.01	< 0.01	<0.005	< 0.01	-	<0.005
Zirconium (filtered)	< 0.01	< 0.01	< 0.05	-	-	< 0.01	< 0.01	<0.005	< 0.01	< 0.01	-	< 0.01	< 0.01	<0.005	< 0.01	-	<0.005
Benzene	-	-	<1	<1	<1	< 1	< 1	<1	< 1	< 1	-	< 1	< 1	<1	< 0.001	<1	<1
Ethylbenzene	-	-	<1	<1	<2	< 1	< 1	<2	< 1	< 1	-	< 1	< 1	<2	< 0.001	<1	<2
m&p-Xylenes	-	-	<2	<2	<2	< 2	< 2	<2	< 2	< 2	-	< 2	< 2	<2	< 0.002	<2	<2
o-Xylene	-	-	<1	<1	<2	< 1	< 1	<2	< 1	< 1	-	< 1	< 1	<2	< 0.001	<1	<2
Toluene	-	-	<1	<1	<2	< 1	< 1	<2	< 1	< 1	-	< 1	< 1	<2	< 0.001	<1	<2
Xylenes - Total	-	-	<3	<3	<2	< 3	< 3	<2	< 3	< 3	-	< 3	< 3	<2	< 0.003	<3	<2
TRH C6-C10	-	-	<20	<20	<20	< 20	< 20	<20	< 20	< 20	-	< 20	< 20	<20	< 0.02	<20	<20
TRH C6-C10 less BTEX (F1)	-	-	<20	<20	<20	< 20	< 20	<20	< 20	< 20	-	< 20	< 20	<20	< 0.02	<20	<20
TRH C10-C14	-	-	<50	<50	<50	< 50	< 50	<50	< 50	< 50	-	< 50	< 50	<50	< 0.02	<20	<50
TRH C10-C36 (Total)	-	-	<100	<100	<50	< 100	< 100	<50	**100**	<100	-	< 100	< 100	<50	< 0.04	<40	<50
TRH C15-C28	-	-	<100	<100	<100	< 100	< 100	<100	**100**	<100	-	< 100	< 100	<100	< 0.04	<40	<100
TRH C29-C36	-	-	<100	<100	<50	< 100	< 100	<50	< 100	< 100	-	< 100	< 100	<50	< 0.04	<40	<50
TRH C6-C9	-	-	<20	<20	<20	< 20	< 20	<20	< 20	< 20	-	< 20	< 20	<20	< 0.02	<20	<20
Naphthalene	-	-	<10	<100	<5	< 10	< 10	<5	< 10	< 10	-	< 10	< 10	<5	< 0.001	<1	<5
TRH >C10-C16	-	-	<50	<50	<100	< 50	< 50	<100	< 50	< 50	-	< 50	< 50	<100	< 0.02	<20	<100
TRH >C10-C16 less Naphthalene (F2)	-	-	<50	<50	<100	< 50	< 50	<100	< 50	< 50	-	< 50	< 50	<100	< 0.02	<20	<100
TRH >C10-C40 (total)	-	-	<100	<100	<100	< 100	< 100	<100	< 100	< 100	-	< 100	< 100	<100	< 0.05	<50	<100
TRH >C16-C34	-	-	<100	<100	<100	< 100	< 100	<100	< 100	< 100	-	< 100	< 100	<100	< 0.05	<50	<100
TRH >C34-C40	-	-	<100	<100	<100	< 100	< 100	<100	< 100	< 100	-	< 100	< 100	<100	< 0.05	<50	<100
Bicarbonate Alkalinity (as CaCO3)	**220**	**200**	**460**	-	-	**400**	**420**	**387**	**400**	**420**	**402**	**420**	**430**	**401**	**440**	-	**407**
Carbonate Alkalinity (as CaCO3)	< 5	< 5	< 20	-	-	< 5	< 5	<1	< 5	< 5	<1	< 5	< 5	<1	< 5	-	<1
Hydroxide Alkalinity (as CaCO3)	< 5	< 5	< 20	-	-	< 5	< 5	<1	< 5	< 5	<1	< 5	< 5	<1	< 5	-	<1
Total Alkalinity (as CaCO3)	**220**	**200**	**460**	-	-	**400**	**420**	**387**	**400**	**420**	**402**	**420**	**430**	**401**	**440**	-	**407**
Calcium	**1300**	**1500**	**59**	-	-	**70**	**72**	**66**	**51**	**52**	**60**	**61**	**68**	**66**	**77**	-	**63**
Chloride	**61000**	**75000**	**430**	-	-	**440**	**450**	**459**	**370**	**380**	**405**	**410**	**440**	**423**	**410**	-	**480**
Magnesium	**4100**	**4700**	**63**	-	-	**63**	**64**	**61**	**62**	**60**	**56**	**68**	**86**	**61**	**83**	-	**58**
Potassium	**1400**	**1600**	**1.7**	-	-	**1.8**	**1.7**	**1**	**1.1**	**1.1**	**1**	**2.1**	**6.3**	**1**	**1.7**	-	**1**
Sodium	**37000**	**42000**	**290**	-	-	**310**	**310**	**298**	**310**	**310**	**276**	**390**	**490**	**286**	**370**	-	**273**
Sulphate (as SO4)	**10000**	**8900**	**53**	-	-	**54**	**54**	**52**	**46**	**46**	**53**	**52**	**53**	**51**	**53**	-	**58**
Calculated Ionic balance	**3%**	**1%**	**0%**			**5%**	**4%**	**2%**	**8%**	**6%**	**1%**	**14%**	**22%**	**3%**	**15%**		**-4%**
Hardness mg equivalent CaCO3/L	**20000**	**23000**	**410**	-	-	**430**	**440**	**416**	**500**	**480**	**380**	**440**	**530**	**416**	**530**	-	**396**
Total Dissolved Solids	**84000**	**85000**	**1200**	-	-	**1200**	**1200**	**1150**	**1200**	**1200**	**1150**	**1200**	**1100**	**1030**	**1300**	-	**1180**
Total Suspended Solids	**22**	**17**	**12**	-	-	< 5	< 5	<5	< 5	**5**	<5	< 5	**16**	<5	< 5	-	<5
Ammonia (as N)	**0.18**	**3.4**	**0.01**	-	-	< 0.02	< 0.02	<0.01	< 0.02	< 0.02	<0.01	< 0.02	< 0.02	**0.02**	< 0.02	-	<0.01
Conductivity (at 25°C)	**120000**	**140,000**	**2,200**	-	-	**2,000**	**2,100**	**2080**	**1,900**	**2000**	**1800**	**2000**	**2000**	**2020**	**2100**	-	**2020**
Ferric Iron - Fe3+	< 0.5	<0.05	< 0.05	-	-	< 0.05	< 0.05	<0.05	< 0.5	< 0.5	<0.05	< 0.5	< 0.5	<0.05	< 0.5	-	<0.05
Ferrous Iron - Fe2+	**1.0**	**1.2**	< 0.05	-	-	< 0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	< 0.05	-	<0.05
Nitrate & Nitrite (as N)	< 0.01	< 0.01	**3.6**	-	-	**3.9**	**3.8**	**3.21**	**4.4**	**4.6**	**3.88**	**3.8**	**4**	**3.76**	**4.2**	-	**3.66**
Nitrate (as N)	< 0.01	< 0.01	**3.6**	-	-	**3.9**	**3.7**	**3.21**	**4.4**	**4.6**	**3.88**	**3.8**	**4**	**3.76**	**4.2**	-	**3.66**
Nitrite (as N)	< 0.01	< 0.01	< 0.02	-	-	**0.02**	**0.02**	<0.01	< 0.01	< 0.01	<0.01	< 0.01	< 0.01	<0.01	< 0.01	-	<0.01
pH (at 25 °C)	**7.2**	**7.1**	**7.7**	-	-	**7.7**	**7.8**	**8.13**	**7.3**	**7.4**	**7.85**	**7.8**	**8.1**	**7.94**	**7.7**	-	**8.01**
Phosphate total (as P)	**0.08**	< 0.01	**0.02**	-	-	-	-	<0.01	-	-	**0.05**	< 0.01	< 0.01	**0.02**	**0.09**	-	**0.03**
Phosphorus reactive (as P)	**0.05**	**0.02**	**0.03**	-	-	**0.03**	**0.03**	<0.01	**0.11**	**0.11**	**0.01**	**0.81**	**0.9**	**0.01**	**0.09**	-	**0.01**
Silica (calculation from Si filtered)	**24**	-	**71**	-	-	-	-	**80.6**	-	-	**82.0**	-	-	**78.5**	**76**	-	**83.4**
Silica (calculation from Si)	-	**26**	**71**	-	-	**69**	**67**	**80.7**	**82**	**81**	**78.3**	**64**	**66**	**78.0**	-	-	**82.2**
Total Kjeldahl Nitrogen (as N)	< 0.2	**4.1**	**0.2**	-	-	< 0.2	< 0.2	**0.5**	< 0.2	< 0.2	**0.4**	< 0.2	< 0.2	**0.4**	< 0.2	-	**0.3**
Total Nitrogen (as N)	< 0.2	**4.1**	**3.8**	-	-	**3.9**	**3.8**	**3.7**	**4.4**	**4.6**	**4.3**	**3.8**	**4**	**4.2**	**4.2**	-	**4.0**

[1] A dividing factor of 1.21589 has been applied to the ADWG (2011) Drinking Water guideline as conversion from ammonia (as NH3) to ammonia (as N)
[2] A dividing factor of 3.28443 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrite (as N02) to nitrite (as N)
[3] A dividing factor of 4.42664 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrate (as N03) to nitrate (as N)

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water
Heavy Metals									
Aluminium	mg/L	0.2		0.2				5	5
Aluminium (filtered)	mg/L	0.2		0.2				5	5
Antimony	mg/L		0.003		0.03				
Antimony (filtered)	mg/L		0.003		0.03				
Arsenic	mg/L		0.01		0.1	0.013		0.1	0.5
Arsenic (filtered)	mg/L		0.01		0.1	0.013		0.1	0.5
Beryllium	mg/L		0.06		0.6			0.1	
Beryllium (filtered)	mg/L		0.06		0.6			0.1	
Bismuth	mg/L								
Bismuth (filtered)	mg/L								
Cadmium	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01
Cadmium (filtered)	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01
Chromium (III+VI)	mg/L		0.05		0.5	0.001		0.1	1
Chromium (III+VI) (filtered)	mg/L		0.05		0.5	0.001		0.1	1
Cobalt	mg/L						0.001	0.05	1
Cobalt (filtered)	mg/L						0.001	0.05	1
Copper	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4
Copper (filtered)	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4
Iron	mg/L	0.3		0.3				0.2	
Iron (filtered)	mg/L	0.3		0.3				0.2	
Lead	mg/L		0.01		0.1	0.0034	0.0044	2	0.1
Lead (filtered)	mg/L		0.01		0.1	0.0034	0.0044	2	0.1
Lithium	mg/L							2.5	
Lithium (filtered)	mg/L							2.5	
Manganese	mg/L	0.1	0.5	0.1	5	1.9		0.2	
Manganese (filtered)	mg/L	0.1	0.5	0.1	5	1.9		0.2	
Mercury	mg/L		0.001		0.01	0.0006		0.002	0.002
Mercury (filtered)	mg/L		0.001		0.01	0.0006		0.002	0.002
Molybdenum	mg/L		0.5		5			0.01	0.15
Molybdenum (filtered)	mg/L		0.5		5			0.01	0.15
Nickel	mg/L		0.02		0.2	0.011	0.07	0.2	1
Nickel (filtered)	mg/L		0.02		0.2	0.011	0.07	0.2	1
Selenium	mg/L		0.01		0.1			0.02	0.02
Selenium (filtered)	mg/L		0.01		0.1			0.02	0.02
Silver	mg/L		0.1		1		0.0014		
Silver (filtered)	mg/L		0.1		1		0.0014		
Strontium	mg/L								
Strontium (filtered)	mg/L								
Thorium*	mg/L								
Thorium* (filtered)	mg/L								
Tin	mg/L								
Tin (filtered)	mg/L								
Titanium	mg/L								
Titanium (filtered)	mg/L								
Uranium	mg/L		0.02		0.2			0.01	0.2
Uranium (filtered)	mg/L		0.02		0.2			0.01	0.2
Vanadium	mg/L							0.1	
Vanadium (filtered)	mg/L							0.1	
Zinc	mg/L	3		3		0.008	0.008	2	20
Zinc (filtered)	mg/L	3		3		0.008	0.008	2	20
Zirconium	mg/L								
Zirconium (filtered)	mg/L								
BTEX									
Benzene	µg/L		1		1	950	700		
Ethylbenzene	µg/L	3	300	3	300				
m&p-Xylenes	µg/L					75			
o-Xylene	µg/L					350			
Toluene	µg/L	25	800	25	800				
Xylenes - Total	µg/L	20	600	20	600				
TRH									
TRH C6-C10	µg/L								
TRH C6-C10 less BTEX (F1)	µg/L								
TRH C10-C14	µg/L								
TRH C10-C36 (Total)	µg/L								
TRH C15-C28	µg/L								
TRH C29-C36	µg/L								
TRH C6-C9	µg/L								
Naphthalene	µg/L					16			
TRH >C10-C16	µg/L								
TRH >C10-C16 less Naphthalene (F2)	µg/L								
TRH >C10-C40 (total)	µg/L								
TRH >C16-C34	µg/L								
TRH >C34-C40	µg/L								
Alkalinity									
Bicarbonate Alkalinity (as CaCO3)	mg/L								
Carbonate Alkalinity (as CaCO3)	mg/L								
Hydroxide Alkalinity (as CaCO3)	mg/L								
Total Alkalinity (as CaCO3)	mg/L								
Alkali Metals									
Calcium	mg/L								1000
Chloride	mg/L	250		250					
Magnesium	mg/L								
Potassium	mg/L								
Sodium	mg/L	180		180					
Sulphate (as SO4)	mg/L	250		250					1000
Ionic Balance									
Calculated Ionic balance	%								
Inorganics									
Hardness mg equivalent CaCO3/L	mg/L	200		200					
Total Dissolved Solids	mg/L	600		600					
Total Suspended Solids	mg/L								
Ammonia (as N)	mg/L	0.41[1]		0.41[1]		0.9	0.91		
Conductivity (at 25°C)	uS/cm								
Ferric Iron - Fe3+	mg/L								
Ferrous Iron - Fe2+	mg/L								
Nitrate & Nitrite (as N)	mg/L								
Nitrate (as N)	mg/L		11.30[3]		113.0[3]	0.7			400
Nitrite (as N)	mg/L		0.91[2]		9.1[2]				30
pH (at 25°C)	pH Units	6.5-8.5		6.5-8.5					
Phosphate total (as P)	mg/L								
Phosphorus reactive (as P)	mg/L							0.05	
Silica (calculation from Si filtered)	mg/L	80		80					
Silica (calculation from Si)	mg/L	80		80					
Total Kjeldahl Nitrogen (as N)	mg/L								
Total Nitrogen (as N)	mg/L							5	

Field ID	MBH09	DUP1	DUP1	MBH10	DUP1	DUP1	MBH10	MBH10	MBH10	MBH10	MBH10	MBH12	MBH12	MBH12	MBH12	MBH12	MBH12	MBH13	MBH13	MBH13
Date	24/07/2024	24/07/2024	24/07/2024	14/12/2021	14/12/2021	14/12/2021	31/03/2022	20/11/2022	25/06/2023	8/11/2023	26/07/2024	14/12/2021	29/03/2022	21/11/2022	22/06/2023	8/11/2023	24/07/2024	14/12/2021	2/04/2022	20/11/2022
Lab Name	Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
Lab Report Number	1121879	1121879	EP2410566	851738	851738	EP2115675	877286	943244	1002605	1043049	1122734	851738	867013	943366	1002271	1043049	1121879	851738	877251	943244
Duplicate	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Heavy Metals																				
Aluminium	< 0.05	< 0.05	**0.009**	**0.9**	**0.41**	**1.63**	**1.3**	**1**	**0.76**	**0.10**	**1.5**	**5.3**	**4.3**	**2.5**	**4.1**	**2.9**	**1.8**	**0.32**	**5.2**	**2.2**
Aluminium (filtered)	< 0.05	< 0.05	<0.005	**0.37**	**0.09**	<0.01	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	**5**	**3.7**	**3.4**	**3.1**	**2.4**	**1.5**	**0.06**	**0.14**	< 0.05
Antimony	< 0.001	< 0.001	<0.0002	< 0.005	< 0.005	<0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.005	**0.002**	< 0.001	**0.001**	< 0.001	**0.002**	< 0.005	< 0.001	< 0.05
Antimony (filtered)	< 0.001	< 0.001	<0.0002	< 0.005	< 0.005	<0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.005	**0.001**	< 0.001	< 0.001	< 0.001	**0.002**	< 0.005	< 0.001	< 0.05
Arsenic	**0.003**	**0.003**	**0.0024**	**0.002**	**0.002**	**0.002**	**0.0036**	< 0.05	**0.002**	**0.002**	**0.003**	**0.011**	**0.018**	**0.016**	**0.016**	**0.020**	**0.016**	**0.002**	**0.006**	< 0.05
Arsenic (filtered)	**0.002**	**0.002**	**0.0024**	**0.002**	**0.002**	**0.001**	**0.004**	< 0.05	**0.002**	**0.002**	**0.002**	**0.009**	**0.019**	< 0.05	**0.013**	**0.016**	**0.013**	**0.002**	**0.007**	< 0.05
Beryllium	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	<0.001	< 0.01	< 0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.05
Beryllium (filtered)	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	<0.001	< 0.01	< 0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.05
Bismuth	< 0.005	< 0.005	<0.00005	< 0.005	< 0.005	<0.001	< 0.01	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.05
Bismuth (filtered)	< 0.005	< 0.005	<0.00005	< 0.005	< 0.005	<0.001	< 0.01	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 5	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.05
Cadmium	< 0.0001	< 0.0001	<0.00005	< 0.0002	< 0.0002	**0.0001**	< 0.0001	**0.002**	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	**0.0007**	**0.0004**	**0.004**
Cadmium (filtered)	< 0.0001	< 0.0001	<0.00005	< 0.0002	< 0.0002	**0.0001**	< 0.0001	< 0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0002	< 0.0001	< 0.002	< 0.0001	< 0.0001	< 0.0001	**0.0006**	**0.0004**	< 0.002
Chromium (III+VI)	< 0.001	< 0.001	**0.0004**	< 0.001	< 0.001	**0.001**	**0.002**	< 0.01	**0.002**	< 0.001	**0.022**	**0.006**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.024**	< 0.1
Chromium (III+VI) (filtered)	< 0.001	< 0.001	**0.0003**	< 0.001	< 0.001	<0.001	< 0.001	< 0.01	**0.002**	< 0.001	< 0.001	**0.005**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.011**	< 0.001
Cobalt	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	<0.001	< 0.001	**0.01**	< 0.001	< 0.001	**0.004**	**0.002**	**0.001**	< 0.001	**0.001**	< 0.001	< 0.001	**0.002**	**0.016**	**0.03**
Cobalt (filtered)	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	<0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	**0.002**	**0.001**	< 0.01	< 0.001	< 0.001	< 0.001	**0.003**	**0.006**	< 0.01
Copper	< 0.001	**0.001**	**0.001**	**0.002**	**0.002**	**0.001**	**0.003**	< 0.01	**0.002**	**0.001**	**0.007**	**0.007**	**0.004**	**0.002**	**0.004**	**0.002**	**0.009**	**0.003**	**0.031**	< 0.01
Copper (filtered)	< 0.001	< 0.001	**0.0007**	**0.001**	**0.001**	<0.001	**0.002**	< 0.01	**0.002**	**0.002**	< 0.001	**0.003**	**0.002**	**0.002**	< 0.001	< 0.001	< 0.001	**0.003**	**0.017**	< 0.01
Iron	**0.02**	**0.03**	**0.009**	**0.96**	**0.48**	**1.23**	**1.4**	**0.8**	**1.3**	**0.05**	**2.8**	**1.1**	**0.19**	**0.07**	**0.4**	**0.10**	**0.16**	**0.4**	**5.5**	**2.1**
Iron (filtered)	< 0.01	< 0.01	<0.002	**0.47**	**0.05**	<0.05	< 0.01	< 0.5	< 0.01	< 0.01	< 0.01	**0.53**	**0.12**	< 0.5	**0.04**	**0.04**	< 0.01	**0.08**	< 0.01	< 0.5
Lead	< 0.001	< 0.001	<0.0001	**0.003**	**0.002**	**0.004**	**0.003**	< 0.01	**0.002**	< 0.001	**0.002**	**0.003**	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	**0.006**	< 0.01
Lead (filtered)	< 0.001	< 0.001	<0.0001	**0.003**	< 0.001	<0.001	< 0.001	< 0.01	**0.002**	< 0.001	< 0.001	**0.002**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.003**	**0.006**	< 0.01
Lithium	**0.014**	**0.015**	**0.0098**	**0.017**	**0.018**	**0.019**	**0.02**	**0.05**	**0.016**	**0.013**	**0.014**	**0.36**	**0.17**	**0.062**	**0.058**	**0.051**	**0.021**	**0.17**	**0.18**	**0.28**
Lithium (filtered)	**0.012**	**0.011**	**0.0115**	**0.017**	**0.019**	**0.018**	**0.02**	< 0.001	**0.016**	**0.014**	**0.014**	**0.36**	**0.079**	**0.051**	**0.057**	**0.054**	**0.019**	**0.18**	**0.17**	**0.28**
Manganese	< 0.005	< 0.005	**0.0014**	**0.036**	**0.027**	**0.044**	**0.03**	< 0.05	**0.023**	**0.009**	**0.065**	**0.021**	< 0.01	< 0.005	**0.014**	**0.007**	**0.005**	**0.11**	**0.12**	**0.13**
Manganese (filtered)	< 0.005	< 0.005	**0.0006**	**0.051**	**0.02**	**0.014**	< 0.01	< 0.05	**0.023**	< 0.005	< 0.005	**0.022**	< 0.01	< 0.05	< 0.005	< 0.005	< 0.005	**0.087**	**0.05**	< 0.05
Mercury	**0.00041**	**0.00017**	<0.0001	< 0.0001	< 0.0001	-	-	< 0.001	< 0.0001	< 0.0001	< 0.0001	**0.0001**	-	**0.0004**	**0.0003**	**0.0003**	**0.00036**	< 0.0001	-	< 0.001
Mercury (filtered)	< 0.0001	< 0.0001	<0.0001	< 0.0001	< 0.0001	-	-	< 0.001	< 0.0001	< 0.0001	< 0.0001	**0.0001**	-	**0.0004**	**0.0002**	**0.0002**	< 0.0001	< 0.0001	-	< 0.001
Molybdenum	**0.003**	**0.003**	**0.0031**	**0.006**	**0.006**	**0.005**	**0.007**	< 0.05	**0.004**	**0.004**	**0.004**	**0.077**	**0.076**	**0.072**	**0.045**	**0.067**	**0.061**	**0.015**	**0.018**	< 0.05
Molybdenum (filtered)	**0.001**	**0.002**	**0.0024**	< 0.005	< 0.005	**0.004**	**0.0065**	< 0.05	**0.004**	**0.002**	< 0.001	**0.055**	**0.075**	**0.08**	**0.035**	**0.043**	**0.020**	**0.007**	**0.02**	< 0.05
Nickel	**0.001**	**0.001**	**0.001**	**0.001**	**0.002**	**0.001**	**0.01**	< 0.01	**0.006**	**0.012**	**0.034**	**0.004**	**0.004**	**0.005**	**0.004**	**0.004**	**0.014**	**0.006**	**0.051**	< 0.01
Nickel (filtered)	< 0.001	< 0.001	**0.0009**	**0.001**	**0.002**	<0.001	**0.01**	< 0.01	**0.006**	**0.011**	**0.022**	**0.004**	**0.004**	**0.005**	**0.003**	**0.003**	**0.005**	**0.006**	**0.022**	< 0.01
Selenium	**0.002**	**0.001**	**0.0015**	**0.002**	**0.002**	<0.01	**0.004**	< 0.05	**0.001**	**0.002**	**0.002**	**0.004**	**0.003**	**0.004**	**0.002**	**0.002**	**0.003**	**0.002**	**0.009**	< 0.05
Selenium (filtered)	**0.001**	**0.001**	**0.0016**	**0.002**	**0.002**	<0.01	**0.0036**	< 0.05	**0.001**	**0.002**	**0.002**	**0.004**	**0.004**	< 0.01	**0.003**	**0.002**	**0.003**	**0.002**	**0.006**	< 0.05
Silver	< 0.001	< 0.001	<0.0001	< 0.005	< 0.005	<0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.01
Silver (filtered)	< 0.001	< 0.001	<0.0001	< 0.005	< 0.005	<0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.01
Strontium	**1.5**	**1.6**	**1.41**	**1.8**	**1.9**	**2.06**	**1.4**	**1.7**	**1.5**	**1.7**	**2**	**1.2**	**1.1**	**0.55**	**1.2**	**0.98**	**0.70**	**38**	**25**	**81**
Strontium (filtered)	**1.5**	**1.5**	**1.31**	**1.8**	**2**	**2.1**	**1.4**	**1.7**	**1.4**	**1.6**	**1.7**	**1.2**	**1.4**	**0.75**	**0.91**	**0.88**	**0.69**	**37**	**25**	**51**
Thorium*	< 0.05	< 0.05	<0.0001	**0.14**	< 0.05	**0.002**	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	**0.17**	**0.03**	< 0.05
Thorium* (filtered)	< 0.05	< 0.05	<0.0001	**0.14**	< 0.05	<0.001	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	**0.17**	< 0.01	< 0.05
Tin	-	-	-	< 0.005	< 0.005	-	-	-	-	-	-	**0.007**	-	-	-	-	-	< 0.005	-	-
Tin (filtered)	-	-	-	< 0.005	< 0.005	-	-	-	-	-	-	**0.005**	-	-	-	-	-	< 0.005	-	-
Titanium	< 0.005	< 0.005	<0.001	**0.036**	**0.018**	**0.06**	**0.06**	< 0.05	**0.031**	< 0.005	**0.048**	**0.028**	< 0.01	< 0.05	**0.007**	< 0.005	< 0.005	**0.007**	**0.09**	< 0.05
Titanium (filtered)	< 0.005	< 0.005	<0.001	**0.014**	< 0.005	<0.01	< 0.01	< 0.05	**0.031**	< 0.005	< 0.005	**0.01**	< 0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.05
Uranium	**0.005**	**0.005**	**0.00516**	**0.007**	**0.007**	**0.008**	**0.007**	< 0.05	**0.008**	**0.006**	**0.006**	< 0.005	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.026**	**0.024**	< 0.05
Uranium (filtered)	**0.002**	**0.002**	**0.00445**	**0.007**	**0.006**	**0.005**	**0.005**	< 0.05	**0.008**	**0.004**	**0.002**	< 0.005	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	**0.025**	**0.02**	< 0.05
Vanadium	**0.040**	**0.041**	**0.0387**	**0.029**	**0.031**	**0.03**	**0.04**	< 0.05	**0.031**	**0.030**	**0.042**	**0.19**	**0.35**	**0.58**	**0.4**	**0.50**	**0.38**	**0.007**	**0.05**	< 0.05
Vanadium (filtered)	**0.016**	**0.016**	**0.0382**	**0.029**	**0.031**	**0.03**	**0.03**	< 0.05	**0.031**	**0.027**	**0.017**	**0.19**	**0.15**	**0.4**	**0.33**	**0.45**	**0.29**	**0.007**	**0.02**	< 0.05
Zinc	**0.013**	**0.015**	**0.012**	**0.009**	< 0.005	**0.006**	**0.041**	< 0.05	**0.019**	**0.017**	**0.043**	**0.022**	**0.005**	< 0.05	**0.013**	**0.008**	**0.020**	**0.008**	**0.054**	< 0.05
Zinc (filtered)	**0.013**	**0.011**	**0.011**	< 0.005	< 0.005	<0.005	**0.041**	< 0.05	**0.019**	**0.015**	**0.021**	**0.021**	< 0.005	< 0.05	< 0.005	< 0.005	< 0.005	**0.009**	**0.014**	< 0.05
Zirconium	< 0.01	< 0.01	<0.005	< 0.05	< 0.05	<0.005	< 0.01	< 0.01	< 0.01	< 0.01	**0.02**	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	**0.02**
Zirconium (filtered)	< 0.01	< 0.01	<0.005	< 0.05	< 0.05	<0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01
BTEX																				
Benzene	< 1	< 1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	< 1	< 1	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m&p-Xylenes	< 2	< 2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	< 1	< 1	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	< 1	< 1	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes - Total	< 3	< 3	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH																				
TRH C6-C10	< 20	< 20	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6-C10 less BTEX (F1)	< 20	< 20	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10-C14	< 20	< 20	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10-C36 (Total)	< 40	< 40	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C15-C28	< 40	< 40	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C29-C36	< 40	< 40	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6-C9	< 20	< 20	<20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	< 1	< 1	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	< 20	< 20	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16 less Naphthalene (F2)	< 20	< 20	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C40 (total)	< 50	< 50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	< 50	< 50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	< 50	< 50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity																				
Bicarbonate Alkalinity (as CaCO3)	**390**	**400**	**397**	**410**	**400**	**346**	**370**	**370**	**390**	**410**	**360**	< 20	< 5	**260**	< 5	< 5	< 5	**180**	**210**	**220**
Carbonate Alkalinity (as CaCO3)	< 5	< 5	<1	< 20	**21**	<1	< 5	< 5	< 5	< 5	< 5	**230**	**360**	< 5	**270**	**160**	**130**	< 20	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	< 5	< 5	<1	< 20	< 20	<1	< 5	< 5	< 5	< 5	< 5	**790**	**260**	**190**	**140**	**190**	**90**	< 20	< 5	< 5
Total Alkalinity (as CaCO3)	**390**	**400**	**397**	**410**	**420**	**346**	**370**	**370**	**390**	**410**	**360**	**1000**	**620**	**440**	**420**	**350**	**220**	**180**	**210**	**220**
Alkali Metals																				
Calcium	**58**	**59**	**64**	**84**	**85**	**86**	**57**	**54**	**56**	**71**	**64**	**55**	**50**	**52**	**63**	**77**	**56**	**1400**	**1700**	**2800**
Chloride	**440**	**440**	**466**	**1100**	**1200**	**1150**	**680**	**650**	**740**	**730**	**660**	**540**	**590**	**580**	**560**	**660**	**630**	**20000**	**15000**	**27000**
Magnesium	**62**	**65**	**65**	**100**	**110**	**99**	**63**	**62**	**62**	**70**	**67**	**0.8**	**1.5**	**2**	**2.5**	**1.6**	**0.8**	**1800**	**1200**	**3900**
Potassium	**1.2**	**1.2**	**2**	**3.9**	**5**	**4**	**2.3**	**1.7**	**3.9**	**2.4**	**1.9**	**59**	**48**	**42**	**47**	**49**	**31**	**69**	**48**	**180**
Sodium	**280**	**290**	**282**	**700**	**690**	**668**	**470**	**540**	**650**	**610**	**480**	**640**	**610**	**650**	**590**	**730**	**530**	**9200**	**7000**	**19000**
Sulphate (as SO4)	**54**	**53**	**51**	**97**	**97**	**84**	**72**	**74**	**72**	**75**	**78**	**190**	**210**	**300**	**230**	**330**	**380**	**2400**	**1900**	**2700**
Ionic Balance																				
Calculated Ionic balance	**1%**	**2%**	**0%**	**4%**	**1%**	**2%**	**3%**	**10%**	**12%**	**11%**	**6%**	**25%**	**18%**	**9%**	**19%**	**19%**	**2%**	**0%**	**3%**	**25%**
Inorganics																				
Hardness mg equivalent CaCO3/L	**400**	**410**	**427**	**640**	**650**	**622**	**400**	**450**	**400**	**470**	**440**	**140**	**130**	**140**	**170**	**200**	**140**	**11000**	**9200**	**23000**
Total Dissolved Solids	**1300**	**1300**	**1150**	**2300**	**2300**	**2550**	**1700**	**1500**	**1600**	**1800**	**1700**	**2100**	**2200**	**2100**	**2000**	**2100**	**1900**	**56000**	**34000**	**44000**
Total Suspended Solids	**5.0**	< 5	<5	**240**	**200**	**165**	< 5	**51**	**90**	**39**	**66**	**100**	**10**	**5**	< 5	**18**	**25**	-	**380**	**360**
Ammonia (as N)	< 0.02	< 0.02	<0.01	**0.04**	**0.05**	**0.08**	< 0.02	< 0.02	< 0.02	**0.24**	< 0.02	**9.3**	**4.1**	**5.3**	**4.8**	**3.0**	**0.84**	**1.6**	**0.1**	< 0.02
Conductivity (at 25°C)	**2100**	**2100**	**2000**	**3,900**	**150,000**	**4150**	**2,800**	**2,900**	**3000**	**3000**	**2900**	**5,200**	**3,700**	**3,500**	**3400**	**3500**	**3200**	**50,000**	**36,000**	**62,000**
Ferric Iron - Fe3+	< 0.05	< 0.05	<0.05	**0.96**	**0.48**	<0.05	**1.4**	< 0.5	< 0.5	< 0.5	< 0.05	**0.98**	**0.11**	< 0.5	< 0.5	< 0.5	< 0.05	**0.08**	**5.5**	< 0.5
Ferrous Iron - Fe2+	< 0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	**0.12**	**0.35**	< 0.05	**0.4**	**0.04**	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate & Nitrite (as N)	**3.5**	**3.4**	**3.27**	**3.4**	**3.4**	**3.18**	**4.5**	**4.3**	**3.3**	**3.8**	**4.3**	**1.8**	**1.2**	**1.1**	**1.5**	**2.1**	**1.5**	**1.5**	**2.8**	**0.97**
Nitrate (as N)	**3.5**	**3.4**	**3.27**	**3.4**	**3.4**	**3.18**	**4.5**	**4.3**	**3.3**	**3.8**	**4.2**	**1.7**	**0.82**	**0.91**	**1.3**	**1.2**	**0.94**	**1.4**	**2.3**	**0.97**
Nitrite (as N)	< 0.01	< 0.01	<0.01	< 0.02	< 0.02	<0.01	**0.03**	< 0.01	< 0.01	< 0.01	**0.04**	**0.1**	**0.43**	**2**	**0.22**	**0.91**	**0.60**	**0.04**	**0.53**	< 0.01
pH (at 25°C)	**7.8**	**8.0**	**7.94**	**7.7**	**8.4**	**8.04**	**7.7**	**7.3**	**7.9**	**7.7**	**7.2**	**12**	**12**	**12**	**12**	**11**	**11**	**7.2**	**7.2**	**6.7**
Phosphate total (as P)	**0.15**	**0.18**	<0.01	**0.06**	**0.05**	**0.06**	-	-	**0.03**	**0.12**	**0.24**	**0.04**	-	-	**0.02**	**0.12**	**0.16**	**0.11**	-	-
Phosphorus reactive (as P)	**0.10**	**0.09**	<0.01	**0.04**	**0.03**	<0.01	**0.08**	**0.12**	**0.89**	**0.05**	**0.1**	**0.03**	**0.04**	**0.06**	**0.51**	**0.04**	**0.06**	**0.11**	**0.05**	**0.12**
Silica (calculation from Si filtered)	-	-	**80.4**	**71**	**77**	**77.8**	-	-	-	**80**	-	**120**	-	-	-	**45**		**45**	-	-
Silica (calculation from Si)	**78**	**77

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water
Field ID									
Date									
Lab Name									
Lab Report Number									
Duplicate									
Heavy Metals									
Aluminium	mg/L	0.2		0.2				5	5
Aluminium (filtered)	mg/L	0.2		0.2				5	5
Antimony	mg/L		0.003		0.03				
Antimony (filtered)	mg/L		0.003		0.03				
Arsenic	mg/L		0.01		0.1	0.013		0.1	0.5
Arsenic (filtered)	mg/L		0.01		0.1	0.013		0.1	0.5
Beryllium	mg/L		0.06		0.6			0.1	
Beryllium (filtered)	mg/L		0.06		0.6			0.1	
Bismuth	mg/L								
Bismuth (filtered)	mg/L								
Cadmium	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01
Cadmium (filtered)	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01
Chromium (III+VI)	mg/L		0.05		0.5	0.001		0.1	1
Chromium (III+VI) (filtered)	mg/L		0.05		0.5	0.001		0.1	1
Cobalt	mg/L						0.001	0.05	1
Cobalt (filtered)	mg/L						0.001	0.05	1
Copper	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4
Copper (filtered)	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4
Iron	mg/L	0.3		0.3				0.2	
Iron (filtered)	mg/L	0.3		0.3				0.2	
Lead	mg/L		0.01		0.1	0.0034	0.0044	2	0.1
Lead (filtered)	mg/L		0.01		0.1	0.0034	0.0044	2	0.1
Lithium	mg/L							2.5	
Lithium (filtered)	mg/L							2.5	
Manganese	mg/L	0.1	0.5	0.1	5	1.9		0.2	
Manganese (filtered)	mg/L	0.1	0.5	0.1	5	1.9		0.2	
Mercury	mg/L		0.001		0.01	0.0006		0.002	0.002
Mercury (filtered)	mg/L		0.001		0.01	0.0006		0.002	0.002
Molybdenum	mg/L		0.5		5			0.01	0.15
Molybdenum (filtered)	mg/L		0.5		5			0.01	0.15
Nickel	mg/L		0.02		0.2	0.011	0.07	0.2	1
Nickel (filtered)	mg/L		0.02		0.2	0.011	0.07	0.2	1
Selenium	mg/L		0.01		0.1			0.02	0.02
Selenium (filtered)	mg/L		0.01		0.1			0.02	0.02
Silver	mg/L		0.1		1		0.0014		
Silver (filtered)	mg/L		0.1		1		0.0014		
Strontium	mg/L								
Strontium (filtered)	mg/L								
Thorium*	mg/L								
Thorium* (filtered)	mg/L								
Tin	mg/L								
Tin (filtered)	mg/L								
Titanium	mg/L								
Titanium (filtered)	mg/L								
Uranium	mg/L		0.02		0.2			0.01	0.2
Uranium (filtered)	mg/L		0.02		0.2			0.01	0.2
Vanadium	mg/L							0.1	
Vanadium (filtered)	mg/L							0.1	
Zinc	mg/L	3		3		0.008	0.008	2	20
Zinc (filtered)	mg/L	3		3		0.008	0.008	2	20
Zirconium	mg/L								
Zirconium (filtered)	mg/L								
BTEX									
Benzene	µg/L		1		1	950	700		
Ethylbenzene	µg/L	3	300	3	300				
m&p-Xylenes	µg/L					75			
o-Xylene	µg/L					350			
Toluene	µg/L	25	800	25	800				
Xylenes - Total	µg/L	20	600	20	600				
TRH									
TRH C6-C10	µg/L								
TRH C6-C10 less BTEX (F1)	µg/L								
TRH C10-C14	µg/L								
TRH C10-C36 (Total)	µg/L								
TRH C15-C28	µg/L								
TRH C29-C36	µg/L								
TRH C6-C9	µg/L								
Naphthalene	µg/L					16			
TRH >C10-C16	µg/L								
TRH >C10-C16 less Naphthalene (F2)	µg/L								
TRH >C10-C40 (total)	µg/L								
TRH >C16-C34	µg/L								
TRH >C34-C40	µg/L								
Alkalinity									
Bicarbonate Alkalinity (as CaCO3)	mg/L								
Carbonate Alkalinity (as CaCO3)	mg/L								
Hydroxide Alkalinity (as CaCO3)	mg/L								
Total Alkalinity (as CaCO3)	mg/L								
Alkali Metals									
Calcium	mg/L								1000
Chloride	mg/L	250		250					
Magnesium	mg/L								
Potassium	mg/L								
Sodium	mg/L	180		180					
Sulphate (as SO4)	mg/L	250		250					1000
Ionic Balance									
Calculated Ionic balance	%								
Inorganics									
Hardness mg equivalent CaCO3/L	mg/L	200		200					
Total Dissolved Solids	mg/L	600		600					
Total Suspended Solids	mg/L								
Ammonia (as N)	mg/L	0.41[1]		0.41[1]		0.9	0.91		
Conductivity (at 25°C)	uS/cm								
Ferric Iron - Fe3+	mg/L								
Ferrous Iron - Fe2+	mg/L								
Nitrate & Nitrite (as N)	mg/L								
Nitrate (as N)	mg/L		11.30[3]		113.0[3]	0.7			400
Nitrite (as N)	mg/L		0.91[2]		9.1[2]				30
pH (at 25°C)	pH Units	6.5-8.5		6.5-8.5					
Phosphate total (as P)	mg/L								
Phosphorus reactive (as P)	mg/L							0.05	
Silica (calculation from Si filtered)	mg/L	80		80					
Silica (calculation from Si)	mg/L	80		80					
Total Kjeldahl Nitrogen (as N)	mg/L								5
Total Nitrogen (as N)	mg/L								

Field ID	MBH13	MBH13	**MBH13**	MBH17	MBH17	MBH17	MBH17	MBH17	**MBH17**	MBH19	MBH19	MBH19	MBH19	MBH19	**MBH19**	MBH20	MBH20	MBH20	MBH20	MBH20	MBH20
Date	22/06/2023	8/11/2023	**26/07/2024**	16/12/2021	2/04/2022	19/11/2022	24/06/2023	7/11/2023	**23/07/2024**	16/12/2021	2/04/2022	17/11/2022	24/06/2023	7/11/2023	**25/07/2024**	16/12/2021	2/04/2022	17/11/2022	24/06/2023	7/11/2023	**23/07/2024**
Lab Name	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**
Lab Report Number	1002271	1043049	**1122734**	851898	877251	943244	1002605	1044243	**1121332**	851898	877251	942841	1002605	1044243	**1122482**	851898	877251	942841	1002605	1044243	**1121332**
Duplicate	Primary	Primary	**Primary**	Primary	Primary	Primary	Primary	Primary	**Primary**	Primary	Primary	Primary	Primary	Primary	**Primary**	Primary	Primary	Primary	Primary	Primary	**Primary**
Heavy Metals																					
Aluminium	**1.4**	**0.43**	**0.74**	**0.15**	**0.11**	**2.3**	**0.15**	< 0.05	**1.3**	< 0.5	**0.55**	**0.24**	**0.25**	< 0.5	0.06	**0.15**	**0.27**	**0.16**	< 0.05	< 0.5	**0.21**
Aluminium (filtered)	< 0.05	< 0.05	**0.071**	**0.08**	< 0.01	< 0.05	< 0.05	-	**0.33**	< 0.5	**0.02**	< 0.05	< 0.05	< 0.5	< 0.05	< 0.05	< 0.01	**0.16**	< 0.05	< 0.5	< 0.05
Antimony	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001
Antimony (filtered)	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.05	< 0.001	-	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.005	< 0.001	< 0.001	< 0.001	< 0.05	**0.002**
Arsenic	< 0.001	**0.001**	**0.004**	**0.002**	**0.001**	< 0.05	< 0.001	< 0.001	**0.002**	< 0.01	**0.004**	**0.012**	**0.001**	< 0.01	**0.008**	**0.002**	**0.003**	**0.01**	< 0.001	< 0.01	< 0.001
Arsenic (filtered)	< 0.001	**0.002**	**0.004**	< 0.001	**0.001**	< 0.05	< 0.001	-	< 0.001	< 0.01	**0.003**	**0.012**	**0.001**	< 0.01	**0.008**	**0.002**	**0.002**	**0.01**	< 0.001	< 0.01	< 0.001
Beryllium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.05	< 0.001	< 0.001	< 0.001	< 0.01	< 0.01	**0.35**	< 0.001	< 0.01	< 0.001	< 0.001	< 0.01	**0.35**	< 0.001	< 0.01	< 0.001
Beryllium (filtered)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.05	< 0.001	-	< 0.001	< 0.01	< 0.01	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.01	**0.008**	< 0.001	< 0.01	< 0.001
Bismuth	< 0.5	< 0.005	< 0.005	< 0.005	< 0.01	< 0.05	< 0.005	< 0.005	< 0.005	< 0.05	< 0.01	< 0.05	< 0.005	< 0.05	< 0.005	< 0.005	< 0.01	< 0.05	< 0.005	< 0.05	< 0.005
Bismuth (filtered)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.01	< 0.05	< 0.005	-	< 0.005	< 0.05	< 0.01	< 0.05	< 0.005	< 0.05	< 0.005	< 0.005	< 0.01	< 0.05	< 0.005	< 0.05	< 0.005
Cadmium	< 0.0002	**0.0012**	**0.0006**	< 0.0002	< 0.0001	**0.007**	< 0.0001	< 0.0001	< 0.0001	< 0.002	**0.0029**	**0.0015**	**0.0007**	**0.0027**	**0.0026**	**0.0009**	**0.0015**	< 0.0001	**0.0001**	< 0.0001	**0.0001**
Cadmium (filtered)	< 0.0002	**0.0010**	**0.0006**	< 0.0002	< 0.0001	< 0.002	< 0.0001	-	< 0.0001	< 0.002	**0.0027**	**0.0015**	**0.0007**	**0.0026**	**0.0026**	**0.001**	**0.0015**	< 0.0001	**0.0001**	< 0.0001	< 0.0001
Chromium (III+VI)	< 0.001	**0.009**	**0.004**	**0.002**	**0.003**	**0.04**	**0.001**	< 0.001	**0.004**	< 0.01	**0.021**	**0.07**	**0.002**	< 0.001	**0.003**	**0.003**	**0.011**	< 0.001	**0.002**	< 0.001	**0.002**
Chromium (III+VI) (filtered)	< 0.001	**0.007**	< 0.001	< 0.001	**0.002**	< 0.01	**0.001**	-	< 0.001	< 0.01	**0.007**	< 0.001	**0.002**	< 0.001	< 0.001	**0.002**	**0.003**	< 0.001	**0.002**	< 0.001	< 0.001
Cobalt	< 0.001	**0.003**	**0.0028**	< 0.001	< 0.001	**0.03**	< 0.001	< 0.001	**0.001**	< 0.01	**0.006**	< 0.001	**0.001**	< 0.001	**0.0019**	**0.007**	**0.009**	< 0.001	< 0.001	< 0.001	**0.002**
Cobalt (filtered)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	-	< 0.001	< 0.01	**0.004**	< 0.001	**0.001**	< 0.001	**0.0019**	**0.007**	**0.005**	< 0.001	< 0.001	< 0.001	< 0.001
Copper	< 0.001	**0.033**	**0.01**	**0.002**	**0.002**	< 0.01	**0.002**	**0.001**	**0.004**	< 0.01	**0.036**	< 0.001	**0.007**	**0.041**	**0.11**	**0.005**	**0.049**	< 0.001	< 0.001	**0.020**	**0.023**
Copper (filtered)	**0.018**	**0.027**	**0.01**	**0.001**	**0.006**	< 0.01	**0.002**	-	< 0.001	< 0.01	**0.023**	< 0.001	**0.007**	**0.044**	**0.054**	**0.005**	**0.039**	< 0.001	< 0.001	< 0.001	< 0.001
Iron	**1.7**	**0.52**	**1.1**	**0.31**	**0.05**	**0.43**	**0.18**	**0.04**	**0.79**	**0.56**	**1.1**	**0.08**	**0.54**	< 0.5	**0.14**	**0.31**	**0.54**	< 0.01	**0.39**	< 0.5	**0.63**
Iron (filtered)	**0.06**	< 0.01	**0.05**	< 0.05	< 0.01	< 0.5	< 0.01	-	**0.17**	< 0.5	< 0.01	**0.083**	**0.01**	< 0.5	< 0.01	**0.1**	< 0.01	< 0.01	**0.08**	< 0.5	**0.06**
Lead	< 0.001	**0.003**	**0.002**	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.01	**0.012**	< 0.001	**0.005**	< 0.001	**0.011**	**0.002**	**0.007**	< 0.001	< 0.001	< 0.001	**0.002**
Lead (filtered)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	-	< 0.001	< 0.01	**0.012**	< 0.001	**0.005**	< 0.001	**0.008**	**0.002**	**0.006**	< 0.001	< 0.001	< 0.001	**0.003**
Lithium	**0.2**	**0.20**	**0.13**	**0.007**	**0.007**	**0.06**	**0.008**	**0.007**	**0.007**	**0.53**	**0.87**	**0.65**	**0.97**	**0.66**	**0.35**	**0.36**	**0.58**	**0.62**	**0.74**	**0.44**	**0.32**
Lithium (filtered)	**0.2**	**0.20**	**0.13**	**0.007**	**0.007**	**0.006**	**0.008**	-	**0.006**	**0.51**	**0.62**	**0.22**	**0.97**	**0.59**	**0.35**	**0.42**	**0.46**	**0.36**	**0.74**	**0.45**	**0.36**
Manganese	**0.005**	**0.065**	**0.053**	**0.008**	< 0.01	**0.11**	< 0.005	< 0.005	**0.029**	**0.089**	**0.04**	**0.13**	**0.021**	< 0.05	**0.033**	**0.37**	**0.5**	**0.25**	**0.29**	**0.55**	**2.9**
Manganese (filtered)	**0.005**	**0.009**	< 0.005	**0.007**	< 0.01	< 0.05	< 0.005	-	< 0.005	**0.089**	**0.03**	**0.046**	**0.021**	< 0.05	**0.031**	**0.4**	**0.49**	**0.22**	**0.29**	**0.55**	**3**
Mercury	< 0.0001	**0.0017**	< 0.0001	< 0.0001	-	< 0.001	< 0.0001	-	< 0.0001	< 0.001	-	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-	< 0.001	< 0.0001		**0.0003**
Mercury (filtered)	**0.0012**	**0.0010**	< 0.0001	< 0.0001	-	< 0.001	< 0.0001	-	< 0.0001	< 0.001	-	< 0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	-	< 0.001	< 0.0001		< 0.0001
Molybdenum	< 0.005	< 0.001	**0.002**	< 0.005	**0.005**	< 0.05	< 0.001	< 0.001	**0.002**	< 0.05	< 0.001	**0.026**	< 0.001	< 0.01	**0.014**	< 0.005	**0.002**	**0.021**	< 0.001	< 0.01	< 0.001
Molybdenum (filtered)	**0.002**	< 0.001	**0.002**	< 0.005	**0.019**	< 0.05	< 0.001	-	**0.002**	< 0.05	**0.015**	**0.026**	< 0.001	< 0.01	< 0.001	< 0.005	**0.005**	**0.021**	< 0.001	< 0.01	**0.001**
Nickel	< 0.001	**0.077**	**0.12**	< 0.001	**0.013**	**0.02**	**0.003**	**0.002**	**0.002**	< 0.01	**0.059**	**0.2**	**0.004**	**0.021**	**0.03**	**0.014**	**0.064**	**0.2**	**0.003**	**0.023**	**0.013**
Nickel (filtered)	**0.008**	**0.059**	**0.13**	< 0.001	**0.008**	< 0.01	**0.003**	-	< 0.001	< 0.01	**0.028**	**0.027**	**0.004**	**0.021**	**0.03**	**0.015**	**0.038**	**0.035**	**0.003**	**0.023**	**0.011**
Selenium	**0.005**	**0.003**	**0.002**	**0.002**	**0.003**	< 0.05	**0.001**	**0.004**	**0.003**	< 0.01	**0.004**	**0.008**	**0.003**	**0.015**	**0.061**	**0.002**	**0.003**	**0.003**	**0.002**	**0.019**	< 0.01
Selenium (filtered)	**0.004**	**0.002**	**0.002**	**0.002**	< 0.001	**0.05**	**0.001**	-	**0.002**	< 0.01	**0.0041**	**0.008**	**0.003**	< 0.01	**0.043**	**0.003**	**0.006**	**0.003**	**0.002**	< 0.01	< 0.01
Silver	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.05	**0.002**	**0.001**	< 0.001	< 0.001	**0.001**	< 0.005	**0.003**	< 0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	< 0.001	< 0.001	< 0.001	< 0.005	< 0.001	< 0.01	< 0.001	-	< 0.001	< 0.05	**0.002**	< 0.001	< 0.001	< 0.001	**0.001**	< 0.005	**0.002**	< 0.001	< 0.001	< 0.001	**0.003**
Strontium	**80**	**53**	**38**	**1.4**	**1.5**	**1.9**	**1.7**	**2.1**	**1.8**	**30**	**29**	**40**	**37**	**39**	**40**	**23**	**22**	**29**	**29**	**29**	**26**
Strontium (filtered)	**78**	**46**	**32**	**1.5**	**1.7**	**1.9**	**1.6**	-	**1.8**	**30**	**29**	**37**	**32**	**37**	**39**	**22**	**23**	**26**	**24**	**27**	**26**
Thorium*	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	**0.37**	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	**0.31**	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05
Thorium* (filtered)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.05	< 0.05	-	< 0.05	**0.37**	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05	**0.31**	< 0.01	< 0.05	< 0.05	< 0.05	< 0.05
Tin	-	-	-	< 0.005	-	-	-	-	-	< 0.05	-	-	-	-	-	< 0.005	-	-	-	-	-
Tin (filtered)	-	-	-	< 0.005	-	-	-	-	-	< 0.05	-	-	-	-	-	< 0.005	-	-	-	-	-
Titanium	< 0.005	**0.018**	**0.021**	< 0.005	< 0.01	< 0.05	**0.048**	< 0.005	**0.052**	< 0.05	**0.02**	< 0.005	**0.78**	< 0.05	< 0.005	< 0.005	< 0.01	< 0.005	**0.62**	< 0.05	**0.009**
Titanium (filtered)	< 0.005	< 0.005	**0.006**	< 0.005	< 0.01	< 0.05	**0.048**	-	**0.009**	< 0.05	< 0.01	< 0.005	**0.78**	< 0.05	< 0.005	< 0.005	< 0.01	< 0.005	**0.62**	< 0.05	< 0.005
Uranium	**0.019**	**0.021**	**0.019**	< 0.005	**0.002**	< 0.05	**0.005**	**0.003**	**0.004**	< 0.05	**0.004**	< 0.001	**0.005**	< 0.05	**0.002**	**0.005**	**0.015**	< 0.001	**0.009**	< 0.05	**0.012**
Uranium (filtered)	**0.015**	**0.009**	**0.018**	< 0.005	**0.003**	< 0.05	**0.005**	-	**0.003**	< 0.05	**0.0037**	< 0.001	**0.005**	< 0.05	**0.002**	**0.006**	**0.018**	< 0.001	**0.009**	< 0.05	**0.013**
Vanadium	< 0.001	< 0.005	**0.013**	**0.019**	**0.02**	< 0.05	**0.02**	**0.020**	**0.027**	< 0.05	**0.02**	**0.036**	**0.008**	< 0.005	**0.038**	**0.005**	**0.02**	**0.036**	**0.006**	< 0.005	< 0.005
Vanadium (filtered)	< 0.001	< 0.005	< 0.005	**0.019**	**0.02**	< 0.05	**0.02**	-	< 0.005	< 0.05	**0.01**	**0.02**	**0.008**	< 0.005	**0.038**	**0.008**	< 0.01	**0.025**	**0.006**	< 0.005	< 0.005
Zinc	**0.034**	**0.032**	**0.039**	**0.013**	**0.022**	< 0.05	**0.011**	**0.012**	**0.03**	< 0.05	**0.3**	**2**	**0.011**	**0.057**	**0.089**	**0.042**	**0.068**	**2.4**	< 0.005	< 0.005	**0.082**
Zinc (filtered)	**0.021**	**0.028**	**0.034**	**0.011**	**0.006**	< 0.05	**0.011**	-	< 0.005	< 0.05	**0.21**	**0.2**	**0.011**	< 0.005	**0.034**	**0.031**	**0.038**	**0.28**	< 0.005	< 0.005	**0.014**
Zirconium	< 0.01	< 0.01	**0.05**	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Zirconium (filtered)	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
BTEX																					
Benzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m&p-Xylenes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes - Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH																					
TRH C6-C10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6-C10 less BTEX (F1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10-C14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10-C36 (Total)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C15-C28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C29-C36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6-C9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16 less Naphthalene (F2)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C40 (total)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alkalinity																					
Bicarbonate Alkalinity (as CaCO3)	**210**	**230**	**240**	**370**	**330**	**350**	**350**	**370**	**330**	**130**	**110**	**110**	**110**	**110**	**110**	**170**	**160**	**160**	**170**	**180**	**200**
Carbonate Alkalinity (as CaCO3)	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	**210**	**230**	**240**	**370**	**330**	**350**	**350**	**370**	**330**	**130**	**110**	**110**	**110**	**110**	**110**	**170**	**160**	**160**	**170**	**180**	**200**
Alkali Metals																					
Calcium	**2000**	**2400**	**1200**	**98**	**130**	**110**	**110**	**120**	**120**	**1600**	**2000**	**1800**	**2000**	**1100**	**1500**	**1400**	**3400**	**1700**	**1900**	**1200**	**1400**
Chloride	**31000**	**29000**	**17000**	**550**	**580**	**500**	**590**	**510**	**520**	**120000**	**99000**	**99000**	**100000**	**87000**	**100000**	**71000**	**78000**	**71000**	**75000**	**68000**	**72000**
Magnesium	**2800**	**3200**	**1700**	**70**	**75**	**85**	**85**	**61**	**86**	**6100**	**6100**	**7900**	**7000**	**5300**	**6400**	**4400**	**4500**	**6100**	**5300**	**3700**	**4400**
Potassium	**280**	**94**	**69**	**2.3**	**5.3**	**2.5**	**3.9**	**2.2**	**2.7**	**1500**	**1300**	**2000**	**4300**	**1300**	**1600**	**1200**	**2000**	**1600**	**3600**	**1100**	**1100**
Sodium	**12000**	**15000**	**9100**	**230**	**970**	**270**	**320**	**250**	**270**	**50000**	**46000**	**64000**	**79000**	**47000**	**52000**	**37000**	**34000**	**49000**	**61000**	**36000**	**36000**
Sulphate (as SO4)	**2600**	**3000**	**2300**	**54**	**63**	**58**	**53**	**62**	**57**	**9100**	**9400**	**10000**	**11000**	**10000**	**8900**	**7200**	**7700**	**8100**	**8300**	**8000**	**7800**
Ionic Balance																					
Calculated Ionic balance	**-4%**	**9%**	**6%**	**-5%**	**42%**	**7%**	**6%**	**0%**	**8%**	**-14%**	**-7%**	**10%**	**18%**	**-2%**	**-2%**	**-2%**	**-7%**	**13%**	**20%**	**-3%**	**-4%**
Inorganics																					
Hardness mg equivalent CaCO3/L	**17000**	**19000**	**10000**	**530**	**630**	**760**	**630**	**560**	**660**	**29000**	**30000**	**190000**	**34000**	**24000**	**30000**	**22000**	**27000**	**130000**	**27000**	**18000**	**21000**
Total Dissolved Solids	**46000**	**42000**	**30000**	**1800**	**1700**	**1200**	**1300**	**1400**	**1400**	**240000**	**210000**	**160000**	**170000**	**110000**	**100000**	**190000**	**160000**	**110000**	**130000**	**91000**	**85000**
Total Suspended Solids	**170**	**290**	**280**	**38**	< 5	**180**	< 5	< 5	**32**	**280**	< 5	**14**	**15**	**80**	**17**	**95**	< 5	**5**	**21**	**22**	**25**
Ammonia (as N)	**0.002**	< 0.001	**0.05**	< 0.01	< 0.02	**0.05**	< 0.02	< 0.02	< 0.02	**0.14**	< 0.02	< 0.02	< 0.02	< 0.02	**3.4**	**0.34**	**0.28**	< 0.02	< 0.02	**0.04**	**3.4**
Conductivity (at 25°C)	**66000**	**60000**	**50000**	**2,200**	**2,300**	**2,300**	**2300**	**2300**	**2300**	**170,000**	**160,000**	**170,000**	**170000**	**150000**	**170000**	**140,000**	**130,000**	**140,000**	**140000**	**130000**	**140000**
Ferric Iron - Fe3+	< 0.5	< 0.5	< 0.05	**0.31**	**0.05**	< 0.5	< 0.5	< 0.5	-	**0.56**	**1.1**	**0.08**	< 0.5	< 0.5	< 0.05	**0.31**	**0.54**	< 0.05	< 0.5	< 0.5	-
Ferrous Iron - Fe2+	< 0.05	< 0.05	**0.05**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5
Nitrate & Nitrite (as N)	**0.87**	**0.99**	**1.2**	**1.9**	**2**	**2.1**	**2.4**	**1.2**	**1.7**	**0.33**	**0.56**	**0.22**	**0.46**	**0.31**	**0.33**	**0.68**	**0.4**	**0.36**	**0.34**	**0.11**	< 0.01
Nitrate (as N)	**0.87**	**0.98**	**1.2**	**1.9**	**2**	**2.1**	**2.4**	**1.2**	**1.7**	**0.33**	**0.54**	**0.03**	**0.46**	**0.30**	**0.33**	**0.66**	**0.32**	**0.04**	**0.34**	**0.10**	< 0.01
Nitrite (as N)	< 0.01	< 0.01	< 0.01	< 0.02	**0.02**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	**0.02**	< 0.01	< 0.01	< 0.01	< 0.01	**0.02**	**0.08**	< 0.01	< 0.01	< 0.01	< 0.01
pH (at 25°C)	**7.1**	**6.5**	**7**	**7.4**	**7.4**	**7.2**	**7.6**	**7.0**	**7.1**	**6.

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water
Heavy Metals									
Aluminium	mg/L	0.2		0.2				5	5
Aluminium (filtered)	mg/L	0.2		0.2				5	5
Antimony	mg/L		0.003		0.03				
Antimony (filtered)	mg/L		0.003		0.03				
Arsenic	mg/L		0.01		0.1	0.013		0.1	0.5
Arsenic (filtered)	mg/L		0.01		0.1	0.013		0.1	0.5
Beryllium	mg/L		0.06		0.6			0.1	
Beryllium (filtered)	mg/L		0.06		0.6			0.1	
Bismuth	mg/L								
Bismuth (filtered)	mg/L								
Cadmium	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01
Cadmium (filtered)	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01
Chromium (III+VI)	mg/L		0.05		0.5	0.001		0.1	1
Chromium (III+VI) (filtered)	mg/L		0.05		0.5	0.001		0.1	1
Cobalt	mg/L						0.001	0.05	1
Cobalt (filtered)	mg/L						0.001	0.05	1
Copper	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4
Copper (filtered)	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4
Iron	mg/L	0.3		0.3				0.2	
Iron (filtered)	mg/L	0.3		0.3				0.2	
Lead	mg/L		0.01		0.1	0.0034	0.0044	2	0.1
Lead (filtered)	mg/L		0.01		0.1	0.0034	0.0044	2	0.1
Lithium	mg/L							2.5	
Lithium (filtered)	mg/L							2.5	
Manganese	mg/L	0.1	0.5	0.1	5	1.9		0.2	
Manganese (filtered)	mg/L	0.1	0.5	0.1	5	1.9		0.2	
Mercury	mg/L		0.001		0.01	0.0006		0.002	0.002
Mercury (filtered)	mg/L		0.001		0.01	0.0006		0.002	0.002
Molybdenum	mg/L		0.5		5			0.01	0.15
Molybdenum (filtered)	mg/L		0.5		5			0.01	0.15
Nickel	mg/L		0.02		0.2	0.011	0.07	0.2	1
Nickel (filtered)	mg/L		0.02		0.2	0.011	0.07	0.2	1
Selenium	mg/L		0.01		0.1			0.02	0.02
Selenium (filtered)	mg/L		0.01		0.1			0.02	0.02
Silver	mg/L		0.1		1		0.0014		
Silver (filtered)	mg/L		0.1		1		0.0014		
Strontium	mg/L								
Strontium (filtered)	mg/L								
Thorium*	mg/L								
Thorium* (filtered)	mg/L								
Tin	mg/L								
Tin (filtered)	mg/L								
Titanium	mg/L								
Titanium (filtered)	mg/L								
Uranium	mg/L		0.02		0.2			0.01	0.2
Uranium (filtered)	mg/L		0.02		0.2			0.01	0.2
Vanadium	mg/L							0.1	
Vanadium (filtered)	mg/L							0.1	
Zinc	mg/L	3		3		0.008	0.008	2	20
Zinc (filtered)	mg/L	3		3		0.008	0.008	2	20
Zirconium	mg/L								
Zirconium (filtered)	mg/L								
BTEX									
Benzene	µg/L		1		1	950	700		
Ethylbenzene	µg/L	3	300	3	300				
m&p-Xylenes	µg/L					75			
o-Xylene	µg/L					350			
Toluene	µg/L	25	800	25	800				
Xylenes - Total	µg/L	20	600	20	600				
TRH									
TRH C6-C10	µg/L								
TRH C6-C10 less BTEX (F1)	µg/L								
TRH C10-C14	µg/L								
TRH C10-C36 (Total)	µg/L								
TRH C15-C28	µg/L								
TRH C29-C36	µg/L								
TRH C6-C9	µg/L								
Naphthalene	µg/L					16			
TRH >C10-C16	µg/L								
TRH >C10-C16 less Naphthalene (F2)	µg/L								
TRH >C10-C40 (total)	µg/L								
TRH >C16-C34	µg/L								
TRH >C34-C40	µg/L								
Alkalinity									
Bicarbonate Alkalinity (as CaCO3)	mg/L								
Carbonate Alkalinity (as CaCO3)	mg/L								
Hydroxide Alkalinity (as CaCO3)	mg/L								
Total Alkalinity (as CaCO3)	mg/L								
Alkali Metals									
Calcium	mg/L								1000
Chloride	mg/L	250		250					
Magnesium	mg/L								
Potassium	mg/L								
Sodium	mg/L	180		180					
Sulphate (as SO4)	mg/L	250		250					1000
Ionic Balance									
Calculated Ionic balance	%								
Inorganics									
Hardness mg equivalent CaCO3/L	mg/L	200		200					
Total Dissolved Solids	mg/L	600		600					
Total Suspended Solids	mg/L								
Ammonia (as N)	mg/L	0.41[1]		0.41[1]		0.9	0.91		
Conductivity (at 25°C)	uS/cm								
Ferric Iron - Fe3+	mg/L								
Ferrous Iron - Fe2+	mg/L								
Nitrate & Nitrite (as N)	mg/L								
Nitrate (as N)	mg/L		11.30[3]		113.0[3]	0.7			400
Nitrite (as N)	mg/L		0.91[2]		9.1[2]				30
pH (at 25°C)	pH Units	6.5-8.5		6.5-8.5					
Phosphate total (as P)	mg/L								
Phosphorus reactive (as P)	mg/L							0.05	
Silica (calculation from Si filtered)	mg/L	80		80					
Silica (calculation from Si)	mg/L	80		80					
Total Kjeldahl Nitrogen (as N)	mg/L								
Total Nitrogen (as N)	mg/L							5	

Field ID	MB21S	MB21S	MB26D	MB26D	MB33S	MB33S	MB33D	MB33D	MB34S	DUP1	DUP1	MB34S	DUP2	DUP2	MB35S	MB35S	MB37D	MB37D
Date	30/01/2024	23/07/2024	30/01/2024	25/07/2024	1/02/2024	24/07/2024	1/02/2024	24/07/2024	1/02/2024	1/02/2024	1/02/2024	24/07/2024	24/07/2024	24/07/2024	31/01/2024	26/07/2024	31/01/2024	24/07/2024
Lab Name	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS	Eurofins	Eurofins	Eurofins	Eurofins
Lab Report Number	1064367	1121332	1064367	1122482	1065212	1121879	1065212	1121879	1065212	1065212	EP2401443	1121879	1121879	EP2410566	1064888	1122734	1064888	1121879
Duplicate	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Primary	Primary	Primary
Aluminium	**0.15**	**0.05**	< 0.05	**0.08**	**0.14**	**0.12**	**3.0**	**3.8**	**0.73**	**0.67**	**0.546**	**4.0**	**3.4**	**7.22**	< 0.05	< 0.05	**1.3**	**0.60**
Aluminium (filtered)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	**0.06**	**2.5**	< 0.05	< 0.05	<0.005	< 0.05	< 0.05	<0.005	< 0.05	< 0.05	< 0.05	< 0.05
Antimony	**0.001**	< 0.001	< 0.005	< 0.001	**0.002**	**0.002**	< 0.001	**0.009**	**0.006**	**0.010**	**0.0109**	**0.031**	**0.032**	**0.0528**	< 0.001	< 0.001	**0.002**	< 0.001
Antimony (filtered)	< 0.001	< 0.001	< 0.005	< 0.001	**0.002**	**0.001**	< 0.001	**0.008**	**0.004**	**0.003**	**0.0062**	**0.030**	**0.031**	**0.0568**	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic	**0.002**	< 0.001	**0.014**	**0.006**	**0.005**	**0.004**	**0.002**	< 0.001	**0.005**	**0.007**	**0.005**	**0.020**	**0.021**	**0.0215**	**0.003**	**0.002**	**0.003**	**0.002**
Arsenic (filtered)	< 0.001	< 0.001	**0.014**	**0.006**	**0.003**	**0.002**	< 0.001	< 0.001	**0.003**	**0.003**	**0.0035**	**0.020**	**0.021**	**0.0221**	**0.002**	**0.002**	**0.002**	< 0.001
Beryllium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	**0.0003**	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium (filtered)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	< 0.001	< 0.001
Bismuth	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.00005	< 0.005	< 0.005	<0.00005	< 0.005	< 0.005	< 0.005	< 0.005
Bismuth (filtered)	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.00005	< 0.005	< 0.005	<0.00005	< 0.005	< 0.005	< 0.005	< 0.005
Cadmium	< 0.0001	< 0.0001	**0.0029**	**0.0025**	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.00005	< 0.0001	< 0.0001	<0.00005	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Cadmium (filtered)	< 0.0001	< 0.0001	**0.0029**	**0.0024**	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.00005	< 0.0001	< 0.0001	<0.00005	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (III+VI)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.001**	**0.023**	**0.041**	**0.004**	**0.002**	**0.0008**	**0.023**	**0.007**	**0.0109**	< 0.001	< 0.001	**0.016**	**0.017**
Chromium (III+VI) (filtered)	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.016**	**0.038**	< 0.001	< 0.001	<0.0002	< 0.001	< 0.001	<0.0002	< 0.001	< 0.001	**0.009**	< 0.001
Cobalt	**0.002**	< 0.001	< 0.001	**0.0012**	**0.002**	< 0.001	**0.003**	**0.004**	**0.002**	**0.002**	**0.0012**	**0.005**	**0.005**	**0.0067**	< 0.001	< 0.001	**0.002**	< 0.001
Cobalt (filtered)	**0.001**	< 0.001	< 0.001	**0.0011**	< 0.001	< 0.001	**0.002**	**0.003**	< 0.001	< 0.001	**0.0008**	< 0.001	< 0.001	**0.0004**	< 0.001	< 0.001	< 0.001	< 0.001
Copper	**0.001**	**0.002**	**0.040**	**0.09**	< 0.001	< 0.001	**0.062**	**0.044**	**0.004**	**0.003**	**0.0024**	**0.006**	**0.007**	**0.0092**	< 0.001	**0.002**	**0.003**	**0.003**
Copper (filtered)	< 0.001	< 0.001	**0.038**	**0.086**	< 0.001	< 0.001	**0.034**	**0.027**	< 0.001	< 0.001	<0.0005	< 0.001	< 0.001	<0.0005	< 0.001	< 0.001	< 0.001	< 0.001
Iron	**2.9**	**0.73**	< 0.05	**0.03**	**1.1**	**1.3**	**1.8**	**0.38**	**4.3**	**4.3**	**2.93**	**16**	**16**	**17.2**	< 0.01	**0.05**	**1.8**	**0.54**
Iron (filtered)	**2.1**	**0.02**	< 0.05	< 0.01	**0.03**	**0.87**	**0.03**	**0.13**	< 0.01	**0.09**	**0.629**	**6.9**	**7.0**	**6.44**	**0.01**	< 0.01	< 0.01	**0.01**
Lead	< 0.001	< 0.001	< 0.001	**0.001**	< 0.001	< 0.001	**0.009**	**0.005**	< 0.001	< 0.001	**0.0005**	**0.004**	**0.004**	**0.0056**	< 0.001	< 0.001	**0.003**	< 0.001
Lead (filtered)	< 0.001	< 0.001	< 0.001	**0.002**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	< 0.001	< 0.001
Lithium	**0.006**	**0.004**	**0.45**	**0.33**	**0.006**	**0.007**	**0.78**	**0.52**	**0.005**	**0.005**	**0.004**	**0.007**	**0.007**	**0.006**	**0.022**	**0.023**	**0.012**	**0.009**
Lithium (filtered)	**0.006**	**0.005**	**0.46**	**0.33**	**0.006**	**0.005**	**0.78**	**0.36**	**0.005**	**0.005**	**0.0031**	< 0.005	< 0.005	**0.0039**	**0.022**	**0.02**	**0.011**	**0.006**
Manganese	**1.2**	**0.27**	**0.29**	**0.033**	**2.2**	**0.99**	**0.040**	**0.006**	**0.52**	**0.63**	**0.471**	**0.89**	**0.92**	**0.8**	< 0.005	< 0.005	**0.11**	**0.13**
Manganese (filtered)	**1.0**	**0.16**	**0.29**	**0.033**	**1.5**	**0.94**	< 0.005	< 0.005	**0.35**	**0.37**	**0.457**	**0.56**	**0.55**	**0.508**	< 0.005	< 0.005	**0.023**	**0.078**
Mercury	< 0.0001	**0.0003**	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	**0.00011**	< 0.0001	< 0.0001	<0.00004	**0.00016**	**0.00021**	<0.0001	< 0.0001	< 0.0001	< 0.0001	**0.00017**
Mercury (filtered)	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.00004	< 0.0001	< 0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum	**0.002**	< 0.001	**0.027**	**0.029**	**0.002**	**0.003**	**0.096**	**0.14**	**0.005**	**0.008**	**0.0059**	**0.003**	**0.004**	**0.0036**	**0.003**	**0.002**	**0.086**	**0.031**
Molybdenum (filtered)	< 0.001	< 0.001	**0.026**	**0.029**	**0.003**	**0.001**	**0.094**	**0.13**	**0.005**	**0.005**	**0.0028**	**0.002**	**0.001**	**0.0026**	< 0.001	< 0.001	**0.025**	**0.009**
Nickel	**0.015**	**0.003**	**0.021**	**0.013**	**0.003**	**0.002**	**0.004**	**0.003**	**0.008**	**0.011**	**0.0088**	**0.018**	**0.019**	**0.0225**	**0.005**	**0.002**	**0.009**	**0.015**
Nickel (filtered)	**0.013**	**0.001**	**0.021**	**0.013**	**0.001**	**0.002**	**0.002**	**0.002**	**0.003**	**0.003**	**0.0053**	**0.023**	**0.022**	**0.0237**	**0.003**	**0.002**	**0.005**	**0.012**
Selenium	**0.001**	**0.001**	**0.033**	**0.055**	< 0.001	< 0.001	< 0.001	**0.001**	**0.001**	**0.003**	**0.0007**	< 0.001	< 0.001	<0.0002	**0.003**	**0.003**	**0.003**	< 0.001
Selenium (filtered)	< 0.001	**0.001**	**0.032**	**0.043**	< 0.001	< 0.001	< 0.001	**0.001**	**0.001**	**0.002**	**0.0009**	< 0.001	< 0.001	<0.0002	**0.002**	**0.003**	**0.001**	< 0.001
Silver	< 0.001	< 0.001	< 0.005	**0.001**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	< 0.001	< 0.001	< 0.005	**0.001**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	<0.0001	< 0.001	< 0.001	< 0.001	< 0.001
Strontium	**1.4**	**1.1**	**45**	**53**	**1.2**	**1.2**	**7.2**	**6.0**	**0.88**	**1.2**	**0.897**	**1.9**	**2.0**	**1.77**	**4.5**	**4.1**	**1.2**	**1.3**
Strontium (filtered)	**1.2**	**1**	**44**	**51**	**1.0**	**1.1**	**1.0**	**4.7**	**0.81**	**0.79**	**0.808**	**1.9**	**1.9**	**1.66**	**4.0**	**4.1**	**0.89**	**1.0**
Thorium*	-	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	**0.0012**	< 0.05	< 0.05	**0.024**	-	< 0.05	-	< 0.05
Thorium* (filtered)	-	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.0001	< 0.05	< 0.05	<0.0001	-	< 0.05	-	< 0.05
Tin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (filtered)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium	-	< 0.005	-	< 0.005	**0.005**	< 0.005	**0.12**	**0.013**	**0.012**	**0.008**	**0.008**	**0.034**	**0.021**	**0.061**	-	< 0.005	-	**0.008**
Titanium (filtered)	-	< 0.005	-	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	<0.001	< 0.005	< 0.005	<0.001	-	< 0.005	-	< 0.005
Uranium	**0.002**	**0.002**	< 0.05	**0.009**	**0.003**	**0.003**	< 0.001	< 0.001	< 0.001	< 0.001	**0.00034**	**0.001**	**0.001**	**0.00122**	**0.014**	**0.013**	**0.008**	**0.012**
Uranium (filtered)	< 0.001	< 0.001	< 0.05	**0.009**	< 0.001	**0.001**	< 0.001	< 0.001	< 0.001	< 0.001	**0.00019**	< 0.001	< 0.001	**0.00013**	**0.005**	**0.007**	**0.003**	**0.003**
Vanadium	**0.012**	< 0.005	**0.081**	**0.026**	**0.005**	**0.016**	< 0.005	< 0.005	**0.014**	**0.024**	**0.0115**	**0.018**	**0.019**	**0.0206**	**0.028**	**0.023**	**0.020**	**0.032**
Vanadium (filtered)	**0.006**	< 0.005	**0.082**	**0.026**	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	**0.0043**	< 0.005	< 0.005	**0.0006**	**0.021**	**0.016**	**0.011**	< 0.005
Zinc	**0.012**	**0.021**	< 0.005	**0.04**	**0.006**	**0.010**	**0.072**	**0.038**	**0.030**	**0.035**	**0.022**	**0.041**	**0.057**	**0.063**	**0.016**	**0.019**	**0.027**	**0.039**
Zinc (filtered)	**0.008**	< 0.005	< 0.005	**0.04**	< 0.005	**0.006**	< 0.005	< 0.005	< 0.005	< 0.005	**0.01**	< 0.005	< 0.005	**0.004**	**0.011**	**0.013**	**0.017**	< 0.005
Zirconium	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.005	**0.03**	< 0.01	<0.005	< 0.01	**0.02**	< 0.01	< 0.01
Zirconium (filtered)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.005	< 0.01	< 0.01	<0.005	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	-	-	-	-	-	-	-	-	<1	<1	<1	< 1	< 1	<1	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	<1	<1	<2	< 1	< 1	<2	-	-	-	-
m&p-Xylenes	-	-	-	-	-	-	-	-	<2	<2	<2	< 2	< 2	<2	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	<1	<1	<2	< 1	< 1	<2	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	<1	<1	<2	< 1	< 1	<2	-	-	-	-
Xylenes - Total	-	-	-	-	-	-	-	-	<3	<3	<2	< 3	< 3	<2	-	-	-	-
TRH C6-C10	-	-	-	-	-	-	-	-	<20	<20	<20	< 20	< 20	<20	-	-	-	-
TRH C6-C10 less BTEX (F1)	-	-	-	-	-	-	-	-	<20	<20	<20	< 20	< 20	<20	-	-	-	-
TRH C10-C14	-	-	-	-	-	-	-	-	<20	<20	**90**	**60**	**100**	**80**	-	-	-	-
TRH C10-C36 (Total)	-	-	-	-	-	-	-	-	<40	<40	**90**	**300**	**460**	**80**	-	-	-	-
TRH C15-C28	-	-	-	-	-	-	-	-	<40	<40	<100	**240**	**360**	<100	-	-	-	-
TRH C29-C36	-	-	-	-	-	-	-	-	<40	<40	<50	< 40	< 40	<50	-	-	-	-
TRH C6-C9	-	-	-	-	-	-	-	-	<20	<20	<20	< 20	< 20	<20	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	-	<1	<1	<5	< 1	< 1	<5	-	-	-	-
TRH >C10-C16	-	-	-	-	-	-	-	-	**60**	**70**	<100	**140**	**180**	**110**	-	-	-	-
TRH >C10-C16 less Naphthalene (F2)	-	-	-	-	-	-	-	-	**60**	**70**	<100	**140**	**180**	**110**	-	-	-	-
TRH >C10-C40 (total)	-	-	-	-	-	-	-	-	**60**	**70**	<100	**250**	**460**	**110**	-	-	-	-
TRH >C16-C34	-	-	-	-	-	-	-	-	<50	<50	<100	**110**	**280**	<100	-	-	-	-
TRH >C34-C40	-	-	-	-	-	-	-	-	<50	<50	<100	< 50	< 50	<100	-	-	-	-
Bicarbonate Alkalinity (as CaCO3)	**340**	**330**	**110**	**99**	**330**	**310**	< 5	< 5	**320**	**320**	**333**	**490**	**480**	**480**	**330**	**320**	**260**	**330**
Carbonate Alkalinity (as CaCO3)	< 5	< 5	< 5	< 5	< 5	< 5	**460**	**500**	< 5	< 5	<1	< 5	< 5	<1	< 5	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	< 5	< 5	< 5	< 5	< 5	< 5	**2200**	**1300**	< 5	< 5	<1	< 5	< 5	<1	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	**340**	**330**	**110**	**99**	**330**	**310**	**2700**	**1800**	**320**	**320**	**333**	**490**	**480**	**480**	**330**	**320**	**260**	**330**
Calcium	**150**	**130**	**1900**	**2100**	**87**	**89**	**500**	**230**	**57**	**66**	**59**	**66**	**66**	**66**	**150**	**150**	**71**	**70**
Chloride	**350**	**330**	**61000**	**60000**	**280**	**270**	**170**	**180**	**450**	**460**	**472**	**640**	**640**	**655**	**1200**	**980**	**420**	**410**
Magnesium	**50**	**40**	**2800**	**2900**	**41**	**43**	**1.1**	< 0.5	**70**	**90**	**68**	**75**	**75**	**70**	**130**	**130**	**42**	**51**
Potassium	**2.4**	**1.8**	**1100**	**1200**	**2**	**2.2**	**270**	**310**	**3.3**	**3.8**	**3**	**4.6**	**4.6**	**4**	**2.4**	**2.4**	**11**	**7.5**
Sodium	**140**	**120**	**31000**	**33000**	**140**	**140**	**350**	**390**	**230**	**290**	**220**	**430**	**430**	**414**	**660**	**620**	**350**	**310**
Sulphate (as SO4)	**23**	**39**	**2600**	**6000**	**42**	**32**	**57**	**24**	**54**	**54**	**34**	**4.3**	**4.8**	**4**	**190**	**190**	**180**	**190**
Calculated Ionic balance	**6%**	**-2%**	**-2%**	**0%**	**-1%**	**3%**	**79%**	**74%**	**-1%**	**-10%**	**-4%**	**4%**	**4%**	**1%**	**4%**	**11%**	**7%**	**1%**
Hardness mg equivalent CaCO3/L	**590**	**480**	**17000**	**17000**	**500**	**400**	**1400**	**570**	**500**	**530**	**427**	**470**	**480**	**453**	**910**	**890**	**340**	**380**
Total Dissolved Solids	**1300**	**980**	**130000**	**75000**	**710**	**850**	**17000**	**3900**	**1000**	**1100**	**1100**	**1700**	**1600**	**1480**	**2500**	**2600**	**1200**	**1200**
Total Suspended Solids	**10**	**6**	**12**	**17**	< 5	**13**	**94**	< 5	**38**	**57**	**87**	**340**	**420**	**1400**	< 5	< 5	**210**	**150**
Ammonia (as N)	**0.19**	< 0.02	**4.0**	**2.8**	**1.1**	**0.14**	**2.0**	**0.94**	< 0.02	< 0.02	<0.01	< 0.02	< 0.02	<0.01	< 0.02	< 0.02	< 0.02	< 0.02
Conductivity (at 25°C)	**1700**	**1600**	**130000**	**130000**	**1400**	**1400**	**9300**	**6500**	**2000**	**1900**	**1970**	**2800**	**2700**	**2560**	**4400**	**4300**	**2000**	**2000**
Ferric Iron - Fe3+	**2.1**	-	< 0.5	< 0.05	< 0.5	< 0.05	< 0.5	**0.13**	< 0.5	< 0.5	<0.05	**6.1**	**2.1**	**0.31**	< 0.5	< 0.05	< 0.5	< 0.05
Ferrous Iron - Fe2+	< 0.05	< 0.05	< 0.05	< 0.05	**1.1**	**0.87**	**0.11**	< 0.05	< 0.05	< 0.05	**0.60**	**0.81**	**4.9**	**6.39**	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate & Nitrite (as N)	**1.0**	**0.72**	**1.4**	**0.99**	**0.57**	**1.2**	**0.59**	**0.48**	**0.48**	**0.53**	**0.26**	< 0.01	< 0.01	<0.01	**2.8**	**2.7**	**0.31**	< 0.01
Nitrate (as N)	**1.0**	**0.69**	**1.3**	**0.98**	**0.56**	**1.1**	**0.56**	**0.45**	**0.48**	**0.53**	**0.26**	< 0.01	< 0.01	<0.01	**2.8**	**2.7**	**0.30**	< 0.01
Nitrite (as N)	< 0.01	**0.03**	**0.03**	< 0.01	< 0.01	**0.02**	**0.03**	**0.04**	< 0.01	< 0.01	<0.01	< 0.01	< 0.01	<0.01	< 0.01	< 0.01	**0.01**	< 0.01
pH (at 25°C)	**7.8**	**7.2**	**6.8**	**7**	**8.0**	**7.8**	**13**	**11**	**7.9**	**8.0**	**7.62**	**7.9**	**8.0**	**7.60**	**7.7**	**7.4**	**7.9**	**8.1**
Phosphate total (as P)	**0.03**	**0.08**	**0.13**	< 0.01	**0.10**	**0.20**	**0.06**	< 0.01	**0.05**	**0.04**	**0.03**	**0.22**	**0.14**	**0.52**	**0.15**	**0.17**	**0.16**	**0.23**
Phosphorus reactive (as P)	**0.03**	**0.02**	**0.06**	**0.05**	**0.05**	**0.06**	< 0.01	**0.05**	< 0.01	< 0.01	<0.01	**0.06**	**0.06**	<0.01	< 0.01	**0.08**	< 0.01	**0.08**
Silica (calculation from Si filtered)	**46**	-	**38**	-	**53**	-	< 0.1	-	**50**	**51**	**48.6**	-	-	**44.6**	**74**	-	**40**	-
Silica (calculation from Si)	-	**45**	-	**33**	-	**48**	-	**1.7**	-	-	**56.9**	**42**	**42**	-	-	**71**	-	**38**
Total Kjeldahl Nitrogen (as N)	**0.2**	<0.2	**2.6**	**2.1**	**0.6**	**0.2**	**1.4**	**3.5**	< 0.2	< 0.2	**0.2**	**0.4**	**0.4**	**2.4**	< 0.2	< 0.2	< 0.2	**0.5**
Total Nitrogen (as N)	**1.2**	**0.8**	**4.0**	**3.1**	**1.7**	**1.4**	**2.0**	**4.0**	**0.48**	**0.6**	**0.5**	**0.4**	**0.4**	**2.4**	**2.9**	**2.7**	**0.5**	**0.5**

[1] A dividing factor of 1.21589 has been applied to the ADWG (2011) Drinking Water guideline as conversion from ammonia (as NH3) to ammonia (as N)
[2] A dividing factor of 3.28443 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrite (as N02) to nitrite (as N)
[3] A dividing factor of 4.42664 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrate (as N03) to nitrate (as N)

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water	MB38D 31/01/2024 Eurofins 1064888 Primary	MB38D 26/07/2024 Eurofins 1122734 Primary	MB39D 30/01/2024 Eurofins 1064367 Primary	MB39D 25/07/2024 Eurofins 1122482 Primary	MB40D 1/02/2024 Eurofins 1065212 Primary	MB40D 25/07/2024 Eurofins 1122482 Primary
Heavy Metals															
Aluminium	mg/L	0.2		0.2				5	5	**4.1**	**5.7**	**1.1**	**1.4**	**1.4**	**0.52**
Aluminium (filtered)	mg/L	0.2		0.2				5	5	< 0.05	< 0.05	< 0.05	< 0.05	**0.46**	**0.27**
Antimony	mg/L		0.003		0.03					< 0.001	< 0.001	**0.002**	< 0.001	**0.010**	**0.019**
Antimony (filtered)	mg/L		0.003		0.03					< 0.001	< 0.001	< 0.001	< 0.001	**0.010**	**0.009**
Arsenic	mg/L		0.01		0.1	0.013		0.1	0.5	**0.015**	**0.02**	**0.004**	**0.002**	**0.009**	**0.003**
Arsenic (filtered)	mg/L		0.01		0.1	0.013		0.1	0.5	**0.006**	**0.014**	**0.003**	**0.002**	**0.002**	< 0.001
Beryllium	mg/L		0.06		0.6			0.1		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium (filtered)	mg/L		0.06		0.6			0.1		< 0.001	< 0.001	**0.002**	< 0.001	< 0.001	< 0.001
Bismuth	mg/L									< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Bismuth (filtered)	mg/L									< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Cadmium	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	**0.0002**
Cadmium (filtered)	mg/L		0.002		0.02	0.0002	0.0055	0.01	0.01	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	**0.0002**
Chromium (III+VI)	mg/L		0.05		0.5	0.001		0.1	1	**0.019**	**0.02**	**0.004**	**0.005**	**0.015**	**0.01**
Chromium (III+VI) (filtered)	mg/L		0.05		0.5	0.001		0.1	1	< 0.001	< 0.001	< 0.001	< 0.001	**0.013**	**0.005**
Cobalt	mg/L						0.001	0.05	1	**0.005**	**0.006**	**0.004**	**0.0034**	**0.002**	**0.0017**
Cobalt (filtered)	mg/L						0.001	0.05	1	**0.001**	< 0.001	**0.002**	**0.001**	**0.002**	**0.0014**
Copper	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4	**0.015**	**0.017**	**0.005**	**0.012**	**0.017**	**0.026**
Copper (filtered)	mg/L	1	2	1	20	0.0014	0.0013	0.2	0.4	< 0.001	< 0.001	< 0.001	**0.009**	**0.016**	**0.011**
Iron	mg/L	0.3		0.3				0.2		**29**	**28**	**2.1**	**1.7**	**0.14**	**0.05**
Iron (filtered)	mg/L	0.3		0.3				0.2		**0.05**	**2.1**	< 0.01	< 0.01	**0.08**	**0.01**
Lead	mg/L		0.01		0.1	0.0034	0.0044	2	0.1	**0.020**	**0.027**	**0.002**	**0.002**	< 0.001	**0.002**
Lead (filtered)	mg/L		0.01		0.1	0.0034	0.0044	2	0.1	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Lithium	mg/L							2.5		**0.074**	**0.051**	**0.015**	**0.011**	**0.55**	**0.64**
Lithium (filtered)	mg/L							2.5		**0.073**	**0.051**	**0.013**	**0.011**	**0.53**	**0.64**
Manganese	mg/L	0.1	0.5	0.1	5	1.9		0.2		**0.11**	**0.18**	**1.5**	**1.3**	< 0.005	< 0.005
Manganese (filtered)	mg/L	0.1	0.5	0.1	5	1.9		0.2		**0.066**	**0.14**	**1.4**	**0.98**	< 0.005	< 0.005
Mercury	mg/L		0.001		0.01	0.0006		0.002	0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	mg/L		0.001		0.01	0.0006		0.002	0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum	mg/L		0.5		5			0.01	0.15	**0.002**	**0.001**	**0.008**	**0.005**	**0.33**	**0.53**
Molybdenum (filtered)	mg/L		0.5		5			0.01	0.15	**0.002**	< 0.001	**0.002**	**0.005**	**0.33**	**0.53**
Nickel	mg/L		0.02		0.2	0.011	0.07	0.2	1	**0.078**	**0.043**	**0.010**	**0.054**	**0.015**	**0.008**
Nickel (filtered)	mg/L		0.02		0.2	0.011	0.07	0.2	1	**0.040**	**0.035**	**0.007**	**0.031**	**0.014**	**0.007**
Selenium	mg/L		0.01		0.1			0.02	0.02	**0.002**	< 0.001	**0.001**	**0.024**	**0.003**	**0.019**
Selenium (filtered)	mg/L		0.01		0.1			0.02	0.02	**0.001**	< 0.001	< 0.001	**0.016**	**0.003**	**0.011**
Silver	mg/L		0.1		1		0.0014			< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	mg/L		0.1		1		0.0014			< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Strontium	mg/L									**8.4**	**6.8**	**2.4**	**2.6**	**1.3**	**2**
Strontium (filtered)	mg/L									**5.9**	**6.1**	**2.3**	**2.6**	**0.11**	**1.9**
Thorium*	mg/L									-	< 0.05	-	< 0.05	< 0.05	< 0.05
Thorium* (filtered)	mg/L									-	< 0.05	-	< 0.05	< 0.05	< 0.05
Tin	mg/L									-	-	-	-	-	-
Tin (filtered)	mg/L									-	-	-	-	-	-
Titanium	mg/L									-	**0.22**	-	**0.033**	< 0.005	< 0.005
Titanium (filtered)	mg/L									-	< 0.005	-	< 0.005	< 0.005	< 0.005
Uranium	mg/L		0.02		0.2			0.01	0.2	**0.024**	**0.03**	**0.011**	**0.011**	< 0.001	< 0.001
Uranium (filtered)	mg/L		0.02		0.2			0.01	0.2	**0.008**	**0.011**	**0.005**	**0.01**	< 0.001	< 0.001
Vanadium	mg/L							0.1		**0.10**	**0.12**	**0.016**	< 0.005	**0.15**	**0.056**
Vanadium (filtered)	mg/L							0.1		< 0.005	< 0.005	< 0.005	< 0.005	**0.10**	**0.013**
Zinc	mg/L	3		3		0.008	0.008	2	20	**0.047**	**0.089**	**0.022**	**0.025**	**0.018**	**0.012**
Zinc (filtered)	mg/L	3		3		0.008	0.008	2	20	< 0.005	**0.005**	**0.012**	**0.025**	< 0.005	< 0.005
Zirconium	mg/L									< 0.01	**0.01**	< 0.01	< 0.01	< 0.01	< 0.01
Zirconium (filtered)	mg/L									< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
BTEX															
Benzene	µg/L		1		1	950	700			-	-	-	-	-	-
Ethylbenzene	µg/L	3	300	3	300					-	-	-	-	-	-
m&p-Xylenes	µg/L					75				-	-	-	-	-	-
o-Xylene	µg/L					350				-	-	-	-	-	-
Toluene	µg/L	25	800	25	800					-	-	-	-	-	-
Xylenes - Total	µg/L	20	600	20	600					-	-	-	-	-	-
TRH															
TRH C6-C10	µg/L									-	-	-	-	-	-
TRH C6-C10 less BTEX (F1)	µg/L									-	-	-	-	-	-
TRH C10-C14	µg/L									-	-	-	-	-	-
TRH C10-C36 (Total)	µg/L									-	-	-	-	-	-
TRH C15-C28	µg/L									-	-	-	-	-	-
TRH C29-C36	µg/L									-	-	-	-	-	-
TRH C6-C9	µg/L									-	-	-	-	-	-
Naphthalene	µg/L					16				-	-	-	-	-	-
TRH >C10-C16	µg/L									-	-	-	-	-	-
TRH >C10-C16 less Naphthalene (F2)	µg/L									-	-	-	-	-	-
TRH >C10-C40 (total)	µg/L									-	-	-	-	-	-
TRH >C16-C34	µg/L									-	-	-	-	-	-
TRH >C34-C40	µg/L									-	-	-	-	-	-
Alkalinity															
Bicarbonate Alkalinity (as CaCO3)	mg/L									**380**	**340**	**300**	**320**	< 5	< 5
Carbonate Alkalinity (as CaCO3)	mg/L									< 5	< 5	< 5	< 5	**530**	**490**
Hydroxide Alkalinity (as CaCO3)	mg/L									< 5	< 5	< 5	< 5	**960**	**1200**
Total Alkalinity (as CaCO3)	mg/L									**380**	**340**	**300**	**320**	**1500**	**1700**
Alkali Metals															
Calcium	mg/L								1000	**250**	**240**	**170**	**150**	**110**	**360**
Chloride	mg/L	250		250						**1700**	**1700**	**860**	**810**	**340**	**470**
Magnesium	mg/L									**270**	**250**	**71**	**64**	<0.5	< 0.5
Potassium	mg/L									**4.7**	**4.6**	**12**	**13**	**300**	**380**
Sodium	mg/L	180		180						**780**	**710**	**600**	**560**	**400**	**450**
Sulphate (as SO4)	mg/L	250		250					1000	**390**	**370**	**220**	**350**	**156**	**370**
Ionic Balance															
Calculated Ionic balance	%									**5%**	**2%**	**10%**	**3%**	**42%**	**41%**
Inorganics															
Hardness mg equivalent CaCO3/L	mg/L	200		200						**1700**	**1600**	**710**	**630**	**300**	**900**
Total Dissolved Solids	mg/L	600		600						**3300**	**3600**	**2200**	**2300**	**5500**	**4000**
Total Suspended Solids	mg/L									**400**	< 5	**55**	**95**	< 5	**13**
Ammonia (as N)	mg/L	0.41[1]		0.41[1]		0.9	0.91			< 0.02	**0.19**	**1.8**	**0.42**	**5.5**	**1.7**
Conductivity (at 25°C)	uS/cm									**6300**	**6000**	**3900**	**3800**	**5300**	**6700**
Ferric Iron - Fe3+	mg/L									< 0.5	-	< 0.5	< 0.05	< 0.5	< 0.05
Ferrous Iron - Fe2+	mg/L									< 0.05	**2.1**	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate & Nitrite (as N)	mg/L									**0.02**	< 0.01	**0.49**	**0.05**	**0.03**	**0.57**
Nitrate (as N)	mg/L		11.30[3]		113.0[3]	0.7			400	**0.02**	< 0.01	**0.48**	**0.03**	**0.03**	**0.55**
Nitrite (as N)	mg/L		0.91[2]		9.1[2]				30	< 0.01	< 0.01	**0.01**	**0.03**	< 0.01	**0.02**
pH (at 25 °C)	pH Units	6.5-8.5		6.5-8.5						**7.4**	**6.8**	**8.1**	**8.1**	**12**	**11**
Phosphate total (as P)	mg/L									**0.25**	**0.2**	**0.10**	**0.12**	**0.09**	**0.04**
Phosphorus reactive (as P)	mg/L							0.05		**0.03**	**0.06**	**0.06**	**0.08**	< 0.01	**0.03**
Silica (calculation from Si filtered)	mg/L	80		80						**51**	**-**	**38**	**-**	< 0.1	**-**
Silica (calculation from Si)	mg/L	80		80						-	**51**	-	**32**	-	**1.4**
Total Kjeldahl Nitrogen (as N)	mg/L									< 0.2	**0.5**	**1.8**	**0.7**	**8.6**	**12**
Total Nitrogen (as N)	mg/L							5		< 0.2	**0.5**	**2.3**	**0.7**	**8.6**	**13**

[1] A dividing factor of 1.21589 has been applied to the ADWG (2011) Drinking Water guideline as conversion from ammonia (as NH3) to ammonia (as N)
[2] A dividing factor of 3.28443 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrite (as N02) to nitrite (as N)
[3] A dividing factor of 4.42664 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrate (as N03) to nitrate (as N)

Table 5 - Comparison of Surface Water Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water	Field ID	SW01	SW01	DUP1S	DUP1S	SW01	SW01	SW01	SW2	SW02	SW02
								Date	4/04/2022	20/11/2022	4/04/2022	4/04/2022	26/06/2023	9/11/2023	27/07/2024	4/04/2022	25/05/2022	20/11/2022
								Lab Name	Eurofins	Eurofins	Eurofins	ALS	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
								Lab Report Number	878084	943366	878084	EP2204125	1002960	1043857	1122734	878084	892237	943244
								Duplicate	Primary	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Primary	Primary	Primary	Primary	Primary
Heavy Metals																		
Aluminium	mg/L	0.2				5	5		**7**	**0.09**	**0.2**	**5.85**	< 0.05	< 0.5	**0.48**	**0.08**	**0.51**	< 0.5
Aluminium (filtered)	mg/L	0.2				5	5		**0.02**	< 0.05	**0.11**	<0.1	< 0.05	< 0.5	**0.48**	**0.01**	< 0.01	< 5
Antimony	mg/L		0.03						< 0.001	< 0.05	< 0.001	<0.01	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.05
Antimony (filtered)	mg/L		0.03						**0.001**	< 0.05	< 0.001	<0.01	< 0.001	< 0.05	< 0.001	< 0.001	< 0.001	< 0.05
Arsenic	mg/L		0.1	0.013		0.1	0.5		**0.009**	< 0.05	**0.003**	<0.01	**0.005**	**0.016**	**0.03**	**0.005**	**0.002**	< 0.05
Arsenic (filtered)	mg/L		0.1	0.013		0.1	0.5		**0.011**	< 0.05	**0.005**	<0.01	**0.004**	< 0.01	**0.03**	**0.008**	**0.001**	< 0.05
Beryllium	mg/L		0.6			0.1			< 0.01	< 0.01	< 0.01	<0.01	< 0.001	< 0.01	< 0.001	< 0.01	< 0.01	< 0.05
Beryllium (filtered)	mg/L		0.6			0.1			< 0.01	< 0.01	< 0.01	<0.01	< 0.001	< 0.01	< 0.001	< 0.01	< 0.01	< 0.05
Bismuth	mg/L								< 0.01	< 0.05	< 0.01	<0.01	< 0.005	< 0.05	< 0.005	< 0.01	< 0.01	< 0.05
Bismuth (filtered)	mg/L								< 0.01	< 5	< 0.01	<0.01	< 0.005	< 0.05	< 0.005	< 0.01	< 0.01	< 0.05
Cadmium	mg/L		0.02	0.0002	0.0055	0.01	0.01		< 0.0001	< 0.002	< 0.0001	<0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.002
Cadmium (filtered)	mg/L		0.02	0.0002	0.0055	0.01	0.01		< 0.0001	< 0.002	< 0.0001	<0.001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.002
Chromium (III+VI)	mg/L		0.5	0.001		0.1	1		**0.066**	< 0.01	**0.006**	**0.036**	< 0.001	< 0.001	**0.002**	< 0.001	**0.002**	< 0.01
Chromium (III+VI) (filtered)	mg/L		0.5	0.001		0.1	1		< 0.001	< 0.01	< 0.001	<0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01
Cobalt	mg/L				0.001	0.05	1		**0.022**	< 0.01	**0.006**	<0.01	< 0.001	< 0.001	< 0.01	**0.002**	**0.002**	< 0.01
Cobalt (filtered)	mg/L				0.001	0.05	1		< 0.001	< 0.01	< 0.001	<0.01	< 0.001	< 0.001	< 0.01	< 0.001	**0.002**	< 0.01
Copper	mg/L	1	20	0.0014	0.0013	0.2	0.4		**0.016**	< 0.01	**0.005**	<0.01	< 0.001	< 0.001	< 0.001	**0.005**	< 0.001	< 0.01
Copper (filtered)	mg/L	1	20	0.0014	0.0013	0.2	0.4		**0.005**	< 0.01	**0.005**	<0.01	< 0.001	< 0.001	< 0.001	**0.004**	< 0.001	< 0.01
Iron	mg/L	0.3				0.2			**11**	< 0.5	**0.41**	**8.33**	< 0.01	**0.59**	**0.69**	**0.2**	**0.56**	< 0.5
Iron (filtered)	mg/L	0.3				0.2			**0.08**	< 0.5	**0.1**	<0.5	< 0.01	< 0.5	**0.03**	**0.27**	**0.01**	< 0.5
Lead	mg/L		0.1	0.0034	0.0044	2	0.1		**0.004**	< 0.01	< 0.001	<0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01
Lead (filtered)	mg/L		0.1	0.0034	0.0044	2	0.1		< 0.001	< 0.01	< 0.001	<0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01
Lithium	mg/L					2.5			**0.27**	**0.32**	**0.28**	**0.266**	**0.35**	**0.23**	**0.24**	**0.38**	**0.36**	**1.9**
Lithium (filtered)	mg/L					2.5			**0.26**	**0.19**	**0.26**	**0.257**	**0.32**	**0.21**	**0.24**	**0.36**	**0.35**	**1.6**
Manganese	mg/L	0.1	5	1.9		0.2			**0.18**	< 0.05	**0.12**	**0.179**	**0.021**	< 0.05	**0.065**	**0.07**	**0.5**	< 0.05
Manganese (filtered)	mg/L	0.1	5	1.9		0.2			**0.05**	< 0.05	**0.01**	**0.141**	**0.019**	< 0.05	**0.065**	**0.05**	**0.34**	< 0.05
Mercury	mg/L		0.01	0.0006		0.002	0.002		**-**	< 0.001	-	-	< 0.0001	< 0.0001	< 0.001	-	-	< 0.001
Mercury (filtered)	mg/L		0.01	0.0006		0.002	0.002		**-**	< 0.001	-	-	< 0.0001	< 0.0001	< 0.001	-	-	< 0.001
Molybdenum	mg/L		5			0.01	0.15		**0.016**	**0.01**	**0.014**	**0.013**	**0.016**	**0.014**	**0.017**	**0.014**	**0.006**	< 0.05
Molybdenum (filtered)	mg/L		5			0.01	0.15		**0.043**	< 0.01	**0.025**	**0.012**	**0.011**	**0.014**	**0.017**	**0.03**	**0.005**	< 0.05
Nickel	mg/L		0.2	0.011	0.07	0.2	1		**0.027**	< 0.01	**0.008**	**0.014**	< 0.001	< 0.001	**0.004**	**0.001**	**0.001**	< 0.01
Nickel (filtered)	mg/L		0.2	0.011	0.07	0.2	1		**0.004**	< 0.01	< 0.001	<0.01	< 0.001	< 0.001	**0.002**	< 0.001	< 0.001	< 0.01
Selenium	mg/L		0.1			0.02	0.02		**0.003**	< 0.01	**0.001**	<0.1	**0.002**	< 0.01	**0.002**	< 0.001	< 0.001	< 0.05
Selenium (filtered)	mg/L		0.1			0.02	0.02		**0.011**	< 0.01	**0.005**	<0.1	**0.002**	< 0.01	**0.002**	**0.005**	< 0.001	< 0.05
Silver	mg/L		1		0.0014				< 0.001	< 0.01	< 0.001	<0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01
Silver (filtered)	mg/L		1		0.0014				< 0.001	< 0.01	< 0.001	<0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01
Strontium	mg/L								**10**	**9.7**	**10**	**10.9**	**12**	**11**	**12.0**	**14**	**10**	**74**
Strontium (filtered)	mg/L								**11**	**8.8**	**11**	**10.5**	**9.2**	**11**	**12.0**	**16**	**11**	**64**
Thorium*	mg/L								< 0.01	< 0.05	< 0.01	<0.01	< 0.05	< 0.05	< 0.05	**0.01**	< 0.001	< 0.05
Thorium* (filtered)	mg/L								**0.02**	< 0.05	< 0.01	<0.01	< 0.05	< 0.05	< 0.05	**0.02**	< 0.001	< 0.05
Tin	mg/L								-	-	-	-	-	-	-	-	-	-
Tin (filtered)	mg/L								-	-	-	-	-	-	-	-	-	-
Titanium	mg/L								**0.23**	< 0.05	< 0.01	**0.2**	< 0.005	< 0.05	**0.024**	< 0.01	**0.02**	< 0.05
Titanium (filtered)	mg/L								**0.05**	< 0.05	**0.01**	<0.1	< 0.005	< 0.05	**0.013**	**0.01**	< 0.01	< 0.05
Uranium	mg/L		0.2			0.01	0.2		**0.01**	< 0.05	**0.01**	<0.01	**0.004**	< 0.05	**0.008**	**0.006**	**0.007**	< 0.05
Uranium (filtered)	mg/L		0.2			0.01	0.2		**0.006**	< 0.05	**0.006**	<0.01	**0.003**	< 0.05	**0.008**	**0.004**	**0.007**	< 0.05
Vanadium	mg/L					0.1			**0.05**	< 0.05	< 0.01	<0.1	< 0.005	**0.072**	**0.110**	< 0.01	< 0.01	< 0.05
Vanadium (filtered)	mg/L					0.1			< 0.01	< 0.05	< 0.01	<0.1	< 0.005	< 0.005	**0.053**	< 0.01	< 0.01	< 0.05
Zinc	mg/L	3		0.008	0.008	2	20		**0.036**	< 0.05	**0.013**	<0.052	< 0.005	< 0.005	**0.014**	**0.018**	**0.005**	< 0.05
Zinc (filtered)	mg/L	3		0.008	0.008	2	20		**0.036**	< 0.05	**0.012**	<0.05	< 0.005	< 0.005	**0.014**	**0.017**	**0.007**	< 0.05
Zirconium	mg/L								< 0.01	< 0.01	< 0.01	<0.052	< 0.01	**0.02**	**0.030**	< 0.01	< 0.01	**0.02**
Zirconium (filtered)	mg/L								< 0.01	< 0.01	< 0.01	<0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alkalinity																		
Bicarbonate Alkalinity (as CaCO3)	mg/L								**62**	**140**	**360**	**258**	**230**	**190**	**320**	**280**	**140**	**240**
Carbonate Alkalinity (as CaCO3)	mg/L								**64**	< 5	< 5	<1	< 5	< 5	< 5	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	mg/L								< 5	< 5	< 5	<1	< 5	< 5	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	mg/L								**130**	**140**	**360**	**258**	**230**	**190**	**320**	**280**	**140**	**240**
Alkali Metals																		
Calcium	mg/L						1000		**640**	**500**	**570**	**650**	**610**	**500**	**620**	**990**	**570**	**1500**
Chloride	mg/L	250							**30000**	**21000**	**30000**	**24900**	**33000**	**23000**	**27000**	**40000**	**24000**	**100000**
Magnesium	mg/L								**1700**	**1500**	**1800**	**1870**	**2100**	**1600**	**2000**	**2400**	**1800**	**14000**
Potassium	mg/L								**570**	**490**	**610**	**537**	**610**	**510**	**590**	**800**	**440**	**4100**
Sodium	mg/L	180							**14000**	**13000**	**16000**	**16000**	**16000**	**12000**	**16000**	**20000**	**12000**	**110000**
Sulphate (as SO4)	mg/L	250					1000		**3300**	**3000**	**3300**	**3630**	**3900**	**4500**	**4900**	**4500**	**2600**	**15000**
Ionic Balance																		
Calculated Ionic balance	%								**-8%**	**5%**	**-2%**	**7%**	**-6%**	**-4%**	**2%**	**-4%**	**-2%**	**37%**
Inorganics																		
Hardness mg equivalent CaCO3/L	mg/L	200							**8600**	**7400**	**8800**	**9320**	**10000**	**7900**	**9700**	**12000**	**8800**	**60000**
Total Dissolved Solids	mg/L	600							**64000**	**42000**	**51000**	**50700**	**45000**	**40000**	**44000**	**72000**	**38000**	**230000**
Total Suspended Solids	mg/L								**50**	**13**	**110**	**87**	**24**	**7.0**	**14**	< 5	**22**	**64**
Ammonia (as N)	mg/L	0.41[1]		0.9	0.91				**0.27**	**0.09**	**0.11**	**0.04**	< 0.02	**0.08**	**0.13**	**0.13**	**0.26**	< 0.02
Conductivity (at 25°C)	mg/L								**68,000**	**58000**	**68,000**	**69,300**	**66,000**	**57000**	**74,000**	**89,000**	**59000**	**190000**
Ferric Iron - Fe3+	mg/L								**11**	< 0.5	**0.41**	<0.5	< 0.5	< 0.5	-	**0.2**	**-**	< 0.5
Ferrous Iron - Fe2+	mg/L								< 0.05	< 0.05	< 0.05	**0.1**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate & Nitrite (as N)	mg/L								< 0.01	**3.2**	**0.03**	**0.04**	**0.09**	< 0.01	< 0.01	< 0.01	**0.02**	**0.02**
Nitrate (as N)	mg/L		113.0[3]	0.7			400		< 0.01	< 0.01	**0.03**	**0.04**	**0.09**	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01
Nitrite (as N)	mg/L		9.1[2]				30		< 0.01	**3.2**	< 0.01	<0.01	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	**0.01**
pH (at 25 °C)	mg/L	6.5-8.5							**7.8**	**7.7**	**7.8**	**7.82**	**7.9**	**8.0**	**7.2**	**8.6**	**8.1**	**7.8**
Phosphate total (as P)	mg/L								**-**	-	-	**0.08**	**0.02**	**0.05**	< 0.01	-	-	-
Phosphorus reactive (as P)	mg/L					0.05			< 0.01	< 0.01	**0.02**	<0.01	**0.09**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Silica (calculation from Si filtered)	mg/L	80							**-**	-	-	**6.9**	-	**3.3**	-	-	-	-
Silica (calculation from Si)	mg/L	80							**4.3**	**0.9**	**4.5**	**37.7**	**4.2**	**-**	**6.1**	**1.3**	**9.6**	**4**
Total Kjeldahl Nitrogen (as N)	mg/L								**1.9**	**0.8**	**2**	**0.7**	**0.8**	< 0.2	**0.2**	**2.1**	**1**	**5.2**
Total Nitrogen (as N)	mg/L					5			**1.9**	**4**	**2**	**0.7**	**0.9**	< 0.2	**0.2**	**2.1**	**1**	**5.2**

[1] A dividing factor of 1.21589 has been applied to the ADWG (2011) Drinking Water guideline as conversion from ammonia (as NH3) to ammonia (as N)
[2] A dividing factor of 3.28443 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrite (as N02) to nitrite (as N)
[3] A dividing factor of 4.42664 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrate (as N03) to nitrate (as N)

Table 5 - Comparison of Surface Water Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water	Field ID	DUP1	DUP1	DUP1	SW02	DUP1SW	DUP1SW	SW02	DUP2	DUP2
								Date	20/11/2022	20/11/2022	20/11/2022	25/06/2023	25/06/2023	25/06/2023	8/11/2023	8/11/2023	8/11/2023
								Lab Name	Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS
								Lab Report Number	943244	943236	EP2216117	1002505	1002505	EP2308597	1043049	1043049	EP2315880
								Duplicate	Intra-Laboratory	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory
Heavy Metals																	
Aluminium	mg/L	0.2				5	5		**1.1**	< 0.5	<0.50	**0.09**	**0.12**	**0.126**	< 0.05	< 0.05	<0.21
Aluminium (filtered)	mg/L	0.2				5	5		< 5	< 0.5	-	< 0.05	< 0.05	<0.01	< 0.05	< 0.05	<0.20
Antimony	mg/L		0.03						< 0.05	< 0.01	<0.050	**0.001**	< 0.001	<0.001	< 0.001	< 0.001	<0.021
Antimony (filtered)	mg/L		0.03						< 0.05	< 0.01	-	**0.001**	< 0.001	<0.001	< 0.001	< 0.001	<0.020
Arsenic	mg/L		0.1	0.013		0.1	0.5		< 0.05	**0.01**	<0.050	< 0.001	< 0.001	**0.0018**	**0.003**	**0.003**	<0.021
Arsenic (filtered)	mg/L		0.1	0.013		0.1	0.5		< 0.05	< 0.01	-	< 0.001	< 0.001	**0.0014**	**0.005**	**0.003**	<0.020
Beryllium	mg/L		0.6			0.1			< 0.05	< 0.01	<0.050	< 0.001	< 0.001	<0.0002	< 0.001	< 0.001	<0.021
Beryllium (filtered)	mg/L		0.6			0.1			< 0.05	< 0.01	-	< 0.001	< 0.001	<0.0002	< 0.001	< 0.001	<0.020
Bismuth	mg/L								< 0.05	< 0.05	<0.050	< 0.005	< 0.005	<0.0002	< 0.005	< 0.005	<0.021
Bismuth (filtered)	mg/L								< 0.05	< 0.05	-	< 0.005	< 0.005	<0.0002	< 0.005	< 0.005	<0.020
Cadmium	mg/L		0.02	0.0002	0.0055	0.01	0.01		**0.003**	< 0.002	<0.0050	< 0.0001	< 0.0001	<0.0004	< 0.0001	< 0.0001	<0.0021
Cadmium (filtered)	mg/L		0.02	0.0002	0.0055	0.01	0.01		< 0.002	< 0.002	-	< 0.0001	< 0.0001	<0.0004	< 0.0001	< 0.0001	<0.0020
Chromium (III+VI)	mg/L		0.5	0.001		0.1	1		**0.01**	< 0.01	<0.050	**0.005**	**0.033**	<0.001	**0.004**	**0.004**	<0.021
Chromium (III+VI) (filtered)	mg/L		0.5	0.001		0.1	1		< 0.01	< 0.01	-	**0.005**	**0.033**	<0.001	**0.004**	**0.003**	<0.020
Cobalt	mg/L				0.001	0.05	1		**0.02**	< 0.01	<0.050	< 0.001	< 0.001	**0.001**	< 0.001	< 0.001	<0.021
Cobalt (filtered)	mg/L				0.001	0.05	1		< 0.01	< 0.01	-	< 0.001	< 0.001	**0.0008**	< 0.001	< 0.001	<0.020
Copper	mg/L	1	20	0.0014	0.0013	0.2	0.4		< 0.01	< 0.01	<0.050	**0.003**	< 0.001	<0.002	**0.001**	**0.004**	<0.021
Copper (filtered)	mg/L	1	20	0.0014	0.0013	0.2	0.4		< 0.01	< 0.01	-	**0.003**	< 0.001	<0.002	< 0.001	< 0.001	<0.020
Iron	mg/L	0.3				0.2			**0.5**	< 0.5	<2.50	**0.34**	**0.38**	**0.253**	**0.02**	**0.02**	**1.08**
Iron (filtered)	mg/L	0.3				0.2			< 0.5	< 0.5	-	**0.02**	**0.02**	**0.016**	< 0.01	< 0.01	<0.20
Lead	mg/L		0.1	0.0034	0.0044	2	0.1		< 0.01	< 0.01	<0.050	**0.012**	< 0.001	<0.0004	< 0.001	< 0.001	<0.021
Lead (filtered)	mg/L		0.1	0.0034	0.0044	2	0.1		< 0.01	< 0.01	-	**0.012**	< 0.001	<0.0004	< 0.001	< 0.001	<0.020
Lithium	mg/L					2.5			**2**	**1.1**	**1.46**	**0.33**	**0.57**	**0.407**	**0.47**	**0.45**	**0.589**
Lithium (filtered)	mg/L					2.5			**2**	**1.1**	-	**0.33**	**0.57**	**0.39**	**0.48**	**0.45**	**0.705**
Manganese	mg/L	0.1	5	1.9		0.2			**0.07**	< 0.05	<0.050	**0.069**	**0.089**	**0.108**	**0.039**	**0.038**	**0.024**
Manganese (filtered)	mg/L	0.1	5	1.9		0.2			< 0.05	< 0.05	-	**0.069**	**0.089**	**0.0953**	**0.021**	**0.024**	<0.020
Mercury	mg/L		0.01	0.0006		0.002	0.002		< 0.001	< 0.001	-	< 0.0001	< 0.0001	<0.0002	< 0.0001	< 0.0001	<0.0005
Mercury (filtered)	mg/L		0.01	0.0006		0.002	0.002		< 0.001	< 0.001	-	< 0.0001	< 0.0001	<0.0002	< 0.0001	< 0.0001	<0.0005
Molybdenum	mg/L		5			0.01	0.15		< 0.05	< 0.05	<0.050	< 0.001	< 0.001	**0.012**	**0.025**	**0.024**	**0.024**
Molybdenum (filtered)	mg/L		5			0.01	0.15		< 0.05	< 0.05	-	< 0.001	< 0.001	**0.0094**	**0.017**	**0.018**	**0.026**
Nickel	mg/L		0.2	0.011	0.07	0.2	1		< 0.01	< 0.01	<0.050	**0.002**	< 0.001	<0.001	< 0.001	< 0.001	<0.021
Nickel (filtered)	mg/L		0.2	0.011	0.07	0.2	1		< 0.01	< 0.01	-	**0.002**	< 0.001	<0.001	< 0.001	< 0.001	<0.020
Selenium	mg/L		0.1			0.02	0.02		< 0.05	< 0.01	<0.50	**0.001**	**0.001**	<0.004	**0.004**	**0.007**	<0.21
Selenium (filtered)	mg/L		0.1			0.02	0.02		< 0.05	< 0.01	-	**0.001**	**0.001**	<0.004	**0.003**	**0.004**	<0.20
Silver	mg/L		1		0.0014				< 0.01	< 0.05	<0.050	< 0.001	< 0.001	<0.0002	< 0.001	< 0.001	<0.021
Silver (filtered)	mg/L		1		0.0014				< 0.01	< 0.05	-	< 0.001	< 0.001	<0.0002	< 0.001	< 0.001	<0.020
Strontium	mg/L								**78**	**48**	**51.6**	**20**	**23**	**22.7**	**35**	**32**	**33.0**
Strontium (filtered)	mg/L								**64**	**48**	-	**20**	**21**	**20**	**32**	**32**	**33.9**
Thorium*	mg/L								< 0.05	< 0.1	<0.050	< 0.05	< 0.05	<0.0002	< 0.05	< 0.05	<0.021
Thorium* (filtered)	mg/L								< 0.05	< 0.1	-	< 0.05	< 0.05	<0.0002	< 0.05	< 0.05	<0.020
Tin	mg/L								-	-	-	-	-	-	-	-	-
Tin (filtered)	mg/L								-	-	-	-	-	-	-	-	-
Titanium	mg/L								< 0.05	< 0.05	<0.50	**0.47**	**0.58**	<0.01	< 0.005	< 0.005	<0.21
Titanium (filtered)	mg/L								< 0.05	< 0.05	-	**0.47**	**0.58**	<0.01	< 0.005	< 0.005	<0.20
Uranium	mg/L		0.2			0.01	0.2		< 0.05	< 0.05	<0.050	**0.01**	**0.009**	**0.004**	**0.005**	**0.005**	<0.021
Uranium (filtered)	mg/L		0.2			0.01	0.2		< 0.05	< 0.05	-	**0.01**	**0.009**	**0.004**	**0.005**	**0.004**	<0.020
Vanadium	mg/L					0.1			< 0.05	< 0.05	<0.50	< 0.005	< 0.005	**0.0022**	< 0.005	< 0.005	<0.21
Vanadium (filtered)	mg/L					0.1			< 0.05	< 0.05	-	< 0.005	< 0.005	**0.002**	< 0.005	< 0.005	<0.20
Zinc	mg/L	3		0.008	0.008	2	20		< 0.05	< 0.05	<0.250	< 0.005	**0.042**	<0.01	< 0.005	< 0.005	<0.105
Zinc (filtered)	mg/L	3		0.008	0.008	2	20		< 0.05	< 0.05	-	< 0.005	**0.042**	<0.01	< 0.005	< 0.005	<0.100
Zirconium	mg/L								**0.01**	**0.01**	<0.250	< 0.01	< 0.01	<0.105	< 0.01	< 0.01	<0.105
Zirconium (filtered)	mg/L								< 0.01	< 0.01	-	< 0.01	< 0.01	<0.100	< 0.01	< 0.01	<0.100
Alkalinity																	
Bicarbonate Alkalinity (as CaCO3)	mg/L								**240**	**230**	**221**	**130**	**130**	**122**	**180**	**180**	**165**
Carbonate Alkalinity (as CaCO3)	mg/L								< 5	< 5	<1	< 5	< 5	<1	< 5	< 5	<1
Hydroxide Alkalinity (as CaCO3)	mg/L								< 5	< 5	<1	< 5	< 5	<1	< 5	< 5	<1
Total Alkalinity (as CaCO3)	mg/L								**240**	**230**	**221**	**130**	**130**	**122**	**180**	**180**	**165**
Alkali Metals																	
Calcium	mg/L						1000		**1700**	**1000**	**1160**	**1800**	**1800**	**1560**	**1800**	**1700**	**1440**
Chloride	mg/L	250							**98000**	**110000**	**136000**	**54000**	**57000**	**50000**	**81000**	**81000**	**73900**
Magnesium	mg/L								**14000**	**9500**	**10200**	**6300**	**6200**	**3760**	**7000**	**6500**	**4590**
Potassium	mg/L								**4300**	**2800**	**4110**	**2700**	**2700**	**1030**	**1600**	**1500**	**1370**
Sodium	mg/L	180							**120000**	**78000**	**80700**	**43000**	**42000**	**30300**	**57000**	**54000**	**41000**
Sulphate (as SO4)	mg/L	250					1000		**15000**	**15000**	**12000**	**8200**	**8300**	**7120**	**11000**	**11000**	**7560**
Ionic Balance																	
Calculated Ionic balance	%								**41%**	**13%**	**6%**	**22%**	**19%**	**6%**	**13%**	**10%**	**1%**
Inorganics																	
Hardness mg equivalent CaCO3/L	mg/L	200							**64000**	**43000**	**44900**	**31000**	**30000**	**19400**	**33000**	**31000**	**22500**
Total Dissolved Solids	mg/L	600							**230000**	**230000**	**251000**	**89000**	**90000**	**86900**	**91000**	**91000**	**151000**
Total Suspended Solids	mg/L								**95**	**26**	**41**	**18**	**16**	**30**	**12**	**28**	**56**
Ammonia (as N)	mg/L	0.41[1]		0.9	0.91				**0.04**	< 0.02	**0.51**	**0.04**	**0.06**	**0.11**	**0.14**	**0.18**	**0.84**
Conductivity (at 25°C)	mg/L								**190000**	**190000**	**203000**	**110000**	**110000**	**118000**	**130000**	**130000**	**155000**
Ferric Iron - Fe3+	mg/L								< 0.5	< 0.5	<2.50	< 0.5	< 0.5	<1.00	< 0.5	< 0.5	<0.20
Ferrous Iron - Fe2+	mg/L								< 0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05
Nitrate & Nitrite (as N)	mg/L								**0.02**	< 0.01	<0.01	**0.02**	**0.03**	<0.01	**2.1**	< 0.01	<0.01
Nitrate (as N)	mg/L		113.0[3]	0.7			400		< 0.01	< 0.01	<0.01	**0.02**	**0.03**	<0.01	< 0.01	< 0.01	<0.01
Nitrite (as N)	mg/L		9.1[2]				30		**0.01**	< 0.01	<0.01	< 0.01	< 0.01	<0.01	< 0.01	< 0.01	<0.01
pH (at 25 °C)	mg/L	6.5-8.5							**7.7**	**7.7**	**7.79**	**8.2**	**8.2**	**8.20**	**8.0**	**8.0**	**8.25**
Phosphate total (as P)	mg/L								-	-	**0.65**	**0.05**	**0.04**	**0.08**	**0.09**	< 0.01	<0.05
Phosphorus reactive (as P)	mg/L					0.05			< 0.01	< 0.01	<0.01	**0.07**	**0.06**	<0.01	< 0.01	< 0.01	<0.01
Silica (calculation from Si filtered)	mg/L	80							-	-	**8.7**	-	-	**4.6**	**2.6**	**1.8**	<5.2
Silica (calculation from Si)	mg/L	80							**5.2**	**4.1**	**6.4**	**4.1**	**3.3**	**4.5**	-	-	<5.0
Total Kjeldahl Nitrogen (as N)	mg/L								**4.2**	**3.6**	**2.0**	**2**	**1.8**	**2.3**	< 0.2	< 0.2	**1.9**
Total Nitrogen (as N)	mg/L					5			**4.2**	**3.6**	**2.0**	**2**	**1.8**	**2.3**	**2.1**	< 0.2	**1.9**

[1] A dividing factor of 1.21589 has been applied to the ADWG (2011) Drinking Water guideline as conversion from ammonia (as NH3) to ammonia (as N)
[2] A dividing factor of 3.28443 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrite (as N02) to nitrite (as N)
[3] A dividing factor of 4.42664 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrate (as N03) to nitrate (as N)

Table 5 - Comparison of Surface Water Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water	Field ID	SW03R	SW04	SW05	SW05	SW6	SW06	SW06	SW06	SW06	SW07	SW08
								Date	24/05/2022	24/05/2022	25/05/2022	22/06/2023	29/03/2022	25/05/2022	20/11/2022	26/06/2023	9/11/2023	24/05/2022	24/05/2022
								Lab Name	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
								Lab Report Number	891968	891968	892237	1002272	867013	892237	943366	1002960	1043857	891968	891968
								Duplicate	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Heavy Metals																			
Aluminium	mg/L	0.2				5	5		< 0.01	**2**	**0.25**	**0.06**	**0.02**	**0.12**	**0.13**	< 0.05	< 0.5	**2.2**	**2.8**
Aluminium (filtered)	mg/L	0.2				5	5		**0.02**	**0.11**	**0.04**	< 0.05	< 0.01	< 0.01	< 0.05	< 0.05	< 0.5	**0.17**	**0.05**
Antimony	mg/L		0.03						< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.05	< 0.001	< 0.001
Antimony (filtered)	mg/L		0.03						< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001	< 0.05	< 0.001	< 0.001
Arsenic	mg/L		0.1	0.013		0.1	0.5		**0.001**	< 0.001	< 0.001	< 0.001	**0.003**	< 0.001	< 0.05	< 0.001	**0.016**	< 0.001	**0.001**
Arsenic (filtered)	mg/L		0.1	0.013		0.1	0.5		**0.001**	< 0.001	< 0.001	< 0.001	**0.003**	**0.001**	< 0.05	< 0.001	< 0.01	< 0.001	< 0.001
Beryllium	mg/L		0.6			0.1			< 0.01	< 0.01	< 0.01	< 0.001	< 0.01	< 0.01	< 0.01	< 0.001	< 0.01	< 0.01	< 0.01
Beryllium (filtered)	mg/L		0.6			0.1			< 0.01	< 0.01	< 0.01	< 0.001	< 0.01	< 0.01	< 0.01	< 0.001	< 0.01	< 0.01	< 0.01
Bismuth	mg/L								< 0.01	< 0.01	< 0.01	< 0.005	< 0.01	< 0.01	< 0.05	< 0.005	< 0.05	< 0.01	< 0.01
Bismuth (filtered)	mg/L								< 0.01	< 0.01	< 0.01	< 0.005	< 0.01	< 0.01	< 0.05	< 0.005	< 0.05	< 0.01	< 0.01
Cadmium	mg/L		0.02	0.0002	0.0055	0.01	0.01		< 0.0001	< 0.0001	< 0.0001	< 0.0001	**0.0005**	< 0.0001	< 0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Cadmium (filtered)	mg/L		0.02	0.0002	0.0055	0.01	0.01		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.002	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (III+VI)	mg/L		0.5	0.001		0.1	1		< 0.001	**0.005**	**0.001**	< 0.001	< 0.001	**0.001**	< 0.01	< 0.001	**0.010**	**0.006**	**0.008**
Chromium (III+VI) (filtered)	mg/L		0.5	0.001		0.1	1		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	mg/L				0.001	0.05	1		**0.001**	**0.001**	< 0.001	**0.001**	< 0.001	**0.002**	< 0.01	< 0.001	< 0.001	**0.001**	**0.002**
Cobalt (filtered)	mg/L				0.001	0.05	1		**0.001**	< 0.001	< 0.001	< 0.001	< 0.001	**0.001**	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001
Copper	mg/L	1	20	0.0014	0.0013	0.2	0.4		< 0.001	**0.004**	**0.002**	**0.005**	**0.013**	**0.002**	< 0.01	< 0.001	< 0.001	**0.003**	**0.004**
Copper (filtered)	mg/L	1	20	0.0014	0.0013	0.2	0.4		< 0.001	**0.001**	**0.001**	< 0.001	**0.009**	< 0.001	< 0.01	< 0.001	< 0.001	**0.001**	**0.002**
Iron	mg/L	0.3				0.2			**0.11**	**2.5**	**0.35**	**0.09**	**0.05**	**0.22**	< 0.5	< 0.01	< 0.5	**2.6**	**3.6**
Iron (filtered)	mg/L	0.3				0.2			**0.11**	**0.13**	**0.06**	**0.03**	**0.03**	**0.03**	< 0.5	< 0.01	< 0.5	**0.23**	**0.09**
Lead	mg/L		0.1	0.0034	0.0044	2	0.1		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001
Lead (filtered)	mg/L		0.1	0.0034	0.0044	2	0.1		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001
Lithium	mg/L					2.5			**0.001**	**0.001**	< 0.001	**0.002**	**0.64**	**1**	**6.5**	**0.63**	**0.76**	**0.001**	**0.002**
Lithium (filtered)	mg/L					2.5			**0.001**	< 0.001	< 0.001	< 0.005	**0.68**	**0.99**	**5.4**	**0.52**	**0.58**	< 0.001	**0.001**
Manganese	mg/L	0.1	5	1.9		0.2			**0.24**	**0.03**	**0.03**	**0.014**	**0.06**	**0.37**	< 0.5	**0.06**	< 0.05	**0.03**	**0.07**
Manganese (filtered)	mg/L	0.1	5	1.9		0.2			**0.24**	< 0.01	< 0.01	< 0.005	**0.06**	**0.25**	< 0.5	**0.04**	< 0.05	< 0.01	< 0.01
Mercury	mg/L		0.01	0.0006		0.002	0.002		-	-	-	< 0.0001	-	-	< 0.001	< 0.0001	< 0.0001	-	-
Mercury (filtered)	mg/L		0.01	0.0006		0.002	0.002		-	-	-	< 0.0001	-	-	< 0.001	< 0.0001	< 0.0001	-	-
Molybdenum	mg/L		5			0.01	0.15		< 0.001	< 0.001	< 0.001	< 0.001	**0.018**	**0.031**	**0.1**	**0.017**	**0.043**	< 0.001	< 0.001
Molybdenum (filtered)	mg/L		5			0.01	0.15		< 0.001	< 0.001	< 0.001	< 0.001	**0.013**	**0.023**	**0.09**	**0.014**	**0.036**	< 0.001	< 0.001
Nickel	mg/L		0.2	0.011	0.07	0.2	1		**0.001**	**0.003**	**0.001**	**0.001**	**0.011**	**0.001**	< 0.01	< 0.001	< 0.001	**0.003**	**0.005**
Nickel (filtered)	mg/L		0.2	0.011	0.07	0.2	1		**0.001**	< 0.001	< 0.001	< 0.001	**0.003**	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	**0.001**
Selenium	mg/L		0.1			0.02	0.02		< 0.001	< 0.001	< 0.001	< 0.001		< 0.001	< 0.01	**0.015**	**0.013**	< 0.001	< 0.001
Selenium (filtered)	mg/L		0.1			0.02	0.02		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	**0.013**	**0.012**	< 0.001	< 0.001
Silver	mg/L		1		0.0014				< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	mg/L		1		0.0014				< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001
Strontium	mg/L								**0.25**	**0.16**	**0.11**	**0.36**	**25**	**20**	**37**	**42**	**38**	**0.09**	**0.19**
Strontium (filtered)	mg/L								**0.26**	**0.16**	**0.11**	**0.31**	**27**	**20**	**31**	**34**	**32**	**0.09**	**0.2**
Thorium*	mg/L								< 0.01	< 0.01	< 0.001	< 0.05	**0.12**	< 0.001	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01
Thorium* (filtered)	mg/L								< 0.01	< 0.01	< 0.001	< 0.05	**0.1**	< 0.001	< 0.05	< 0.05	< 0.05	< 0.01	< 0.01
Tin	mg/L								-	-	-	-	-	-	-	-	-	-	-
Tin (filtered)	mg/L								-	-	-	-	-	-	-	-	-	-	-
Titanium	mg/L								< 0.01	**0.06**	< 0.01	< 0.005	< 0.01	< 0.01	< 0.05	< 0.005	< 0.05	**0.07**	**0.07**
Titanium (filtered)	mg/L								< 0.01	< 0.01	< 0.01	< 0.005	< 0.01	< 0.01	< 0.05	< 0.005	< 0.05	< 0.01	< 0.01
Uranium	mg/L		0.2			0.01	0.2		< 0.001	< 0.001	< 0.001	< 0.001	**0.004**	**0.009**	< 0.05	< 0.005	< 0.05	< 0.001	< 0.001
Uranium (filtered)	mg/L		0.2			0.01	0.2		< 0.001	< 0.001	< 0.001	< 0.001	**0.004**	**0.007**	< 0.05	< 0.005	< 0.05	< 0.001	< 0.001
Vanadium	mg/L					0.1			< 0.01	< 0.01	< 0.01	< 0.005	< 0.01	< 0.01	< 0.05	< 0.005	**0.060**	< 0.01	**0.01**
Vanadium (filtered)	mg/L					0.1			< 0.01	< 0.01	< 0.01	< 0.005	< 0.01	< 0.01	< 0.05	< 0.005	< 0.005	< 0.01	< 0.01
Zinc	mg/L	3		0.008	0.008	2	20		**0.01**	**0.006**	< 0.005	< 0.005	**0.027**	**0.02**	< 0.05	< 0.005	< 0.005	**0.005**	**0.008**
Zinc (filtered)	mg/L	3		0.008	0.008	2	20		**0.014**	< 0.005	**0.005**	< 0.005	**0.068**	**0.019**	< 0.05	< 0.005	< 0.005	< 0.005	< 0.005
Zirconium	mg/L								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**0.02**	< 0.01	**0.01**	< 0.01	< 0.01
Zirconium (filtered)	mg/L								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Alkalinity																			
Bicarbonate Alkalinity (as CaCO3)	mg/L								**120**	**49**	**60**	**130**	**18**	**140**	**610**	**110**	**180**	**44**	**99**
Carbonate Alkalinity (as CaCO3)	mg/L								< 5	< 5	< 5	< 5	**92**	< 5	**740**	**20**	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	mg/L								< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	mg/L								**120**	**49**	**60**	**130**	**110**	**140**	**1300**	**130**	**180**	**44**	**99**
Alkali Metals																			
Calcium	mg/L						1000		**37**	**15**	**16**	**38**	**1300**	**1400**	**220**	**2100**	**1500**	**12**	**33**
Chloride	mg/L	250							**430**	< 5	**12**	**200**	**65000**	**49000**	**170000**	**93000**	**73000**	< 5	< 5
Magnesium	mg/L								**15**	**1.3**	**2.8**	**20**	**5100**	**5200**	**46000**	**5500**	**5300**	**1.2**	**2.9**
Potassium	mg/L								**6.2**	**3.5**	**4.6**	**7.2**	**1400**	**1200**	**12000**	**1500**	**1700**	**3**	**5.2**
Sodium	mg/L	180							**56**	**3.3**	**9.5**	**130**	**33000**	**24000**	**55000**	**38000**	**39000**	**5.5**	**3.4**
Sulphate (as SO4)	mg/L	250					1000		**12**	**4.5**	**4.4**	**33**	**7900**	**5700**	**65000**	**9300**	**13000**	**2.9**	**15**
Ionic Balance																			
Calculated Ionic balance	%								**-44%**	**2%**	**5%**	**5%**	**-1%**	**3%**	**4%**	**-13%**	**-2%**	**5%**	**2%**
Inorganics																			
Hardness mg equivalent CaCO3/L	mg/L	200							**150**	**43**	**51**	**180**	**24000**	**25000**	**170000**	**28000**	**26000**	**35**	**94**
Total Dissolved Solids	mg/L	600							**350**	**66**	**99**	**560**	**120000**	**98000**	**380000**	**110000**	**91000**	**66**	**140**
Total Suspended Solids	mg/L								**6**	**10**	< 5	< 5	**56**	**38**	**100**	**280**	**13**	**5**	**39**
Ammonia (as N)	mg/L	0.41[1]		0.9	0.91				< 0.02	< 0.02	**0.04**	< 0.02	**0.05**	**0.04**	**0.02**	< 0.02	**0.03**	< 0.02	**0.02**
Conductivity (at 25°C)	mg/L								**610**	**120**	**160**	**940**	**110,000**	**110000**	**150000**	**130000**	**130000**	**100**	**230**
Ferric Iron - Fe3+	mg/L								-	-	-	< 0.5	**0.05**	-	< 0.5	< 0.5	< 0.5	-	-
Ferrous Iron - Fe2+	mg/L								**0.12**	< 0.05	< 0.05	< 0.05	**4.8**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate & Nitrite (as N)	mg/L								< 0.01	< 0.01	**0.04**	**0.02**	**0.03**	**0.04**	< 0.01	**0.03**	< 0.01	< 0.01	**0.06**
Nitrate (as N)	mg/L		113.0[3]	0.7			400		< 0.01	< 0.01	**0.03**	**0.02**	**0.02**	**0.02**	< 0.01	**0.03**	< 0.01	< 0.01	**0.06**
Nitrite (as N)	mg/L		9.1[2]				30		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
pH (at 25 °C)	mg/L	6.5-8.5							**7.5**	**6.4**	**6.7**	**7.6**	**9.2**	**8.2**	**6.9**	**8.4**	**8.2**	**6.4**	**6.7**
Phosphate total (as P)	mg/L								-	-	-	< 0.01	-	-	-	**0.03**	**0.06**	-	-
Phosphorus reactive (as P)	mg/L					0.05			**0.04**	< 0.01	**0.01**	**0.02**	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01
Silica (calculation from Si filtered)	mg/L	80							-	-	-	-	-	-	-	-	**1.2**	-	-
Silica (calculation from Si)	mg/L	80							**16**	**6**	**8**	**2.2**	**0.3**	**2.6**	**4.8**	**0.8**	-	**5.5**	**13**
Total Kjeldahl Nitrogen (as N)	mg/L								**1.1**	**3.5**	**0.9**	**0.5**	**0.3**	**1**	**34**	**1.6**	< 0.2	**0.7**	**0.7**
Total Nitrogen (as N)	mg/L					5			**1.1**	**3.5**	**0.9**	**0.5**	**0.3**	**1**	**34**	**1.6**	< 0.2	**0.7**	**0.8**

[1] A dividing factor of 1.21589 has been applied to the ADWG (2011) Drinking Water guideline as conversion from ammonia (as NH3) to ammonia (as N)
[2] A dividing factor of 3.28443 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrite (as N02) to nitrite (as N)
[3] A dividing factor of 4.42664 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrate (as N03) to nitrate (as N)

Table 5 - Comparison of Surface Water Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water	Field ID	SW10	SW10R	SW11	SW11R	SW12	SW13	SW13	DUP1	DUP1	SW13	SW14	SW14	SW14
								Date	25/05/2022	24/05/2022	26/05/2022	24/05/2022	25/05/2022	1/04/2022	23/05/2022	23/05/2022	23/05/2022	24/06/2023	26/05/2022	24/06/2023	25/07/2024
								Lab Name	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	ALS	Eurofins	Eurofins	Eurofins	Eurofins
								Lab Report Number	892237	891968	892863	891968	892237	867913	891465	891465	EP2206309	1002505	892863	1002505	1122482
								Duplicate	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Intra-Duplicate	Inter-Duplicate	Primary	Primary	Primary	Primary
Heavy Metals																					
Aluminium	mg/L	0.2				5	5		**0.41**	**0.23**	**0.05**	**0.76**	**0.6**	**3.2**	**1**	**1**	**1.08**	**15**	**4.6**	**5.9**	**8.4**
Aluminium (filtered)	mg/L	0.2				5	5		**0.13**	**0.11**	**0.02**	**0.31**	< 0.01	**0.33**	**0.1**	**0.11**	**0.11**	**0.12**	**0.43**	**0.46**	< 0.05
Antimony	mg/L		0.03						< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.002**	< 0.001	< 0.001	<0.001	< 0.001	< 0.001	< 0.001	**0.003**
Antimony (filtered)	mg/L		0.03						< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.002**	< 0.001	< 0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic	mg/L		0.1	0.013		0.1	0.5		< 0.001	< 0.001	< 0.001	< 0.001	**0.001**	**0.003**	< 0.001	< 0.001	<0.001	**0.002**	**0.002**	**0.002**	**0.006**
Arsenic (filtered)	mg/L		0.1	0.013		0.1	0.5		< 0.001	< 0.001	**0.001**	< 0.001	**0.002**	**0.002**	< 0.001	< 0.001	<0.001	**0.002**	**0.002**	**0.002**	**0.003**
Beryllium	mg/L		0.6			0.1			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.001	**0.001**	< 0.01	< 0.001	< 0.001
Beryllium (filtered)	mg/L		0.6			0.1			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.001	**0.001**	< 0.01	< 0.001	< 0.001
Bismuth	mg/L								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.001	< 0.005	< 0.01	< 0.005	< 0.005
Bismuth (filtered)	mg/L								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.001	< 0.005	< 0.01	< 0.005	< 0.005
Cadmium	mg/L		0.02	0.0002	0.0055	0.01	0.01		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	**0.0001**	< 0.0001	< 0.0001	<0.0001	< 0.0001	**0.0001**	< 0.0001	< 0.0001
Cadmium (filtered)	mg/L		0.02	0.0002	0.0055	0.01	0.01		< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	<0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium (III+VI)	mg/L		0.5	0.001		0.1	1		**0.001**	< 0.001	**0.002**	**0.003**	**0.002**	**0.01**	**0.003**	**0.003**	**0.003**	**0.015**	**0.015**	**0.012**	**0.041**
Chromium (III+VI) (filtered)	mg/L		0.5	0.001		0.1	1		< 0.001	< 0.001	**0.002**	< 0.001	< 0.001	**0.001**	< 0.001	< 0.001	<0.001	**0.015**	**0.002**	**0.012**	**0.001**
Cobalt	mg/L				0.001	0.05	1		< 0.001	< 0.001	< 0.001	< 0.001	**0.003**	**0.003**	**0.001**	< 0.001	<0.001	**0.003**	**0.004**	**0.003**	**0.011**
Cobalt (filtered)	mg/L				0.001	0.05	1		< 0.001	< 0.001	< 0.001	< 0.001	**0.003**	< 0.001	< 0.001	< 0.001	<0.001	**0.003**	< 0.001	**0.003**	**0.001**
Copper	mg/L	1	20	0.0014	0.0013	0.2	0.4		**0.002**	**0.002**	**0.001**	**0.002**	**0.002**	**0.019**	**0.003**	**0.002**	**0.002**	**0.006**	**0.01**	**0.005**	**0.028**
Copper (filtered)	mg/L	1	20	0.0014	0.0013	0.2	0.4		**0.001**	< 0.001	< 0.001	**0.001**	**0.002**	**0.016**	**0.002**	**0.002**	**0.002**	**0.006**	**0.004**	**0.005**	**0.015**
Iron	mg/L	0.3				0.2			**0.61**	**0.33**	**0.82**	**0.95**	**0.93**	**4.3**	**1.3**	**1.3**	**1.17**	**44**	**6**	**16**	**17**
Iron (filtered)	mg/L	0.3				0.2			**0.25**	**0.15**	**0.67**	**0.32**	**0.03**	**0.45**	**0.14**	**0.15**	**0.17**	**0.08**	**0.58**	**0.44**	**0.16**
Lead	mg/L		0.1	0.0034	0.0044	2	0.1		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.002**	< 0.001	< 0.001	<0.001	**0.002**	**0.002**	**0.001**	**0.007**
Lead (filtered)	mg/L		0.1	0.0034	0.0044	2	0.1		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	**0.002**	< 0.001	**0.001**	< 0.001
Lithium	mg/L					2.5			< 0.001	< 0.001	< 0.001	< 0.001	**0.31**	**0.003**	**0.001**	**0.001**	**0.002**	**0.008**	**0.007**	**0.008**	**0.013**
Lithium (filtered)	mg/L					2.5			< 0.001	< 0.001	**0.001**	< 0.001	**0.29**	**0.002**	**0.001**	**0.001**	<0.001	**0.008**	**0.005**	**0.008**	**0.011**
Manganese	mg/L	0.1	5	1.9		0.2			**0.04**	**0.01**	**0.04**	**0.02**	**0.78**	**0.1**	**0.03**	**0.03**	**0.028**	**0.097**	**0.08**	**0.072**	**0.32**
Manganese (filtered)	mg/L	0.1	5	1.9		0.2			**0.04**	< 0.01	**0.03**	**0.02**	**0.78**	**0.02**	< 0.01	< 0.01	**0.003**	**0.097**	**0.02**	**0.072**	**0.011**
Mercury	mg/L		0.01	0.0006		0.002	0.002		-	-	-	-	-	-	-	-	-	< 0.0001	-	< 0.0001	<0.0001
Mercury (filtered)	mg/L		0.01	0.0006		0.002	0.002		-	-	-	-	-	-	-	-	-	< 0.0001	-	< 0.0001	<0.0001
Molybdenum	mg/L		5			0.01	0.15		< 0.001	< 0.001	< 0.001	< 0.001	**0.015**	**0.004**	< 0.001	< 0.001	<0.001	< 0.001	**0.001**	**0.001**	**0.004**
Molybdenum (filtered)	mg/L		5			0.01	0.15		< 0.001	< 0.001	< 0.001	< 0.001	**0.016**	**0.004**	< 0.001	< 0.001	<0.001	< 0.001	**0.001**	**0.001**	**0.004**
Nickel	mg/L		0.2	0.011	0.07	0.2	1		**0.001**	< 0.001	**0.002**	**0.002**	**0.002**	**0.007**	**0.002**	**0.002**	**0.002**	**0.006**	**0.008**	**0.005**	**0.02**
Nickel (filtered)	mg/L		0.2	0.011	0.07	0.2	1		< 0.001	< 0.001	**0.001**	< 0.001	**0.004**	**0.003**	< 0.001	< 0.001	<0.001	**0.006**	**0.003**	**0.005**	**0.005**
Selenium	mg/L		0.1			0.02	0.02		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	**0.007**	< 0.001	< 0.001	<0.01	< 0.001	< 0.001	< 0.001	**0.002**
Selenium (filtered)	mg/L		0.1			0.02	0.02		< 0.001	< 0.001	< 0.001	< 0.001	**0.002**	**0.006**	< 0.001	< 0.001	<0.01	< 0.001	< 0.001	< 0.001	**0.002**
Silver	mg/L		1		0.0014				< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	mg/L		1		0.0014				< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	< 0.001	< 0.001	< 0.001
Strontium	mg/L								**0.14**	**0.11**	**0.2**	**0.07**	**45**	**0.25**	**0.18**	**0.19**	**0.188**	**0.3**	**0.11**	**0.11**	**0.28**
Strontium (filtered)	mg/L								**0.17**	**0.11**	**0.2**	**0.06**	**48**	**0.26**	**0.18**	**0.19**	**0.182**	**0.19**	**0.12**	**0.09**	**0.19**
Thorium*	mg/L								< 0.001	< 0.01	< 0.01	< 0.01	< 0.001	< 0.01	**0.003**	< 0.001	<0.001	< 0.05	< 0.01	< 0.05	< 0.05
Thorium* (filtered)	mg/L								< 0.001	< 0.01	< 0.01	< 0.01	< 0.001	< 0.01	< 0.001	< 0.001	<0.001	< 0.05	< 0.01	< 0.05	< 0.05
Tin	mg/L								-	-	-	-	-	-	-	-	-	-	-	-	-
Tin (filtered)	mg/L								-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium	mg/L								< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	**0.09**	**0.03**	**0.03**	**0.03**	**0.066**	**0.09**	**0.06**	**0.22**
Titanium (filtered)	mg/L								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**0.03**	< 0.01	< 0.01	<0.01	**0.066**	< 0.01	**0.06**	< 0.005
Uranium	mg/L		0.2			0.01	0.2		< 0.001	< 0.001	< 0.001	< 0.001	**0.05**	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	< 0.001	**0.002**	**0.008**
Uranium (filtered)	mg/L		0.2			0.01	0.2		< 0.001	< 0.001	< 0.001	< 0.001	**0.049**	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	< 0.001	**0.002**	**0.008**
Vanadium	mg/L					0.1			< 0.01	< 0.01	< 0.01	< 0.01	**0.01**	**0.02**	< 0.01	< 0.01	<0.01	**0.021**	**0.02**	**0.017**	**0.041**
Vanadium (filtered)	mg/L					0.1			< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	**0.021**	< 0.01	**0.017**	< 0.005
Zinc	mg/L	3		0.008	0.008	2	20		< 0.005	< 0.005	< 0.005	< 0.005	**0.007**	**0.2**	< 0.005	**0.006**	<0.005	< 0.005	**0.016**	**0.007**	**0.053**
Zinc (filtered)	mg/L	3		0.008	0.008	2	20		**0.006**	< 0.005	**0.007**	**0.005**	**0.009**	**0.19**	< 0.005	< 0.005	<0.005	< 0.005	**0.005**	**0.007**	**0.007**
Zirconium	mg/L								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.005	< 0.01	< 0.01	< 0.01	< 0.01
Zirconium (filtered)	mg/L								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.005	< 0.01	< 0.01	< 0.01	< 0.01
Alkalinity																					
Bicarbonate Alkalinity (as CaCO3)	mg/L								**62**	**41**	**92**	**28**	**230**	**82**	**70**	**70**	**67**	**110**	**120**	**120**	**560**
Carbonate Alkalinity (as CaCO3)	mg/L								< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	<1	< 5	< 5	< 5	**30**
Hydroxide Alkalinity (as CaCO3)	mg/L								< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	<1	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	mg/L								**62**	**41**	**92**	**28**	**230**	**82**	**70**	**70**	**67**	**110**	**120**	**120**	**590**
Alkali Metals																					
Calcium	mg/L						1000		**17**	**8.8**	**30**	**6.5**	**1600**	**12**	**17**	**18**	**19**	**12**	**9.6**	**7.4**	**15**
Chloride	mg/L	250							< 5	**16**	**53**	**6.5**	**32000**	**23**	< 5	< 5	**3**	**12**	**27**	**160**	**130**
Magnesium	mg/L								**2.7**	**3.2**	**11**	**1.9**	**3400**	**2.8**	**2.4**	**2.6**	**2**	**14**	**3.3**	**8.6**	**17**
Potassium	mg/L								**6.2**	**4.9**	**7.2**	**3.8**	**100**	**8.2**	**4.8**	**4.9**	**4**	**5.9**	**7.6**	**11**	**13**
Sodium	mg/L	180							**16**	**11**	**41**	**3.4**	**14000**	**37**	**5**	**5.3**	**6**	**97**	**62**	**160**	**280**
Sulphate (as SO4)	mg/L	250					1000		**3.9**	**5.1**	**8**	**3.5**	**2600**	**3.7**	**2.5**	**2.5**	<1	**5.4**	**6.8**	**19**	< 1
Ionic Balance																					
Calculated Ionic balance	%								**22%**	**3%**	**16%**	**1%**	**1%**	**12%**	**2%**	**5%**	**10%**	**47%**	**12%**	**10%**	**7%**
Inorganics																					
Hardness mg equivalent CaCO3/L	mg/L	200							**54**	**35**	**120**	**24**	**18000**	**41**	**52**	**56**	**56**	**89**	**38**	**54**	**110**
Total Dissolved Solids	mg/L	600							**89**	**84**	**230**	**48**	**61000**	**130**	**84**	**84**	**73**	**390**	**200**	**550**	**810**
Total Suspended Solids	mg/L								**6**	< 5	< 5	< 5	**44**	**66**	**12**	**13**	**7**	**70**	**37**	**16**	**280**
Ammonia (as N)	mg/L	0.41[1]		0.9	0.91				**0.04**	< 0.02	**0.13**	< 0.02	**0.22**	**0.33**	< 0.02	< 0.02	<0.01	< 0.02	**0.06**	< 0.02	< 0.02
Conductivity (at 25°C)	mg/L								**140**	**140**	**370**	**82**	**75000**	**220**	**150**	**150**	**134**	**260**	**340**	**700**	**1300**
Ferric Iron - Fe3+	mg/L								-	-	-	-	-	**1.8**	-	-	**0.17**	< 0.5	-	< 0.5	**0.16**
Ferrous Iron - Fe2+	mg/L								< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate & Nitrite (as N)	mg/L								**0.02**	< 0.01	**0.04**	< 0.01	< 0.01	**0.04**	< 0.01	< 0.01	<0.01	**1.8**	**0.04**	< 0.01	< 0.01
Nitrate (as N)	mg/L		113.0[3]	0.7			400		**0.02**	< 0.01	**0.03**	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01	<0.01	**1.8**	**0.03**	< 0.01	< 0.01
Nitrite (as N)	mg/L		9.1[2]				30		< 0.01	< 0.01	**0.01**	< 0.01	< 0.01	**0.02**	< 0.01	< 0.01	<0.01	**0.01**	**0.01**	< 0.01	< 0.01
pH (at 25 °C)	mg/L	6.5-8.5							**6.6**	**6.4**	**6.5**	**6.2**	**7.9**	**7.3**	**6.5**	**6.6**	**7.81**	**7.2**	**8**	**7.1**	**8.6**
Phosphate total (as P)	mg/L								-	-	-	-	-	-	-	-	**0.02**	**0.09**	-	**0.04**	**0.42**
Phosphorus reactive (as P)	mg/L					0.05			< 0.01	**0.03**	**0.01**	< 0.01	**0.03**	< 0.01	< 0.01	< 0.01	<0.01	**0.1**	**0.01**	**0.1**	**0.04**
Silica (calculation from Si filtered)	mg/L	80							-	-	-	-	-	-	-	-	**13.4**	-	-	-	-
Silica (calculation from Si)	mg/L	80							**10**	**6.3**	**17**	**6.8**	**13**	**7.9**	**11**	**11**	**18.4**	**7.5**	**21**	**7.7**	**30**
Total Kjeldahl Nitrogen (as N)	mg/L								**0.8**	**0.7**	**0.3**	**0.8**	**1.9**	**2.9**	**0.7**	**0.8**	**0.4**	**0.3**	**0.6**	**1.1**	**3.4**
Total Nitrogen (as N)	mg/L					5			**0.8**	**0.7**	**0.3**	**0.8**	**1.9**	**2.9**	**0.7**	**0.8**	**0.4**	**2.1**	**0.6**	**1.1**	**3.4**

[1] A dividing factor of 1.21589 has been applied to the ADWG (2011) Drinking Water guideline as conversion from ammonia (as NH3) to ammonia (as N)
[2] A dividing factor of 3.28443 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrite (as N02) to nitrite (as N)
[3] A dividing factor of 4.42664 has been applied to the ADWG (2011) Drinking Water guideline as conversion from nitrate (as N03) to nitrate (as N)

APPENDIX A
GROUNDWATER WELL, SURFACE WATER AND LOGGER LOCATION PHOTOS

Groundwater Monitoring Well Network Photos

July 2024 Groundwater and Surface Water Monitoring Event— Eramurra Salt Project

MBH01

MBH03

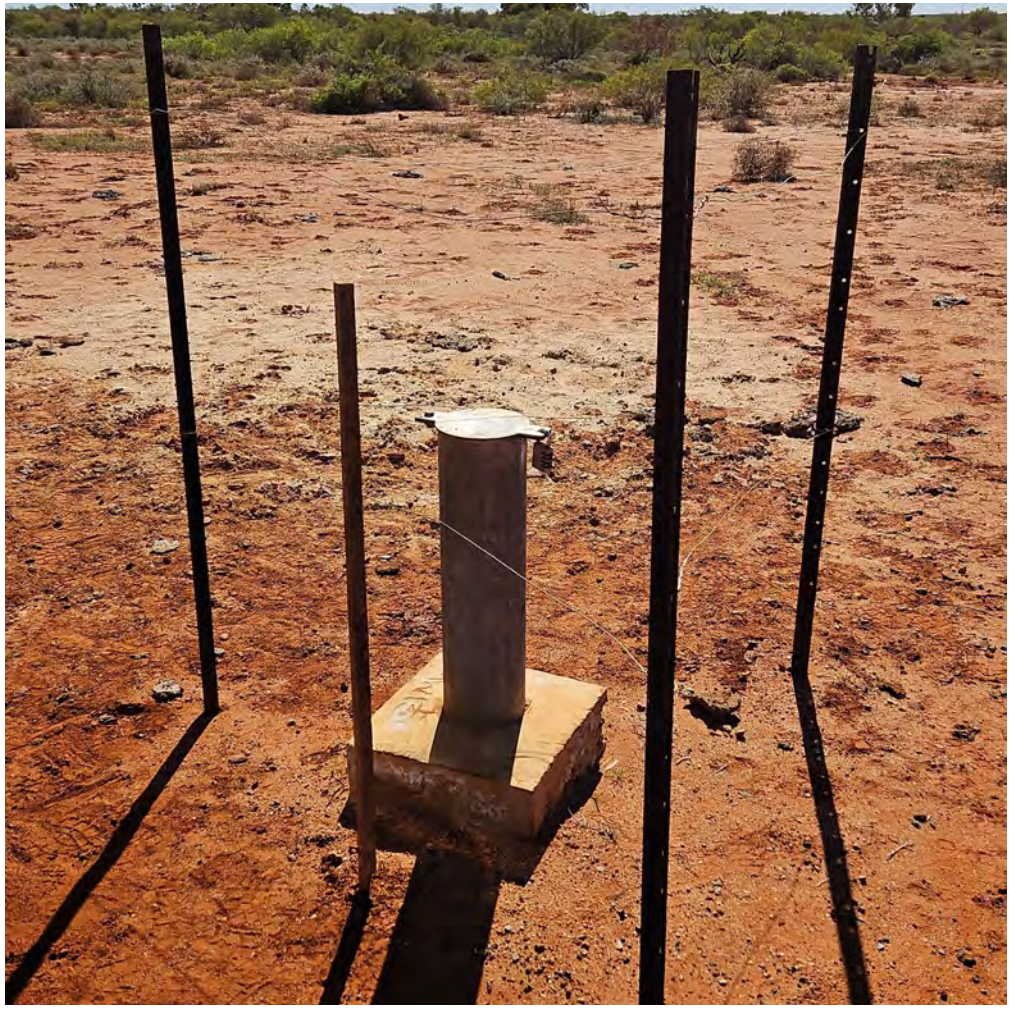
MBH06

MBH08

MNH09

MBH10

MBH12



MBH13

MBH17

MBH19

MBH20

MB21S

MB26D

MB33S

MB33D

MB34S

MB37D

MB38D

MB39D

MB40D

Surface Water Monitoring Location Photos

July 2024 Groundwater and Surface Water Monitoring Event — Eramurra Salt Project

SW01—Surface Water Sampling Location

SW14—Surface Water Sampling Location

Surface Water Monitoring Location Photos - Eramurra Salt Project (July 2024)

Surface Water Logger Location Photos

July 2024 Groundwater and Surface Water Monitoring Event—Eramurra Salt Project

LOG_MC04

LOG_SW13

LOG_SW14

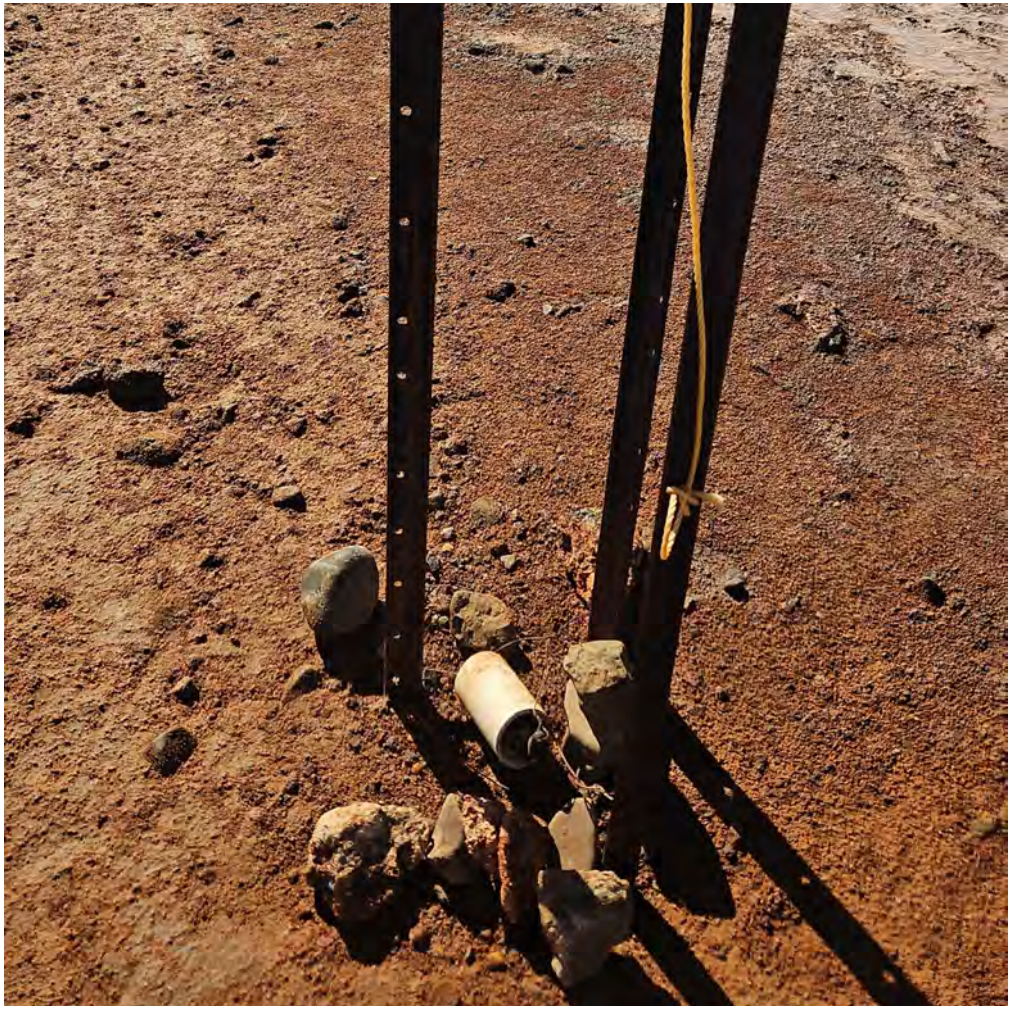
LOG_SW01

LOG_DC01

LOG_EC03

LOG_MC03

*Guage 2— **No logger identified***



LOG_DC03

LOG_YAN01

LOG_EC02

LOG_MC02

LOG_DCANAB1

LOG_EC01

LOG_MC01

LOG_FMBR1

LOG_EC04

LOG_DC02

LOG_DCANAB2

APPENDIX B
CALIBRATION CERTIFICATES

Oil / Water Interface Meter

Instrument Geotech Interface Meter (60M)
Serial No. 5392

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
		✓	
Tape Check	Cleaned	✓	
Connectors	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Calibrated by: **Aisling Oflynn**

Calibration date: **09-Jul-24**

Next calibration due: **07-Sep-24**

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. **18J 104 317**

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
	Seal		
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. ORP in mV	✓	
	3. EC/Temp.	✓	
	4. D.O.	✓	
Alarms	Beeper		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Value	Standard		Instrument Reading
Temperature			*Checked*	21.5 °C
pH	pH 7	381241	Calibrated	5.90 mV
pH	pH 4	384826	Calibrated	167.10 mV
EC	Zero	Air	*Checked*	0.001 mS/cm
EC	2.76mS/cm	368682	Calibrated	2.76 mS/cm
ORP (mV)	240mV at 20°C	377347/374425	Calibrated	242.1 mV
DO Zero	Zero	Sodium sulpite 329994	*Checked*	-0.2 %
DO 100%	100%	Water saturated air	Calibrated	93.3 %

Calibrated by: **Aisling Oflynn**

Calibration date: **09-Jul-24**

Next calibration due 09-Aug-24

APPENDIX C
FIELD SAMPLING SHEETS

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH01	Bore Locked	combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	25.5
Depth to Groundwater (mPVC):	7.654	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.055 / 0.025	Screen Interval (m)	19.5 - 25.5 mBGL
Gatic Cover: Y / N	Standpipe: (Y) / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: (Y) / N	Rain: -	Wind Direction: Easterly
Comments: Rental	Signed Off By: LW	Temperature: 22°C	Wind Speed: low
		Cloud Cover: 0%	Upwind Activities: N/A

Location Conditions
Comments:
(Circle) Sealed (Gravel) / (Grassed) Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer | Waterra Tubing/ Footvalve | (Low Flow Sampling) | Passive Sampler

Equipment (Circle): Disposable | (Dedicated Tubing) | Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 23/7/24 | Name: L Wilkins / A Vaughan

Start Time: 9:10 | Finish Time: 9:35 | Pump Depth: ~22m

Purge Volume (L): 10 | No times purged: 4 | Pumping Details: 0.4L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
9:20	4	6.80	2487	5.9	27.4	5.08	7.65	clear, no/low turbidity,
9:25	2	6.82	2497	7.5	27.7	7.02	" "	no odour or sheen.
9:30	2	6.83	2489	7.0	27.8	5.89	" "	
9:35	2	6.82	2496	6.4	27.8	6.19	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / (N)

If so, QAQC Sample ID:

Logger download @ 9:30 - MBH01

Purger/ Sampler Name: A Vaughan | Signature: [signature] | Date: 23 / 7 / 2024

Checked by: E Picken | Signature: EP | Date: 11 / 8 / 2024

* Datum = 68 cm - 16 cm (PVC) = 52 cm (mPVC) above ground level

Groundwater Well Sampling Data Sheet M

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH03	Bore Locked	combo lock
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	5.80
Depth to Groundwater (mPVC):	2.985	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.055/0.025	Screen Interval (m)	3.5-5.5 m BGL
Gatic Cover: Y / (N)	Standpipe: (Y) / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: (Y) / N	Rain: -	Wind Direction: E
Comments: Rental	Signed Off By: LW	Temperature: 27°C	Wind Speed: Mod
		Cloud Cover: 0%	Upwind Activities: N/A

Location Conditions
Comments:
(Circle) Sealed Gravel (Grassed) Other (specify)

Sampling Methodology	
Sampling Method (Circle): Disposable Bailer / Waterra Tubing/ Footvalve / (Low Flow Sampling) / Passive Sampler	
Equipment (Circle): Disposable / (Dedicated Tubing) / Decontaminated	
Bore Volume Calculation: $PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$	**Low Flow Methodology:** The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable).
where H = height of water column (m) R = Bore Radius (m)	
h = thickness of saturated filterpack (m) r = PVC Radius (m)	

Purging Information

Date: 25/7/24 | Name: L Wilkins / A Vaughan

Start Time: 12:49 | Finish Time: 1:20 | Pump Depth: ~4.5 m

Purge Volume (L): 7.5 | No times purged: 4 | Pumping Details: 0.5L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
12:59	3	7.65	121204	26.9	29.2	1.71	3.03	Cloudy grey, lav-mod turb
1:04	1.5	7.62	122339	28.6	29.5	1.30	" "	no odour or sheen.
1:09	1.5	7.57	123722	29.2	29.6	1.56	" "	
1:14	1.5	7.57	123801	29.3	29.6	1.50	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes
QAQC Sample Collected: Y / (N)
If so, QAQC Sample ID:
Logger ID: Y5452 Downloaded @ 1:00 pm
Purger/ Sampler Name: A Vaughan Signature: A Vaughan Date: 25 / 7 / 2024
Checked by: E Picken Signature: EP Date: 11 / 8 / 2024

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH06	Bore Locked	combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	22.213
Depth to Groundwater (mPVC):	8.753	Depth to Apparent Free Thickness (mPVC)	—
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.055/0.025	Screen Interval (m)	19.5 - 22.5 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: -	Wind Direction: Easterly
Comments: Rental	Signed Off By: LW	Temperature: 20°C	Wind Speed: moderate
		Cloud Cover: 0%	Upwind Activities: -

Location Conditions
Comments:
(Circle) Sealed Gravel / Grassed Other (specify)

Sampling Methodology				
Sampling Method (Circle):	Disposable Bailer	Waterra Tubing/ Footvalve	Low Flow Sampling	Passive Sampler
Equipment (Circle):	Disposable	Dedicated Tubing	Decontaminated	

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 26/7/24	Name: L Wilkins / A Vaughan		
Start Time: 8:44	Finish Time: 9:15	Pump Depth: ~21 m	
Purge Volume (L): 5	No times purged: 4	Pumping Details: 0.2 L/min	

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
8:54	2	6.57	34182	25.9	27.6	0.10	8.76	clear, no/low turbidity,
8:59	1	6.59	34337	25.2	28.1	0.33	" "	no odour or sheen
9:04	1	6.60	34272	25.1	28.0	0.00	" "	
9:09	1	6.62	34080	24.3	28.0	0.00	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / (N)

If so, QAQC Sample ID:

Logger ID: Y4510
a = 20 m
b = 19.425
c = 22.213

Purger/ Sampler Name: A Vaughan Signature A Vaughan Date 26 / 7 / 2024

Checked by: E Picken Signature EP Date 11 / 8 / 2024

deployed @ 9:15am

pod sum = 72.3 cm total height
14.8 cm down to PVC from TOC

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH08	Bore Locked	combo lock
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	13.26
Depth to Groundwater (mPVC):	4.235	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.055/0.025	Screen Interval (m)	10 - 13 m BML
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Good

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: -	Wind Direction: Easterly
Comments: Rental	Signed Off By: LW	Temperature: 25°C	Wind Speed: moderate
		Cloud Cover: 10%	Upwind Activities: N/A

Location Conditions
Comments:
(Circle) Sealed Gravel / Grassed Other (specify)

Sampling Methodology				
Sampling Method (Circle):	Disposable Bailer	Waterra Tubing/ Footvalve	Low Flow Sampling	Passive Sampler
Equipment (Circle):	Disposable	Dedicated Tubing	Decontaminated	

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information								
Date: 25/7/24		Name: L Wilkins / A Vaughan						
Start Time: 11:06		Finish Time: 11:30			Pump Depth: 11 m			
Purge Volume (L): 5		No times purged: 4			Pumping Details: 0.2L/min			
Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
11:10	2	6.65	157944	-11.5	29.1	0.97	4.30	Clear no/low turbidity
11:15	1	6.64	158877	-4.0	29.0	0.08	" "	no odour or sheen.
11:20	1	6.64	159514	-0.4	28.9	0.12	" "	
11:25	1	6.64	161063	0.7	29.1	0.17	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes			
QAQC Sample Collected: Y / N			Logger ID: Y4254
If so, QAQC Sample ID:			Downloaded @ 11:08 pm
Purger/ Sampler Name: A Vaughan	Signature	Date	25 / 7 / 2024
Checked by: E Picken	Signature EP	Date	31 / 8 / 2024

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH09	Bore Locked	Combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	14.08
Depth to Groundwater (mPVC):	6.716	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.055/0.025	Screen Interval (m)	10.5-13.5 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (Integrity of casing/ well caps etc):	Fixed Mount

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: -	Wind Direction: Easterly
Comments: Rental	Signed Off By: LW	Temperature: 25°C	Wind Speed: Low
		Cloud Cover: 40%	Upwind Activities: -

Location Conditions
Comments:
(Circle) Sealed Gravel / Grassed Other (specify)

Sampling Methodology
Sampling Method (Circle): Disposable Bailer Waterra Tubing/ Footvalve **Low Flow Sampling** Passive Sampler
Equipment (Circle): Disposable **Dedicated Tubing** Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 24/7/24 Name: L Wilkins / A Vaughan

Start Time: 2:26 Finish Time: 2:56 Pump Depth: 11 m

Purge Volume (L): 10 No times purged: 4 Pumping Details: 0.4 L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
2:36	4	7.00	2335	35.6	30.5	1.44	6.725	clear, no/low turbidity
2:41	2	7.00	2336	36.4	30.6	6.42	" "	no odour or sheen.
2:46	2	6.99	2332	38.1	30.5	4.65	" "	
2:51	2	6.99	2331	39.3	30.6	4.67	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / N

If so, QAQC Sample ID: DUP1

Logger ID: Y4257 downloaded @ 2:40 pm

Podmm: 71cm - 15cm = 56cm above ground level

Purger/ Sampler Name: A Vaughan Signature A Vaughan Date 24 / 7 / 2024

Checked by: E Picken Signature EP Date 1 / 8 / 2024

Groundwater Well Sampling Data Sheet

General Information

Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information

Well ID No.	MBH10	Bore Locked	combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	16.75
Depth to Groundwater (mPVC):	5.224	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.055/0.025	Screen Interval (m)	9.8-15.8 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Good

Equipment Calibration Information

Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N		
Comments: Rental	Signed Off By: LW		

Weather Conditions

Rain:	-	Wind Direction:	-
Temperature:	25°C	Wind Speed:	-
Cloud Cover:	0%	Upwind Activities:	-

Location Conditions

Comments:

(Circle) Sealed (Gravel) / (Grassed) Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer | Waterra Tubing/ Footvalve | (Low Flow Sampling) | Passive Sampler

Equipment (Circle): Disposable | (Dedicated Tubing) | Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 26/7/24 | Name: L Wilkins / A Vaughan

Start Time: 11:50 | Finish Time: 12:25 | Pump Depth: ~12 m

Purge Volume (L): 7.5 | No times purged: 4 | Pumping Details: 0.3 L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
12:00	3	7.25	3177	22.4	30.0	4.20	5.25	Clear, low turb, no o/s
12:05	1.5	7.24	3185	22.7	30.2	3.08	" "	↓
12:10	1.5	7.23	3178	20.4	30.1	2.92	" "	
12:15	1.5	7.22	3175	19.2	30.1	2.92	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / (N)

If so, QAQC Sample ID:

Reset Logger ID: DP342 Download @ 11:55 am

Purger/ Sampler Name: A Vaughan Signature [signature] Date 26 / 7 / 2024

Checked by: E Picken Signature EP Date 11 / 8 / 2024

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH12	Bore Locked	combo lock - 7435
Depth to Groundwater (m-TOSC):	–	Well depth (m-PVC)	9.7
Depth to Groundwater (mPVC):	5.147	Depth to Apparent Free Thickness (mPVC)	–
Depth to Groundwater (m-BGL):	–	Apparent Free Product Thickness (m)	–
Bore Radius (m)/ PVC Casing Radius (m)	0.055/0.025	Screen Interval (m)	5.5 - 9.5 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions			
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: –		Wind Direction:	Westerly
Comments: Rental	Signed Off By: LW	Temperature:	18°C	Wind Speed:	low
		Cloud Cover:	20%	Upwind Activities:	N/A

Location Conditions
Comments:
(Circle) Sealed Gravel / Grassed Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer | Waterra Tubing/ Footvalve | Low Flow Sampling | Passive Sampler

Equipment (Circle): Disposable | Dedicated Tubing | Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m); R = Bore Radius (m)

h = thickness of saturated filterpack (m); r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable).

Purging Information

Date: 24/7/24 | Name: L Wilkins / A Vaughan

Start Time: 7:42 | Finish Time: 8:18 | Pump Depth: ~7m

Purge Volume (L): 5 | No times purged: 6 | Pumping Details: 0.2 L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
7:52	2	~~11.44~~	3439	5.1	27.8	0.00	5.19	Clear, low/no turb,
7:57	1	11.42	3490	-22.6	28.2	0.00	" "	no o/s
8:02	1	11.42	3501	-31.0	28.4	0.00	" "	
8:07	1	11.43	3510	-49.5	28.5	0.00	" "	
8:12	1	11.45	3554	-54.2	28.7	0.00	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / (N)

If so, QAQC Sample ID:

Logger ID: ~~BX17815~~ Y25911
download @ 7:50am
Pachum: 66.5 + 12 cm = 78.5

Purger/ Sampler Name: A Vaughan | Signature: AVaughan | Date: 24 / 7 / 2024

78.5 - 16 cm (mPVC)
= 62.5 cm (PV)

Checked by: E Picken | Signature: EP | Date: 11 / 8 / 2024

above ground level.

Groundwater Well Sampling Data Sheet

General Information

Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information

Well ID No.	MBH 13	Bore Locked	combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	14.25
Depth to Groundwater (mPVC):	4.200	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.055/0.025	Screen Interval (m)	8 - 14 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Good

Equipment Calibration Information

Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: -	Wind Direction: easterly
Comments: Rental	Signed Off By: LW	Temperature: 24°C	Wind Speed: moderate
		Cloud Cover: 0%	Upwind Activities: -

Location Conditions

Comments:

(Circle) Sealed / Gravel / Grassed / Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer / Waterra Tubing/ Footvalve / Low Flow Sampling / Passive Sampler

Equipment (Circle): Disposable / Dedicated Tubing / Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable).

Purging Information

Date: 26/7/24 Name: L Wilkins / A Vaughan

Start Time: 10:44 Finish Time: 11:14 Pump Depth: ~11 m

Purge Volume (L): 5 No times purged: 4 Pumping Details: 0.2 L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
10:54	2	6.33	60290	37.1	29.8	2.91	4.30	clear, low/no turbidity,
10:59	1	6.35	58297	37.8	29.8	2.79	" "	no odour or sheen.
11:04	1	6.36	58282	36.6	30.1	2.65	" "	
11:09	1	6.37	57448	34.5	29.9	2.57	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / N

If so, QAQC Sample ID:

reset.
Logger ID: Y3950
downloaded @ 10:50 am

Purger/ Sampler Name: A Vaughan Signature Date 26 / 7 / 2024

Checked by: E Picken Signature EP Date 11 / 8 / 2024

Groundwater Well Sampling Data Sheet

LWC

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH17	Bore Locked	Combo lock - 7435
Depth to Groundwater (m-TOSC):	–	Well depth (m-PVC)	17.6
Depth to Groundwater (mPVC):	7.412	Depth to Apparent Free Thickness (mPVC)	–
Depth to Groundwater (m-BGL):	–	Apparent Free Product Thickness (m)	–
Bore Radius (m)/ PVC Casing Radius (m)	0.055/0.025	Screen Interval (m)	12 - 18 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Good

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: –	Wind Direction: –
Comments: Rental	Signed Off By: LW	Temperature: 26°C	Wind Speed: –
		Cloud Cover: 0%	Upwind Activities: –

Location Conditions

Comments:

(Circle) Sealed Gravel / Grassed Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer | Waterra Tubing/ Footvalve | Low Flow Sampling | Passive Sampler

Equipment (Circle): Disposable | Dedicated Tubing | Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable).

Purging Information

Date: 23/7/24 Name: L Wilkins / A Vaughan

Start Time: 11:01 Finish Time: 11:35 Pump Depth: ~15 m BGL

Purge Volume (L): 10 No times purged: 4 Pumping Details: 0.4 L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
11:11	4	6.79	2553	8.8	30.5	8.66	7.42	Clear, low turb, no o/s
11:16	2	6.79	2556	9.2	30.5	9.09	" "	
11:21	2	6.80	2548	9.5	30.4	6.12	" "	
11:26	2	6.80	2548	9.7	30.5	5.15	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / N

If so, QAQC Sample ID:

Logger ID: D1710
Replaced @ 11:37am
Pochum = 67cm - 15cm
= 52cm (m PVC) above ground level
a = 14.48 m
b = 15m
c = 17.60m

Purger/ Sampler Name: A Vaughan Signature A Vaughan Date 23 / 7 / 2024

Checked by: E Picken Signature EP Date 1 / 8 / 2024

Groundwater Well Sampling Data Sheet

General Information

Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information

Well ID No.	MBH19	Bore Locked	combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	22.3
Depth to Groundwater (mPVC):	3.670	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.055/0.025	Screen Interval (m)	20.5 - 22.5 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Good

Equipment Calibration Information

Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N
Comments: Rental	Signed Off By: LW

Weather Conditions

Rain: -	Wind Direction: Southerly
Temperature: 19°C	Wind Speed: Moderate
Cloud Cover: 0%	Upwind Activities: N/A

Location Conditions

Comments:

(Circle) Sealed / Gravel / Grassed / Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer / Waterra Tubing/ Footvalve / Low Flow Sampling / Passive Sampler

Equipment (Circle): Disposable / Dedicated Tubing / Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m); R = Bore Radius (m)

h = thickness of saturated filterpack (m); r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 25/7/24 | Name: L Wilkins / A Vaughan

Start Time: 8:28 | Finish Time: 8:58 | Pump Depth: ~21 m

Purge Volume (L): 7.5 | No times purged: 4 | Pumping Details: 0.3L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
8:38	3	5.67	190758	49.9	28.4	0.52	3.70	Clear, low/no turb, no
8:43	1.5	5.90	190646	49.8	28.4	0.61	" "	o/s
8:48	1.5	5.94	191114	47.4	28.6	0.51	" "	
8:53	1.5	5.95	191126	46.1	28.6	0.50	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / N

If so, QAQC Sample ID:

Logger ID: DP349
Downloaded @ 8:40 am

Purger/ Sampler Name: A Vaughan | Signature: A Vaughan | Date: 25 / 7 / 2024

Checked by: E Picken | Signature: EP | Date: 11 / 8 / 2024

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH20	Bore Locked	Combo lock - 7435
Depth to Groundwater (m-TOSC):	–	Well depth (m-PVC)	22.6
Depth to Groundwater (mPVC):	3.990	Depth to Apparent Free Thickness (mPVC)	–
Depth to Groundwater (m-BGL):	–	Apparent Free Product Thickness (m)	–
Bore Radius (m)/ PVC Casing Radius (m)	0.055 / 0.025	Screen Interval (m)	19-22 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (Integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: –	Wind Direction: –
Comments: Rental	Signed Off By: LW	Temperature: 26°C	Wind Speed: –
		Cloud Cover: 0%	Upwind Activities: –

Location Conditions
Comments:
(Circle) Sealed Gravel / Grassed Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer | Waterra Tubing/ Footvalve | **Low Flow Sampling** | Passive Sampler

Equipment (Circle): Disposable | **Dedicated Tubing** | Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 23/7/24 | Name: L Wilkins / A Vaughan

Start Time: 1:47 | Finish Time: 2:20 | Pump Depth: 20.5 m BGL

Purge Volume (L): 10 | No times purged: 4 | Pumping Details: 0.4L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
1:57	4	6.54	153986	-122.7	28.3	0.00	4.00	clear, no/low turbidity,
2:02	2	6.54	154588	-122.4	28.0	0.00	" "	H_2S odour, no
2:07	2	6.54	153941	-119.2	27.8	0.00	" "	sheen.
2:12	2	6.53	154329	-117.4	28.1	0.00	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / N

If so, QAQC Sample ID:

Logger ID: Y3962
Deployed: 2:25 pm
pontoon = 77cm - 11cm
= 66cm

Purger/ Sampler Name: A Vaughan | Signature: A Vaughan | Date: 23/7/2024

Checked by: E Picken | Signature: EP | Date: 9/8/2024

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH215	Bore Locked	combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	~~17.85~~ 24 m
Depth to Groundwater (mPVC):	8.428	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.052 / 0.025	Screen Interval (m)	17-23 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: -	Wind Direction: -
Comments: Rental	Signed Off By: LW	Temperature: 26°C	Wind Speed: -
		Cloud Cover: 0%	Upwind Activities: -

Location Conditions				
Comments:				
(Circle)	Sealed	Gravel	Grassed	Other (specify)

Sampling Methodology				
Sampling Method (Circle):	Disposable Bailer	Waterra Tubing/ Footvalve	Low Flow Sampling	Passive Sampler
Equipment (Circle):	Disposable	Dedicated Tubing	Decontaminated	

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and Internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 23/7/24 | Name: L Wilkins / A Vaughan

Start Time: 12:14 | Finish Time: 12:45 | Pump Depth: ~21 m BGL

Purge Volume (L): 10 | No times purged: 4 | Pumping Details: 0.4L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
12:24	4	6.68	1795	-29.5	30.6	0.00	8.44	clear, no/low turbidity,
12:29	2	6.68	1785	-22.3	30.5	0.00	" "	no odour or sheen.
12:34	2	6.68	1781	-21.8	30.4	0.00	" "	
12:39	2	6.68	1777	-19.6	30.5	0.00	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / N

If so, QAQC Sample ID:

Logger Y4498 downloaded @ 12:45 pm

Purger/ Sampler Name: A Vaughan Signature: AV Date: 23 / 7 / 2024

Checked by: E Picken Signature: EP Date: 11 / 8 / 2024

Pochum = 97 cm - 11 cm = 86 cm (mPVC) above ground level

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH26D	Bore Locked	combo lock
Depth to Groundwater (m-TOSC):	–	Well depth (m-PVC)	26.650
Depth to Groundwater (mPVC):	4.912	Depth to Apparent Free Thickness (mPVC)	–
Depth to Groundwater (m-BGL):	–	Apparent Free Product Thickness (m)	–
Bore Radius (m)/ PVC Casing Radius (m)	6.064 / 0.025	Screen Interval (m)	19-25 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: –	Wind Direction: Easterly
Comments: Rental	Signed Off By: LW	Temperature: 27°C	Wind Speed: moderate
		Cloud Cover: 0%	Upwind Activities: N/A

Location Conditions
Comments:
(Circle) Sealed Gravel / Grassed Other (specify)

Sampling Methodology
Sampling Method (Circle): Disposable Bailer; Waterra Tubing/ Footvalve; Low Flow Sampling; Passive Sampler
Equipment (Circle): Disposable; Dedicated Tubing; Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m); R = Bore Radius (m)

h = thickness of saturated filterpack (m); r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 25/7/24 | Name: L Wilkins / A Vaughan

Start Time: 11:57 | Finish Time: 12:30 | Pump Depth: 23 m

Purge Volume (L): 10 | No times purged: 4 | Pumping Details: 0.4 L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
12:07	4	6.58	139861	7.9	29.1	2.88	4.95	clear, no / low turbidity,
12:12	2	6.56	139900	12.7	29.1	2.85	" "	no odour or sheen
12:17	2	6.57	139281	25.9	28.9	2.70	" "	
12:22	2	6.57	139055	28.5	28.8	2.89	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / N

If so, QAQC Sample ID:

Logger: Y4499 download @ 12:05 pm

Purger/ Sampler Name: A Vaughan Signature: AVaughan Date: 25 / 7 / 2024

Checked by: E Picken Signature: EP Date: 11 / 8 / 2024

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MB19335	Bore Locked	Combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	21.050
Depth to Groundwater (mPVC):	6.935	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.064 / 0.025	Screen Interval (m)	14-20m BGL
Gatic Cover: Y / (N)	Standpipe: (Y) / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: (Y) / N	Rain: -	Wind Direction: Easterly
Comments: Rental	Signed Off By: LW	Temperature: 26°C	Wind Speed: Low
		Cloud Cover: 30%	Upwind Activities: -

Location Conditions				
Comments:				
(Circle)	Sealed	(Gravel) /	(Grassed)	Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer | Waterra Tubing/ Footvalve | (Low Flow Sampling) | Passive Sampler

Equipment (Circle): Disposable | (Dedicated Tubing) | Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) | R = Bore Radius (m)

h = thickness of saturated filterpack (m) | r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable).

Purging Information

Date: 24/7/24 | Name: L Wilkins / A Vaughan

Start Time: 1:10 | Finish Time: 1:45 | Pump Depth: ~18m BGL

Purge Volume (L): 10 | No times purged: 4 | Pumping Details: 0.4L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
1:20	4	7.14	1591	-66.7	30.8	1.06	6.94	clear, low/no turbidity,
1:25	2	7.13	1585	-66.4	31.4	0.13	" "	no odour or sheen.
1:30	2	7.08	1560	-42.6	31.3	0.08	" "	
1:35	2	7.06	1550	-36.0	31.3	0.09	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / (N)

If so, QAQC Sample ID:

Logger ID: Y4489
downloaded: 1:20 pm

Purger/ Sampler Name: A Vaughan | Signature: [signature] | Date: 24 / 7 / 2024

Checked by: E Picken | Signature: EP | Date: 11 / 8 / 2024

Podium = 93.5 - 10cm
= 83.5 cm above ground level.

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH33D	Bore Locked	combo lock
Depth to Groundwater (m-TOSC):	–	Well depth (m-PVC)	60 m
Depth to Groundwater (mPVC):	7.260	Depth to Apparent Free Thickness (mPVC)	–
Depth to Groundwater (m-BGL):	–	Apparent Free Product Thickness (m)	–
Bore Radius (m)/ PVC Casing Radius (m)	0.064 / 0.025	Screen Interval (m)	54 - 60 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: –	Wind Direction: Easterly
Comments: Rental	Signed Off By: LW	Temperature: 27°C	Wind Speed: Low
		Cloud Cover: 30%	Upwind Activities: N/A

Location Conditions				
Comments:				
(Circle)	Sealed	Gravel	Grassed	Other (specify)

Sampling Methodology				
Sampling Method (Circle):	Disposable Bailer	Waterra Tubing/ Footvalve	Low Flow Sampling	Passive Sampler
Equipment (Circle):	Disposable	Dedicated Tubing	Decontaminated	

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 24/7/24 Name: L Wilkins / A Vaughan

Start Time: 12:15 Finish Time: 12:45 Pump Depth: ~57 m

Purge Volume (L): 10 No times purged: 4 Pumping Details: 0.4 L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm) or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm) or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
12:25	4	11.97	7646	10.9	30.3	4.96	7.35	clear, no/low turbidity,
12:30	2	11.97	7662	12.8	30.3	3.40	"	no odour or sheen.
12:35	2	11.97	7672	13.7	30.5	3.37	"	"
12:40	2	11.97	7608	14.9	30.4	3.08	"	"

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / (N)

If so, QAQC Sample ID:

Logger ID: W8665 downloaded @ 12:18pm

Purger/ Sampler Name: A Vaughan Signature [signature] Date 24 / 7 2024

Checked by: E Picken Signature [signature] Date 1 / 8 / 2024

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH345	Bore Locked	combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	20.75
Depth to Groundwater (mPVC):	7.215	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.064 / 0.025	Screen Interval (m)	17-20 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: -	Wind Direction: -
Comments: Rental	Signed Off By: LW	Temperature: 22°C	Wind Speed: -
		Cloud Cover: 10%	Upwind Activities: -

Location Conditions

Comments:

(Circle) Sealed / Gravel / Grassed / Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer | Waterra Tubing/ Footvalve | Low Flow Sampling | Passive Sampler

Equipment (Circle): Disposable | Dedicated Tubing | Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable).

Purging Information

Date: 24/7/24 Name: L Wilkins / A Vaughan

Start Time: 8:35 Finish Time: 9:15 Pump Depth: ~19.2 m

Purge Volume (L): 10 No times purged: 4 Pumping Details: 0.4 L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
8:45	4	7.12	3224	-80.6	28.9	~~1.00~~ 3.33	7.30	light grey, L-m turbidity, H_2S odour,
8:50	2	7.14	3087	-84.1	28.6	~~0.00~~ 3.14	" "	
8:55	2	7.14	3084	-84.2	28.5	~~0.00~~ 3.28	" "	no sheen.
9:00	2	7.15	3064	-86.1	28.6	1.83	" "	↓

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / N

If so, QAQC Sample ID: DUP2

Did not download! Replacement logger!

Logger ID: ~~P3610~~ Y3661

Position: 77cm - 12.5 = 64.5cm above ground level

Purger/ Sampler Name: A Vaughan Signature: [signature] Date: 24 / 7 / 2024

Checked by: E Picken Signature: EP Date: 11 / 8 / 2024

new logger deployed @ 9:25 am

attempted download @ 8:40 am

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH355	Bore Locked	combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	16.120
Depth to Groundwater (mPVC):	5.143	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):		Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.064/0.025	Screen Interval (m)	12-15 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (Integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: -	Wind Direction: Easterly
Comments: Rental	Signed Off By: LW	Temperature: 24°C	Wind Speed: moderate
		Cloud Cover: 10%	Upwind Activities: -

Location Conditions				
Comments:				
(Circle)	Sealed	Gravel	Grassed	Other (specify)

Sampling Methodology				
Sampling Method (Circle):	Disposable Bailer	Waterra Tubing/ Footvalve	Low Flow Sampling	Passive Sampler
Equipment (Circle):	Disposable	Dedicated Tubing	Decontaminated	

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 26/7/24 | Name: L Wilkins / A Vaughan

Start Time: 9:44 | Finish Time: 10:15 | Pump Depth: 14.5

Purge Volume (L): 10 | No times purged: 4 | Pumping Details: 0.4L/min

Time	Volume Removed (L)	pH	E.C. (uS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
9:54	4	7.11	4632	25.4	28.6	2.66	5.20	Clear, low/no turbidity,
9:59	2	7.10	4630	25.4	28.6	7.60	"	no odour or sheen
10:04	2	7.09	4645	25.0	28.9	2.83	"	
10:09	2	7.08	4652	24.5	29.1	2.65	"	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / N

If so, QAQC Sample ID:

Logger ID: Y4486 downloaded @ 9:48am

Purger/ Sampler Name: A Vaughan Signature: A Vaughan Date: 26 / 7 / 2024

Checked by: E Picken Signature: EP Date: 11 / 9 / 2024

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH37D	Bore Locked	Combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	43.90
Depth to Groundwater (mPVC):	7.516	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.064 / 0.025	Screen Interval (m)	36-42 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: -	Wind Direction: -
Comments: Rental	Signed Off By: LW	Temperature: 27°C	Wind Speed: -
		Cloud Cover: 0%	Upwind Activities: -

Location Conditions
Comments:
(Circle) Sealed Gravel / Grassed Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer | Waterra Tubing/ Footvalve | Low Flow Sampling | Passive Sampler

Equipment (Circle): Disposable | Dedicated Tubing | Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 24/7/24 Name: L Wilkins / A Vaughan

Start Time: 10:42 Finish Time: 11:12 Pump Depth: ~ 41 m

Purge Volume (L): 10 No times purged: 4 Pumping Details: 0.4 L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
10:52	4	7.53	2210	-21.6	30.0	0.39	7.56	Clear, low turb, no o/s
10:57	2	7.49	2217	-8.4	30.1	0.55	" "	
11:02	2	7.48	2229	5.9	30.1	1.16	" "	
11:07	2	7.46	2216	12.7	30.3	1.08	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / (N)

If so, QAQC Sample ID:

Logger ID: W8653

Pectium: 106 - 6cm (PVC) = 100 cm above ground level (downloaded @ 10:55 am)

Purger/ Sampler Name: A Vaughan Signature: AVaughan Date: 24 / 7 / 2024

Checked by: E Picken Signature: EP Date: 11 / 9 / 2024

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH38D	Bore Locked	Combolock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	50.550
Depth to Groundwater (mPVC):	17.872	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.064 / 0.025	Screen Interval (m)	43.6 - 49.6 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: -	Wind Direction: Easterly
Comments: Rental	Signed Off By: LW	Temperature: 17°C	Wind Speed: moderate
		Cloud Cover: 6%	Upwind Activities: -

Location Conditions
Comments:
(Circle) Sealed Gravel / Grassed Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer | Waterra Tubing/ Footvalve | Low Flow Sampling | Passive Sampler

Equipment (Circle): Disposable | Dedicated Tubing | Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m); R = Bore Radius (m)

h = thickness of saturated filterpack (m); r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 26/7/24 | Name: L Wilkins / A Vaughan

Start Time: 7:33 | Finish Time: 8:05 | Pump Depth: ~47 m

Purge Volume (L): 10 | No times purged: 4 | Pumping Details: 0.4 L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
7:43	4	7.02	5453	-74.5	19.9	5.56	17.90	clear, no/low turbidity
7:48	2	6.72	6047	-61.5	25.5	1.35	" "	H_2S odour, no
7:53	2	6.66	6077	-45.2	25.7	2.06	" "	sheen
7:58	2	6.65	6104	-37.5	26.0	2.10	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / N

If so, QAQC Sample ID:

Logger ID: Y4496
Downloaded @ 7:37 am

Purger/ Sampler Name: A Vaughan | Signature: [signature] | Date: 26 / 7 / 2024

Checked by: E Picken | Signature: EP | Date: 1 / 8 / 2024

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH390	Bore Locked	combo lock - 7435
Depth to Groundwater (m-TOSC):	-	Well depth (m-PVC)	28.550
Depth to Groundwater (mPVC):	8.640	Depth to Apparent Free Thickness (mPVC)	-
Depth to Groundwater (m-BGL):	-	Apparent Free Product Thickness (m)	-
Bore Radius (m)/ PVC Casing Radius (m)	0.064 / 0.025	Screen Interval (m)	21 - 27 m BGL
Gatic Cover: Y / N	Standpipe: Y / N	Bore Condition (integrity of casing/ well caps etc):	Excellent

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: Y / N	Rain: -	Wind Direction: Low
Comments: Rental	Signed Off By: LW	Temperature: 27°C	Wind Speed: Easterly
		Cloud Cover: 20/	Upwind Activities: -

Location Conditions				
Comments:				
(Circle)	Sealed	Gravel	Grassed	Other (specify)

Sampling Methodology

Sampling Method (Circle): Disposable Bailer | Waterra Tubing/ Footvalve | Low Flow Sampling | Passive Sampler

Equipment (Circle): Disposable | Dedicated Tubing | Decontaminated

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) | R = Bore Radius (m)

h = thickness of saturated filterpack (m) | r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable).

Purging Information

Date: 25/7/24 | Name: L Wilkins / A Vaughan

Start Time: 1:57 | Finish Time: 2:20 | Pump Depth: ~25 m

Purge Volume (L): 10 | No times purged: 4 | Pumping Details: 0.4 L/min

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
2:07	4	7.48	4212	22.4	29.5	1.69	8.70	Clear, low turb, no
2:12	2	7.47	4208	18.8	30.1	1.44	" "	o/s
2:17	2	7.47	4200	13.8	30.0	1.21	" "	
2:22	2	7.47	4200	13.9	30.0	1.10	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / N

If so, QAQC Sample ID:

Logger ID: Y4512 downloaded @ 2:07 pm

Purger/ Sampler Name: A Vaughan | Signature | Date 25 / 7 / 2024

Checked by: E Picken | Signature EP | Date 11 / 8 / 2024

Groundwater Well Sampling Data Sheet

General Information	
Client:	Leichhardt
Job Number:	QI-01
Project:	July 2024 GME
Location:	Eramurra, WA

Bore Information			
Well ID No.	MBH40D	Bore Locked	Yes - combo 74 35
Depth to Groundwater (m-TOSC):	–	Well depth (m-PVC)	~60 m
Depth to Groundwater (mPVC):	5.217	Depth to Apparent Free Thickness (mPVC)	–
Depth to Groundwater (m-BGL):	–	Apparent Free Product Thickness (m)	–
Bore Radius (m)/ PVC Casing Radius (m)	~~BR~~ 0.064/0.025	Screen Interval (m)	57 - 60 m BGL
Gatic Cover: Y / (N)	Standpipe: (Y) / N	Bore Condition (integrity of casing/ well caps etc):	Good (Bent PVC casing)

Equipment Calibration Information		Weather Conditions	
Chem Kit Number/ Type: YSI	Chem Kit Calibrated: (Y) / N	Rain: –	Wind Direction: –
Comments: Rental	Signed Off By: LW	Temperature: 24°C	Wind Speed: –
		Cloud Cover: 20%	Upwind Activities: –

Location Conditions
Comments:
(Circle) Sealed (Gravel) / (Grassed) Other (specify)

Sampling Methodology					
Sampling Method (Circle):	Disposable Bailer	Waterra Tubing/ Footvalve	(Low Flow Sampling)	Passive Sampler	Tubing removed / Waterra Footvalve Sampling
Equipment (Circle):	Disposable	(Dedicated Tubing)	Decontaminated		

Bore Volume Calculation:

$$PV = [(H \times \pi \times r^2) + 0.2(h \times \pi \times (R^2 - r^2))] \times 1000$$

where H = height of water column (m) R = Bore Radius (m)

h = thickness of saturated filterpack (m) r = PVC Radius (m)

Low Flow Methodology:

The low flow pump is to be positioned at the mid-point of the saturated well screen. Between sampling locations, dedicated LDPE tubing and internal pump bladders are to be used with the pump decontaminated using Decon90 (decontamination solution) and rinsed through twice, once with tap water and then with distilled water. The water level is to be measured during the micro purging so as to ensure that the water level does not fall by more than 10 cm and that water is being sampled from the targeted depth. This is required to ensure groundwater extracted from the well is fresh groundwater obtained from the adjacent formation and not stagnant water contained in the well water column. Field chemical parameters are to be recorded every five minutes or the time taken to remove one volume of the flow through the cell (whichever is greater) and at least 1 bore volume (screened interval only) should be removed before sampling (if conditions are suitable) .

Purging Information

Date: 25/7/24	Name: L Wilkins / A Vaughan				
Start Time: 10.00	Finish Time: 10:36	Pump Depth: ~57 m			
Purge Volume (L): 10	No times purged: 4	Pumping Details: 0.4 L/min			

Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Temp (°C)	DO (ppm or %)	Water Level (mPVC)	Appearance (Colour, Turbidity, Odour and Appearance of a Sheen)
10:10	4	12.28	9350	2.2	27.3	6.02	5.30	light brown, low to
10:15	2	12.34	8309	4.3	27.4	2.55	" "	moderate turbidity
10:20	2	12.31	8586	4.3	27.4	3.85	" "	no odour or sheen
10:25	2	12.31	8590	3.4	27.3	3.50	" "	

Purging should continue until measurements for pH are within 0.05 pH unit, EC is within 3%, Redox is within 10mV and Temperature is within 0.5 degC of the previous set of parameters.

Sampling Notes

QAQC Sample Collected: Y / (N)
If so, QAQC Sample ID:

* Bent PVC casing at approx. 8 m BGL.

Logger ID: W8655 Downloaded @ 10:20 am

Purger/ Sampler Name: A Vaughan Signature: A Vaughan Date: 25 / 7 2024

Checked by: E Picken Signature: EP Date: 31 / 8 / 2024

Surface Water Sampling Data Sheet

General Information			
Project:	Baseline Hydrogeological Investigation		
Job Number:	QI-01	Site Locked (Y/N):	N
Client:	Leichhardt Industries	Sample ID:	SW14
Location:	Eramurra, WA	Equip Calibrated:	Yes

Weather Conditions	
Rain: —	Wind Direction: —
Temperature: 21°C	Wind Speed: —
Cloud Cover: 20%	Upwind Activities: —
Location Conditions: Im creek.	

Purging Information

Date: 25/8/24		Name:	A Vaughan & L Wilkins				
Method: Grab sample		Sampling Material:	Surface water			Pump Depth: —	
Start Time: 9:15		Finish Time:	9:25			Pumping Details: —	
Sample Volume (L): 4		No Times Sampled:	4			Total Volumes (litres): —	
Time	Volume Removed (L)	pH	E.C. (µS/cm or mS/cm)	Redox (mV)	Dissolved Oxygen (ppm)	Temp (°C)	Appearance (Colour / Odour / Turbidity)
9:17	1	8.49	1048	50.7	5.60	13.6	light brown, moderate
9:19	1	8.48	1049	51.8	4.31	13.6	to high turbidity, no
9:21	1	8.48	1049	51.9	4.08	13.5	odour or sheen.
9:23	1	8.48	1050	52.0	3.90	13.5	

Purging should continue until measurements for pH are within 0.05 pH unit; conductivity within 3%, DO within 10%, Redox within 10 mV and Temperature is within 0.5 degC over three successive measurements

General Information			
Project:	Baseline Hydrogeological Investigation		
Job Number:	W-AO-11	Site Locked (Y/N):	N
Client:	Leichhardt Industries	Sample ID:	SW01
Location:	Eramurra, WA	Chem Kit No.	Yes

Weather Conditions	
Rain: —	Wind Direction: —
Temperature: 25°C	Wind Speed: —
Cloud Cover: 20%	Upwind Activities: —
Location Conditions: At camp	

Purging Information

Date: 27/8/24		Name:	A Vaughan & L Wilkins				
Method: Grab sample		Sampling Material:	Surface water			Pump Depth: —	
Start Time: 10:56		Finish Time:	11:06			Pump Speed: —	
Sample Volume (L) 4		No Times Sampled:	4			Total Volumes (litres): —	
Time	Volume Removed (L)	pH	E.C. (µS/cm)	Redox (mV)	Dissolved Oxygen (ppm)	Temp (Cels)	Appearance (Colour / Odour / Turbidity)
10:58	1	6.89	66397	31.3	2.21	18.1	clear/light brown, low
11:00	1	6.86	66477	31.1	1.55	18.6	turbidity, no odour
11:02	1	6.85	66550	31.1	1.51	18.6	or sheen.
11:04	1	6.85	66644	31.2	1.60	18.6	

APPENDIX D
CERTIFIED LABORATORY ANALYTICAL RESULTS

Land & Water Consulting
Suite 3 Level 1 4-8 Goodwood Road
Wayville
SA 5034

NATA Accredited
Accreditation Number 2377
Site Number 2370 & 2554

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Karen Mackenzie**

Report **1121332-W-V6**
Project name
Project ID QI-01
Received Date Jul 24, 2024

Client Sample ID			**MBH01**	**MBH017**	**MBH20**	**MBH21S**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**L24-JI0063439**	**L24-JI0063440**	**L24-JI0063441**	**L24-JI0063442**
Date Sampled			**Jul 23, 2024**	**Jul 23, 2024**	**Jul 23, 2024**	**Jul 23, 2024**
Test/Reference	LOR	Unit				
Ammonia (as N)	0.02	mg/L	< 0.02	< 0.02	[G16]3.4	< 0.02
Chloride	5	mg/L	550	520	72000	330
Conductivity (at 25 °C)	10	uS/cm	2400	2300	140000	1600
Ferric Iron - Fe3+*	0.5	mg/L	< 0.05	0.17	0.06	< 0.05
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	< 0.05	< 0.5	< 0.05
Filterable Reactive Phosphorus	0.01	mg/L	0.04	0.04	0.03	0.02
Nitrate (as N)	0.01	mg/L	2.1	1.7	< 0.01	0.69
Nitrite (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	0.03
NOx (as N)	0.01	mg/L	2.1	1.7	< 0.01	0.72
pH (at 25 °C)	0.1	pH Units	7.4	7.1	7.0	7.2
Reactive Silica	0.1	mg/L	63	62	22	45
Sulfate (as SO4)	1	mg/L	63	57	7800	39
Total Dissolved Solids Dried at 180 °C ± 2 °C	5	mg/L	1400	1400	85000	980
Total Kjeldahl Nitrogen (as N) by calculation*	0.2	mg/L	0.7	< 0.2	< 0.2	< 0.2
Total Nitrogen	0.2	mg/L	2.8	1.7	< 0.2	0.8
Total Phosphorus	0.01	mg/L	0.10	0.14	0.03	0.08
Total Suspended Solids Dried at 103°C to 105°C	5	mg/L	23	32	25	6.0
Hardness mg equivalent CaCO3/L	5	mg/L	560	660	21000	480
Zirconium (filtered)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Zirconium - Total	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	5	mg/L	350	330	200	330
Carbonate Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	5	mg/L	350	330	200	330
Heavy Metals						
Aluminium	0.05	mg/L	0.21	1.3	0.21	0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	0.33	< 0.05	< 0.05
Antimony	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Antimony (filtered)	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Arsenic	0.001	mg/L	0.001	0.002	< 0.001	< 0.001
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bismuth	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MBH01	MBH017	MBH20	MBH21S
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			L24-JI0063439	L24-JI0063440	L24-JI0063441	L24-JI0063442
Date Sampled			Jul 23, 2024	Jul 23, 2024	Jul 23, 2024	Jul 23, 2024
Test/Reference	LOR	Unit				
Heavy Metals						
Bismuth (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Cadmium	0.0001	mg/L	< 0.0001	< 0.0001	0.0001	< 0.0001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium	0.001	mg/L	0.001	0.004	0.002	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	0.001	mg/L	< 0.001	0.001	0.002	< 0.001
Cobalt (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.003	0.004	0.023	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.01	mg/L	0.25	0.79	0.63	0.73
Iron (filtered)	0.01	mg/L	< 0.01	0.17	0.06	0.02
Lead	0.001	mg/L	< 0.001	< 0.001	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Lithium	0.001	mg/L	0.006	0.007	0.32	0.004
Lithium (filtered)	0.005	mg/L	0.006	0.006	0.36	0.005
Manganese	0.005	mg/L	0.023	0.029	2.9	0.27
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	3.0	0.16
Mercury	0.0001	mg/L	0.0003	< 0.0001	0.0003	0.0003
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum	0.001	mg/L	< 0.001	0.002	< 0.001	< 0.001
Molybdenum (filtered)	0.001	mg/L	< 0.001	0.002	0.001	< 0.001
Nickel	0.001	mg/L	0.001	0.002	0.013	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	0.011	0.001
Selenium	0.001	mg/L	0.002	0.003	< 0.01	0.001
Selenium (filtered)	0.001	mg/L	0.002	0.002	< 0.01	0.001
Silver	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Strontium	0.005	mg/L	1.6	1.8	26	1.1
Strontium (filtered)	0.005	mg/L	1.6	1.8	26	1.0
Thorium*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Thorium* (filtered)*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Titanium	0.005	mg/L	0.006	0.052	0.009	< 0.005
Titanium (filtered)	0.005	mg/L	< 0.005	0.009	< 0.005	< 0.005
Uranium	0.001	mg/L	0.003	0.004	0.012	0.002
Uranium (filtered)	0.001	mg/L	0.003	0.003	0.013	< 0.001
Vanadium	0.005	mg/L	0.011	0.027	< 0.005	< 0.005
Vanadium (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.005	mg/L	0.024	0.030	0.082	0.021
Zinc (filtered)	0.005	mg/L	0.010	< 0.005	0.014	< 0.005
Eurofins Suite B11C: Na/K/Ca/Mg						
Calcium	0.5	mg/L	99	120	1400	130
Magnesium	0.5	mg/L	75	86	4400	40
Potassium	0.5	mg/L	2.2	2.7	1100	1.8
Sodium	0.5	mg/L	230	270	36000	120

Client Sample ID			Rinsate 23/7
Sample Matrix			**Water**
Eurofins Sample No.			**L24-JI0063443**
Date Sampled			**Jul 23, 2024**
Test/Reference	LOR	Unit	
Reactive Silica	0.1	mg/L	< 0.1
Zirconium - Total	0.01	mg/L	< 0.01
Heavy Metals			
Aluminium	0.05	mg/L	< 0.05
Antimony	0.001	mg/L	< 0.001
Arsenic	0.001	mg/L	< 0.001
Beryllium	0.001	mg/L	< 0.001
Bismuth	0.005	mg/L	< 0.005
Cadmium	0.0001	mg/L	< 0.0001
Chromium	0.001	mg/L	< 0.001
Cobalt	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Iron	0.01	mg/L	< 0.01
Lead	0.001	mg/L	< 0.001
Lithium	0.001	mg/L	< 0.001
Manganese	0.005	mg/L	< 0.005
Molybdenum	0.001	mg/L	< 0.001
Nickel	0.001	mg/L	< 0.001
Selenium	0.001	mg/L	< 0.001
Silver	0.001	mg/L	< 0.001
Strontium	0.005	mg/L	< 0.005
Thorium*	0.05	mg/L	< 0.05
Titanium	0.005	mg/L	< 0.005
Uranium	0.001	mg/L	< 0.001
Vanadium	0.005	mg/L	< 0.005
Zinc	0.005	mg/L	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Ammonia (as N) - Method: ARL303 - Ammonia in Water by Discrete Analyser	Welshpool	Jul 25, 2024	28 Days
Ferrous Iron - Fe2+ - Method: LTM-INO-4190 Ferrous Iron in Water by Discrete Analyser	Melbourne	Jul 26, 2024	7 Days
Filterable Reactive Phosphorus - Method: ARL309 - Filterable Reactive Phosphorus in Water by Discrete Analyser	Welshpool	Jul 25, 2024	28 Days
Nitrate (as N) - Method: ARL313/319 - NOx in Water by Discrete Analyser	Welshpool	Aug 13, 2024	28 Days
Nitrite (as N) - Method: ARL311 - Nitrite in Water by Discrete Analyser	Welshpool	Jul 25, 2024	2 Days
pH (at 25 °C) - Method: LTM-GEN-7090 pH in water by ISE	Welshpool	Jul 25, 2024	6 Hours
Reactive Silica - Method: ARL315 - Reactive Silica in Water by Discrete Analyser	Welshpool	Jul 25, 2024	28 Days
Total Phosphorus - Method: ARL308 - Total Phosphorus in Water by Discrete Analyser	Welshpool	Aug 14, 2024	28 Days
Total Suspended Solids Dried at 103°C to 105°C - Method: ARL No. 016 - Total Suspended Solids	Welshpool	Jul 25, 2024	7 Days
Zirconium (filtered) - Method: ARL402/403 - Metals in Water by ICPOES/ICPMS	Welshpool	Jul 25, 2024	180 Days
Zirconium - Total - Method: ARL402/403 - Metals in Water by ICPOES/ICPMS	Welshpool	Jul 25, 2024	180 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 25, 2024	28 Days
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 25, 2024	28 Days
Metals M7 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 25, 2024	6 Months
Metals M7 filtered - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Aug 05, 2024	6 Day
Bismuth (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Aug 06, 2024	6 Days
Lithium - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 25, 2024	180 Days
Lithium (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 25, 2024	180 Days
Eurofins Suite B11C: Na/K/Ca/Mg - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 25, 2024	180 Days
Chloride - Method: ARL305 - Chloride in Water by Discrete Analyser	Welshpool	Jul 25, 2024	28 Days
Sulfate (as SO4) - Method: ARL301 - Sulfate in Water by Discrete Analyser	Welshpool	Jul 25, 2024	28 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Welshpool	Jul 25, 2024	14 Days
Conductivity (at 25 °C) - Method: LTM-INO-4030 Conductivity	Welshpool	Jul 25, 2024	28 Days
Total Dissolved Solids Dried at 180 °C ± 2 °C - Method: ARL No. 017 - Total Dissolved Solids	Welshpool	Jul 25, 2024	7 Days
NOx (as N) - Method: ARL313/319 - NOx in Water by Discrete Analyser	Welshpool	Jul 25, 2024	28 Days
Total Kjeldahl Nitrogen (as N) by calculation	Welshpool	Jul 25, 2024	28 Days

Description	Testing Site	Extracted	Holding Time
- Method: ARL No. 330 - Persulfate Method for Simultaneous Determination of TN & TP			
Total Nitrogen	Welshpool	Jul 25, 2024	28 Days
- Method: ARL No. 330 - Persulfate Method for Simultaneous Determination of TN & TP			
Hardness mg equivalent CaCO3/L	Welshpool	Jul 25, 2024	28 Months
- Method: APHA 2340B Hardness by Calculation			

eurofins

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IANZ# 1402

Company Name: Land & Water Consulting
Address: Suite 3 Level 1 4-8 Goodwood Road
Wayville
SA 5034

Project Name:
Project ID: QI-01

Order No.:
Report #: 1121332
Phone: 08 8271 5255
Fax:

Received: Jul 24, 2024 5:00 PM
Due: Jul 31, 2024
Priority: 5 Day
Contact Name: Karen Mackenzie

Eurofins Analytical Services Manager : Elden Garrett

Sample Detail	Aluminium	Aluminium (filtered)	Ammonia-N	Antimony	Antimony (filtered)	Beryllium	Beryllium (filtered)	Bismuth	Cobalt	Cobalt (filtered)	Ferric Iron - Fe3+	Ferrous Iron - Fe2+	Filterable Reactive Phosphorus	Iron	Iron (filtered)	Lithium	Lithium (filtered)	Manganese	Manganese (filtered)	Mercury	Mercury (filtered)	Molybdenum	Molybdenum (filtered)	Nitrite-N	pH (at 25 °C)	Reactive Silica	Selenium	Selenium (filtered)	Silver	Silver (filtered)	Strontium	Strontium (filtered)	Thorium*	Thorium* (filtered)*	Titanium	Titanium (filtered)	Total Suspended Solids	Uranium	Uranium (filtered)	Vanadium	Vanadium (filtered)	Zirconium (filtered)	Zirconium - Total	Metals M7	Metals M7 filtered	Hardness Set	Eurofins Suite B11C: Na/K/Ca/Mg	Total Nitrogen	Total Dissolved Solids (TDS)	Eurofins Suite B11E
Perth Laboratory - NATA # 2377 Site # 2370	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Melbourne Laboratory - NATA # 1261 Site # 1254												X																																					
External Laboratory																																																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																																												
1	MBH01	Jul 23, 2024		Water	L24-JI0063439	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	MBH017	Jul 23, 2024		Water	L24-JI0063440	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	MBH20	Jul 23, 2024		Water	L24-JI0063441	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	MBH21S	Jul 23, 2024		Water	L24-JI0063442	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	Rinsate 23/7	Jul 23, 2024		Water	L24-JI0063443	X			X		X		X	X				X		X		X				X				X	X		X		X				X		X			X	X				
Test Counts						6	5	4	6	5	6	5	6	6	5	4	4	4	6	5	6	5	5	5	6	5	4	4	5	6	5	6	5	6	5	6	5	4	6	5	6	5	5	6	5	4	4	4	4	4

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
ppm: parts per million
µg/L: micrograms per litre
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit
Colour: Pt-Co Units (CU)

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Ammonia (as N)	mg/L	< 0.02			0.02	Pass	
Chloride	mg/L	< 5			5	Pass	
Filterable Reactive Phosphorus	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.01			0.01	Pass	
Nitrite (as N)	mg/L	< 0.01			0.01	Pass	
NOx (as N)	mg/L	< 0.01			0.01	Pass	
Reactive Silica	mg/L	< 0.1			0.1	Pass	
Sulfate (as SO4)	mg/L	< 1			1	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 5			5	Pass	
Total Nitrogen	mg/L	< 0.2			0.2	Pass	
Total Phosphorus	mg/L	< 0.01			0.01	Pass	
Total Suspended Solids Dried at 103°C to 105°C	mg/L	< 5			5	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 5			5	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 5			5	Pass	
Method Blank							
Heavy Metals							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Antimony (filtered)	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Bismuth (filtered)	mg/L	< 0.005			0.005	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron (filtered)	mg/L	< 0.01			0.01	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Lithium (filtered)	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum (filtered)	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.001			0.001	Pass	
Strontium (filtered)	mg/L	< 0.005			0.005	Pass	
Thorium* (filtered)*	mg/L	< 0.05			0.05	Pass	
Titanium (filtered)	mg/L	< 0.005			0.005	Pass	
Uranium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Hardness mg equivalent CaCO3/L	mg/L	< 5			5	Pass	
Zirconium - Total	mg/L	< 0.01			0.01	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Antimony	mg/L	< 0.001			0.001	Pass	
Antimony (filtered)	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Bismuth	mg/L	< 0.005			0.005	Pass	
Bismuth (filtered)	mg/L	< 0.005			0.005	Pass	
Cadmium	mg/L	< 0.0001			0.0001	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.01			0.01	Pass	
Iron (filtered)	mg/L	< 0.01			0.01	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Lithium (filtered)	mg/L	< 0.005			0.005	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum	mg/L	< 0.001			0.001	Pass	
Molybdenum (filtered)	mg/L	< 0.001			0.001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Silver	mg/L	< 0.001			0.001	Pass	
Strontium	mg/L	< 0.005			0.005	Pass	
Strontium (filtered)	mg/L	< 0.005			0.005	Pass	
Thorium*	mg/L	< 0.05			0.05	Pass	
Titanium	mg/L	< 0.005			0.005	Pass	
Titanium (filtered)	mg/L	< 0.005			0.005	Pass	
Uranium	mg/L	< 0.001			0.001	Pass	
Uranium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium	mg/L	< 0.005			0.005	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Eurofins Suite B11C: Na/K/Ca/Mg							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
Method Blank							
Zirconium - Total	mg/L	< 0.01			0.01	Pass	
Method Blank							
Heavy Metals							
Thorium*	mg/L	< 0.05			0.05	Pass	
Thorium* (filtered)*	mg/L	< 0.05			0.05	Pass	
Method Blank							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ferrous Iron - Fe2+	mg/L	< 0.05			0.05	Pass	
Method Blank							
Heavy Metals							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Antimony (filtered)	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Bismuth (filtered)	mg/L	< 0.005			0.005	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron (filtered)	mg/L	< 0.01			0.01	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Lithium (filtered)	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum (filtered)	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.001			0.001	Pass	
Strontium (filtered)	mg/L	< 0.005			0.005	Pass	
Thorium* (filtered)*	mg/L	< 0.05			0.05	Pass	
Titanium (filtered)	mg/L	< 0.005			0.005	Pass	
Uranium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Antimony	mg/L	< 0.001			0.001	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Bismuth	mg/L	< 0.005			0.005	Pass	
Cadmium	mg/L	< 0.0001			0.0001	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.01			0.01	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lithium	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Molybdenum	mg/L	< 0.001			0.001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Silver	mg/L	< 0.001			0.001	Pass	
Strontium	mg/L	< 0.005			0.005	Pass	
Titanium	mg/L	< 0.005			0.005	Pass	
Uranium	mg/L	< 0.001			0.001	Pass	
Vanadium	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Method Blank							
Eurofins Suite B11C: Na/K/Ca/Mg							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	97			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium (filtered)	%	100			80-120	Pass	
Antimony (filtered)	%	106			80-120	Pass	
Arsenic (filtered)	%	106			80-120	Pass	
Beryllium (filtered)	%	95			80-120	Pass	
Bismuth (filtered)	%	97			80-120	Pass	
Cadmium (filtered)	%	102			80-120	Pass	
Chromium (filtered)	%	101			80-120	Pass	
Cobalt (filtered)	%	101			80-120	Pass	
Copper (filtered)	%	96			80-120	Pass	
Iron (filtered)	%	101			80-120	Pass	
Lead (filtered)	%	98			80-120	Pass	
Lithium (filtered)	%	98			80-120	Pass	
Manganese (filtered)	%	101			80-120	Pass	
Mercury (filtered)	%	100			80-120	Pass	
Molybdenum (filtered)	%	104			80-120	Pass	
Nickel (filtered)	%	99			80-120	Pass	
Selenium (filtered)	%	100			80-120	Pass	
Silver (filtered)	%	84			80-120	Pass	
Strontium (filtered)	%	103			80-120	Pass	
Thorium* (filtered)*	%	86			80-120	Pass	
Titanium (filtered)	%	106			80-120	Pass	
Uranium (filtered)	%	103			80-120	Pass	
Vanadium (filtered)	%	103			80-120	Pass	
Zinc (filtered)	%	101			80-120	Pass	
LCS - % Recovery							
Zirconium - Total	%	106			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	105			80-120	Pass	
Aluminium (filtered)	%	96			80-120	Pass	
Antimony	%	109			80-120	Pass	
Antimony (filtered)	%	101			80-120	Pass	
Arsenic	%	108			80-120	Pass	
Arsenic (filtered)	%	99			80-120	Pass	
Beryllium	%	116			80-120	Pass	
Beryllium (filtered)	%	86			80-120	Pass	
Bismuth	%	103			80-120	Pass	
Bismuth (filtered)	%	98			80-120	Pass	
Cadmium	%	106			80-120	Pass	
Cadmium (filtered)	%	98			80-120	Pass	
Chromium	%	109			80-120	Pass	
Chromium (filtered)	%	102			80-120	Pass	
Cobalt	%	106			80-120	Pass	
Cobalt (filtered)	%	103			80-120	Pass	
Copper	%	105			80-120	Pass	
Copper (filtered)	%	101			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Iron	%	105			80-120	Pass	
Iron (filtered)	%	101			80-120	Pass	
Lead	%	104			80-120	Pass	
Lead (filtered)	%	100			80-120	Pass	
Lithium (filtered)	%	87			80-120	Pass	
Manganese	%	107			80-120	Pass	
Manganese (filtered)	%	100			80-120	Pass	
Mercury	%	107			80-120	Pass	
Mercury (filtered)	%	99			80-120	Pass	
Molybdenum	%	109			80-120	Pass	
Molybdenum (filtered)	%	100			80-120	Pass	
Nickel	%	103			80-120	Pass	
Nickel (filtered)	%	100			80-120	Pass	
Selenium	%	109			80-120	Pass	
Selenium (filtered)	%	93			80-120	Pass	
Silver	%	81			80-120	Pass	
Strontium	%	108			80-120	Pass	
Strontium (filtered)	%	98			80-120	Pass	
Thorium*	%	89			80-120	Pass	
Titanium	%	108			80-120	Pass	
Titanium (filtered)	%	101			80-120	Pass	
Uranium	%	109			80-120	Pass	
Uranium (filtered)	%	101			80-120	Pass	
Vanadium	%	110			80-120	Pass	
Vanadium (filtered)	%	96			80-120	Pass	
Zinc	%	108			80-120	Pass	
Zinc (filtered)	%	101			80-120	Pass	
LCS - % Recovery							
Eurofins Suite B11C: Na/K/Ca/Mg							
Calcium	%	100			80-120	Pass	
Magnesium	%	104			80-120	Pass	
Potassium	%	96			80-120	Pass	
Sodium	%	103			80-120	Pass	
LCS - % Recovery							
Zirconium - Total	%	104			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Thorium*	%	94			80-120	Pass	
Thorium* (filtered)*	%	92			80-120	Pass	
LCS - % Recovery							
Ferrous Iron - Fe2+	%	93			70-130	Pass	
Zirconium - Total	%	81			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium (filtered)	%	98			80-120	Pass	
Antimony (filtered)	%	103			80-120	Pass	
Arsenic (filtered)	%	102			80-120	Pass	
Beryllium (filtered)	%	81			80-120	Pass	
Bismuth (filtered)	%	99			80-120	Pass	
Cadmium (filtered)	%	101			80-120	Pass	
Chromium (filtered)	%	101			80-120	Pass	
Cobalt (filtered)	%	103			80-120	Pass	
Copper (filtered)	%	100			80-120	Pass	
Iron (filtered)	%	101			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead (filtered)	%	102			80-120	Pass	
Lithium (filtered)	%	81			80-120	Pass	
Manganese (filtered)	%	101			80-120	Pass	
Mercury (filtered)	%	102			80-120	Pass	
Molybdenum (filtered)	%	103			80-120	Pass	
Nickel (filtered)	%	99			80-120	Pass	
Selenium (filtered)	%	99			80-120	Pass	
Silver (filtered)	%	80			80-120	Pass	
Strontium (filtered)	%	101			80-120	Pass	
Thorium* (filtered)*	%	92			80-120	Pass	
Titanium (filtered)	%	102			80-120	Pass	
Uranium (filtered)	%	103			80-120	Pass	
Vanadium (filtered)	%	98			80-120	Pass	
Zinc (filtered)	%	102			80-120	Pass	
LCS - % Recovery							
Zirconium - Total	%	115			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	99			80-120	Pass	
Antimony	%	103			80-120	Pass	
Arsenic	%	106			80-120	Pass	
Beryllium	%	102			80-120	Pass	
Bismuth	%	96			80-120	Pass	
Cadmium	%	104			80-120	Pass	
Chromium	%	100			80-120	Pass	
Cobalt	%	101			80-120	Pass	
Copper	%	97			80-120	Pass	
Iron	%	99			80-120	Pass	
Lead	%	97			80-120	Pass	
Lithium	%	104			80-120	Pass	
Manganese	%	99			80-120	Pass	
Mercury	%	101			80-120	Pass	
Molybdenum	%	103			80-120	Pass	
Nickel	%	97			80-120	Pass	
Selenium	%	104			80-120	Pass	
Silver	%	80			80-120	Pass	
Strontium	%	105			80-120	Pass	
Titanium	%	103			80-120	Pass	
Uranium	%	101			80-120	Pass	
Vanadium	%	103			80-120	Pass	
Zinc	%	99			80-120	Pass	
LCS - % Recovery							
Eurofins Suite B11C: Na/K/Ca/Mg							
Calcium	%	102			80-120	Pass	
Magnesium	%	101			80-120	Pass	
Potassium	%	99			80-120	Pass	
Sodium	%	98			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ferrous Iron - Fe2+	M24-Jl0063087	NCP	%	101			70-130	Pass	
Total Nitrogen	L24-Au0026350	NCP	%	81			70-130	Pass	
Total Phosphorus	L24-Au0024270	NCP	%	95			80-120	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heavy Metals				Result 1					
Aluminium	L24-JI0069845	NCP	%	96			75-125	Pass	
Aluminium (filtered)	L24-JI0062088	NCP	%	108			75-125	Pass	
Antimony	L24-JI0069845	NCP	%	100			75-125	Pass	
Antimony (filtered)	L24-JI0062088	NCP	%	105			75-125	Pass	
Arsenic	L24-JI0069845	NCP	%	103			75-125	Pass	
Arsenic (filtered)	L24-JI0062088	NCP	%	106			75-125	Pass	
Beryllium	L24-JI0069845	NCP	%	96			75-125	Pass	
Beryllium (filtered)	L24-JI0062088	NCP	%	92			75-125	Pass	
Bismuth	L24-JI0069845	NCP	%	92			75-125	Pass	
Cadmium	L24-JI0069845	NCP	%	100			75-125	Pass	
Cadmium (filtered)	L24-JI0062088	NCP	%	101			75-125	Pass	
Chromium	L24-JI0069845	NCP	%	97			75-125	Pass	
Chromium (filtered)	L24-JI0062088	NCP	%	94			75-125	Pass	
Cobalt	L24-JI0069845	NCP	%	97			75-125	Pass	
Cobalt (filtered)	L24-JI0062088	NCP	%	95			75-125	Pass	
Copper	L24-JI0069845	NCP	%	93			75-125	Pass	
Copper (filtered)	L24-JI0062088	NCP	%	90			75-125	Pass	
Lead	L24-JI0069845	NCP	%	93			75-125	Pass	
Lead (filtered)	L24-JI0062088	NCP	%	92			75-125	Pass	
Lithium	L24-JI0069845	NCP	%	93			75-125	Pass	
Lithium (filtered)	L24-JI0062088	NCP	%	95			75-125	Pass	
Manganese (filtered)	L24-JI0062088	NCP	%	85			75-125	Pass	
Mercury	L24-JI0069845	NCP	%	90			75-125	Pass	
Mercury (filtered)	L24-JI0062088	NCP	%	75			75-125	Pass	
Molybdenum	L24-JI0069845	NCP	%	101			75-125	Pass	
Molybdenum (filtered)	L24-JI0062088	NCP	%	80			75-125	Pass	
Nickel	L24-JI0069845	NCP	%	93			75-125	Pass	
Nickel (filtered)	L24-JI0062088	NCP	%	91			75-125	Pass	
Selenium	L24-JI0069845	NCP	%	99			75-125	Pass	
Selenium (filtered)	L24-JI0062088	NCP	%	77			75-125	Pass	
Silver	L24-JI0063446	NCP	%	79			75-125	Pass	
Silver (filtered)	L24-JI0062088	NCP	%	121			75-125	Pass	
Strontium	L24-JI0069845	NCP	%	98			75-125	Pass	
Thorium*	L24-JI0063446	NCP	%	88			75-125	Pass	
Titanium	L24-JI0069845	NCP	%	100			75-125	Pass	
Titanium (filtered)	L24-JI0062088	NCP	%	100			75-125	Pass	
Uranium	L24-JI0069845	NCP	%	97			75-125	Pass	
Uranium (filtered)	L24-JI0062088	NCP	%	97			75-125	Pass	
Vanadium	L24-JI0069845	NCP	%	97			75-125	Pass	
Vanadium (filtered)	L24-JI0062088	NCP	%	100			75-125	Pass	
Zinc	L24-JI0069845	NCP	%	98			75-125	Pass	
Zinc (filtered)	L24-JI0062088	NCP	%	94			75-125	Pass	
Spike - % Recovery									
Eurofins Suite B11C: Na/K/Ca/Mg				Result 1					
Calcium	L24-JI0069845	NCP	%	92			75-125	Pass	
Magnesium	L24-JI0069845	NCP	%	94			75-125	Pass	
Potassium	L24-JI0069845	NCP	%	93			75-125	Pass	
Sodium	L24-JI0069845	NCP	%	93			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	L24-JI0063445	NCP	mg/L	2.2	2.2	<1	20%	Pass	
Chloride	L24-JI0063445	NCP	mg/L	220	220	<1	30%	Pass	
Ferrous Iron - Fe2+	M24-JI0062815	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Filterable Reactive Phosphorus	L24-JI0063445	NCP	mg/L	< 0.01	< 0.01	<1	20%	Pass	
Nitrate (as N)	L24-JI0063445	NCP	mg/L	0.10	0.10	2.0	30%	Pass	
Nitrite (as N)	L24-JI0063445	NCP	mg/L	< 0.01	< 0.01	<1	20%	Pass	
NOx (as N)	L24-JI0063445	NCP	mg/L	0.10	0.10	1.5	20%	Pass	
Reactive Silica	L24-JI0063534	NCP	mg/L	28	29	<1	20%	Pass	
Sulfate (as SO4)	L24-JI0063445	NCP	mg/L	41	42	<1	30%	Pass	
Total Nitrogen	L24-Au0026371	NCP	mg/L	1.8	1.9	4.0	30%	Pass	
Total Phosphorus	L24-Au0026371	NCP	mg/L	0.08	0.08	1.0	20%	Pass	
Total Suspended Solids Dried at 103°C to 105°C		NCP	mg/L	**	**	17	20%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Zirconium (filtered)	L24-JI0063440	CP	mg/L	< 0.01	< 0.01	<1	20%	Pass	Q15
Zirconium - Total	L24-JI0063440	CP	mg/L	< 0.01	< 0.01	<1	20%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	L24-JI0063440	CP	mg/L	1.3	1.1	13	30%	Pass	
Aluminium (filtered)	L24-JI0063444	NCP	mg/L	0.92	0.96	4.1	30%	Pass	
Antimony	L24-JI0063440	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Antimony (filtered)	L24-JI0063444	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic	L24-JI0063440	CP	mg/L	0.002	0.002	3.4	30%	Pass	
Arsenic (filtered)	L24-JI0063444	NCP	mg/L	0.002	0.002	3.0	30%	Pass	
Beryllium	L24-JI0063440	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium (filtered)	L24-JI0063444	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bismuth	L24-JI0063440	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Cadmium	L24-JI0063440	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Cadmium (filtered)	L24-JI0063444	NCP	mg/L	0.0002	0.0001	7.6	30%	Pass	
Chromium	L24-JI0063440	CP	mg/L	0.004	0.004	5.5	30%	Pass	
Chromium (filtered)	L24-JI0063444	NCP	mg/L	0.002	0.002	5.4	30%	Pass	
Cobalt	L24-JI0063440	CP	mg/L	0.001	0.001	1.4	30%	Pass	
Cobalt (filtered)	L24-JI0063444	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	L24-JI0063440	CP	mg/L	0.004	0.004	3.5	30%	Pass	
Copper (filtered)	L24-JI0063444	NCP	mg/L	0.008	0.008	2.9	30%	Pass	
Iron	L24-JI0063440	CP	mg/L	0.79	0.76	4.9	30%	Pass	
Iron (filtered)	L24-JI0063444	NCP	mg/L	0.46	0.49	5.7	30%	Pass	
Lead	L24-JI0063440	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	L24-JI0063444	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lithium	L24-JI0063440	CP	mg/L	0.007	0.007	<1	30%	Pass	
Lithium (filtered)	L24-JI0063444	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese	L24-JI0063440	CP	mg/L	0.029	0.029	2.9	30%	Pass	
Manganese (filtered)	L24-JI0063444	NCP	mg/L	0.022	0.022	1.6	30%	Pass	
Mercury	L24-JI0063440	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Mercury (filtered)	L24-JI0063444	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Molybdenum	L24-JI0063440	CP	mg/L	0.002	0.001	26	30%	Pass	
Molybdenum (filtered)	L24-JI0063444	NCP	mg/L	0.002	0.002	<1	30%	Pass	
Nickel	L24-JI0063440	CP	mg/L	0.002	0.002	3.5	30%	Pass	
Nickel (filtered)	L24-JI0063444	NCP	mg/L	0.002	0.002	2.6	30%	Pass	
Selenium	L24-JI0063440	CP	mg/L	0.003	0.003	22	30%	Pass	
Selenium (filtered)	L24-JI0063444	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Silver	L24-JI0063440	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Silver (filtered)	L24-JI0063444	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Strontium	L24-JI0063440	CP	mg/L	1.8	1.8	<1	30%	Pass	
Strontium (filtered)	L24-JI0063444	NCP	mg/L	0.12	0.12	<1	30%	Pass	
Thorium*	L24-JI0063440	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Thorium* (filtered)*	L24-JI0063444	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Titanium	L24-JI0063440	CP	mg/L	0.052	0.053	1.3	30%	Pass	
Titanium (filtered)	L24-JI0063444	NCP	mg/L	0.17	0.17	2.2	30%	Pass	
Uranium	L24-JI0063440	CP	mg/L	0.004	0.004	1.5	30%	Pass	
Uranium (filtered)	L24-JI0063444	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Vanadium	L24-JI0063440	CP	mg/L	0.027	0.027	1.3	30%	Pass	
Vanadium (filtered)	L24-JI0063444	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	L24-JI0063440	CP	mg/L	0.030	0.030	<1	30%	Pass	
Zinc (filtered)	L24-JI0063444	NCP	mg/L	0.015	0.016	1.6	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25 °C)	L24-JI0063441	CP	uS/cm	140000	140000	<1	30%	Pass	
pH (at 25 °C)	L24-JI0063441	CP	pH Units	7.0	6.9	<1	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	L24-JI0063441	CP	mg/L	85000	85000	<1	30%	Pass	

Comments

V2: Jl0063441 metals LORs amended to match 95% ANZECC levels.

V3: All samples added Bismuth Filtered, Nitrate.

V4: Total Phosphorous for all samples.

V5: Jl0063441 As (filtered) amended upon review of results.

V6: TKN re-calculated following repeat analysis of the TN/NOx.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
G16	Sample matrix inappropriate for the required analysis
Q05	The matrix spike concentration is less than five times the background concentration in the sample - therefore the spike recovery cannot be determined
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Elden Garrett	Analytical Services Manager
Caitlin Breeze	Senior Analyst-Inorganic
Douglas Todd	Senior Analyst-Metal
Sam Becker	Senior Analyst-Inorganic
Sean Sangster	Senior Analyst-Metal

Kim Rodgers
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request

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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Sample Receipt Advice

Company name: Land & Water Consulting
Contact name: Karen Mackenzie
Project name: Not provided
Project ID: QI-01
Turnaround time: 5 Day
Date/Time received Jul 24, 2024 5:00 PM
Eurofins reference 1121332

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
N/A	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Elden Garrett on phone : 0892519602 or by email: EldenGarrett@eurofins.com

Results will be delivered electronically via email to Karen Mackenzie - kmackenzie@lwconsulting.com.au.

Note: A copy of these results will also be delivered to the general Land & Water Consulting email address.

Global Leader - Results you can trust

CHAIN OF CUSTODY FORM

Eurofins

From : Land & Water Consulting Pty Ltd
Suite 3, 4-8 Goodwood Road, WAYVILLE, SA, 5034
ph: (08) 8271 5255 fax: (08) 8357 1307

LAB Quote Number: LWC 240321

LWC Contact Information:
Contact Name:
Emily Picken
Contact Email:
laboratoryresults@lwconsulting.com.au

Phone Number:
08 8271 5255

LWC Project No:
QI-01
Project Manager:
Emily Picken
Date Samples Sent:
24/07/2024
COC Checked by: A Vaughan

Sample Analysis

Lab ID	Date	Matrix	Sample ID	No. Bottles	*Suite 1	*Suite 2	*Suite 3	*Suite 4					
					Tick required analytes								
	23/07/2024	W	MBH01	4	X								
	23/07/2024	W	MBH17	4	X								
	23/07/2024	W	MBH20	4	X								
	23/07/2024	W	MBH21S	4	X								
	23/07/2024	W	Rinsate 23/7	2			X						
			TOTAL	5	4		1						

ADDITIONAL COMMENTS:

Suite 1 - Major components, metals and nutrients:
EC
Total dissolved solids (TDS) and Total Suspended Solids (TSS)
Laboratory pH
Major Ions including calcium, sodium, potassium, magnesium, chloride, sulphate, bicarbonate and carbonate.
Hydroxide alkalinity as CaCO3, carbonate alkalinity as CaCO3 and bicarbonate as CaCO3.
Water Hardness
Total and dissolved metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO2, Se, Sr, Th, Ti, U, V, Zn, Zr and SiO2
Speciation of Ferric Iron and Ferrous Iron (actual and not calculated).
Nutrients including total nitrogen, nitrate as N, nitrite as N, ammonia, TKN and filtered reactive phosphorous.

Suite 2 - Hydrocarbons:
Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, total Xylenes, Naphthalene (BTEXN)

Suite 3 - Rinsate Screen:
Total metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO2, Se, Sr, Th, Ti, U, V, Zn, Zr and SiO2.

Suite 4 - Tripblank
TRH Fraction C6-C10 and BTEXN

24/07/24
17:00 8.9°C

1121332

***LOR must be sufficient for comparision to ANZG 2018 freshwater guidelines 95% protection, water samples will have salinity ranging from 500 - 150,000 mg/L. PLEASE ANALYSE TO MEET THIS GUIDELINE**

Land & Water Consulting
Suite 3 Level 1 4-8 Goodwood Road
Wayville
SA 5034

NATA Accredited
Accreditation Number 2377
Site Number 2370 & 2554

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **E Picken**

Report **1121879-W-V6**
Project name
Project ID QI-01
Received Date Jul 26, 2024

Client Sample ID			**MBH09**	**MBH12**	**MBH33S**	**MBH33D**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**L24-JI0067603**	**L24-JI0067604**	**L24-JI0067605**	**L24-JI0067606**
Date Sampled			**Jul 24, 2024**	**Jul 24, 2024**	**Jul 24, 2024**	**Jul 24, 2024**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	0.02	mg/L	< 0.02	-	-	-
TRH C10-C14	0.02	mg/L	< 0.02	-	-	-
TRH C15-C28	0.04	mg/L	< 0.04	-	-	-
TRH C29-C36	0.04	mg/L	< 0.04	-	-	-
TRH C10-C36 (Total)	0.04	mg/L	< 0.04	-	-	-
TRH C6-C10	0.02	mg/L	< 0.02	-	-	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	-	-	-
TRH >C10-C16	0.02	mg/L	< 0.02	-	-	-
TRH >C10-C16 less Naphthalene (F2)*[N01]	0.02	mg/L	< 0.02	-	-	-
TRH >C16-C34	0.05	mg/L	< 0.05	-	-	-
TRH >C34-C40	0.05	mg/L	< 0.05	-	-	-
TRH >C10-C40 (total)*	0.05	mg/L	< 0.05	-	-	-
BTEX						
Benzene	0.001	mg/L	< 0.001	-	-	-
Toluene	0.001	mg/L	< 0.001	-	-	-
Ethylbenzene	0.001	mg/L	< 0.001	-	-	-
m&p-Xylenes	0.002	mg/L	< 0.002	-	-	-
o-Xylene	0.001	mg/L	< 0.001	-	-	-
Xylenes - Total*	0.003	mg/L	< 0.003	-	-	-
BTEX						
4-Bromofluorobenzene (surr.)	1	%	81	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.001	mg/L	< 0.001	-	-	-
Ammonia (as N)	0.02	mg/L	< 0.02	0.84	0.14	0.94
Chloride	5	mg/L	440	630	270	180
Conductivity (at 25 °C)	10	uS/cm	2100	3200	1400	6500
Ferric Iron - Fe3+*	0.5	mg/L	< 0.05	< 0.05	< 0.05	0.13
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	< 0.05	0.87	< 0.05
Filterable Reactive Phosphorus	0.01	mg/L	0.10	0.06	0.06	0.05
Nitrate (as N)	0.01	mg/L	3.5	0.94	1.1	0.45
Nitrite (as N)	0.01	mg/L	< 0.01	0.60	0.02	0.04
NOx (as N)	0.01	mg/L	3.5	1.5	1.2	0.48
pH (at 25 °C)	0.1	pH Units	7.8	11	7.8	11
Reactive Silica	0.1	mg/L	78	38	48	1.7

Client Sample ID			MBH09	MBH12	MBH33S	MBH33D
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			L24-JI0067603	L24-JI0067604	L24-JI0067605	L24-JI0067606
Date Sampled			Jul 24, 2024	Jul 24, 2024	Jul 24, 2024	Jul 24, 2024
Test/Reference	LOR	Unit				
Sulfate (as SO4)	1	mg/L	54	380	32	24
Total Dissolved Solids Dried at 180 °C ± 2 °C	5	mg/L	1300	1900	850	3900
Total Kjeldahl Nitrogen	0.2	mg/L	< 0.2	6.3	0.2	3.5
Total Nitrogen	0.2	mg/L	3.5	7.8	1.4	4.0
Total Phosphorus	0.01	mg/L	0.15	0.16	0.20	< 0.01
Total Suspended Solids Dried at 103°C to 105°C	5	mg/L	5.0	25	13	< 5
Hardness mg equivalent CaCO3/L	5	mg/L	400	140	400	570
Zirconium (filtered)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Zirconium - Total	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	5	mg/L	390	< 5	310	< 5
Carbonate Alkalinity (as CaCO3)	5	mg/L	< 5	130	< 5	500
Hydroxide Alkalinity (as CaCO3)	5	mg/L	< 5	90	< 5	1300
Total Alkalinity (as CaCO3)	5	mg/L	390	220	310	1800
Heavy Metals						
Aluminium	0.05	mg/L	< 0.05	1.8	0.12	3.8
Aluminium (filtered)	0.05	mg/L	< 0.05	1.5	< 0.05	2.5
Antimony	0.001	mg/L	< 0.001	0.002	0.002	0.009
Antimony (filtered)	0.001	mg/L	< 0.001	0.002	0.001	0.008
Arsenic	0.001	mg/L	0.003	0.016	0.004	< 0.001
Arsenic (filtered)	0.001	mg/L	0.002	0.013	0.002	< 0.001
Beryllium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bismuth	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Bismuth (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Cadmium	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium	0.001	mg/L	< 0.001	< 0.001	0.001	0.041
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.038
Cobalt	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.004
Cobalt (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.003
Copper	0.001	mg/L	< 0.001	0.009	< 0.001	0.044
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.027
Iron	0.01	mg/L	0.02	0.16	1.3	0.38
Iron (filtered)	0.01	mg/L	< 0.01	< 0.01	0.87	0.13
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	0.005
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lithium	0.001	mg/L	0.014	0.021	0.007	0.52
Lithium (filtered)	0.005	mg/L	0.012	0.019	0.005	0.36
Manganese	0.005	mg/L	< 0.005	0.005	0.99	0.006
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	0.94	< 0.005
Mercury	0.0001	mg/L	0.00041	0.00036	< 0.0001	0.00011
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum	0.001	mg/L	0.003	0.061	0.003	0.14
Molybdenum (filtered)	0.001	mg/L	< 0.001	0.020	0.001	0.13
Nickel	0.001	mg/L	0.001	0.014	0.002	0.003
Nickel (filtered)	0.001	mg/L	< 0.001	0.005	0.002	0.002
Selenium	0.001	mg/L	0.002	0.003	< 0.001	0.001
Selenium (filtered)	0.001	mg/L	0.001	0.003	< 0.001	0.001

Client Sample ID			MBH09	MBH12	MBH33S	MBH33D
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			L24-JI0067603	L24-JI0067604	L24-JI0067605	L24-JI0067606
Date Sampled			Jul 24, 2024	Jul 24, 2024	Jul 24, 2024	Jul 24, 2024
Test/Reference	LOR	Unit				
Heavy Metals						
Silver	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Strontium	0.005	mg/L	1.5	0.70	1.2	6.0
Strontium (filtered)	0.005	mg/L	1.5	0.69	1.1	4.7
Thorium*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Thorium* (filtered)*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Titanium	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.013
Titanium (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Uranium	0.001	mg/L	0.005	< 0.001	0.003	< 0.001
Uranium (filtered)	0.001	mg/L	0.002	< 0.001	0.001	< 0.001
Vanadium	0.005	mg/L	0.040	0.38	0.016	< 0.005
Vanadium (filtered)	0.005	mg/L	0.016	0.29	< 0.005	< 0.005
Zinc	0.005	mg/L	0.013	0.020	0.010	0.038
Zinc (filtered)	0.005	mg/L	0.013	< 0.005	0.006	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	58	56	89	230
Magnesium	0.5	mg/L	62	0.8	43	< 0.5
Potassium	0.5	mg/L	1.2	31	2.2	310
Sodium	0.5	mg/L	280	530	140	390

Client Sample ID			MBH34S	MBH37D	DUP1	DUP2
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			L24-JI0067607	L24-JI0067608	L24-JI0067609	L24-JI0067610
Date Sampled			Jul 24, 2024	Jul 24, 2024	Jul 24, 2024	Jul 24, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	0.02	mg/L	< 0.02	-	< 0.02	< 0.02
TRH C10-C14	0.02	mg/L	0.06	-	< 0.02	0.10
TRH C15-C28	0.04	mg/L	0.24	-	< 0.04	0.36
TRH C29-C36	0.04	mg/L	< 0.04	-	< 0.04	< 0.04
TRH C10-C36 (Total)	0.04	mg/L	0.3	-	< 0.04	0.46
TRH C6-C10	0.02	mg/L	< 0.02	-	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	-	< 0.02	< 0.02
TRH >C10-C16	0.02	mg/L	0.14	-	< 0.02	0.18
TRH >C10-C16 less Naphthalene (F2)*[N01]	0.02	mg/L	0.14	-	< 0.02	0.18
TRH >C16-C34	0.05	mg/L	0.11	-	< 0.05	0.28
TRH >C34-C40	0.05	mg/L	< 0.05	-	< 0.05	< 0.05
TRH >C10-C40 (total)*	0.05	mg/L	0.25	-	< 0.05	0.46
BTEX						
Benzene	0.001	mg/L	< 0.001	-	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	-	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	-	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	-	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	-	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	-	< 0.003	< 0.003
BTEX						
4-Bromofluorobenzene (surr.)	1	%	86	-	88	87
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.001	mg/L	< 0.001	-	< 0.001	< 0.001

Client Sample ID			MBH34S	MBH37D	DUP1	DUP2
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			L24-JI0067607	L24-JI0067608	L24-JI0067609	L24-JI0067610
Date Sampled			Jul 24, 2024	Jul 24, 2024	Jul 24, 2024	Jul 24, 2024
Test/Reference	LOR	Unit				
Ammonia (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Chloride	5	mg/L	640	410	440	640
Conductivity (at 25 °C)	10	uS/cm	2800	2000	2100	2700
Ferric Iron - Fe3+*	0.5	mg/L	6.1	< 0.05	< 0.05	2.1
Ferrous Iron - Fe2+	0.05	mg/L	0.81	< 0.05	< 0.05	4.9
Filterable Reactive Phosphorus	0.01	mg/L	0.06	0.08	0.09	0.06
Nitrate (as N)	0.01	mg/L	< 0.01	< 0.01	3.4	< 0.01
Nitrite (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
NOx (as N)	0.01	mg/L	< 0.01	< 0.01	3.4	< 0.01
pH (at 25 °C)	0.1	pH Units	7.9	8.1	8.0	8.0
Reactive Silica	0.1	mg/L	42	38	77	42
Sulfate (as SO4)	1	mg/L	4.3	190	53	4.8
Total Dissolved Solids Dried at 180 °C ± 2 °C	5	mg/L	1700	1200	1300	1600
Total Kjeldahl Nitrogen	0.2	mg/L	0.4	0.5	< 0.2	0.4
Total Nitrogen	0.2	mg/L	0.4	0.5	3.4	0.4
Total Phosphorus	0.01	mg/L	0.22	0.23	0.18	0.14
Total Suspended Solids Dried at 103°C to 105°C	5	mg/L	340	150	< 5	420
Hardness mg equivalent CaCO3/L	5	mg/L	470	380	410	480
Zirconium (filtered)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Zirconium - Total	0.01	mg/L	0.03	< 0.01	< 0.01	< 0.01
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	5	mg/L	490	330	400	480
Carbonate Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	5	mg/L	490	330	400	480
Heavy Metals						
Aluminium	0.05	mg/L	4.0	0.60	< 0.05	3.4
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Antimony	0.001	mg/L	0.031	< 0.001	< 0.001	0.032
Antimony (filtered)	0.001	mg/L	0.030	< 0.001	< 0.001	0.031
Arsenic	0.001	mg/L	0.020	0.002	0.003	0.021
Arsenic (filtered)	0.001	mg/L	0.020	< 0.001	0.002	0.021
Beryllium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bismuth	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Bismuth (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Cadmium	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium	0.001	mg/L	0.023	0.017	< 0.001	0.007
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Cobalt	0.001	mg/L	0.005	< 0.001	< 0.001	0.005
Cobalt (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	0.006	0.003	0.001	0.007
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iron	0.01	mg/L	16	0.54	0.03	16
Iron (filtered)	0.01	mg/L	6.9	0.01	< 0.01	7.0
Lead	0.001	mg/L	0.004	< 0.001	< 0.001	0.004
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lithium	0.001	mg/L	0.007	0.009	0.015	0.007

Client Sample ID			MBH34S	MBH37D	DUP1	DUP2
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			L24-JI0067607	L24-JI0067608	L24-JI0067609	L24-JI0067610
Date Sampled			Jul 24, 2024	Jul 24, 2024	Jul 24, 2024	Jul 24, 2024
Test/Reference	LOR	Unit				
Heavy Metals						
Lithium (filtered)	0.005	mg/L	< 0.005	0.006	0.011	< 0.005
Manganese	0.005	mg/L	0.89	0.13	< 0.005	0.92
Manganese (filtered)	0.005	mg/L	0.56	0.078	< 0.005	0.55
Mercury	0.0001	mg/L	0.00016	0.00017	0.00017	0.00021
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum	0.001	mg/L	0.003	0.031	0.003	0.004
Molybdenum (filtered)	0.001	mg/L	0.002	0.009	0.001	0.001
Nickel	0.001	mg/L	0.018	0.015	0.001	0.019
Nickel (filtered)	0.001	mg/L	0.018	0.012	< 0.001	0.019
Selenium	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Silver	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Strontium	0.005	mg/L	1.9	1.3	1.6	2.0
Strontium (filtered)	0.005	mg/L	1.9	1.0	1.5	1.9
Thorium*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Thorium* (filtered)*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Titanium	0.005	mg/L	0.034	0.008	< 0.005	0.021
Titanium (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Uranium	0.001	mg/L	0.001	0.012	0.005	0.001
Uranium (filtered)	0.001	mg/L	< 0.001	0.003	0.002	< 0.001
Vanadium	0.005	mg/L	0.018	0.032	0.041	0.019
Vanadium (filtered)	0.005	mg/L	< 0.005	< 0.005	0.016	< 0.005
Zinc	0.005	mg/L	0.041	0.039	0.015	0.057
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	0.011	< 0.005
Alkali Metals						
Calcium	0.5	mg/L	66	70	59	66
Magnesium	0.5	mg/L	75	51	65	75
Potassium	0.5	mg/L	4.6	7.5	1.2	4.6
Sodium	0.5	mg/L	430	310	290	430

Client Sample ID			Rinse	Tripblank
Sample Matrix			Water	Water
Eurofins Sample No.			L24-JI0067611	L24-JI0067612
Date Sampled			Jul 24, 2024	Jul 24, 2024
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons				
TRH C6-C9	0.02	mg/L	-	< 0.02
TRH C6-C10	0.02	mg/L	-	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	-	< 0.02
BTEX				
Benzene	0.001	mg/L	-	< 0.001
Toluene	0.001	mg/L	-	< 0.001
Ethylbenzene	0.001	mg/L	-	< 0.001
m&p-Xylenes	0.002	mg/L	-	< 0.002
o-Xylene	0.001	mg/L	-	< 0.001
Xylenes - Total*	0.003	mg/L	-	< 0.003
BTEX				
4-Bromofluorobenzene (surr.)	1	%	-	83

Client Sample ID			Rinse	Tripblank
Sample Matrix			Water	Water
Eurofins Sample No.			L24-JI0067611	L24-JI0067612
Date Sampled			Jul 24, 2024	Jul 24, 2024
Test/Reference	LOR	Unit		
Reactive Silica	0.1	mg/L	< 0.1	-
Zirconium - Total	0.01	mg/L	< 0.01	-
Naphthalene[N02]	0.001	mg/L	-	< 0.001
Heavy Metals				
Aluminium	0.05	mg/L	< 0.05	-
Antimony	0.001	mg/L	< 0.001	-
Arsenic	0.001	mg/L	< 0.001	-
Beryllium	0.001	mg/L	< 0.001	-
Bismuth	0.005	mg/L	< 0.005	-
Cadmium	0.0001	mg/L	< 0.0001	-
Chromium	0.001	mg/L	< 0.001	-
Cobalt	0.001	mg/L	< 0.001	-
Copper	0.001	mg/L	< 0.001	-
Iron	0.01	mg/L	< 0.01	-
Lead	0.001	mg/L	< 0.001	-
Lithium	0.001	mg/L	< 0.001	-
Manganese	0.005	mg/L	< 0.005	-
Molybdenum	0.001	mg/L	< 0.001	-
Nickel	0.001	mg/L	< 0.001	-
Selenium	0.001	mg/L	< 0.001	-
Silver	0.001	mg/L	< 0.001	-
Strontium	0.005	mg/L	< 0.005	-
Thorium*	0.05	mg/L	< 0.05	-
Titanium	0.005	mg/L	< 0.005	-
Uranium	0.001	mg/L	< 0.001	-
Vanadium	0.005	mg/L	< 0.005	-
Zinc	0.005	mg/L	< 0.005	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	Aug 07, 2024	7 Days
Total Recoverable Hydrocarbons - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	Jul 26, 2024	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	Aug 07, 2024	14 Days
Naphthalene - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	Aug 07, 2024	14 Days
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	Aug 07, 2024	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Welshpool	Aug 07, 2024	7 Days
Ammonia (as N) - Method: ARL303 - Ammonia in Water by Discrete Analyser	Welshpool	Jul 26, 2024	28 Days
Filterable Reactive Phosphorus - Method: ARL309 - Filterable Reactive Phosphorus in Water by Discrete Analyser	Welshpool	Jul 26, 2024	28 Days
Nitrate (as N) - Method: ARL313/319 - NOx in Water by Discrete Analyser	Welshpool	Jul 26, 2024	28 Days
Nitrite (as N) - Method: ARL311 - Nitrite in Water by Discrete Analyser	Welshpool	Jul 26, 2024	2 Days
NOx (as N) - Method: ARL313/319 - NOx in Water by Discrete Analyser	Welshpool	Jul 26, 2024	28 Days
Total Kjeldahl Nitrogen - Method: ARL No. 330 - Persulfate Method for Simultaneous Determination of TN & TP	Welshpool	Jul 26, 2024	28 Day
Total Nitrogen - Method: ARL No. 330 - Persulfate Method for Simultaneous Determination of TN & TP	Welshpool	Jul 26, 2024	28 Days
Total Phosphorus - Method: ARL308 - Total Phosphorus in Water by Discrete Analyser	Welshpool	Jul 26, 2024	28 Days
Chloride - Method: ARL305 - Chloride in Water by Discrete Analyser	Welshpool	Jul 26, 2024	28 Days
Sulfate (as SO4) - Method: ARL301 - Sulfate in Water by Discrete Analyser	Welshpool	Jul 26, 2024	28 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Welshpool	Jul 26, 2024	14 Days
Conductivity (at 25 °C) - Method: LTM-INO-4030 Conductivity	Welshpool	Jul 26, 2024	28 Days
Total Dissolved Solids Dried at 180 °C ± 2 °C - Method: ARL No. 017 - Total Dissolved Solids	Welshpool	Jul 26, 2024	7 Days
Ferrous Iron - Fe2+ - Method: LTM-INO-4190 Ferrous Iron in Water by Discrete Analyser	Melbourne	Jul 30, 2024	7 Days
pH (at 25 °C) - Method: LTM-GEN-7090 pH in water by ISE	Welshpool	Jul 26, 2024	6 Hours
Reactive Silica - Method: ARL315 - Reactive Silica in Water by Discrete Analyser	Welshpool	Jul 26, 2024	28 Days
Total Suspended Solids Dried at 103°C to 105°C - Method: ARL No. 016 - Total Suspended Solids	Welshpool	Jul 26, 2024	7 Days
Zirconium (filtered) - Method: ARL402/403 - Metals in Water by ICPOES/ICPMS	Welshpool	Jul 26, 2024	180 Days
Zirconium - Total - Method: ARL402/403 - Metals in Water by ICPOES/ICPMS	Welshpool	Jul 26, 2024	180 Days
Heavy Metals	Welshpool	Aug 13, 2024	28 Days

Description	Testing Site	Extracted	Holding Time
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Heavy Metals (filtered)	Welshpool	Aug 13, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M7	Welshpool	Jul 26, 2024	6 Months
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M7 filtered	Welshpool	Jul 26, 2024	6 Day
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Bismuth (filtered)	Welshpool	Jul 26, 2024	6 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Lithium	Welshpool	Jul 26, 2024	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Lithium (filtered)	Welshpool	Jul 26, 2024	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B11D: Na/K/Ca/Mg and Hardness			
Hardness mg equivalent CaCO3/L	Welshpool	Jul 26, 2024	28 Months
- Method: APHA 2340B Hardness by Calculation			
Alkali Metals	Welshpool	Jul 26, 2024	6 Months
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

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Project Name:
Project ID: QI-01

Order No.:
Report #: 1121879
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Received: Jul 26, 2024 5:25 PM
Due: Aug 2, 2024
Priority: 5 Day
Contact Name: E Picken

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Sample Detail	Aluminium	Aluminium (filtered)	Antimony	Antimony (filtered)	Beryllium	Beryllium (filtered)	Bismuth	Bismuth (filtered)	Cobalt	Cobalt (filtered)	Ferric Iron - Fe3+	Ferrous Iron - Fe2+	Iron	Iron (filtered)	Lithium	Lithium (filtered)	Manganese	Manganese (filtered)	Molybdenum	Molybdenum (filtered)	pH (at 25 °C)	Reactive Silica	Selenium	Selenium (filtered)	Silver	Silver (filtered)	Strontium	Strontium (filtered)	Thorium*	Thorium* (filtered)*	Titanium	Titanium (filtered)	Total Suspended Solids	Uranium	Uranium (filtered)	Vanadium	Vanadium (filtered)	Zirconium (filtered)	Zirconium - Total	Metals M7	Metals M7 filtered	Hardness Set	Eurofins Suite B1	BTEXN and Volatile TRH	Eurofins Suite B11D: Na/K/Ca/Mg and	Total Dissolved Solids (TDS)	Eurofins Suite B19E	Eurofins Suite B11E
Perth Laboratory - NATA # 2377 Site # 2370	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Melbourne Laboratory - NATA # 1261 Site # 1254												X																																				
External Laboratory																																																

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																																													
1	MBH09	Jul 24, 2024		Water	L24-JI0067603	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X
2	MBH12	Jul 24, 2024		Water	L24-JI0067604	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X
3	MBH33S	Jul 24, 2024		Water	L24-JI0067605	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X
4	MBH33D	Jul 24, 2024		Water	L24-JI0067606	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X
5	MBH34S	Jul 24, 2024		Water	L24-JI0067607	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X
6	MBH37D	Jul 24, 2024		Water	L24-JI0067608	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X
7	DUP1	Jul 24, 2024		Water	L24-JI0067609	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X
8	DUP2	Jul 24, 2024		Water	L24-JI0067610	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X
9	Rinse	Jul 24, 2024		Water	L24-JI0067611	X		X		X		X		X				X		X		X			X	X		X		X		X		X		X			X	X									
10	Tripblank	Jul 24, 2024		Water	L24-JI0067612																																									X					
Test Counts	9	8	9	8	9	8	9	8	8	7	8	8	9	8	9	8	9	8	9	8	8	9	9	8	9	8	9	8	9	8	9	8	8	9	8	9	8	8	9	9	8	3	3	1	8	8	8	8

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C10-C14	mg/L	< 0.02			0.02	Pass	
TRH C15-C28	mg/L	< 0.04			0.04	Pass	
TRH C29-C36	mg/L	< 0.04			0.04	Pass	
TRH >C10-C16	mg/L	< 0.02			0.02	Pass	
TRH >C16-C34	mg/L	< 0.05			0.05	Pass	
TRH >C34-C40	mg/L	< 0.05			0.05	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.02			0.02	Pass	
Chloride	mg/L	< 5			5	Pass	
Filterable Reactive Phosphorus	mg/L	< 0.01			0.01	Pass	
Nitrate (as N)	mg/L	< 0.01			0.01	Pass	
Nitrite (as N)	mg/L	< 0.01			0.01	Pass	
NOx (as N)	mg/L	< 0.01			0.01	Pass	
Reactive Silica	mg/L	< 0.1			0.1	Pass	
Sulfate (as SO4)	mg/L	< 1			1	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 5			5	Pass	
Total Nitrogen	mg/L	< 0.2			0.2	Pass	
Total Phosphorus	mg/L	< 0.01			0.01	Pass	
Total Suspended Solids Dried at 103°C to 105°C	mg/L	< 5			5	Pass	
Hardness mg equivalent CaCO3/L	mg/L	< 5			5	Pass	
Zirconium - Total	mg/L	< 0.01			0.01	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 5			5	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 5			5	Pass	
Method Blank							
Heavy Metals							
Thorium*	mg/L	< 0.05			0.05	Pass	
Thorium* (filtered)*	mg/L	< 0.05			0.05	Pass	
Method Blank							
Zirconium - Total	mg/L	< 0.01			0.01	Pass	
Method Blank							
Ferrous Iron - Fe2+	mg/L	< 0.05			0.05	Pass	
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.02			0.02	Pass	
TRH C15-C28	mg/L	< 0.04			0.04	Pass	
TRH C29-C36	mg/L	< 0.04			0.04	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.02			0.02	Pass	
TRH >C16-C34	mg/L	< 0.05			0.05	Pass	
TRH >C34-C40	mg/L	< 0.05			0.05	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Antimony (filtered)	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Bismuth (filtered)	mg/L	< 0.005			0.005	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron (filtered)	mg/L	< 0.01			0.01	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Lithium (filtered)	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum (filtered)	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.001			0.001	Pass	
Strontium (filtered)	mg/L	< 0.005			0.005	Pass	
Titanium (filtered)	mg/L	< 0.005			0.005	Pass	
Uranium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Heavy Metals							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Antimony (filtered)	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Bismuth (filtered)	mg/L	< 0.005			0.005	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron (filtered)	mg/L	< 0.01			0.01	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Lithium (filtered)	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum (filtered)	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.001			0.001	Pass	
Strontium (filtered)	mg/L	< 0.005			0.005	Pass	
Titanium (filtered)	mg/L	< 0.005			0.005	Pass	
Uranium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ferrous Iron - Fe2+	mg/L	< 0.05			0.05	Pass	
Method Blank							
Heavy Metals							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Antimony (filtered)	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Bismuth (filtered)	mg/L	< 0.005			0.005	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron (filtered)	mg/L	< 0.01			0.01	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Lithium (filtered)	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum (filtered)	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.001			0.001	Pass	
Strontium (filtered)	mg/L	< 0.005			0.005	Pass	
Titanium (filtered)	mg/L	< 0.005			0.005	Pass	
Uranium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Antimony	mg/L	< 0.001			0.001	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Bismuth	mg/L	< 0.005			0.005	Pass	
Cadmium	mg/L	< 0.0001			0.0001	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.01			0.01	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lithium	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Molybdenum	mg/L	< 0.001			0.001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Silver	mg/L	< 0.001			0.001	Pass	
Strontium	mg/L	< 0.005			0.005	Pass	
Titanium	mg/L	< 0.005			0.005	Pass	
Uranium	mg/L	< 0.001			0.001	Pass	
Vanadium	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C10-C14	%	94			70-130	Pass	
TRH >C10-C16	%	106			70-130	Pass	
LCS - % Recovery							
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	97			70-130	Pass	
Zirconium - Total	%	92			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Thorium*	%	80			80-120	Pass	
Thorium* (filtered)*	%	92			80-120	Pass	
LCS - % Recovery							
Zirconium - Total	%	85			80-120	Pass	
LCS - % Recovery							
Zirconium - Total	%	85			80-120	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	94			70-130	Pass	
TRH C10-C14	%	103			70-130	Pass	
TRH C6-C10	%	96			70-130	Pass	
TRH >C10-C16	%	101			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	110			70-130	Pass	
Toluene	%	107			70-130	Pass	
Ethylbenzene	%	118			70-130	Pass	
m&p-Xylenes	%	109			70-130	Pass	
o-Xylene	%	111			70-130	Pass	
Xylenes - Total*	%	109			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	109			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium (filtered)	%	98			80-120	Pass	
Antimony (filtered)	%	102			80-120	Pass	
Arsenic (filtered)	%	106			80-120	Pass	
Beryllium (filtered)	%	104			80-120	Pass	
Bismuth (filtered)	%	96			80-120	Pass	
Cadmium (filtered)	%	102			80-120	Pass	
Chromium (filtered)	%	98			80-120	Pass	
Cobalt (filtered)	%	98			80-120	Pass	
Copper (filtered)	%	94			80-120	Pass	
Iron (filtered)	%	99			80-120	Pass	
Lead (filtered)	%	96			80-120	Pass	
Lithium (filtered)	%	109			80-120	Pass	
Manganese (filtered)	%	95			80-120	Pass	
Mercury (filtered)	%	100			80-120	Pass	
Molybdenum (filtered)	%	104			80-120	Pass	
Nickel (filtered)	%	94			80-120	Pass	
Selenium (filtered)	%	96			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Silver (filtered)	%	81			80-120	Pass	
Strontium (filtered)	%	101			80-120	Pass	
Titanium (filtered)	%	101			80-120	Pass	
Uranium (filtered)	%	99			80-120	Pass	
Vanadium (filtered)	%	109			80-120	Pass	
Zinc (filtered)	%	96			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium (filtered)	%	99			80-120	Pass	
Antimony (filtered)	%	101			80-120	Pass	
Arsenic (filtered)	%	105			80-120	Pass	
Beryllium (filtered)	%	107			80-120	Pass	
Bismuth (filtered)	%	96			80-120	Pass	
Cadmium (filtered)	%	101			80-120	Pass	
Chromium (filtered)	%	98			80-120	Pass	
Cobalt (filtered)	%	99			80-120	Pass	
Copper (filtered)	%	96			80-120	Pass	
Iron (filtered)	%	99			80-120	Pass	
Lead (filtered)	%	97			80-120	Pass	
Lithium (filtered)	%	114			80-120	Pass	
Manganese (filtered)	%	99			80-120	Pass	
Mercury (filtered)	%	101			80-120	Pass	
Molybdenum (filtered)	%	104			80-120	Pass	
Nickel (filtered)	%	96			80-120	Pass	
Selenium (filtered)	%	100			80-120	Pass	
Silver (filtered)	%	81			80-120	Pass	
Strontium (filtered)	%	105			80-120	Pass	
Titanium (filtered)	%	102			80-120	Pass	
Uranium (filtered)	%	100			80-120	Pass	
Vanadium (filtered)	%	104			80-120	Pass	
Zinc (filtered)	%	99			80-120	Pass	
LCS - % Recovery							
Ferrous Iron - Fe2+	%	118			70-130	Pass	
Zirconium - Total	%	84			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium (filtered)	%	98			80-120	Pass	
Antimony (filtered)	%	102			80-120	Pass	
Arsenic (filtered)	%	106			80-120	Pass	
Beryllium (filtered)	%	104			80-120	Pass	
Bismuth (filtered)	%	95			80-120	Pass	
Cadmium (filtered)	%	102			80-120	Pass	
Chromium (filtered)	%	98			80-120	Pass	
Cobalt (filtered)	%	98			80-120	Pass	
Copper (filtered)	%	95			80-120	Pass	
Iron (filtered)	%	97			80-120	Pass	
Lead (filtered)	%	95			80-120	Pass	
Lithium (filtered)	%	107			80-120	Pass	
Manganese (filtered)	%	98			80-120	Pass	
Mercury (filtered)	%	99			80-120	Pass	
Molybdenum (filtered)	%	103			80-120	Pass	
Nickel (filtered)	%	95			80-120	Pass	
Selenium (filtered)	%	102			80-120	Pass	
Silver (filtered)	%	81			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Strontium (filtered)	%	105			80-120	Pass	
Titanium (filtered)	%	101			80-120	Pass	
Uranium (filtered)	%	99			80-120	Pass	
Vanadium (filtered)	%	103			80-120	Pass	
Zinc (filtered)	%	97			80-120	Pass	
LCS - % Recovery							
Zirconium - Total	%	118			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	95			80-120	Pass	
Antimony	%	103			80-120	Pass	
Arsenic	%	103			80-120	Pass	
Beryllium	%	100			80-120	Pass	
Bismuth	%	99			80-120	Pass	
Cadmium	%	102			80-120	Pass	
Chromium	%	93			80-120	Pass	
Cobalt	%	93			80-120	Pass	
Copper	%	91			80-120	Pass	
Iron	%	95			80-120	Pass	
Lead	%	99			80-120	Pass	
Lithium	%	102			80-120	Pass	
Manganese	%	92			80-120	Pass	
Mercury	%	102			80-120	Pass	
Molybdenum	%	103			80-120	Pass	
Nickel	%	92			80-120	Pass	
Selenium	%	92			80-120	Pass	
Silver	%	115			80-120	Pass	
Strontium	%	101			80-120	Pass	
Titanium	%	97			80-120	Pass	
Uranium	%	106			80-120	Pass	
Vanadium	%	93			80-120	Pass	
Zinc	%	101			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	93			80-120	Pass	
Magnesium	%	94			80-120	Pass	
Potassium	%	92			80-120	Pass	
Sodium	%	91			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ammonia (as N)	L24-JI0067478	NCP	%	108			80-120	Pass	
Filterable Reactive Phosphorus	L24-JI0067478	NCP	%	103			80-120	Pass	
Nitrate (as N)	L24-JI0067478	NCP	%	101			70-130	Pass	
Nitrite (as N)	L24-JI0067478	NCP	%	101			80-120	Pass	
NOx (as N)	L24-JI0067478	NCP	%	101			80-120	Pass	
Total Nitrogen	L24-JI0067152	NCP	%	102			70-130	Pass	
Total Phosphorus	L24-JI0069418	NCP	%	98			80-120	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	L24-JI0069845	NCP	%	96			75-125	Pass	
Aluminium (filtered)	L24-JI0063445	NCP	%	95			75-125	Pass	
Antimony	L24-JI0069845	NCP	%	100			75-125	Pass	
Antimony (filtered)	L24-JI0063445	NCP	%	100			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic	L24-JI0069845	NCP	%	103			75-125	Pass	
Arsenic (filtered)	L24-JI0063445	NCP	%	100			75-125	Pass	
Beryllium	L24-JI0069845	NCP	%	96			75-125	Pass	
Beryllium (filtered)	L24-JI0063445	NCP	%	84			75-125	Pass	
Bismuth	L24-JI0069845	NCP	%	92			75-125	Pass	
Cadmium	L24-JI0069845	NCP	%	100			75-125	Pass	
Cadmium (filtered)	L24-JI0063445	NCP	%	96			75-125	Pass	
Chromium	L24-JI0069845	NCP	%	97			75-125	Pass	
Chromium (filtered)	L24-JI0063445	NCP	%	93			75-125	Pass	
Copper	L24-JI0069845	NCP	%	93			75-125	Pass	
Copper (filtered)	L24-JI0063445	NCP	%	90			75-125	Pass	
Iron	L24-JI0069845	NCP	%	70			75-125	Fail	Q08
Iron (filtered)	L24-JI0063445	NCP	%	91			75-125	Pass	
Lead	L24-JI0069845	NCP	%	93			75-125	Pass	
Lead (filtered)	L24-JI0063445	NCP	%	92			75-125	Pass	
Lithium	L24-JI0069845	NCP	%	93			75-125	Pass	
Lithium (filtered)	L24-JI0063445	NCP	%	90			75-125	Pass	
Manganese	L24-JI0069845	NCP	%	55			75-125	Fail	Q08
Manganese (filtered)	L24-JI0063445	NCP	%	Q05			75-125	Fail	Q05
Molybdenum	L24-JI0069845	NCP	%	101			75-125	Pass	
Molybdenum (filtered)	L24-JI0063445	NCP	%	66			75-125	Fail	Q08
Nickel	L24-JI0069845	NCP	%	93			75-125	Pass	
Nickel (filtered)	L24-JI0063445	NCP	%	91			75-125	Pass	
Selenium	L24-JI0069845	NCP	%	99			75-125	Pass	
Selenium (filtered)	L24-JI0063445	NCP	%	92			75-125	Pass	
Silver	L24-JI0069845	NCP	%	80			75-125	Pass	
Silver (filtered)	L24-JI0063445	NCP	%	97			75-125	Pass	
Strontium	L24-JI0069845	NCP	%	98			75-125	Pass	
Strontium (filtered)	L24-JI0063445	NCP	%	98			75-125	Pass	
Thorium*	L24-JI0063446	NCP	%	88			75-125	Pass	
Titanium	L24-JI0069845	NCP	%	100			75-125	Pass	
Titanium (filtered)	L24-JI0063445	NCP	%	93			75-125	Pass	
Uranium	L24-JI0069845	NCP	%	97			75-125	Pass	
Uranium (filtered)	L24-JI0063445	NCP	%	94			75-125	Pass	
Vanadium	L24-JI0069845	NCP	%	97			75-125	Pass	
Vanadium (filtered)	L24-JI0063445	NCP	%	82			75-125	Pass	
Zinc	L24-JI0069845	NCP	%	98			75-125	Pass	
Zinc (filtered)	L24-JI0063445	NCP	%	95			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	L24-JI0069845	NCP	%	92			75-125	Pass	
Magnesium	L24-JI0069845	NCP	%	94			75-125	Pass	
Potassium	L24-JI0069845	NCP	%	93			75-125	Pass	
Sodium	L24-JI0069845	NCP	%	93			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cobalt	L24-JI0069845	NCP	%	97			75-125	Pass	
Cobalt (filtered)	L24-JI0063445	NCP	%	93			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	L24-JI0065337	NCP	%	106			70-130	Pass	
TRH C10-C14	L24-JI0065333	NCP	%	183			70-130	Fail	Q08
TRH C6-C10	L24-JI0065337	NCP	%	103			70-130	Pass	
TRH >C10-C16	L24-JI0065333	NCP	%	180			70-130	Fail	Q08

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
BTEX				Result 1					
Benzene	L24-JI0065337	NCP	%	102			70-130	Pass	
Toluene	L24-JI0065337	NCP	%	101			70-130	Pass	
Ethylbenzene	L24-JI0065337	NCP	%	112			70-130	Pass	
m&p-Xylenes	L24-JI0065337	NCP	%	105			70-130	Pass	
o-Xylene	L24-JI0065337	NCP	%	105			70-130	Pass	
Xylenes - Total*	L24-JI0065337	NCP	%	105			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	L24-JI0065337	NCP	%	103			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	L24-JI0067603	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	L24-JI0067603	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C15-C28	L24-JI0067603	CP	mg/L	< 0.04	< 0.04	<1	30%	Pass	
TRH C29-C36	L24-JI0067603	CP	mg/L	< 0.04	< 0.04	<1	30%	Pass	
TRH C6-C10	L24-JI0067603	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	L24-JI0067603	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C16-C34	L24-JI0067603	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C34-C40	L24-JI0067603	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	L24-JI0067603	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	L24-JI0067603	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	L24-JI0067603	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	L24-JI0067603	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	L24-JI0067603	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	L24-JI0067603	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	L24-JI0067603	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	L24-JI0067477	NCP	mg/L	5.4	5.4	<1	20%	Pass	
Chloride	L24-JI0069564	NCP	mg/L	680	680	<1	30%	Pass	
Filterable Reactive Phosphorus	L24-JI0067477	NCP	mg/L	1.5	1.5	<1	20%	Pass	
Nitrate (as N)	L24-JI0067477	NCP	mg/L	0.53	0.53	<1	30%	Pass	
Nitrite (as N)	L24-JI0067477	NCP	mg/L	0.05	0.05	<1	20%	Pass	
NOx (as N)	L24-JI0067477	NCP	mg/L	0.58	0.58	<1	20%	Pass	
Reactive Silica	L24-JI0067885	NCP	mg/L	7.6	7.5	<1	20%	Pass	
Sulfate (as SO4)	L24-JI0069564	NCP	mg/L	120	120	<1	30%	Pass	
Total Nitrogen	L24-JI0067477	NCP	mg/L	6.6	7.0	2.7	30%	Pass	
Total Phosphorus	L24-JI0067477	NCP	mg/L	0.84	0.79	5.8	20%	Pass	
Total Suspended Solids Dried at 103°C to 105°C		NCP	mg/L	**	**	16	20%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	L24-JI0061412	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Antimony (filtered)	L24-JI0061412	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	L24-JI0061412	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium (filtered)	L24-JI0061412	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bismuth (filtered)	L24-JI0061412	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium (filtered)	L24-JI0061412	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium (filtered)	L24-JI0061412	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	L24-JI0061412	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	L24-JI0061412	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Lead (filtered)	L24-JI0061412	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lithium (filtered)	L24-JI0061412	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese (filtered)	L24-JI0061412	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nickel (filtered)	L24-JI0061412	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	L24-JI0061412	NCP	mg/L	0.001	< 0.001	7.4	30%	Pass	
Silver (filtered)	L24-JI0061412	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Strontium (filtered)	L24-JI0061412	NCP	mg/L	0.13	0.13	<1	30%	Pass	
Thorium* (filtered)*	L24-JI0061412	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Titanium (filtered)	L24-JI0061412	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Uranium (filtered)	L24-JI0061412	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Vanadium (filtered)	L24-JI0061412	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	L24-JI0061412	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cobalt (filtered)	L24-JI0061412	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ferrous Iron - Fe2+	L24-JI0067605	CP	mg/L	0.87	0.91	4.8	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	L24-JI0069577	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	L24-JI0069563	NCP	mg/L	< 0.02	3.6	1.2	30%	Pass	
TRH C15-C28	L24-JI0069563	NCP	mg/L	1.6	0.14	14	30%	Pass	
TRH C29-C36	L24-JI0069563	NCP	mg/L	0.35	< 0.04	<1	30%	Pass	
TRH C6-C10	L24-JI0069577	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	L24-JI0069563	NCP	mg/L	< 0.02	1.6	3.4	30%	Pass	
TRH >C16-C34	L24-JI0069563	NCP	mg/L	1.8	< 0.05	<1	30%	Pass	
TRH >C34-C40	L24-JI0069563	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	L24-JI0069577	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	L24-JI0069577	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	L24-JI0069577	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	L24-JI0069577	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	L24-JI0069577	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	L24-JI0069577	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	L24-JI0069577	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25 °C)	L24-JI0067610	CP	uS/cm	2700	2700	<1	30%	Pass	
pH (at 25 °C)	L24-JI0067610	CP	pH Units	8.0	8.0	<1	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	L24-JI0067610	CP	mg/L	1600	1600	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Zirconium - Total	L24-JI0067611	CP	mg/L	< 0.01	< 0.01	<1	20%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Lithium	L24-Jl0067611	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Thorium*	L24-Jl0067611	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

Comments

V2: LORs fixed up for Nitrate on Jl0067607 and Jl0067610. Raw data uploaded, LIMS did not convert to < 0.01.

V3: Suite B1 added for sample MBH09.

V4: Mercury (total and dissolved) added to the following samples:

MBH09

DUP1

MBH012

MBH37D

MBH33S

MBH33D

DUP2

V5: Following review of results:

Selenium and nickel (filtered) amended to match total for Jl0067604, Jl0067606

V6: Sulfate for sample Jl0067606 reported by calculation from total sulfur.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q05	The matrix spike concentration is less than five times the background concentration in the sample - therefore the spike recovery cannot be determined
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Elden Garrett	Analytical Services Manager
Caitlin Breeze	Senior Analyst-Inorganic
Douglas Todd	Senior Analyst-Metal
John Horwood	Senior Analyst-Volatile
Patrick Patfield	Senior Analyst-Organic
Patrick Patfield	Senior Analyst-Volatile
Sam Becker	Senior Analyst-Inorganic
Sean Sangster	Senior Analyst-Metal

Kim Rodgers
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request

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Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

Eurofins ProMicro Pty Ltd ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Eurofins Environment Testing NZ Ltd NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Sample Receipt Advice

Company name: Land & Water Consulting
Contact name: E Picken
Project name: Not provided
Project ID: QI-01
Turnaround time: 5 Day
Date/Time received Jul 26, 2024 5:25 PM
Eurofins reference 1121879

Sample Information

✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

✓ All samples have been received as described on the above COC.

✓ COC has been completed correctly.

✓ Attempt to chill was evident.

✓ Appropriately preserved sample containers have been used.

✓ All samples were received in good condition.

✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

✓ Appropriate sample containers have been used.

✓ Sample containers for volatile analysis received with zero headspace.

X Split sample sent to requested external lab.

X Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Elden Garrett on phone : 0892519602 or by email: EldenGarrett@eurofins.com

Results will be delivered electronically via email to E Picken - epicken@lwconsulting.com.au.

Global Leader - Results you can trust

CHAIN OF CUSTODY FORM

From : Land & Water Consulting Pty Ltd
Suite 3, 4-8 Goodwood Road, WAYVILLE, SA, 5034
ph: (08) 8271 5255 fax: (08) 8357 1307

LAB Quote Number: LWC 240321

LWC Contact Information:
Contact Name:
Emily Picken
Contact Email:
laboratoryresults@lwconsulting.com.au

Phone Number:
08 8271 5255

LWC Project No:
QI-01
Project Manager:
Emily Picken
Date Samples Sent:
25/07/2024
COC Checked by: A Vaughan

Eurofins
Sample Analysis

Lab ID	Date	Matrix	Sample ID	No. Bottles	*Suite 1	*Suite 2	*Suite 3	*Suite 4					
					Tick required analytes								
	24/07/2024	W	MBH09	7	X								
	24/07/2024	W	MBH12	4	X								
	24/07/2024	W	MBH33S	4	X								
	24/07/2024	W	MBH33D	4	X								
	24/07/2024	W	MBH34S	7	X	X							
	24/07/2024	W	MBH37D	4	X								
	24/07/2024	W	DUP1	7	X	X							
	24/07/2024	W	DUP2	7	X	X							
	24/07/2024	W	Rinse	2			X						
	24/07/2024	W	Tripblank	2				X					
			TOTAL	10	8	3	1	1					

ADDITIONAL COMMENTS:

Suite 1 - Major components, metals and nutrients:
- EC
- Total dissolved solids (TDS) and Total Suspended Solids (TSS).
- Laboratory pH
- Major Ions including calcium, sodium, potassium, magnesium, chloride, sulphate, bicarbonate and carbonate.
- Hydroxide alkalinity as CaCO3, carbonate alkalinity as CaCO3 and bicarbonate as CaCO3.
- Water Hardness
- Total and dissolved metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO2, Se, Sr, Th, Tl, U, V, Zn, Zr and SiO2.
- Speciation of Ferric Iron and Ferrous Iron (actual and not calculated).
- Nutrients including total nitrogen, nitrate as N, nitrite as N, ammonia, TKN and filtered reactive phosphorous.

Suite 2 - Hydrocarbons:
- Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, total Xylenes, Naphthalene (BTEXN)

Suite 3 - Rinsate Screen:
- Total metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO2, Se, Sr, Th, Tl, U, V, Zn, Zr and SiO2.

Suite 4 - Tripblank
- TRH Fraction C6-C10 and BTEXN

***LOR must be sufficient for comparision to ANZG 2018 freshwater guidelines 95% protection, water samples will have salinity ranging from 500 - 150,000 mg/L. PLEASE ANALYSE TO MEET THIS GUIDELINE**

#1121879

25/07/24 @ 15:45

Land & Water Consulting
Suite 3 Level 1 4-8 Goodwood Road
Wayville
SA 5034

NATA Accredited
Accreditation Number 2377
Site Number 2370 & 2554

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **Karen Mackenzie**

Report **1122482-W-V3**
Project name QI-01
Received Date Jul 29, 2024

Client Sample ID			**MBH03**	**MBH08**	**MBH19**	**MBH26D**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**L24-JI0072940**	**L24-JI0072941**	**L24-JI0072942**	**L24-JI0072943**
Date Sampled			**Jul 25, 2024**	**Jul 25, 2024**	**Jul 25, 2024**	**Jul 25, 2024**
Test/Reference	LOR	Unit				
Ammonia (as N)	0.02	mg/L	[G16]1.7	[G16]3.4	[G16]3.4	[G16]2.8
Chloride	5	mg/L	49000	75000	100000	60000
Conductivity (at 25 °C)	10	uS/cm	110000	140000	170000	130000
Ferric Iron - Fe3+*	0.5	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	1.2	< 0.05	< 0.05
Filterable Reactive Phosphorus	0.01	mg/L	0.03	0.02	0.03	0.05
Nitrate (as N)	0.01	mg/L	0.59	< 0.01	0.33	0.98
Nitrite (as N)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
NOx (as N)	0.01	mg/L	0.59	< 0.01	0.33	0.99
pH (at 25 °C)	0.1	pH Units	7.4	7.1	6.7	7.0
Reactive Silica	0.1	mg/L	12	26	32	33
Sulfate (as SO4)	1	mg/L	4400	8900	8900	6000
Total Dissolved Solids Dried at 180 °C ± 2 °C	5	mg/L	66000	85000	100000	75000
Total Kjeldahl Nitrogen	0.2	mg/L	1.9	4.1	4.0	2.1
Total Nitrogen	0.2	mg/L	2.5	4.1	4.3	3.1
Total Phosphorus	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Total Suspended Solids Dried at 103°C to 105°C	5	mg/L	93	17	17	17
Hardness mg equivalent CaCO3/L	5	mg/L	16000	23000	30000	17000
Zirconium (filtered)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Zirconium - Total	0.01	mg/L	< 0.01	0.01	0.01	< 0.01
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	5	mg/L	71	200	110	99
Carbonate Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	5	mg/L	71	200	110	99
Heavy Metals						
Aluminium	0.05	mg/L	0.79	< 0.05	0.06	0.08
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Antimony	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Antimony (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	< 0.001
Arsenic	0.001	mg/L	0.014	0.021	0.008	0.006
Arsenic (filtered)	0.001	mg/L	0.014	0.021	0.008	0.006
Beryllium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bismuth	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Bismuth (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MBH03	MBH08	MBH19	MBH26D
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			L24-JI0072940	L24-JI0072941	L24-JI0072942	L24-JI0072943
Date Sampled			Jul 25, 2024	Jul 25, 2024	Jul 25, 2024	Jul 25, 2024
Test/Reference	LOR	Unit				
Heavy Metals						
Cadmium	0.0001	mg/L	0.0009	< 0.0001	0.0026	0.0025
Cadmium (filtered)	0.0001	mg/L	0.0009	< 0.0001	0.0026	0.0024
Chromium	0.001	mg/L	0.073	< 0.001	0.003	< 0.001
Chromium (filtered)	0.001	mg/L	0.063	< 0.001	< 0.001	< 0.001
Cobalt	0.001	mg/L	< 0.001	0.028	0.0019	0.0012
Cobalt (filtered)	0.001	mg/L	< 0.001	0.027	0.0019	0.0011
Copper	0.001	mg/L	0.079	0.024	0.11	0.090
Copper (filtered)	0.001	mg/L	0.020	0.004	0.054	0.086
Iron	0.01	mg/L	0.57	1.3	0.14	0.03
Iron (filtered)	0.01	mg/L	< 0.01	1.2	< 0.01	< 0.01
Lead	0.001	mg/L	0.005	0.002	0.011	0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.008	0.002
Lithium	0.001	mg/L	0.41	0.37	0.35	0.33
Lithium (filtered)	0.005	mg/L	0.41	0.37	0.35	0.33
Manganese	0.005	mg/L	0.11	2.0	0.033	0.033
Manganese (filtered)	0.005	mg/L	0.046	1.9	0.031	0.033
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum	0.001	mg/L	0.036	0.015	0.014	0.029
Molybdenum (filtered)	0.001	mg/L	0.036	0.013	< 0.001	0.029
Nickel	0.001	mg/L	0.006	0.060	0.030	0.013
Nickel (filtered)	0.001	mg/L	0.005	0.060	0.030	0.013
Selenium	0.001	mg/L	0.044	0.049	0.061	0.055
Selenium (filtered)	0.001	mg/L	0.027	0.026	0.043	0.043
Silver	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Silver (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	0.001
Strontium	0.005	mg/L	50	35	40	53
Strontium (filtered)	0.005	mg/L	47	31	39	51
Thorium*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Thorium* (filtered)*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Titanium	0.005	mg/L	0.031	< 0.005	< 0.005	< 0.005
Titanium (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Uranium	0.001	mg/L	0.006	0.007	0.002	0.009
Uranium (filtered)	0.001	mg/L	0.006	0.006	0.002	0.009
Vanadium	0.005	mg/L	0.029	0.034	0.038	0.026
Vanadium (filtered)	0.005	mg/L	0.023	0.034	0.038	0.026
Zinc	0.005	mg/L	0.043	0.024	0.089	0.040
Zinc (filtered)	0.005	mg/L	0.021	0.017	0.034	0.040
Alkali Metals						
Calcium	0.5	mg/L	2400	1500	1500	2100
Magnesium	0.5	mg/L	2500	4700	6400	2900
Potassium	0.5	mg/L	860	1600	1600	1200
Sodium	0.5	mg/L	28000	42000	52000	33000

Client Sample ID			MBH39D	MBH40D	RINSE	SW14
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			L24-JI0072944	L24-JI0072945	L24-JI0072946	L24-JI0072947
Date Sampled			Jul 25, 2024	Jul 25, 2024	Jul 25, 2024	Jul 25, 2024
Test/Reference	LOR	Unit				
Ammonia (as N)	0.02	mg/L	0.42	1.7	-	< 0.02
Chloride	5	mg/L	810	470	-	130
Conductivity (at 25 °C)	10	uS/cm	3800	6700	-	1300
Ferric Iron - Fe3+*	0.5	mg/L	< 0.05	< 0.05	-	0.16
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	< 0.05	-	< 0.05
Filterable Reactive Phosphorus	0.01	mg/L	0.08	0.03	-	0.04
Nitrate (as N)	0.01	mg/L	0.03	0.55	-	< 0.01
Nitrite (as N)	0.01	mg/L	0.03	0.02	-	< 0.01
NOx (as N)	0.01	mg/L	0.05	0.57	-	< 0.01
pH (at 25 °C)	0.1	pH Units	8.1	11	-	8.6
Reactive Silica	0.1	mg/L	32	1.4	< 0.1	30
Sulfate (as SO4)	1	mg/L	350	370	-	< 1
Total Dissolved Solids Dried at 180 °C ± 2 °C	5	mg/L	2300	4000	-	810
Total Kjeldahl Nitrogen	0.2	mg/L	0.7	12	-	3.4
Total Nitrogen	0.2	mg/L	0.7	13	-	3.4
Total Phosphorus	0.01	mg/L	0.12	0.04	-	0.42
Total Suspended Solids Dried at 103°C to 105°C	5	mg/L	95	13	-	280
Hardness mg equivalent CaCO3/L	5	mg/L	630	900	-	110
Zirconium (filtered)	0.01	mg/L	< 0.01	< 0.01	-	< 0.01
Zirconium - Total	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	5	mg/L	320	< 5	-	560
Carbonate Alkalinity (as CaCO3)	5	mg/L	< 5	490	-	30
Hydroxide Alkalinity (as CaCO3)	5	mg/L	< 5	1200	-	< 5
Total Alkalinity (as CaCO3)	5	mg/L	320	1700	-	590
Heavy Metals						
Aluminium	0.05	mg/L	1.4	0.52	< 0.05	8.4
Aluminium (filtered)	0.05	mg/L	< 0.05	0.27	-	< 0.05
Antimony	0.001	mg/L	< 0.001	0.019	< 0.001	0.003
Antimony (filtered)	0.001	mg/L	< 0.001	0.009	-	< 0.001
Arsenic	0.001	mg/L	0.002	0.003	< 0.001	0.006
Arsenic (filtered)	0.001	mg/L	0.002	< 0.001	-	0.003
Beryllium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	-	< 0.001
Bismuth	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Bismuth (filtered)	0.005	mg/L	< 0.005	< 0.005	-	< 0.005
Cadmium	0.0001	mg/L	< 0.0001	0.0002	< 0.0001	< 0.0001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	0.0002	-	< 0.0001
Chromium	0.001	mg/L	0.005	0.010	0.003	0.041
Chromium (filtered)	0.001	mg/L	< 0.001	0.005	-	0.001
Cobalt	0.001	mg/L	0.0034	0.0017	< 0.001	0.011
Cobalt (filtered)	0.001	mg/L	0.001	0.0014	-	0.001
Copper	0.001	mg/L	0.012	0.026	0.009	0.028
Copper (filtered)	0.001	mg/L	0.009	0.011	-	0.015
Iron	0.01	mg/L	1.7	0.05	< 0.01	17
Iron (filtered)	0.01	mg/L	< 0.01	0.01	-	0.16
Lead	0.001	mg/L	0.002	0.002	< 0.001	0.007
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	-	< 0.001
Lithium	0.001	mg/L	0.011	0.64	< 0.001	0.013

Client Sample ID			MBH39D	MBH40D	RINSE	SW14
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			L24-JI0072944	L24-JI0072945	L24-JI0072946	L24-JI0072947
Date Sampled			Jul 25, 2024	Jul 25, 2024	Jul 25, 2024	Jul 25, 2024
Test/Reference	LOR	Unit				
Heavy Metals						
Lithium (filtered)	0.005	mg/L	0.011	0.64	-	0.011
Manganese	0.005	mg/L	1.3	< 0.005	< 0.005	0.32
Manganese (filtered)	0.005	mg/L	0.98	< 0.005	-	0.011
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	-	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	-	< 0.0001
Molybdenum	0.001	mg/L	0.005	0.53	0.002	0.004
Molybdenum (filtered)	0.001	mg/L	0.005	0.53	-	0.004
Nickel	0.001	mg/L	0.054	0.008	< 0.001	0.020
Nickel (filtered)	0.001	mg/L	0.031	0.007	-	0.005
Selenium	0.001	mg/L	0.024	0.019	0.003	0.002
Selenium (filtered)	0.001	mg/L	0.016	0.011	-	0.002
Silver	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	0.001	mg/L	< 0.001	< 0.001	-	< 0.001
Strontium	0.005	mg/L	2.6	2.0	< 0.005	0.28
Strontium (filtered)	0.005	mg/L	2.6	1.9	-	0.19
Thorium*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Thorium* (filtered)*	0.05	mg/L	< 0.05	< 0.05	-	< 0.05
Titanium	0.005	mg/L	0.033	< 0.005	< 0.005	0.22
Titanium (filtered)	0.005	mg/L	< 0.005	< 0.005	-	< 0.005
Uranium	0.001	mg/L	0.011	< 0.001	< 0.001	0.008
Uranium (filtered)	0.001	mg/L	0.010	< 0.001	-	0.008
Vanadium	0.005	mg/L	< 0.005	0.056	< 0.005	0.041
Vanadium (filtered)	0.005	mg/L	< 0.005	0.013	-	< 0.005
Zinc	0.005	mg/L	0.025	0.012	< 0.005	0.053
Zinc (filtered)	0.005	mg/L	0.025	< 0.005	-	0.007
Alkali Metals						
Calcium	0.5	mg/L	150	360	-	15
Magnesium	0.5	mg/L	64	< 0.5	-	17
Potassium	0.5	mg/L	13	380	-	13
Sodium	0.5	mg/L	560	450	-	280

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Ammonia (as N) - Method: ARL303 - Ammonia in Water by Discrete Analyser	Welshpool	Jul 29, 2024	28 Days
Filterable Reactive Phosphorus - Method: ARL309 - Filterable Reactive Phosphorus in Water by Discrete Analyser	Welshpool	Jul 29, 2024	28 Days
Nitrate (as N) - Method: ARL313/319 - NOx in Water by Discrete Analyser	Welshpool	Jul 29, 2024	28 Days
Nitrite (as N) - Method: ARL311 - Nitrite in Water by Discrete Analyser	Welshpool	Jul 29, 2024	2 Days
NOx (as N) - Method: ARL313/319 - NOx in Water by Discrete Analyser	Welshpool	Jul 29, 2024	28 Days
Total Kjeldahl Nitrogen - Method: ARL No. 330 - Persulfate Method for Simultaneous Determination of TN & TP	Welshpool	Jul 29, 2024	28 Day
Total Nitrogen - Method: ARL No. 330 - Persulfate Method for Simultaneous Determination of TN & TP	Welshpool	Jul 29, 2024	28 Days
Total Phosphorus - Method: ARL308 - Total Phosphorus in Water by Discrete Analyser	Welshpool	Jul 29, 2024	28 Days
Chloride - Method: ARL305 - Chloride in Water by Discrete Analyser	Welshpool	Jul 29, 2024	28 Days
Sulfate (as SO4) - Method: ARL301 - Sulfate in Water by Discrete Analyser	Welshpool	Jul 29, 2024	28 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Welshpool	Jul 29, 2024	14 Days
Conductivity (at 25 °C) - Method: LTM-INO-4030 Conductivity	Welshpool	Jul 29, 2024	28 Days
Total Dissolved Solids Dried at 180 °C ± 2 °C - Method: ARL No. 017 - Total Dissolved Solids	Welshpool	Jul 29, 2024	7 Days
Ferrous Iron - Fe2+ - Method: LTM-INO-4190 Ferrous Iron in Water by Discrete Analyser	Melbourne	Jul 30, 2024	7 Days
pH (at 25 °C) - Method: LTM-GEN-7090 pH in water by ISE	Welshpool	Jul 29, 2024	6 Hours
Reactive Silica - Method: ARL315 - Reactive Silica in Water by Discrete Analyser	Welshpool	Jul 29, 2024	28 Days
Total Suspended Solids Dried at 103°C to 105°C - Method: ARL No. 016 - Total Suspended Solids	Welshpool	Jul 29, 2024	7 Days
Zirconium (filtered) - Method: ARL402/403 - Metals in Water by ICPOES/ICPMS	Welshpool	Jul 29, 2024	180 Days
Zirconium - Total - Method: ARL402/403 - Metals in Water by ICPOES/ICPMS	Welshpool	Jul 29, 2024	180 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Aug 13, 2024	28 Days
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Aug 13, 2024	28 Days
Metals M7 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 29, 2024	6 Months
Metals M7 filtered - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 29, 2024	6 Day
Bismuth (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 29, 2024	6 Days
Lithium - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 29, 2024	180 Days
Lithium (filtered)	Welshpool	Jul 29, 2024	180 Days

Description	Testing Site	Extracted	Holding Time
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B11D: Na/K/Ca/Mg and Hardness			
Hardness mg equivalent CaCO3/L	Welshpool	Jul 29, 2024	28 Months
- Method: APHA 2340B Hardness by Calculation			
Alkali Metals	Welshpool	Jul 29, 2024	6 Months
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

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Project Name: QI-01

Order No.:
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Received: Jul 29, 2024 6:00 PM
Due: Aug 6, 2024
Priority: 5 Day
Contact Name: Karen Mackenzie

Eurofins Analytical Services Manager : Elden Garrett

Sample Detail						Aluminium	Aluminium (filtered)	Antimony	Antimony (filtered)	Beryllium	Beryllium (filtered)	Bismuth	Bismuth (filtered)	Ferric Iron - Fe3+	Ferrous Iron - Fe2+	Iron	Iron (filtered)	Lithium	Lithium (filtered)	Manganese	Manganese (filtered)	Molybdenum	Molybdenum (filtered)	pH (at 25 °C)	Reactive Silica	Selenium	Selenium (filtered)	Silver	Silver (filtered)	Strontium	Strontium (filtered)	Thorium*	Thorium* (filtered)*	Titanium	Titanium (filtered)	Total Suspended Solids	Uranium	Uranium (filtered)	Vanadium	Vanadium (filtered)	Zirconium (filtered)	Zirconium - Total	Metals M7	Metals M7 filtered	Hardness Set	Eurofins Suite B11D: Na/K/Ca/Mg and	Total Dissolved Solids (TDS)	Eurofins Suite B19E	Eurofins Suite B11E
Perth Laboratory - NATA # 2377 Site # 2370						X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Melbourne Laboratory - NATA # 1261 Site # 1254															X																																	
External Laboratory																																																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																																											
1	MBH03	Jul 25, 2024		Water	L24-JI0072940	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	MBH08	Jul 25, 2024		Water	L24-JI0072941	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	MBH19	Jul 25, 2024		Water	L24-JI0072942	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	MBH26D	Jul 25, 2024		Water	L24-JI0072943	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	MBH39D	Jul 25, 2024		Water	L24-JI0072944	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	MBH40D	Jul 25, 2024		Water	L24-JI0072945	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	RINSE	Jul 25, 2024		Water	L24-JI0072946	X		X		X		X				X		X		X		X			X	X		X		X		X			X		X			X	X						
8	SW14	Jul 25, 2024		Water	L24-JI0072947	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Test Counts						8	7	8	7	8	7	8	7	7	7	8	7	8	7	8	7	8	7	7	8	8	7	8	7	8	7	8	7	8	7	7	8	7	8	7	7	8	8	7	7	7	7	7

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
ppm: parts per million
µg/L: micrograms per litre
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit
Colour: Pt-Co Units (CU)

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Chloride	mg/L	< 5			5	Pass	
Filterable Reactive Phosphorus	mg/L	< 0.01			0.01	Pass	
Nitrite (as N)	mg/L	< 0.01			0.01	Pass	
NOx (as N)	mg/L	< 0.01			0.01	Pass	
Reactive Silica	mg/L	< 0.1			0.1	Pass	
Sulfate (as SO4)	mg/L	< 1			1	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 5			5	Pass	
Total Nitrogen	mg/L	< 0.2			0.2	Pass	
Total Phosphorus	mg/L	< 0.01			0.01	Pass	
Total Suspended Solids Dried at 103°C to 105°C	mg/L	< 5			5	Pass	
Hardness mg equivalent CaCO3/L	mg/L	< 5			5	Pass	
Zirconium - Total	mg/L	< 0.01			0.01	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 5			5	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 5			5	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Antimony	mg/L	< 0.001			0.001	Pass	
Antimony (filtered)	mg/L	< 0.001			0.001	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Bismuth	mg/L	< 0.005			0.005	Pass	
Bismuth (filtered)	mg/L	< 0.005			0.005	Pass	
Cadmium	mg/L	< 0.0001			0.0001	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.01			0.01	Pass	
Iron (filtered)	mg/L	< 0.01			0.01	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Lithium	mg/L	< 0.001			0.001	Pass	
Lithium (filtered)	mg/L	< 0.005			0.005	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum	mg/L	< 0.001			0.001	Pass	
Molybdenum (filtered)	mg/L	< 0.001			0.001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Silver	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.001			0.001	Pass	
Strontium	mg/L	< 0.005			0.005	Pass	
Strontium (filtered)	mg/L	< 0.005			0.005	Pass	
Thorium*	mg/L	< 0.05			0.05	Pass	
Thorium* (filtered)*	mg/L	< 0.05			0.05	Pass	
Titanium	mg/L	< 0.005			0.005	Pass	
Titanium (filtered)	mg/L	< 0.005			0.005	Pass	
Uranium	mg/L	< 0.001			0.001	Pass	
Uranium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium	mg/L	< 0.005			0.005	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Antimony (filtered)	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Bismuth (filtered)	mg/L	< 0.005			0.005	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron (filtered)	mg/L	< 0.01			0.01	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Lithium (filtered)	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum (filtered)	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.001			0.001	Pass	
Strontium (filtered)	mg/L	< 0.005			0.005	Pass	
Titanium (filtered)	mg/L	< 0.005			0.005	Pass	
Uranium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Heavy Metals							
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Silver (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ferrous Iron - Fe2+	mg/L	< 0.05			0.05	Pass	
Method Blank							
Heavy Metals							
Copper	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Silver	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.001			0.001	Pass	
Method Blank							
Alkali Metals							
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	97			70-130	Pass	
Zirconium - Total	%	87			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	100			80-120	Pass	
Aluminium (filtered)	%	100			80-120	Pass	
Antimony	%	101			80-120	Pass	
Antimony (filtered)	%	101			80-120	Pass	
Arsenic	%	104			80-120	Pass	
Arsenic (filtered)	%	106			80-120	Pass	
Beryllium	%	113			80-120	Pass	
Bismuth	%	99			80-120	Pass	
Bismuth (filtered)	%	102			80-120	Pass	
Cadmium	%	98			80-120	Pass	
Cadmium (filtered)	%	101			80-120	Pass	
Chromium	%	96			80-120	Pass	
Chromium (filtered)	%	97			80-120	Pass	
Cobalt	%	94			80-120	Pass	
Cobalt (filtered)	%	95			80-120	Pass	
Copper	%	93			80-120	Pass	
Copper (filtered)	%	95			80-120	Pass	
Iron	%	98			80-120	Pass	
Iron (filtered)	%	100			80-120	Pass	
Lead	%	98			80-120	Pass	
Lead (filtered)	%	100			80-120	Pass	
Lithium	%	91			80-120	Pass	
Lithium (filtered)	%	120			80-120	Pass	
Manganese	%	98			80-120	Pass	
Manganese (filtered)	%	99			80-120	Pass	
Mercury	%	96			80-120	Pass	
Mercury (filtered)	%	98			80-120	Pass	
Molybdenum	%	101			80-120	Pass	
Molybdenum (filtered)	%	104			80-120	Pass	
Nickel	%	96			80-120	Pass	
Nickel (filtered)	%	96			80-120	Pass	
Selenium	%	102			80-120	Pass	
Selenium (filtered)	%	101			80-120	Pass	
Silver	%	81			80-120	Pass	
Silver (filtered)	%	81			80-120	Pass	
Strontium	%	101			80-120	Pass	
Strontium (filtered)	%	103			80-120	Pass	
Thorium*	%	80			80-120	Pass	
Thorium* (filtered)*	%	82			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Titanium	%	102			80-120	Pass	
Titanium (filtered)	%	103			80-120	Pass	
Uranium	%	102			80-120	Pass	
Uranium (filtered)	%	105			80-120	Pass	
Vanadium	%	97			80-120	Pass	
Vanadium (filtered)	%	100			80-120	Pass	
Zinc	%	96			80-120	Pass	
Zinc (filtered)	%	97			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	99			80-120	Pass	
Magnesium	%	97			80-120	Pass	
Potassium	%	97			80-120	Pass	
Sodium	%	97			80-120	Pass	
LCS - % Recovery							
Zirconium - Total	%	104			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium (filtered)	%	100			80-120	Pass	
Antimony (filtered)	%	101			80-120	Pass	
Arsenic (filtered)	%	106			80-120	Pass	
Beryllium (filtered)	%	101			80-120	Pass	
Bismuth (filtered)	%	102			80-120	Pass	
Cadmium (filtered)	%	101			80-120	Pass	
Chromium (filtered)	%	97			80-120	Pass	
Cobalt (filtered)	%	95			80-120	Pass	
Copper (filtered)	%	95			80-120	Pass	
Iron (filtered)	%	100			80-120	Pass	
Lead (filtered)	%	100			80-120	Pass	
Lithium (filtered)	%	120			80-120	Pass	
Manganese (filtered)	%	99			80-120	Pass	
Mercury (filtered)	%	98			80-120	Pass	
Molybdenum (filtered)	%	104			80-120	Pass	
Nickel (filtered)	%	96			80-120	Pass	
Selenium (filtered)	%	104			80-120	Pass	
Silver (filtered)	%	83			80-120	Pass	
Strontium (filtered)	%	103			80-120	Pass	
Titanium (filtered)	%	103			80-120	Pass	
Uranium (filtered)	%	105			80-120	Pass	
Vanadium (filtered)	%	100			80-120	Pass	
Zinc (filtered)	%	97			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Beryllium (filtered)	%	108			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Beryllium (filtered)	%	113			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Silver (filtered)	%	80			80-120	Pass	
LCS - % Recovery							
Ferrous Iron - Fe2+	%	103			70-130	Pass	
LCS - % Recovery							
Heavy Metals							

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper			%	95			80-120	Pass	
Copper (filtered)			%	97			80-120	Pass	
Silver (filtered)			%	80			80-120	Pass	
LCS - % Recovery									
Alkali Metals									
Sodium			%	101			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
				Result 1					
Chloride	L24-JI0072985	NCP	%	95			70-130	Pass	
Filterable Reactive Phosphorus	L24-JI0073275	NCP	%	105			80-120	Pass	
Nitrate (as N)	L24-JI0075730	NCP	%	90			70-130	Pass	
Nitrite (as N)	L24-JI0075730	NCP	%	109			80-120	Pass	
NOx (as N)	L24-JI0072985	NCP	%	102			80-120	Pass	
Reactive Silica	L24-JI0075730	NCP	%	102			80-120	Pass	
Sulfate (as SO4)	L24-JI0072985	NCP	%	116			70-130	Pass	
Total Nitrogen	L24-JI0073273	NCP	%	100			70-130	Pass	
Total Phosphorus	L24-JI0073273	NCP	%	96			80-120	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	L24-JI0073253	NCP	%	100			75-125	Pass	
Antimony	L24-JI0073253	NCP	%	104			75-125	Pass	
Arsenic	L24-JI0073253	NCP	%	110			75-125	Pass	
Beryllium	L24-JI0073253	NCP	%	108			75-125	Pass	
Bismuth	L24-JI0073253	NCP	%	98			75-125	Pass	
Cadmium	L24-JI0073253	NCP	%	102			75-125	Pass	
Chromium	L24-JI0073253	NCP	%	97			75-125	Pass	
Copper	L24-JI0073253	NCP	%	91			75-125	Pass	
Iron	L24-JI0073253	NCP	%	99			75-125	Pass	
Lead	L24-JI0073253	NCP	%	98			75-125	Pass	
Lithium	L24-JI0073253	NCP	%	113			75-125	Pass	
Manganese	L24-JI0073253	NCP	%	96			75-125	Pass	
Molybdenum	L24-JI0073253	NCP	%	106			75-125	Pass	
Nickel	L24-JI0073253	NCP	%	94			75-125	Pass	
Selenium	L24-JI0073253	NCP	%	100			75-125	Pass	
Silver	L24-JI0073253	NCP	%	80			75-125	Pass	
Strontium	L24-JI0073253	NCP	%	94			75-125	Pass	
Thorium*	L24-JI0073253	NCP	%	78			75-125	Pass	
Titanium	L24-JI0073253	NCP	%	104			75-125	Pass	
Uranium	L24-JI0073253	NCP	%	103			75-125	Pass	
Vanadium	L24-JI0073253	NCP	%	100			75-125	Pass	
Zinc	L24-JI0073253	NCP	%	98			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	L24-JI0073253	NCP	%	Q05			75-125	Fail	Q05
Magnesium	L24-JI0073253	NCP	%	94			75-125	Pass	
Potassium	L24-JI0073253	NCP	%	97			75-125	Pass	
Sodium	L24-JI0073253	NCP	%	73			75-125	Fail	Q08
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium (filtered)	L24-JI0073255	NCP	%	103			75-125	Pass	
Antimony (filtered)	L24-JI0073255	NCP	%	105			75-125	Pass	
Arsenic (filtered)	L24-JI0073255	NCP	%	112			75-125	Pass	
Beryllium (filtered)	L24-JI0073255	NCP	%	116			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Bismuth (filtered)	L24-JI0073255	NCP	%	54			75-125	Fail	Q08
Cadmium (filtered)	L24-JI0073255	NCP	%	101			75-125	Pass	
Chromium (filtered)	L24-JI0073255	NCP	%	96			75-125	Pass	
Copper (filtered)	L24-JI0073255	NCP	%	91			75-125	Pass	
Iron (filtered)	L24-JI0073255	NCP	%	92			75-125	Pass	
Lead (filtered)	L24-JI0073255	NCP	%	94			75-125	Pass	
Manganese (filtered)	L24-JI0073255	NCP	%	94			75-125	Pass	
Molybdenum (filtered)	L24-JI0073255	NCP	%	78			75-125	Pass	
Nickel (filtered)	L24-JI0073255	NCP	%	87			75-125	Pass	
Selenium (filtered)	L24-JI0073255	NCP	%	89			75-125	Pass	
Silver (filtered)	L24-JI0073255	NCP	%	53			75-125	Fail	Q08
Strontium (filtered)	L24-JI0073255	NCP	%	Q05			75-125	Fail	Q05
Titanium (filtered)	L24-JI0073255	NCP	%	104			75-125	Pass	
Uranium (filtered)	L24-JI0073255	NCP	%	96			75-125	Pass	
Vanadium (filtered)	L24-JI0073255	NCP	%	94			75-125	Pass	
Zinc (filtered)	L24-JI0073255	NCP	%	94			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Chloride	L24-JI0072777	NCP	mg/L	150	150	1.4	30%	Pass	
Conductivity (at 25 °C)	L24-JI0068187	NCP	uS/cm	5700	5800	<1	30%	Pass	
Ferrous Iron - Fe2+	L24-JI0067605	NCP	mg/L	0.87	0.91	4.8	30%	Pass	
Filterable Reactive Phosphorus	L24-JI0072777	NCP	mg/L	0.07	0.07	<1	20%	Pass	
Nitrate (as N)	L24-Au0001910	NCP	mg/L	11	11	2.3	30%	Pass	
Nitrite (as N)	L24-Au0001910	NCP	mg/L	0.03	0.03	1.6	20%	Pass	
NOx (as N)	L24-JI0072777	NCP	mg/L	0.62	0.64	3.8	20%	Pass	
pH (at 25 °C)	L24-JI0068187	NCP	pH Units	7.7	7.7	<1	30%	Pass	
Reactive Silica	L24-Au0001910	NCP	mg/L	75	75	<1	20%	Pass	
Sulfate (as SO4)	L24-JI0072777	NCP	mg/L	42	42	<1	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	L24-JI0068187	NCP	mg/L	3400	3500	<1	30%	Pass	
Total Nitrogen	L24-JI0073242	NCP	mg/L	6.2	5.9	2.1	30%	Pass	
Total Phosphorus	L24-JI0073242	NCP	mg/L	0.26	0.25	3.7	20%	Pass	
Total Suspended Solids Dried at 103°C to 105°C		NCP	mg/L	**	**	<1	20%	Pass	
Zirconium - Total	L24-JI0063440	NCP	mg/L	< 0.01	< 0.01	<1	20%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	L24-JI0075110	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Antimony	L24-JI0075110	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic	L24-JI0075110	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium	L24-JI0073248	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bismuth	L24-JI0075110	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Cadmium	L24-JI0075110	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium	L24-JI0075110	NCP	mg/L	0.001	0.001	1.2	30%	Pass	
Copper	L24-JI0075110	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	L24-JI0075110	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Lead	L24-JI0075110	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lithium	L24-JI0073248	NCP	mg/L	0.002	0.002	<1	30%	Pass	
Manganese	L24-JI0075110	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Molybdenum	L24-JI0075110	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel	L24-JI0075110	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	L24-JI0075110	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Silver	L24-JI0075110	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Strontium	L24-Jl0075110	NCP	mg/L	0.27	0.28	<1	30%	Pass	
Thorium*	L24-Jl0073248	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Titanium	L24-Jl0075110	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Uranium	L24-Jl0075110	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Vanadium	L24-Jl0075110	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	L24-Jl0075110	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	L24-Jl0075110	NCP	mg/L	86	85	<1	30%	Pass	
Magnesium	L24-Jl0075110	NCP	mg/L	8.2	8.3	<1	30%	Pass	
Potassium	L24-Jl0075110	NCP	mg/L	6.2	6.1	<1	30%	Pass	
Sodium	L24-Jl0075110	NCP	mg/L	41	41	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	L24-Jl0073254	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Antimony (filtered)	L24-Jl0073254	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic (filtered)	L24-Jl0073254	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium (filtered)	L24-Jl0073254	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bismuth (filtered)	L24-Jl0073254	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Cadmium (filtered)	L24-Jl0073254	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Chromium (filtered)	L24-Jl0073254	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	L24-Jl0073254	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	L24-Jl0073254	NCP	mg/L	2.8	2.8	<1	30%	Pass	
Lead (filtered)	L24-Jl0073254	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	L24-Jl0073254	NCP	mg/L	0.069	0.069	<1	30%	Pass	
Molybdenum (filtered)	L24-Jl0073254	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel (filtered)	L24-Jl0073254	NCP	mg/L	0.001	0.001	7.4	30%	Pass	
Selenium (filtered)	L24-Jl0073254	NCP	mg/L	0.003	0.003	<1	30%	Pass	
Silver (filtered)	L24-Jl0073254	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Strontium (filtered)	L24-Jl0073254	NCP	mg/L	0.57	0.56	<1	30%	Pass	
Titanium (filtered)	L24-Jl0073254	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Uranium (filtered)	L24-Jl0073254	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Vanadium (filtered)	L24-Jl0073254	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc (filtered)	L24-Jl0073254	NCP	mg/L	0.039	0.041	3.1	30%	Pass	

Comments

V2: Sample Jl0063441 LORs amended to match 95 % ANZECC levels.

V3: Cobalt and Mercury, total and filtered, added to all samples.

Ammonia commented with G16 code. Ammonia potentially elevated due to high salinity.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G16	Sample matrix inappropriate for the required analysis
Q05	The matrix spike concentration is less than five times the background concentration in the sample - therefore the spike recovery cannot be determined
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.

Authorised by:

Elden Garrett	Analytical Services Manager
Caitlin Breeze	Senior Analyst-Inorganic
Douglas Todd	Senior Analyst-Metal
Sam Becker	Senior Analyst-Inorganic
Sean Sangster	Senior Analyst-Metal

Kim Rodgers
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request

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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Sample Receipt Advice

Company name: Land & Water Consulting
Contact name: Karen Mackenzie
Project name: QI-01
Project ID: Not provided
Turnaround time: 5 Day
Date/Time received Jul 29, 2024 6:00 PM
Eurofins reference 1122482

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
N/A	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Received extra sample labelled SW14, have placed it under suite 1 testing
Samples received by the laboratory after 5.30pm are deemed to have been received the following working day.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Elden Garrett on phone : 0892519602 or by email: EldenGarrett@eurofins.com

Results will be delivered electronically via email to Karen Mackenzie - kmackenzie@lwconsulting.com.au.

Note: A copy of these results will also be delivered to the general Land & Water Consulting email address.

Global Leader - Results you can trust

CHAIN OF CUSTODY FORM

From : Land & Water Consulting Pty Ltd
Suite 3, 4-8 Goodwood Road, WAYVILLE, SA, 5034
ph: (08) 8271 5255 fax: (08) 8357 1307

Eurofins

Sample Analysis

LAB Quote Number: LWC 240321

LWC Project No: QI-01

LWC Contact Information:
Contact Name: Emily Picken
Contact Email: laboratoryresults@lwconsulting.com.au
Phone Number: 08 8271 5255

Project Manager: Emily Picken

Date Samples Sent: 26/07/2024

COC Checked by: A Vaughan

Lab ID	Date	Matrix	Sample ID	No. Bottles	Tick required analytes									
					*Suite 1	*Suite 2	*Suite 3	*Suite 4						
	25/07/2024	W	MBH03	4	X									
	25/07/2024	W	MBH08	4	X									
	25/07/2024	W	MBH19	4	X									
	25/07/2024	W	MBH26D	4	X									
	25/07/2024	W	MBH39D	4	X									
	25/07/2024	W	MBH40D	4	X									
	25/07/2024	W	Rinse	2			X							
	[redacted]													
			TOTAL	8	6		1	1						

ADDITIONAL COMMENTS:

Suite 1 - Major components, metals and nutrients:
- EC
- Total dissolved solids (TDS) and Total Suspended Solids (TSS).
- Laboratory pH
- Major Ions including calcium, sodium, potassium, magnesium, chloride, sulphate, bicarbonate and carbonate.
- Hydroxide alkalinity as CaCO3, carbonate alkalinity as CaCO3 and bicarbonate as CaCO3.
- Water Hardness
- Total and dissolved metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO2, Se, Sr, Th, Ti, U, V, Zn, Zr and SiO2.
- Speciation of Ferric Iron and Ferrous Iron (actual and not calculated).
- Nutrients including total nitrogen, nitrate as N, nitrite as N, ammonia, TKN and filtered reactive phosphorous.

Suite 2 - Hydrocarbons:
- Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, total Xylenes, Naphthalene (BTEXN)

Suite 3 - Rinsate Screen:
- Total metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO2, Se, Sr, Th, Ti, U, V, Zn, Zr and SiO2.

Suite 4 - Tripblank
- TRH Fraction C6-C10 and BTEXN

***LOR must be sufficient for comparision to ANZG 2018 freshwater guidelines 95% protection, water samples will have salinity ranging from 500 - 150,000 mg/L. PLEASE ANALYSE TO MEET THIS GUIDELINE**

B.Hill 10.8° 18:00 26/7/24

1122482

Land & Water Consulting
Suite 3 Level 1 4-8 Goodwood Road
Wayville
SA 5034

NATA Accredited
Accreditation Number 2377
Site Number 2370 & 2554

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **LAB Results**

Report **1122734-W-V4**
Project name
Project ID QI-01
Received Date Jul 29, 2024

Client Sample ID			**MBH06**	**MBH10**	**MBH13**	**MBH35S**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**L24-JI0075078**	**L24-JI0075079**	**L24-JI0075080**	**L24-JI0075081**
Date Sampled			**Jul 26, 2024**	**Jul 26, 2024**	**Jul 26, 2024**	**Jul 26, 2024**
Test/Reference	LOR	Unit				
Ammonia (as N)	0.02	mg/L	< 0.02	< 0.02	0.05	< 0.02
Chloride	5	mg/L	9800	660	17000	980
Conductivity (at 25 °C)	10	uS/cm	32000	2900	50000	4300
Ferric Iron - Fe3+*	0.5	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	< 0.05	0.05	< 0.05
Filterable Reactive Phosphorus	0.01	mg/L	< 0.01	0.10	< 0.01	0.08
Nitrate (as N)	0.01	mg/L	8.7	4.2	1.2	2.7
Nitrite (as N)	0.01	mg/L	0.44	0.04	< 0.01	< 0.01
NOx (as N)	0.01	mg/L	9.1	4.3	1.2	2.7
pH (at 25 °C)	0.1	pH Units	6.9	7.2	7.0	7.4
Reactive Silica	0.1	mg/L	48	74	55	71
Sulfate (as SO4)	1	mg/L	1100	78	2300	190
Total Dissolved Solids Dried at 180 °C ± 2 °C	5	mg/L	19000	1700	30000	2600
Total Kjeldahl Nitrogen	0.2	mg/L	7.9	< 0.2	0.2	< 0.2
Total Nitrogen	0.2	mg/L	17	4.3	1.4	2.7
Total Phosphorus	0.01	mg/L	< 0.01	0.24	< 0.01	0.17
Total Suspended Solids Dried at 103°C to 105°C	5	mg/L	43	66	280	< 5
Hardness mg equivalent CaCO3/L	5	mg/L	9400	440	10000	890
Zirconium (filtered)	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Zirconium - Total	0.01	mg/L	0.06	0.02	0.05	0.02
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	5	mg/L	160	360	240	320
Carbonate Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	5	mg/L	160	360	240	320
Heavy Metals						
Aluminium	0.05	mg/L	0.20	1.5	0.74	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.5	< 0.05
Antimony	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Antimony (filtered)	0.001	mg/L	< 0.001	< 0.001	[G01]< 0.05	< 0.001
Arsenic	0.001	mg/L	0.005	0.003	0.004	0.002
Arsenic (filtered)	0.001	mg/L	0.003	0.002	[G01]< 0.01	0.002
Beryllium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	[G01]< 0.01	< 0.001
Bismuth	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005

Client Sample ID			MBH06	MBH10	MBH13	MBH35S
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			L24-JI0075078	L24-JI0075079	L24-JI0075080	L24-JI0075081
Date Sampled			Jul 26, 2024	Jul 26, 2024	Jul 26, 2024	Jul 26, 2024
Test/Reference	LOR	Unit				
Heavy Metals						
Bismuth (filtered)	0.005	mg/L	< 0.005	< 0.005	[G01]< 0.05	< 0.005
Cadmium	0.0001	mg/L	0.0006	< 0.0001	0.0006	< 0.0001
Cadmium (filtered)	0.0001	mg/L	0.0006	< 0.0001	[G01]< 0.002	< 0.0001
Chromium	0.001	mg/L	0.002	0.022	0.004	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	[G01]< 0.01	< 0.001
Cobalt	0.001	mg/L	0.001	0.004	0.003	< 0.001
Cobalt (filtered)	0.001	mg/L	0.001	< 0.001	< 0.01	< 0.001
Copper	0.001	mg/L	0.008	0.007	0.010	0.002
Copper (filtered)	0.001	mg/L	0.005	< 0.001	0.013	< 0.001
Iron	0.01	mg/L	0.31	2.8	1.1	0.05
Iron (filtered)	0.01	mg/L	0.01	< 0.01	[G01]< 0.5	< 0.01
Lead	0.001	mg/L	0.001	0.002	0.002	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	[G01]< 0.01	< 0.001
Lithium	0.001	mg/L	0.10	0.014	0.13	0.023
Lithium (filtered)	0.005	mg/L	0.14	0.014	0.24	0.020
Manganese	0.005	mg/L	0.27	0.065	0.053	< 0.005
Manganese (filtered)	0.005	mg/L	0.25	< 0.005	[G01]< 0.05	< 0.005
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	0.0009	< 0.0001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.001	< 0.0001
Molybdenum	0.001	mg/L	0.015	0.004	0.002	0.002
Molybdenum (filtered)	0.001	mg/L	0.006	< 0.001	[G01]< 0.01	< 0.001
Nickel	0.001	mg/L	0.050	0.034	0.12	0.002
Nickel (filtered)	0.001	mg/L	0.050	0.022	0.13	0.002
Selenium	0.001	mg/L	0.005	0.002	0.002	0.003
Selenium (filtered)	0.001	mg/L	0.003	0.002	[G01]< 0.01	0.006
Silver	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Silver (filtered)	0.001	mg/L	< 0.001	< 0.001	[G01]< 0.05	< 0.001
Strontium	0.005	mg/L	54	2.0	38	4.1
Strontium (filtered)	0.005	mg/L	51	1.7	32	4.3
Thorium*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Thorium* (filtered)*	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Titanium	0.005	mg/L	0.011	0.048	0.021	< 0.005
Titanium (filtered)	0.005	mg/L	< 0.005	< 0.005	[G01]< 0.05	< 0.005
Uranium	0.001	mg/L	0.051	0.006	0.019	0.013
Uranium (filtered)	0.001	mg/L	0.041	0.002	[G01]< 0.05	0.007
Vanadium	0.005	mg/L	0.005	0.042	0.013	0.023
Vanadium (filtered)	0.005	mg/L	< 0.005	0.017	[G01]< 0.05	0.016
Zinc	0.005	mg/L	0.12	0.043	0.039	0.019
Zinc (filtered)	0.005	mg/L	0.11	0.021	[G01]< 0.05	0.013
Alkali Metals						
Calcium	0.5	mg/L	1900	64	1200	150
Magnesium	0.5	mg/L	1100	67	1700	130
Potassium	0.5	mg/L	28	1.9	77	2.4
Sodium	0.5	mg/L	3800	480	9100	620

Client Sample ID			MBH38D	SW01	Rinse
Sample Matrix			Water	Water	Water
Eurofins Sample No.			L24-JI0075082	L24-JI0075083	L24-JI0075084
Date Sampled			Jul 26, 2024	Jul 27, 2024	Jul 26, 2024
Test/Reference	LOR	Unit			
Ammonia (as N)	0.02	mg/L	0.19	0.13	-
Chloride	5	mg/L	1700	27000	-
Conductivity (at 25 °C)	10	uS/cm	6000	74000	-
Ferric Iron - Fe3+*	0.5	mg/L	< 0.05	-	-
Ferrous Iron - Fe2+	0.05	mg/L	2.1	< 0.05	-
Filterable Reactive Phosphorus	0.01	mg/L	0.06	< 0.01	-
Nitrate (as N)	0.01	mg/L	< 0.01	< 0.01	-
Nitrite (as N)	0.01	mg/L	< 0.01	< 0.01	-
NOx (as N)	0.01	mg/L	< 0.01	< 0.01	-
pH (at 25 °C)	0.1	pH Units	6.8	7.2	-
Reactive Silica	0.1	mg/L	51	6.1	< 0.1
Sulfate (as SO4)	1	mg/L	370	4900	-
Total Dissolved Solids Dried at 180 °C ± 2 °C	5	mg/L	3600	44000	-
Total Kjeldahl Nitrogen	0.2	mg/L	0.5	0.2	-
Total Nitrogen	0.2	mg/L	0.5	0.2	-
Total Phosphorus	0.01	mg/L	0.20	< 0.01	-
Total Suspended Solids Dried at 103°C to 105°C	5	mg/L	< 5	14	-
Hardness mg equivalent CaCO3/L	5	mg/L	1600	9700	-
Zirconium (filtered)	0.01	mg/L	< 0.01	< 0.01	-
Zirconium - Total	0.01	mg/L	0.01	0.03	< 0.01
Alkalinity (speciated)					
Bicarbonate Alkalinity (as CaCO3)	5	mg/L	340	320	-
Carbonate Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	-
Hydroxide Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	-
Total Alkalinity (as CaCO3)	5	mg/L	340	320	-
Heavy Metals					
Aluminium	0.05	mg/L	5.7	[G01]< 0.5	< 0.05
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.5	-
Antimony	0.001	mg/L	< 0.001	[G01]< 0.05	< 0.001
Antimony (filtered)	0.001	mg/L	< 0.001	[G01]< 0.05	-
Arsenic	0.001	mg/L	0.020	0.030	< 0.001
Arsenic (filtered)	0.001	mg/L	0.014	[G01]< 0.01	-
Beryllium	0.001	mg/L	< 0.001	[G01]< 0.01	< 0.001
Beryllium (filtered)	0.001	mg/L	< 0.001	[G01]< 0.01	-
Bismuth	0.005	mg/L	< 0.005	[G01]< 0.05	< 0.005
Bismuth (filtered)	0.005	mg/L	< 0.005	[G01]< 0.05	-
Cadmium	0.0001	mg/L	< 0.0001	[G01]< 0.002	< 0.0001
Cadmium (filtered)	0.0001	mg/L	< 0.0001	[G01]< 0.002	-
Chromium	0.001	mg/L	0.020	[G01]< 0.01	< 0.001
Chromium (filtered)	0.001	mg/L	< 0.001	[G01]< 0.01	-
Cobalt	0.001	mg/L	0.006	< 0.01	-
Cobalt (filtered)	0.001	mg/L	0.001	< 0.01	-
Copper	0.001	mg/L	0.017	[G01]< 0.01	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	[G01]< 0.01	-
Iron	0.01	mg/L	28	0.69	< 0.01
Iron (filtered)	0.01	mg/L	1.8	[G01]< 0.5	-
Lead	0.001	mg/L	0.027	[G01]< 0.01	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	[G01]< 0.01	-
Lithium	0.001	mg/L	0.051	0.24	< 0.001

Client Sample ID			MBH38D	SW01	Rinse
Sample Matrix			Water	Water	Water
Eurofins Sample No.			L24-JI0075082	L24-JI0075083	L24-JI0075084
Date Sampled			Jul 26, 2024	Jul 27, 2024	Jul 26, 2024
Test/Reference	LOR	Unit			
Heavy Metals					
Lithium (filtered)	0.005	mg/L	0.054	0.35	-
Manganese	0.005	mg/L	0.18	0.065	< 0.005
Manganese (filtered)	0.005	mg/L	0.14	0.060	-
Mercury	0.0001	mg/L	< 0.0001	< 0.001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.001	-
Molybdenum	0.001	mg/L	0.001	0.017	< 0.001
Molybdenum (filtered)	0.001	mg/L	< 0.001	0.016	-
Nickel	0.001	mg/L	0.043	[G01]< 0.01	< 0.001
Nickel (filtered)	0.001	mg/L	0.035	[G01]< 0.01	-
Selenium	0.001	mg/L	< 0.001	[G01]< 0.01	< 0.001
Selenium (filtered)	0.001	mg/L	0.001	[G01]< 0.01	-
Silver	0.001	mg/L	< 0.001	[G01]< 0.05	< 0.001
Silver (filtered)	0.001	mg/L	< 0.001	[G01]< 0.05	-
Strontium	0.005	mg/L	6.8	12	< 0.005
Strontium (filtered)	0.005	mg/L	6.1	10	-
Thorium*	0.05	mg/L	< 0.05	< 0.05	< 0.05
Thorium* (filtered)*	0.05	mg/L	< 0.05	< 0.05	-
Titanium	0.005	mg/L	0.22	[G01]< 0.05	< 0.005
Titanium (filtered)	0.005	mg/L	< 0.005	[G01]< 0.05	-
Uranium	0.001	mg/L	0.030	[G01]< 0.05	< 0.001
Uranium (filtered)	0.001	mg/L	0.011	[G01]< 0.05	-
Vanadium	0.005	mg/L	0.12	0.11	0.013
Vanadium (filtered)	0.005	mg/L	< 0.005	[G01]< 0.05	-
Zinc	0.005	mg/L	0.089	[G01]< 0.05	< 0.005
Zinc (filtered)	0.005	mg/L	0.005	[G01]< 0.05	-
Alkali Metals					
Calcium	0.5	mg/L	240	620	-
Magnesium	0.5	mg/L	250	2000	-
Potassium	0.5	mg/L	4.6	590	-
Sodium	0.5	mg/L	710	16000	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Ammonia (as N) - Method: ARL303 - Ammonia in Water by Discrete Analyser	Welshpool	Aug 01, 2024	28 Days
Filterable Reactive Phosphorus - Method: ARL309 - Filterable Reactive Phosphorus in Water by Discrete Analyser	Welshpool	Aug 01, 2024	28 Days
Nitrate (as N) - Method: ARL313/319 - NOx in Water by Discrete Analyser	Welshpool	Aug 01, 2024	28 Days
Nitrite (as N) - Method: ARL311 - Nitrite in Water by Discrete Analyser	Welshpool	Aug 01, 2024	2 Days
NOx (as N) - Method: ARL313/319 - NOx in Water by Discrete Analyser	Welshpool	Aug 01, 2024	28 Days
Total Kjeldahl Nitrogen - Method: ARL No. 330 - Persulfate Method for Simultaneous Determination of TN & TP	Welshpool	Jul 31, 2024	28 Day
Total Nitrogen - Method: ARL No. 330 - Persulfate Method for Simultaneous Determination of TN & TP	Welshpool	Aug 01, 2024	28 Days
Total Phosphorus - Method: ARL308 - Total Phosphorus in Water by Discrete Analyser	Welshpool	Aug 01, 2024	28 Days
Chloride - Method: ARL305 - Chloride in Water by Discrete Analyser	Welshpool	Aug 01, 2024	28 Days
Sulfate (as SO4) - Method: ARL301 - Sulfate in Water by Discrete Analyser	Welshpool	Aug 01, 2024	28 Days
Alkalinity (speciated) - Method: LTM-INO-4250 Alkalinity by Electrometric Titration	Welshpool	Aug 01, 2024	14 Days
Conductivity (at 25 °C) - Method: LTM-INO-4030 Conductivity	Welshpool	Aug 01, 2024	28 Days
Total Dissolved Solids Dried at 180 °C ± 2 °C - Method: ARL No. 017 - Total Dissolved Solids	Welshpool	Aug 01, 2024	7 Days
Ferrous Iron - Fe2+ - Method: LTM-INO-4190 Ferrous Iron in Water by Discrete Analyser	Melbourne	Aug 02, 2024	7 Days
pH (at 25 °C) - Method: LTM-GEN-7090 pH in water by ISE	Welshpool	Aug 01, 2024	6 Hours
Reactive Silica - Method: ARL315 - Reactive Silica in Water by Discrete Analyser	Welshpool	Aug 01, 2024	28 Days
Total Suspended Solids Dried at 103°C to 105°C - Method: ARL No. 016 - Total Suspended Solids	Welshpool	Aug 01, 2024	7 Days
Zirconium (filtered) - Method: ARL402/403 - Metals in Water by ICPOES/ICPMS	Welshpool	Jul 31, 2024	180 Days
Zirconium - Total - Method: ARL402/403 - Metals in Water by ICPOES/ICPMS	Welshpool	Jul 31, 2024	180 Days
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Dec 12, 2024	28 Days
Heavy Metals (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Dec 12, 2024	28 Days
Metals M7 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 31, 2024	6 Months
Metals M7 filtered - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Jul 31, 2024	6 Day
Bismuth (filtered) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Aug 01, 2024	6 Days
Lithium - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Welshpool	Aug 01, 2024	180 Days
Lithium (filtered)	Welshpool	Aug 01, 2024	180 Days

Description	Testing Site	Extracted	Holding Time
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B11D: Na/K/Ca/Mg and Hardness			
Hardness mg equivalent CaCO3/L	Welshpool	Aug 01, 2024	28 Months
- Method: APHA 2340B Hardness by Calculation			
Alkali Metals	Welshpool	Aug 01, 2024	6 Months
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

eurofins

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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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Company Name: Land & Water Consulting
Address: Suite 3 Level 1 4-8 Goodwood Road
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Project Name:
Project ID: QI-01

Order No.:
Report #: 1122734
Phone: 08 8271 5255
Fax:

Received: Jul 29, 2024 5:50 PM
Due: Aug 6, 2024
Priority: 5 Day
Contact Name: LAB Results

Eurofins Analytical Services Manager : Elden Garrett

Sample Detail	Aluminium	Antimony	Antimony (filtered)	Beryllium	Beryllium (filtered)	Bismuth	Bismuth (filtered)	Ferric Iron - Fe3+	Ferrous Iron - Fe2+	Iron	Iron (filtered)	Lithium	Lithium (filtered)	Manganese	Manganese (filtered)	Molybdenum	Molybdenum (filtered)	pH (at 25 °C)	Reactive Silica	Selenium	Selenium (filtered)	Silver	Silver (filtered)	Strontium	Strontium (filtered)	Thorium*	Thorium* (filtered)*	Titanium	Titanium (filtered)	Total Suspended Solids	Uranium	Uranium (filtered)	Vanadium	Vanadium (filtered)	Zirconium (filtered)	Zirconium - Total	Metals M7	Metals M7 filtered	Eurofins Suite B11D: Na/K/Ca/Mg and	Total Dissolved Solids (TDS)	Eurofins Suite B19E	Eurofins Suite B11E
Perth Laboratory - NATA # 2377 Site # 2370	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Melbourne Laboratory - NATA # 1261 Site # 1254									X																																		
External Laboratory																																											
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**																																							
1	MBH06	Jul 26, 2024		Water	L24-JI0075078	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	MBH10	Jul 26, 2024		Water	L24-JI0075079	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	MBH13	Jul 26, 2024		Water	L24-JI0075080	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4	MBH35S	Jul 26, 2024		Water	L24-JI0075081	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5	MBH38D	Jul 26, 2024		Water	L24-JI0075082	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6	SW1	Jul 27, 2024		Water	L24-JI0075083	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7	Rinse	Jul 26, 2024		Water	L24-JI0075084	X	X		X		X			X		X		X		X			X	X		X		X		X		X		X	X			X	X					
Test Counts						7	7	6	7	6	7	6	6	6	7	6	7	6	7	6	7	6	6	7	7	6	7	6	7	6	7	6	7	6	7	6	6	7	6	7	6	6	7	7	6	6	6	6	6

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
ppm: parts per million
µg/L: micrograms per litre
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit
Colour: Pt-Co Units (CU)

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Ammonia (as N)	mg/L	< 0.02			0.02	Pass	
Chloride	mg/L	< 5			5	Pass	
Filterable Reactive Phosphorus	mg/L	< 0.01			0.01	Pass	
Nitrite (as N)	mg/L	< 0.01			0.01	Pass	
NOx (as N)	mg/L	< 0.01			0.01	Pass	
Reactive Silica	mg/L	< 0.1			0.1	Pass	
Sulfate (as SO4)	mg/L	< 1			1	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 5			5	Pass	
Total Suspended Solids Dried at 103°C to 105°C	mg/L	< 5			5	Pass	
Hardness mg equivalent CaCO3/L	mg/L	< 5			5	Pass	
Zirconium - Total	mg/L	< 0.01			0.01	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 5			5	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 5			5	Pass	
Method Blank							
Heavy Metals							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Antimony (filtered)	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Bismuth (filtered)	mg/L	< 0.005			0.005	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Lithium (filtered)	mg/L	< 0.005			0.005	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.001			0.001	Pass	
Strontium (filtered)	mg/L	< 0.005			0.005	Pass	
Thorium*	mg/L	< 0.05			0.05	Pass	
Titanium (filtered)	mg/L	< 0.005			0.005	Pass	
Uranium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Zirconium - Total	mg/L	< 0.01			0.01	Pass	
Method Blank							
Heavy Metals							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Antimony (filtered)	mg/L	< 0.001			0.001	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Bismuth (filtered)	mg/L	< 0.005			0.005	Pass	
Cadmium (filtered)	mg/L	< 0.0001			0.0001	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron (filtered)	mg/L	< 0.01			0.01	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum (filtered)	mg/L	< 0.001			0.001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.001			0.001	Pass	
Strontium (filtered)	mg/L	< 0.005			0.005	Pass	
Titanium (filtered)	mg/L	< 0.005			0.005	Pass	
Uranium (filtered)	mg/L	< 0.001			0.001	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Ferrous Iron - Fe2+	mg/L	< 0.05			0.05	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Antimony	mg/L	< 0.001			0.001	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Bismuth	mg/L	< 0.005			0.005	Pass	
Cadmium	mg/L	< 0.0001			0.0001	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.01			0.01	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lithium	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Molybdenum	mg/L	< 0.001			0.001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Silver	mg/L	< 0.001			0.001	Pass	
Strontium	mg/L	< 0.005			0.005	Pass	
Titanium	mg/L	< 0.005			0.005	Pass	
Uranium	mg/L	< 0.001			0.001	Pass	
Vanadium	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Method Blank							
Total Nitrogen	mg/L	< 0.2			0.2	Pass	
Total Phosphorus	mg/L	< 0.01			0.01	Pass	
Zirconium - Total	mg/L	< 0.01			0.01	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Antimony	mg/L	< 0.001			0.001	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Bismuth	mg/L	< 0.005			0.005	Pass	
Cadmium	mg/L	< 0.0001			0.0001	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lithium	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Molybdenum	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Silver	mg/L	< 0.001			0.001	Pass	
Strontium	mg/L	< 0.005			0.005	Pass	
Thorium*	mg/L	< 0.05			0.05	Pass	
Thorium* (filtered)*	mg/L	< 0.05			0.05	Pass	
Titanium	mg/L	< 0.005			0.005	Pass	
Uranium	mg/L	< 0.001			0.001	Pass	
Vanadium	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
Method Blank							
Zirconium - Total	mg/L	< 0.01			0.01	Pass	
Method Blank							
Heavy Metals							
Aluminium	mg/L	< 0.05			0.05	Pass	
Antimony	mg/L	< 0.001			0.001	Pass	
Arsenic	mg/L	< 0.001			0.001	Pass	
Beryllium	mg/L	< 0.001			0.001	Pass	
Bismuth	mg/L	< 0.005			0.005	Pass	
Cadmium	mg/L	< 0.0001			0.0001	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Cobalt	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.01			0.01	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Lithium	mg/L	< 0.001			0.001	Pass	
Manganese	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Molybdenum	mg/L	< 0.001			0.001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Silver	mg/L	< 0.001			0.001	Pass	
Strontium	mg/L	< 0.005			0.005	Pass	
Thorium*	mg/L	< 0.05			0.05	Pass	
Titanium	mg/L	< 0.005			0.005	Pass	
Uranium	mg/L	< 0.001			0.001	Pass	
Vanadium	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	95			70-130	Pass	
Zirconium - Total	%	111			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium (filtered)	%	96			80-120	Pass	
Antimony (filtered)	%	102			80-120	Pass	
Arsenic (filtered)	%	102			80-120	Pass	
Beryllium (filtered)	%	97			80-120	Pass	
Bismuth (filtered)	%	95			80-120	Pass	
Cadmium (filtered)	%	101			80-120	Pass	
Cobalt (filtered)	%	96			80-120	Pass	
Lead (filtered)	%	97			80-120	Pass	
Lithium (filtered)	%	96			80-120	Pass	
Manganese (filtered)	%	95			80-120	Pass	
Mercury (filtered)	%	93			80-120	Pass	
Molybdenum (filtered)	%	100			80-120	Pass	
Selenium (filtered)	%	94			80-120	Pass	
Silver (filtered)	%	114			80-120	Pass	
Strontium (filtered)	%	101			80-120	Pass	
Thorium*	%	92			80-120	Pass	
Titanium (filtered)	%	98			80-120	Pass	
Uranium (filtered)	%	102			80-120	Pass	
Vanadium (filtered)	%	97			80-120	Pass	
Zinc (filtered)	%	97			80-120	Pass	
LCS - % Recovery							
Zirconium - Total	%	116			80-120	Pass	
LCS - % Recovery							
Zirconium - Total	%	88			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium (filtered)	%	102			80-120	Pass	
Antimony (filtered)	%	104			80-120	Pass	
Arsenic (filtered)	%	116			80-120	Pass	
Beryllium (filtered)	%	104			80-120	Pass	
Bismuth (filtered)	%	86			80-120	Pass	
Cadmium (filtered)	%	100			80-120	Pass	
Chromium (filtered)	%	86			80-120	Pass	
Cobalt (filtered)	%	84			80-120	Pass	
Copper (filtered)	%	105			80-120	Pass	
Iron (filtered)	%	87			80-120	Pass	
Lead (filtered)	%	84			80-120	Pass	
Manganese (filtered)	%	89			80-120	Pass	
Molybdenum (filtered)	%	103			80-120	Pass	
Nickel (filtered)	%	81			80-120	Pass	
Selenium (filtered)	%	84			80-120	Pass	
Silver (filtered)	%	102			80-120	Pass	
Strontium (filtered)	%	93			80-120	Pass	
Titanium (filtered)	%	99			80-120	Pass	
Uranium (filtered)	%	84			80-120	Pass	
Vanadium (filtered)	%	89			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc (filtered)	%	80			80-120	Pass	
LCS - % Recovery							
Ferrous Iron - Fe2+	%	100			70-130	Pass	
Zirconium - Total	%	100			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	102			80-120	Pass	
Antimony	%	104			80-120	Pass	
Arsenic	%	115			80-120	Pass	
Beryllium	%	98			80-120	Pass	
Bismuth	%	88			80-120	Pass	
Cadmium	%	100			80-120	Pass	
Chromium	%	86			80-120	Pass	
Cobalt	%	83			80-120	Pass	
Copper	%	103			80-120	Pass	
Iron	%	86			80-120	Pass	
Lead	%	86			80-120	Pass	
Lithium	%	117			80-120	Pass	
Manganese	%	88			80-120	Pass	
Mercury	%	80			80-120	Pass	
Molybdenum	%	104			80-120	Pass	
Nickel	%	81			80-120	Pass	
Selenium	%	86			80-120	Pass	
Silver	%	102			80-120	Pass	
Strontium	%	94			80-120	Pass	
Titanium	%	97			80-120	Pass	
Uranium	%	86			80-120	Pass	
Vanadium	%	89			80-120	Pass	
Zinc	%	80			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	106			80-120	Pass	
Magnesium	%	105			80-120	Pass	
Potassium	%	112			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	99			80-120	Pass	
Antimony	%	102			80-120	Pass	
Arsenic	%	102			80-120	Pass	
Beryllium	%	99			80-120	Pass	
Bismuth	%	97			80-120	Pass	
Cadmium	%	102			80-120	Pass	
Cobalt	%	98			80-120	Pass	
Lead	%	99			80-120	Pass	
Lithium	%	101			80-120	Pass	
Manganese	%	97			80-120	Pass	
Mercury	%	95			80-120	Pass	
Molybdenum	%	102			80-120	Pass	
Selenium	%	99			80-120	Pass	
Silver	%	114			80-120	Pass	
Strontium	%	102			80-120	Pass	
Thorium*	%	90			80-120	Pass	
Thorium* (filtered)*	%	89			80-120	Pass	
Titanium	%	102			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Uranium	%	103			80-120	Pass	
Vanadium	%	99			80-120	Pass	
Zinc	%	99			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	97			80-120	Pass	
Magnesium	%	100			80-120	Pass	
Potassium	%	98			80-120	Pass	
Sodium	%	97			80-120	Pass	
LCS - % Recovery							
Zirconium - Total	%	80			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium	%	101			80-120	Pass	
Antimony	%	104			80-120	Pass	
Arsenic	%	105			80-120	Pass	
Beryllium	%	98			80-120	Pass	
Bismuth	%	99			80-120	Pass	
Cadmium	%	104			80-120	Pass	
Chromium	%	99			80-120	Pass	
Cobalt	%	100			80-120	Pass	
Copper	%	97			80-120	Pass	
Iron	%	102			80-120	Pass	
Lead	%	99			80-120	Pass	
Lithium	%	100			80-120	Pass	
Manganese	%	99			80-120	Pass	
Mercury	%	101			80-120	Pass	
Molybdenum	%	102			80-120	Pass	
Nickel	%	99			80-120	Pass	
Selenium	%	94			80-120	Pass	
Silver	%	116			80-120	Pass	
Strontium	%	101			80-120	Pass	
Thorium*	%	95			80-120	Pass	
Titanium	%	105			80-120	Pass	
Uranium	%	103			80-120	Pass	
Vanadium	%	100			80-120	Pass	
Zinc	%	103			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	94			80-120	Pass	
Magnesium	%	100			80-120	Pass	
Potassium	%	99			80-120	Pass	
Sodium	%	98			80-120	Pass	
CRM - % Recovery							
Zirconium - Total	%	97			80-120	Pass	
CRM - % Recovery							
Heavy Metals							
Antimony	%	106			80-120	Pass	
Arsenic	%	109			80-120	Pass	
Arsenic (filtered)	%	98			90-110	Pass	
Beryllium	%	96			80-120	Pass	
Beryllium (filtered)	%	91			90-110	Pass	
Cadmium	%	106			80-120	Pass	
Cadmium (filtered)	%	97			90-110	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	%	99			80-120	Pass	
Chromium (filtered)	%	99			90-110	Pass	
Cobalt	%	100			80-120	Pass	
Cobalt (filtered)	%	97			90-110	Pass	
Copper	%	98			80-120	Pass	
Copper (filtered)	%	98			90-110	Pass	
Iron	%	106			80-120	Pass	
Iron (filtered)	%	103			90-110	Pass	
Lead	%	103			80-120	Pass	
Lead (filtered)	%	101			90-110	Pass	
Lithium	%	97			70-130	Pass	
Lithium (filtered)	%	100			70-130	Pass	
Manganese	%	99			80-120	Pass	
Manganese (filtered)	%	99			90-110	Pass	
Molybdenum	%	99			80-120	Pass	
Molybdenum (filtered)	%	99			90-110	Pass	
Nickel	%	99			80-120	Pass	
Nickel (filtered)	%	95			90-110	Pass	
Selenium	%	103			80-120	Pass	
Selenium (filtered)	%	99			90-110	Pass	
Strontium	%	106			80-120	Pass	
Strontium (filtered)	%	99			90-110	Pass	
Thorium*	%	107			70-130	Pass	
Thorium* (filtered)*	%	107			0-0	Fail	
Titanium (filtered)	%	100			90-110	Pass	
Uranium	%	104			80-120	Pass	
Zinc	%	103			90-110	Pass	
Zinc (filtered)	%	97			90-110	Pass	
CRM - % Recovery							
Alkali Metals							
Calcium	%	95			70-130	Pass	
Magnesium	%	106			70-130	Pass	
Potassium	%	105			70-130	Pass	
Sodium	%	101			70-130	Pass	
CRM - % Recovery							
Heavy Metals							
Aluminium	%	102			80-120	Pass	
Arsenic	%	102			80-120	Pass	
Beryllium	%	93			80-120	Pass	
Bismuth	%	101			80-120	Pass	
Cadmium	%	100			80-120	Pass	
Chromium	%	101			80-120	Pass	
Cobalt	%	99			80-120	Pass	
Copper	%	96			80-120	Pass	
Iron	%	100			80-120	Pass	
Lead	%	98			80-120	Pass	
Lithium	%	92			70-130	Pass	
Manganese	%	99			80-120	Pass	
Molybdenum	%	100			80-120	Pass	
Nickel	%	99			80-120	Pass	
Selenium	%	103			80-120	Pass	
Strontium	%	101			80-120	Pass	
Vanadium	%	100			80-120	Pass	
Zinc	%	100			90-110	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
CRM - % Recovery							
Alkali Metals							
Calcium	%	99			70-130	Pass	
Magnesium	%	107			70-130	Pass	
Potassium	%	103			70-130	Pass	
CRM - % Recovery							
Heavy Metals							
Aluminium (filtered)	%	100			90-110	Pass	
Antimony (filtered)	%	90			90-110	Pass	
Arsenic (filtered)	%	96			90-110	Pass	
Beryllium (filtered)	%	94			90-110	Pass	
Cadmium (filtered)	%	98			90-110	Pass	
Chromium (filtered)	%	99			90-110	Pass	
Cobalt (filtered)	%	99			90-110	Pass	
Copper (filtered)	%	99			90-110	Pass	
Iron (filtered)	%	101			90-110	Pass	
Lead (filtered)	%	101			90-110	Pass	
Lithium (filtered)	%	104			70-130	Pass	
Manganese (filtered)	%	97			90-110	Pass	
Molybdenum (filtered)	%	94			90-110	Pass	
Nickel (filtered)	%	98			90-110	Pass	
Selenium (filtered)	%	97			90-110	Pass	
Silver (filtered)	%	92			90-110	Pass	
Strontium (filtered)	%	98			90-110	Pass	
Titanium (filtered)	%	103			90-110	Pass	
Vanadium (filtered)	%	98			90-110	Pass	
Zinc (filtered)	%	99			90-110	Pass	
CRM - % Recovery							
Alkali Metals							
Sodium	%	110			70-130	Pass	
CRM - % Recovery							
Heavy Metals							
Antimony	%	90			80-120	Pass	
Arsenic	%	105			80-120	Pass	
Beryllium	%	96			80-120	Pass	
Cadmium	%	101			80-120	Pass	
Chromium	%	94			80-120	Pass	
Cobalt	%	94			80-120	Pass	
Copper	%	104			80-120	Pass	
Iron	%	103			80-120	Pass	
Lead	%	97			80-120	Pass	
Manganese	%	96			80-120	Pass	
Molybdenum	%	103			80-120	Pass	
Nickel	%	98			80-120	Pass	
Selenium	%	98			80-120	Pass	
Silver	%	98			80-120	Pass	
Strontium	%	101			80-120	Pass	
Titanium	%	103			80-120	Pass	
Vanadium	%	98			80-120	Pass	
Zinc	%	94			90-110	Pass	
CRM - % Recovery							
Alkali Metals							
Magnesium	%	98			70-130	Pass	
CRM - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heavy Metals							
Aluminium	%	102			80-120	Pass	
Aluminium (filtered)	%	102			90-110	Pass	
Arsenic	%	98			80-120	Pass	
Arsenic (filtered)	%	103			90-110	Pass	
Beryllium	%	102			80-120	Pass	
Beryllium (filtered)	%	102			90-110	Pass	
Bismuth	%	92			80-120	Pass	
Bismuth (filtered)	%	92			90-110	Pass	
Cadmium	%	99			80-120	Pass	
Cadmium (filtered)	%	101			90-110	Pass	
Chromium	%	97			80-120	Pass	
Chromium (filtered)	%	97			90-110	Pass	
Cobalt	%	94			80-120	Pass	
Cobalt (filtered)	%	98			90-110	Pass	
Copper	%	99			80-120	Pass	
Copper (filtered)	%	100			90-110	Pass	
Iron	%	98			80-120	Pass	
Iron (filtered)	%	98			90-110	Pass	
Lead	%	100			80-120	Pass	
Lead (filtered)	%	100			90-110	Pass	
Manganese	%	95			80-120	Pass	
Manganese (filtered)	%	96			90-110	Pass	
Molybdenum	%	99			80-120	Pass	
Molybdenum (filtered)	%	99			90-110	Pass	
Nickel	%	99			80-120	Pass	
Nickel (filtered)	%	97			90-110	Pass	
Selenium	%	96			80-120	Pass	
Selenium (filtered)	%	96			90-110	Pass	
Silver	%	98			80-120	Pass	
Strontium	%	101			80-120	Pass	
Strontium (filtered)	%	101			90-110	Pass	
Vanadium	%	96			80-120	Pass	
Vanadium (filtered)	%	96			90-110	Pass	
Zinc	%	100			90-110	Pass	
Zinc (filtered)	%	94			90-110	Pass	
CRM - % Recovery							
Zirconium (filtered)	%	90			80-120	Pass	
Zirconium - Total	%	90			80-120	Pass	
CRM - % Recovery							
Heavy Metals							
Antimony (filtered)	%	109			90-110	Pass	
Arsenic	%	98			80-120	Pass	
Arsenic (filtered)	%	104			90-110	Pass	
Beryllium	%	91			80-120	Pass	
Beryllium (filtered)	%	95			90-110	Pass	
Cadmium	%	97			80-120	Pass	
Cadmium (filtered)	%	102			90-110	Pass	
Chromium	%	99			80-120	Pass	
Chromium (filtered)	%	100			90-110	Pass	
Cobalt	%	97			80-120	Pass	
Cobalt (filtered)	%	100			90-110	Pass	
Copper	%	98			80-120	Pass	
Copper (filtered)	%	98			90-110	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Iron	%	103			80-120	Pass	
Iron (filtered)	%	108			90-110	Pass	
Lead	%	101			80-120	Pass	
Lead (filtered)	%	104			90-110	Pass	
Lithium	%	100			70-130	Pass	
Lithium (filtered)	%	106			70-130	Pass	
Manganese	%	99			80-120	Pass	
Manganese (filtered)	%	99			90-110	Pass	
Mercury (filtered)	%	101			70-130	Pass	
Molybdenum	%	99			80-120	Pass	
Molybdenum (filtered)	%	96			90-110	Pass	
Nickel	%	95			80-120	Pass	
Nickel (filtered)	%	99			90-110	Pass	
Selenium	%	99			80-120	Pass	
Selenium (filtered)	%	106			90-110	Pass	
Strontium	%	99			80-120	Pass	
Strontium (filtered)	%	104			90-110	Pass	
Thorium*	%	90			70-130	Pass	
Thorium* (filtered)*	%	90			0-0	Fail	
Titanium	%	100			80-120	Pass	
Uranium (filtered)	%	105			90-110	Pass	
Zinc	%	97			90-110	Pass	
Zinc (filtered)	%	99			90-110	Pass	
CRM - % Recovery							
Alkali Metals							
Magnesium	%	105			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ammonia (as N)	L24-JI0073275	NCP	%	101			80-120	Pass	
Chloride	L24-JI0075730	NCP	%	105			70-130	Pass	
Ferrous Iron - Fe2+	L24-JI0075078	CP	%	90			70-130	Pass	
Filterable Reactive Phosphorus	L24-JI0073275	NCP	%	105			80-120	Pass	
Nitrate (as N)	L24-JI0075730	NCP	%	90			70-130	Pass	
Nitrite (as N)	L24-JI0075730	NCP	%	109			80-120	Pass	
NOx (as N)	L24-JI0073275	NCP	%	109			80-120	Pass	
Reactive Silica	L24-JI0075730	NCP	%	102			80-120	Pass	
Sulfate (as SO4)	L24-JI0075730	NCP	%	114			70-130	Pass	
Total Nitrogen	L24-JI0073273	NCP	%	100			70-130	Pass	
Total Phosphorus	L24-JI0073273	NCP	%	96			80-120	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium	L24-JI0074747	NCP	%	96			75-125	Pass	
Antimony	L24-JI0074747	NCP	%	107			75-125	Pass	
Antimony (filtered)	L24-JI0076535	NCP	%	106			75-125	Pass	
Arsenic	L24-JI0074747	NCP	%	112			75-125	Pass	
Arsenic (filtered)	L24-JI0076535	NCP	%	111			75-125	Pass	
Beryllium	L24-JI0074747	NCP	%	87			75-125	Pass	
Beryllium (filtered)	L24-JI0076535	NCP	%	101			75-125	Pass	
Bismuth	L24-JI0074747	NCP	%	95			75-125	Pass	
Cadmium	L24-JI0074747	NCP	%	105			75-125	Pass	
Cadmium (filtered)	L24-JI0076535	NCP	%	106			75-125	Pass	
Chromium	L24-JI0074747	NCP	%	94			75-125	Pass	
Chromium (filtered)	L24-JI0076535	NCP	%	93			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	L24-JI0074747	NCP	%	88			75-125	Pass	
Copper (filtered)	L24-JI0076535	NCP	%	90			75-125	Pass	
Iron	L24-JI0074747	NCP	%	89			75-125	Pass	
Lead	L24-JI0074747	NCP	%	96			75-125	Pass	
Lead (filtered)	L24-JI0076535	NCP	%	96			75-125	Pass	
Lithium	L24-JI0074747	NCP	%	83			75-125	Pass	
Lithium (filtered)	L24-JI0076535	NCP	%	101			75-125	Pass	
Manganese	L24-JI0074747	NCP	%	90			75-125	Pass	
Manganese (filtered)	L24-JI0076535	NCP	%	89			75-125	Pass	
Molybdenum	L24-JI0074747	NCP	%	106			75-125	Pass	
Molybdenum (filtered)	L24-JI0076535	NCP	%	75			75-125	Pass	
Nickel	L24-JI0074747	NCP	%	90			75-125	Pass	
Nickel (filtered)	L24-JI0076535	NCP	%	91			75-125	Pass	
Selenium	L24-JI0074747	NCP	%	100			75-125	Pass	
Silver	L24-JI0074747	NCP	%	85			75-125	Pass	
Silver (filtered)	L24-JI0076535	NCP	%	100			75-125	Pass	
Strontium	L24-JI0077285	NCP	%	97			75-125	Pass	
Titanium	L24-JI0074747	NCP	%	100			75-125	Pass	
Titanium (filtered)	L24-JI0076535	NCP	%	97			75-125	Pass	
Uranium	L24-JI0074747	NCP	%	99			75-125	Pass	
Uranium (filtered)	L24-JI0076535	NCP	%	101			75-125	Pass	
Vanadium	L24-JI0074747	NCP	%	98			75-125	Pass	
Vanadium (filtered)	L24-JI0076535	NCP	%	95			75-125	Pass	
Zinc	L24-JI0074747	NCP	%	106			75-125	Pass	
Zinc (filtered)	L24-JI0076535	NCP	%	106			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	L24-JI0076414	NCP	%	92			75-125	Pass	
Magnesium	L24-JI0076414	NCP	%	94			75-125	Pass	
Potassium	L24-JI0074747	NCP	%	94			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Ferrous Iron - Fe2+	L24-JI0076629	NCP	mg/L	0.76	0.78	3.2	30%	Pass	
Total Suspended Solids Dried at 103°C to 105°C		NCP	mg/L	**	**	<1	20%	Pass	
Zirconium (filtered)	L24-JI0075735	NCP	mg/L	< 0.01	< 0.01	<1	20%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	L24-JI0075078	CP	mg/L	0.20	0.19	3.0	30%	Pass	
Antimony	L24-JI0075078	CP	mg/L	0.001	0.001	1.0	30%	Pass	
Antimony (filtered)	L24-JI0076534	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Arsenic	L24-JI0075078	CP	mg/L	0.005	0.005	2.0	30%	Pass	
Arsenic (filtered)	L24-JI0076534	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium	L24-JI0075078	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium (filtered)	L24-JI0076534	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bismuth	L24-JI0075078	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Bismuth (filtered)	L24-JI0076534	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Cadmium	L24-JI0075078	CP	mg/L	0.0006	0.0006	2.0	30%	Pass	
Cadmium (filtered)	L24-JI0076534	NCP	mg/L	0.0001	0.0001	8.1	30%	Pass	
Chromium	L24-JI0075078	CP	mg/L	0.002	0.002	6.0	30%	Pass	
Chromium (filtered)	L24-JI0076534	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cobalt	L24-JI0075078	CP	mg/L	0.001	0.001	2.0	30%	Pass	
Copper	L24-JI0075078	CP	mg/L	0.008	0.008	3.0	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Copper (filtered)	L24-JI0076534	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	L24-JI0075078	CP	mg/L	0.31	0.30	3.0	30%	Pass	
Iron (filtered)	L24-JI0076534	NCP	mg/L	0.22	0.21	1.9	30%	Pass	
Lead	L24-JI0075078	CP	mg/L	0.001	0.001	5.0	30%	Pass	
Lead (filtered)	L24-JI0076534	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lithium	L24-JI0075078	CP	mg/L	0.10	0.11	5.0	30%	Pass	
Lithium (filtered)	L24-JI0076534	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Manganese	L24-JI0075078	CP	mg/L	0.27	0.26	2.0	30%	Pass	
Manganese (filtered)	L24-JI0076534	NCP	mg/L	0.074	0.073	<1	30%	Pass	
Mercury	L24-JI0075078	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Molybdenum	L24-JI0075078	CP	mg/L	0.015	0.015	<1	30%	Pass	
Molybdenum (filtered)	L24-JI0076534	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Nickel	L24-JI0075078	CP	mg/L	0.050	0.049	2.0	30%	Pass	
Nickel (filtered)	L24-JI0076534	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	L24-JI0076534	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Silver	L24-JI0075078	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Silver (filtered)	L24-JI0076534	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Strontium	L24-Au0002022	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Thorium*	L24-JI0075078	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Titanium	L24-JI0075078	CP	mg/L	0.011	0.010	7.0	30%	Pass	
Titanium (filtered)	L24-JI0076534	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Uranium	L24-JI0075078	CP	mg/L	0.051	0.050	1.0	30%	Pass	
Uranium (filtered)	L24-JI0076534	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Vanadium	L24-JI0075078	CP	mg/L	0.005	0.005	1.0	30%	Pass	
Vanadium (filtered)	L24-JI0076534	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	L24-JI0075078	CP	mg/L	0.12	0.12	1.0	30%	Pass	
Zinc (filtered)	L24-JI0076534	NCP	mg/L	0.079	0.082	3.1	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	L24-Au0002022	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Magnesium	L24-Au0002022	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Sodium	L24-JI0076391	NCP	mg/L	140	130	1.7	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Strontium (filtered)	L24-JI0076534	NCP	mg/L	0.21	0.21	1.4	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (at 25 °C)	L24-JI0075080	CP	uS/cm	50000	51000	<1	30%	Pass	
pH (at 25 °C)	L24-JI0075080	CP	pH Units	7.0	6.7	4.4	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	L24-JI0075080	CP	mg/L	30000	30000	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	L24-JI0075083	CP	mg/L	27000	23000	13	30%	Pass	
Nitrite (as N)	L24-JI0075083	CP	mg/L	< 0.01	< 0.01	<1	20%	Pass	
NOx (as N)	L24-JI0075083	CP	mg/L	< 0.01	< 0.01	<1	20%	Pass	
Reactive Silica	L24-JI0075083	CP	mg/L	6.1	6.2	2.1	20%	Pass	
Sulfate (as SO4)	L24-JI0075083	CP	mg/L	4900	5000	1.9	30%	Pass	
Total Nitrogen	L24-JI0075083	CP	mg/L	0.2	0.2	7.5	30%	Pass	
Total Phosphorus	L24-JI0075083	CP	mg/L	< 0.01	< 0.01	<1	20%	Pass	

Comments

V2: Cobalt and Mercury (filtered and total) added to:
MBH06
MBH10
MBH13
MBH35S
MBH38D
V3: Sb, Be, Mn for JI0075083 filtered results amended to match total, following review of results.
V4: Hg, HgFilt, Co, and CoFilt added to SW01.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
Q05	The matrix spike concentration is less than five times the background concentration in the sample - therefore the spike recovery cannot be determined
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Celeste Chinnery	Analytical Services Manager
Sam Becker	Senior Analyst-Inorganic
Caitlin Breeze	Senior Analyst-Inorganic
Douglas Todd	Senior Analyst-Metal
Sean Sangster	Senior Analyst-Metal

Kim Rodgers
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request

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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Sample Receipt Advice

Company name: Land & Water Consulting
Contact name: LAB Results
Project name: Not provided
Project ID: QI-01
Turnaround time: 5 Day
Date/Time received Jul 29, 2024 5:50 PM
Eurofins reference 1122734

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
N/A	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Samples received by the laboratory after 5.30pm are deemed to have been received the following working day.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Elden Garrett on phone : 0892519602 or by email: EldenGarrett@eurofins.com

Results will be delivered electronically via email to LAB Results - laboratoryresults@lwconsulting.com.au.

Note: A copy of these results will also be delivered to the general Land & Water Consulting email address.

Global Leader - Results you can trust

CHAIN OF CUSTODY FORM

Eurofins

From : Land & Water Consulting Pty Ltd
Suite 3, 4-8 Goodwood Road, WAYVILLE, SA, 5034
ph: (08) 8271 5255 fax: (08) 8357 1307

LAB Quote Number: LWC 240321

LWC Contact Information:
Contact Name:
Emily Picken
Contact Email:
laboratoryresults@lwconsulting.com.au

Phone Number:
08 8271 5255

LWC Project No:
QI-01
Project Manager:
Emily Picken
Date Samples Sent:
28/07/2024
COC Checked by: A Vaughan

Lab ID	Date	Matrix	Sample ID	No. Bottles	Sample Analysis: Tick required analytes								
					*Suite 1	*Suite 2	*Suite 3	*Suite 4	HOLD				
	26/07/2024	W	MBH06	5	X								
	26/07/2024	W	MBH10	5	X								
	26/07/2024	W	MBH13	5	X								
	26/07/2024	W	MBH35S	5	X								
	26/07/2024	W	MBH38D	5	X								
	27/07/2024	W	SW01	5					X				
	26/07/2024	W	Rinse	2			X						
			TOTAL	7	5		1		1				

ADDITIONAL COMMENTS:

Suite 1 - Major components, metals and nutrients:
- EC
- Total dissolved solids (TDS) and Total Suspended Solids (TSS).
- Laboratory pH
- Major Ions including calcium, sodium, potassium, magnesium, chloride, sulphate, bicarbonate and carbonate.
- Hydroxide alkalinity as CaCO3, carbonate alkalinity as CaCO3 and bicarbonate as CaCO3.
- Water Hardness
- Total and dissolved metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO2, Se, Sr, Th, Ti, U, V, Zn, Zr and SiO2.
- Speciation of Ferric Iron and Ferrous Iron (actual and not calculated).
- Nutrients including total nitrogen, nitrate as N, nitrite as N, ammonia, TKN and filtered reactive phosphorous.

Suite 2 - Hydrocarbons:
- Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, total Xylenes, Naphthalene (BTEXN)

Suite 3 - Rinsate Screen:
- Total metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO2, Se, Sr, Th, Ti, U, V, Zn, Zr and SiO2.

Suite 4 - Tripblank
- TRH Fraction C6-C10 and BTEXN

P2 29/7/24 17:50 @16.1

1122734

*LOR must be sufficient for comparision to ANZG 2018 freshwater guidelines 95% protection, water samples will have salinity ranging from 800 - 150,000 mg/L. PLEASE ANALYSE TO MEET THIS GUIDELINE

CERTIFICATE OF ANALYSIS

Work Order	: **EP2410566**	Page	: 1 of 8
Amendment	: **2**		
Client	: **LWC MANAGEMENT PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: EMILY PICKEN	Contact	: Kieren Burns
Address	: LEVEL 7, 191 ST GEORGES TERRACE PERTH 6000	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 08 8271 5255	Telephone	: +61881625130
Project	: QI-01	Date Samples Received	: 26-Jul-2024 11:45
Order number	: ----	Date Analysis Commenced	: 26-Jul-2024
C-O-C number	: ----	Issue Date	: 07-Aug-2024 16:55
Sampler	: ----		
Site	: ----		
Quote number	: EP24LANWAT0001		
No. of samples received	: 3		
No. of samples analysed	: 3		

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
- Surrogate Control Limits

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*
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
Thomas Donovan	Senior Organic Chemist	Perth Organics, Wangara, WA

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.

- While ALS is NATA accredited to report Alkalinity via method ED037P ALS is not NATA accredited to report analytes under method ED037CC which are calculations based on Alkalinity results from method ED037P.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- 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.
- EG094: It is recognised that total As, Li, Ni, Sb, Se concentrations are less than dissolved for samples EP2410566-001 and -002. However, the difference is within experimental variation of the methods.
- EP071: Poor matrix spike recovery for QC sample EP2410557-001 due to suspected matrix effects and interferences.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Perth, NATA accreditation no. 825, site no. 15847.
- Amendment (07/08/2024): This report has been amended and re-released to allow the reporting of additional analytical data, specifically method ED094 for sample DUP1, DUP2 (EP2410566-001 and EP2410566-002).
- 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	DUP1	DUP2	Tripblank	----	----
			Sampling date / time	24-Jul-2024 00:00	24-Jul-2024 00:00	24-Jul-2024 00:00	----	----
Compound	CAS Number	LOR	Unit	EP2410566-001	EP2410566-002	EP2410566-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.94	7.60	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	2000	2560	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1150	1480	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	1400	----	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	427	453	----	----	----
ED037CC: Calculated Alkalinity Parameters								
ø Bicarbonate Alkalinity as Bicarbonate	----	1	mg/L	484	586	----	----	----
ø Carbonate Alkalinity as Carbonate	----	1	mg/L	<1	<1	----	----	----
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	397	480	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	397	480	----	----	----
ED040F: Dissolved Major Anions								
Silicon as SiO2	14464-46-1	0.1	mg/L	80.4	44.6	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	51	4	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	466	655	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	64	66	----	----	----
Magnesium	7439-95-4	1	mg/L	65	70	----	----	----
Sodium	7440-23-5	1	mg/L	282	414	----	----	----
Potassium	7440-09-7	1	mg/L	2	4	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP1	DUP2	Tripblank	----	----
				Sampling date / time	24-Jul-2024 00:00	24-Jul-2024 00:00	24-Jul-2024 00:00	----	----
Compound	CAS Number	LOR	Unit		EP2410566-001	EP2410566-002	EP2410566-003	--------	--------
					Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS									
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	----	----	----
EG020T: Total Metals by ICP-MS									
Zirconium	7440-67-7	0.005	mg/L		<0.005	<0.005	----	----	----
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	----	----	----
EG051G: Ferrous Iron by Discrete Analyser									
Ferrous Iron	----	0.05	mg/L		<0.05	**6.39**	----	----	----
EG053FG-MS: Dissolved Ferric Iron by ICPMS and DA									
Ferric Iron	----	0.05	mg/L		<0.05	**0.31**	----	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L		<5	<5	----	----	----
Antimony	7440-36-0	0.2	µg/L		<0.2	**56.8**	----	----	----
Arsenic	7440-38-2	0.2	µg/L		**2.4**	**22.1**	----	----	----
Beryllium	7440-41-7	0.1	µg/L		<0.1	<0.1	----	----	----
Bismuth	7440-69-9	0.05	µg/L		<0.05	<0.05	----	----	----
Cadmium	7440-43-9	0.05	µg/L		<0.05	<0.05	----	----	----
Chromium	7440-47-3	0.2	µg/L		**0.3**	<0.2	----	----	----
Cobalt	7440-48-4	0.1	µg/L		<0.1	**0.4**	----	----	----
Copper	7440-50-8	0.5	µg/L		**0.7**	<0.5	----	----	----
Iron	7439-89-6	2	µg/L		<2	**6440**	----	----	----
Lead	7439-92-1	0.1	µg/L		<0.1	<0.1	----	----	----
Lithium	7439-93-2	0.5	µg/L		**11.5**	**3.9**	----	----	----
Manganese	7439-96-5	0.5	µg/L		**0.6**	**508**	----	----	----
Molybdenum	7439-98-7	0.1	µg/L		**2.4**	**2.6**	----	----	----
Nickel	7440-02-0	0.5	µg/L		**0.9**	**23.7**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP1	DUP2	Tripblank	----	----
				Sampling date / time	24-Jul-2024 00:00	24-Jul-2024 00:00	24-Jul-2024 00:00	----	----
Compound	CAS Number	LOR	Unit		EP2410566-001	EP2410566-002	EP2410566-003	--------	--------
					Result	Result	Result	----	----
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS - Continued									
Selenium	7782-49-2	0.2	µg/L		**1.6**	<0.2	----	----	----
Silver	7440-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Strontium	7440-24-6	1	µg/L		**1310**	**1660**	----	----	----
Thallium	7440-28-0	0.02	µg/L		<0.02	<0.02	----	----	----
Thorium	7440-29-1	0.1	µg/L		<0.1	<0.1	----	----	----
Titanium	7440-32-6	1	µg/L		<1	<1	----	----	----
Uranium	7440-61-1	0.05	µg/L		**4.45**	**0.13**	----	----	----
Vanadium	7440-62-2	0.2	µg/L		**38.2**	**0.6**	----	----	----
Zinc	7440-66-6	1	µg/L		**11**	**4**	----	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS									
Aluminium	7429-90-5	5	µg/L		**9**	**7220**	----	----	----
Antimony	7440-36-0	0.2	µg/L		<0.2	**52.8**	----	----	----
Arsenic	7440-38-2	0.2	µg/L		**2.4**	**21.5**	----	----	----
Beryllium	7440-41-7	0.1	µg/L		<0.1	**0.3**	----	----	----
Bismuth	7440-69-9	0.05	µg/L		<0.05	<0.05	----	----	----
Cadmium	7440-43-9	0.05	µg/L		<0.05	<0.05	----	----	----
Chromium	7440-47-3	0.2	µg/L		**0.4**	**10.9**	----	----	----
Cobalt	7440-48-4	0.1	µg/L		<0.1	**6.7**	----	----	----
Copper	7440-50-8	0.5	µg/L		**1.0**	**9.2**	----	----	----
Iron	7439-89-6	2	µg/L		**9**	**17200**	----	----	----
Lead	7439-92-1	0.1	µg/L		<0.1	**5.6**	----	----	----
Lithium	7439-93-2	0.5	µg/L		**9.8**	**6.0**	----	----	----
Manganese	7439-96-5	0.5	µg/L		**1.4**	**800**	----	----	----
Molybdenum	7439-98-7	0.1	µg/L		**3.1**	**3.6**	----	----	----
Selenium	7782-49-2	0.2	µg/L		**1.5**	<0.2	----	----	----
Nickel	7440-02-0	0.5	µg/L		**1.0**	**22.5**	----	----	----
Silver	7440-22-4	0.1	µg/L		<0.1	<0.1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	DUP1	DUP2	Tripblank	----	----
			Sampling date / time	24-Jul-2024 00:00	24-Jul-2024 00:00	24-Jul-2024 00:00	----	----
Compound	CAS Number	LOR	Unit	EP2410566-001	EP2410566-002	EP2410566-003	--------	--------
				Result	Result	Result	----	----
EG094T: Total metals in Fresh water by ORC-ICPMS - Continued								
Strontium	7440-24-6	1	µg/L	**1410**	**1770**	----	----	----
Thallium	7440-28-0	0.02	µg/L	<0.02	**0.21**	----	----	----
Thorium	7440-29-1	0.1	µg/L	<0.1	**24.0**	----	----	----
Titanium	7440-32-6	1	µg/L	<1	**61**	----	----	----
Uranium	7440-61-1	0.05	µg/L	**5.16**	**1.22**	----	----	----
Vanadium	7440-62-2	0.2	µg/L	**38.7**	**20.6**	----	----	----
Zinc	7440-66-6	1	µg/L	**12**	**63**	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	----	----	----
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	**3.27**	<0.01	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**3.27**	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.4**	**2.4**	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**3.7**	**2.4**	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	**0.52**	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser								
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	----	----	----
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	**22.1**	**28.2**	----	----	----
ø Total Cations	----	0.01	meq/L	**20.9**	**27.2**	----	----	----
ø Ionic Balance	----	0.01	%	**2.97**	**1.78**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DUP1	DUP2	Tripblank	----	----
				Sampling date / time	24-Jul-2024 00:00	24-Jul-2024 00:00	24-Jul-2024 00:00	----	----
Compound	CAS Number	LOR	Unit		EP2410566-001	EP2410566-002	EP2410566-003	--------	--------
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	----	----
C10 - C14 Fraction	----	50	µg/L		<50	**80**	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	**80**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	**110**	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	**110**	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	**110**	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**116**	**127**	**118**	----	----
Toluene-D8	2037-26-5	2	%		**100**	**97.1**	**97.6**	----	----
4-Bromofluorobenzene	460-00-4	2	%		**99.8**	**96.0**	**96.7**	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	61	141
Toluene-D8	2037-26-5	73	126
4-Bromofluorobenzene	460-00-4	60	125

QUALITY CONTROL REPORT

Work Order	: **EP2410566**	Page	: 1 of 14
Amendment	: **2**		
Client	: **LWC MANAGEMENT PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: EMILY PICKEN	Contact	: Kieren Burns
Address	: LEVEL 7, 191 ST GEORGES TERRACE PERTH 6000	Address	: 26 Rigali Way Wangara WA Australia 6065
Telephone	: 08 8271 5255	Telephone	: +61881625130
Project	: QI-01	Date Samples Received	: 26-Jul-2024
Order number	: ----	Date Analysis Commenced	: 26-Jul-2024
C-O-C number	: ----	Issue Date	: 07-Aug-2024
Sampler	: ----		
Site	: ----		
Quote number	: EP24LANWAT0001		
No. of samples received	: 3		
No. of samples analysed	: 3		

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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

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*
Canhuang Ke	Inorganics Supervisor	Perth Inorganics, Wangara, WA
Chris Lemaitre	Laboratory Manager (Perth)	Perth Inorganics, Wangara, WA
Daniel Fisher	Inorganics Analyst	Perth Inorganics, Wangara, WA
Thomas Donovan	Senior Organic Chemist	Perth Organics, Wangara, WA

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.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5957751)									
EP2410587-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.27	7.34	1.0	0% - 20%
EP2410560-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.86	7.85	0.1	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5957752)									
EP2410587-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	602	605	0.5	0% - 20%
EP2410560-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1950	1950	0.0	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 5958246)									
EP2410566-001	DUP1	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1150	1140	1.0	0% - 20%
EP2410586-009	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	3260	3220	1.2	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5958247)									
EP2410566-001	DUP1	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EP2410586-009	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ED037P: Alkalinity by PC Titrator (QC Lot: 5957753)									
EP2410587-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	84	84	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	84	84	0.0	0% - 20%
EP2410560-002	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	198	198	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	198	198	0.0	0% - 20%
ED040F: Dissolved Major Anions (QC Lot: 5952880)									
EP2410566-001	DUP1	ED040F: Silicon as SiO2	14464-46-1	0.1	mg/L	80.4	80.2	0.2	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
ED040F: Dissolved Major Anions (QC Lot: 5952880) - continued									
EP2410591-001	Anonymous	ED040F: Silicon as SiO2	14464-46-1	0.1	mg/L	91.8	92.2	0.4	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5952879)									
EP2410587-003	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	44	44	0.0	0% - 20%
EP2410590-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	140	142	1.8	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 5952878)									
EP2410587-003	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	185	191	2.9	0% - 20%
EP2410590-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	78	79	0.0	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 5956464)									
EP2410566-001	DUP1	ED093F: Calcium	7440-70-2	1	mg/L	64	64	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	65	64	0.0	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	282	280	0.8	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	2	1	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5956462)									
EP2410566-001	DUP1	EG020D-F: Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EP2410622-001	Anonymous	EG020D-F: Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 5956521)									
EP2410622-006	Anonymous	EG020D-T: Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EP2410584-001	Anonymous	EG020D-T: Zirconium	7440-67-7	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 5956461)									
EP2410691-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5953943)									
EP2410530-007	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG051G: Ferrous Iron by Discrete Analyser (QC Lot: 5955607)									
EP2410509-001	Anonymous	EG051G: Ferrous Iron	----	0.05	mg/L	0.24	0.24	0.0	No Limit
EP2410509-011	Anonymous	EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 5958270)									
EP2410623-001	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.0002 mg/L	<0.2	0.0	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	0.052 mg/L	51	0.0	0% - 20%
EP2410691-002	Anonymous	EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094B-F: Iron	7439-89-6	2	µg/L	<0.002 mg/L	<2	0.0	No Limit
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 5958271)									
EP2410623-001	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	0.02	0.02	0.0	No Limit
		EG094A-F: Bismuth	7440-69-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.00005 mg/L	<0.05	0.0	No Limit
		EG094A-F: Uranium	7440-61-1	0.05	µg/L	0.00145 mg/L	1.44	0.0	0% - 20%
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 5958271) - continued									
EP2410623-001	Anonymous	EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	0.0003 mg/L	0.3	0.0	No Limit
		EG094A-F: Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Thorium	7440-29-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Antimony	7440-36-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	0.0003 mg/L	0.2	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.0002 mg/L	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	0.0005 mg/L	0.6	0.0	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.0005 mg/L	<0.5	0.0	No Limit
		EG094A-F: Lithium	7439-93-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	0.0045 mg/L	4.5	0.0	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.0005 mg/L	<0.5	0.0	No Limit
		EG094A-F: Strontium	7440-24-6	1	µg/L	233	230	1.4	0% - 20%
		EG094A-F: Titanium	7440-32-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	<0.001 mg/L	<1	0.0	No Limit
		EG094A-F: Aluminium	7429-90-5	5	µg/L	<0.005 mg/L	<5	0.0	No Limit
EP2410691-002	Anonymous	EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EG094A-F: Bismuth	7440-69-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.00005 mg/L	<0.05	0.0	No Limit
		EG094A-F: Uranium	7440-61-1	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-F: Silver	7440-22-4	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-F: Thorium	7440-29-1	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-F: Antimony	7440-36-0	0.2	µg/L	<0.0002 mg/L	<0.2	0.0	No Limit
		EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.0002 mg/L	<0.2	0.0	No Limit
		EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.0005 mg/L	<0.5	0.0	No Limit
		EG094A-F: Lithium	7439-93-2	0.5	µg/L	<0.0005 mg/L	<0.5	0.0	No Limit
		EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.0005 mg/L	<0.5	0.0	No Limit
		EG094A-F: Nickel	7440-02-0	0.5	µg/L	0.0007 mg/L	0.7	0.0	No Limit
		EG094A-F: Strontium	7440-24-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-F: Titanium	7440-32-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-F: Zinc	7440-66-6	1	µg/L	<0.001 mg/L	<1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QC Lot: 5958271) - continued									
EP2410691-002	Anonymous	EG094A-F: Aluminium	7429-90-5	5	µg/L	<0.005 mg/L	<5	0.0	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 5958274)									
EP2410623-003	Anonymous	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.0002 mg/L	<0.2	0.0	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	14	19	31.8	No Limit
EP2410691-002	Anonymous	EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094B-T: Iron	7439-89-6	2	µg/L	0.002 mg/L	3	0.0	No Limit
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 5958275)									
EP2410623-003	Anonymous	EG094A-T: Thallium	7440-28-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EG094A-T: Bismuth	7440-69-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-T: Uranium	7440-61-1	0.05	µg/L	1.10	1.11	0.0	0% - 20%
		EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	0.3	0.4	0.0	No Limit
		EG094A-T: Silver	7440-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Thorium	7440-29-1	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Antimony	7440-36-0	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	0.0002 mg/L	0.3	0.0	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.0002 mg/L	<0.2	0.0	No Limit
		EG094A-T: Vanadium	7440-62-2	0.2	µg/L	1.4	1.3	0.0	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Lithium	7439-93-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	28.4	28.1	1.3	0% - 20%
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	0.6	<0.5	24.4	No Limit
		EG094A-T: Strontium	7440-24-6	1	µg/L	234	238	1.8	0% - 20%
		EG094A-T: Titanium	7440-32-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	1	<1	0.0	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	7	10	29.4	No Limit
EP2410691-002	Anonymous	EG094A-T: Thallium	7440-28-0	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EG094A-T: Bismuth	7440-69-9	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.00005 mg/L	<0.05	0.0	No Limit
		EG094A-T: Uranium	7440-61-1	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	<0.1	0.0	No Limit
		EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG094T: Total metals in Fresh water by ORC-ICPMS (QC Lot: 5958275) - continued									
EP2410691-002	Anonymous	EG094A-T: Silver	7440-22-4	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-T: Thorium	7440-29-1	0.1	µg/L	<0.0001 mg/L	<0.1	0.0	No Limit
		EG094A-T: Antimony	7440-36-0	0.2	µg/L	<0.0002 mg/L	<0.2	0.0	No Limit
		EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.0002 mg/L	<0.2	0.0	No Limit
		EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.0005 mg/L	<0.5	0.0	No Limit
		EG094A-T: Lithium	7439-93-2	0.5	µg/L	<0.0005 mg/L	<0.5	0.0	No Limit
		EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.0005 mg/L	<0.5	0.0	No Limit
		EG094A-T: Nickel	7440-02-0	0.5	µg/L	0.0007 mg/L	0.7	0.0	No Limit
		EG094A-T: Strontium	7440-24-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-T: Titanium	7440-32-6	1	µg/L	<1	<1	0.0	No Limit
		EG094A-T: Zinc	7440-66-6	1	µg/L	<0.001 mg/L	<1	0.0	No Limit
		EG094A-T: Aluminium	7429-90-5	5	µg/L	<0.005 mg/L	5	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 5952576)									
EP2410574-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.10	0.10	0.0	0% - 50%
EP2410574-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.18	0.18	0.0	0% - 50%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 5952876)									
EP2410587-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP2410590-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5952577)									
EP2410574-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	1.93	1.92	0.0	0% - 20%
EP2410574-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.92	0.92	0.0	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5951793)									
EP2410564-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	8.4	8.7	2.4	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5951792)									
EP2410566-001	DUP1	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP2410564-004	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	1.98	1.97	0.0	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 5952877)									
EP2410587-003	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP2410590-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	0.28	0.29	0.0	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5953769)									
EP2410540-009	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP2410555-007	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5954124)									
EP2410609-003	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	680	810	16.5	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5954124) - continued									
EP2410609-003	Anonymous	EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5959925)									
EP2410557-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	560	920	48.6	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	390	540	30.7	0% - 50%
EP2410609-002	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	3160	2740	14.2	0% - 20%
		EP071: C10 - C14 Fraction	----	50	µg/L	460	440	3.8	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	200	220	5.3	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5953769)									
EP2410540-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP2410555-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5954124)									
EP2410609-003	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	110	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	650	760	16.3	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5959925)									
EP2410557-001	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	880	1340	41.5	0% - 50%
		EP071: >C34 - C40 Fraction	----	100	µg/L	160	250	40.0	No Limit
EP2410609-002	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	1130	980	13.9	0% - 50%
		EP071: >C16 - C34 Fraction	----	100	µg/L	2700	2410	11.5	0% - 20%
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	110	0.0	No Limit
EP080: BTEXN (QC Lot: 5953769)									
EP2410540-009	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP2410555-007	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 5953769) - continued									
EP2410555-007	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 5957751)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.5	102
				----	7 pH Unit	100	98.5	102
EA010P: Conductivity by PC Titrator (QCLot: 5957752)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	24800 µS/cm	100	92.1	105
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 5958246)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	94.1	80.0	120
				<10	293 mg/L	96.4	80.0	120
				<10	2410 mg/L	103	80.0	120
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5958247)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	107	80.0	120
				<5	1000 mg/L	103	80.0	120
				<5	879 mg/L	93.3	80.0	120
ED037P: Alkalinity by PC Titrator (QCLot: 5957753)								
ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	----	----	----	----
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	<1	20 mg/L	105	85.1	126
				<1	200 mg/L	99.8	90.5	111
ED040F: Dissolved Major Anions (QCLot: 5952880)								
ED040F: Silicon as SiO2	14464-46-1	0.1	mg/L	<0.1	21.4 mg/L	101	88.6	112
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5952879)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	98.5	89.9	112
				<1	500 mg/L	97.4	89.9	112
ED045G: Chloride by Discrete Analyser (QCLot: 5952878)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	95.4	88.6	113
				<1	1000 mg/L	97.3	88.6	113
ED093F: Dissolved Major Cations (QCLot: 5956464)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	98.7	86.5	117
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	104	88.4	110
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	101	91.4	113

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
ED093F: Dissolved Major Cations (QCLot: 5956464) - continued								
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	102	84.6	108
EG020F: Dissolved Metals by ICP-MS (QCLot: 5956462)								
EG020D-F: Zirconium	7440-67-7	0.005	mg/L	<0.005	0.01 mg/L	118	80.0	120
EG020T: Total Metals by ICP-MS (QCLot: 5956521)								
EG020D-T: Zirconium	7440-67-7	0.005	mg/L	<0.005	0.01 mg/L	118	80.0	120
EG035F: Dissolved Mercury by FIMS (QCLot: 5956461)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.005 mg/L	110	85.6	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5953943)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.005 mg/L	100	83.7	120
EG051G: Ferrous Iron by Discrete Analyser (QCLot: 5955607)								
EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	2 mg/L	99.0	90.0	111
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 5958270)								
EG094B-F: Iron	7439-89-6	2	µg/L	<2	50 µg/L	114	87.8	121
EG094B-F: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	86.8	77.8	103
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 5958271)								
EG094A-F: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	107	94.0	116
EG094A-F: Antimony	7440-36-0	0.2	µg/L	<0.2	2 µg/L	85.0	74.0	106
EG094A-F: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	104	92.1	119
EG094A-F: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	94.1	78.9	123
EG094A-F: Bismuth	7440-69-9	0.05	µg/L	<0.05	10 µg/L	86.5	68.2	121
EG094A-F: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	100	92.7	111
EG094A-F: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	107	90.0	112
EG094A-F: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	102	92.1	114
EG094A-F: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	101	88.5	111
EG094A-F: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	101	89.2	109
EG094A-F: Lithium	7439-93-2	0.5	µg/L	<0.5	10 µg/L	95.0	67.6	133
EG094A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	100	91.1	109
EG094A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	101	91.8	114
EG094A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	103	91.5	113
EG094A-F: Silver	7440-22-4	0.1	µg/L	<0.1	2 µg/L	104	83.5	116
EG094A-F: Strontium	7440-24-6	1	µg/L	<1	10 µg/L	99.5	88.9	122
EG094A-F: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	101	89.1	107
EG094A-F: Thorium	7440-29-1	0.1	µg/L	<0.1	----	----	----	----
EG094A-F: Titanium	7440-32-6	1	µg/L	<1	10 µg/L	101	93.0	112

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 5958271) - continued								
EG094A-F: Uranium	7440-61-1	0.05	µg/L	<0.05	10 µg/L	101	90.8	111
EG094A-F: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	108	91.5	111
EG094A-F: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	103	90.5	123
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 5958274)								
EG094B-T: Iron	7439-89-6	2	µg/L	<2	50 µg/L	119	93.0	123
EG094B-T: Selenium	7782-49-2	0.2	µg/L	<0.2	10 µg/L	98.4	81.6	108
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 5958275)								
EG094A-T: Aluminium	7429-90-5	5	µg/L	<5	50 µg/L	116	94.7	119
EG094A-T: Antimony	7440-36-0	0.2	µg/L	<0.2	2 µg/L	109	87.7	124
EG094A-T: Arsenic	7440-38-2	0.2	µg/L	<0.2	10 µg/L	111	89.6	117
EG094A-T: Beryllium	7440-41-7	0.1	µg/L	<0.1	10 µg/L	95.0	75.2	121
EG094A-T: Bismuth	7440-69-9	0.05	µg/L	<0.05	10 µg/L	96.0	76.9	120
EG094A-T: Cadmium	7440-43-9	0.05	µg/L	<0.05	10 µg/L	105	90.0	109
EG094A-T: Chromium	7440-47-3	0.2	µg/L	<0.2	10 µg/L	105	85.0	112
EG094A-T: Cobalt	7440-48-4	0.1	µg/L	<0.1	10 µg/L	107	79.5	114
EG094A-T: Copper	7440-50-8	0.5	µg/L	<0.5	10 µg/L	106	83.3	118
EG094A-T: Lead	7439-92-1	0.1	µg/L	<0.1	10 µg/L	104	83.2	110
EG094A-T: Lithium	7439-93-2	0.5	µg/L	<0.5	10 µg/L	86.6	70.0	124
EG094A-T: Manganese	7439-96-5	0.5	µg/L	<0.5	10 µg/L	105	90.9	108
EG094A-T: Molybdenum	7439-98-7	0.1	µg/L	<0.1	10 µg/L	116	94.9	118
EG094A-T: Nickel	7440-02-0	0.5	µg/L	<0.5	10 µg/L	106	89.5	116
EG094A-T: Silver	7440-22-4	0.1	µg/L	<0.1	2 µg/L	106	82.3	108
EG094A-T: Strontium	7440-24-6	1	µg/L	<1	10 µg/L	114	87.6	120
EG094A-T: Thallium	7440-28-0	0.02	µg/L	<0.02	10 µg/L	104	75.1	107
EG094A-T: Thorium	7440-29-1	0.1	µg/L	<0.1	----	----	----	----
EG094A-T: Titanium	7440-32-6	1	µg/L	<1	10 µg/L	107	93.7	109
EG094A-T: Uranium	7440-61-1	0.05	µg/L	<0.05	10 µg/L	105	80.0	120
EG094A-T: Vanadium	7440-62-2	0.2	µg/L	<0.2	10 µg/L	107	90.4	111
EG094A-T: Zinc	7440-66-6	1	µg/L	<1	10 µg/L	107	84.9	119
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5952576)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	108	86.2	111
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5952876)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.7	88.7	113
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5952577)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5952577) - continued								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	100	90.5	110
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5951793)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	91.6	80.0	115
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5951792)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	88.3	70.0	110
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5952877)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	94.2	89.4	109
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5953769)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	95.7	73.6	113
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5954124)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	58.1	39.3	103
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	61.0	47.2	122
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	65.5	42.5	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5953769)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	95.8	73.9	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5954124)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	61.2	47.0	100
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	62.6	46.2	116
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	55.7	24.7	137
EP080: BTEXN (QCLot: 5953769)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	98.3	84.1	114
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	101	81.0	115
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	99.2	84.4	113
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	98.8	84.3	114
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	101	86.5	111
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	99.1	77.0	118

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5952879)							
EP2410590-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	100 mg/L	114	70.4	130
ED045G: Chloride by Discrete Analyser (QCLot: 5952878)							
EP2410590-001	Anonymous	ED045G: Chloride	16887-00-6	200 mg/L	90.0	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5956462)							
EP2410566-002	DUP2	EG020D-F: Zirconium	7440-67-7	0.05 mg/L	91.0	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 5956521)							
EP2410566-002	DUP2	EG020D-T: Zirconium	7440-67-7	0.05 mg/L	71.5	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 5956461)							
EP2410584-001	Anonymous	EG035F: Mercury	7439-97-6	0.005 mg/L	116	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5953943)							
EP2410530-008	Anonymous	EG035T: Mercury	7439-97-6	0.005 mg/L	107	70.0	130
EG051G: Ferrous Iron by Discrete Analyser (QCLot: 5955607)							
EP2410509-001	Anonymous	EG051G: Ferrous Iron	----	1 mg/L	93.0	81.1	122
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS (QCLot: 5958271)							
EP2410623-002	Anonymous	EG094A-F: Arsenic	7440-38-2	50 µg/L	108	81.0	141
		EG094A-F: Beryllium	7440-41-7	50 µg/L	99.3	66.2	135
		EG094A-F: Cadmium	7440-43-9	12.5 µg/L	103	79.1	129
		EG094A-F: Chromium	7440-47-3	50 µg/L	106	71.8	127
		EG094A-F: Cobalt	7440-48-4	50 µg/L	104	78.3	132
		EG094A-F: Copper	7440-50-8	50 µg/L	102	75.8	126
		EG094A-F: Lead	7439-92-1	50 µg/L	94.9	73.9	112
		EG094A-F: Manganese	7439-96-5	50 µg/L	100	69.6	127
		EG094A-F: Nickel	7440-02-0	50 µg/L	103	76.6	131
		EG094A-F: Vanadium	7440-62-2	50 µg/L	108	74.1	129
		EG094A-F: Zinc	7440-66-6	50 µg/L	106	76.8	133
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 5958275)							
EP2410623-004	Anonymous	EG094A-T: Arsenic	7440-38-2	50 µg/L	102	70.0	130
		EG094A-T: Beryllium	7440-41-7	50 µg/L	88.3	70.0	130
		EG094A-T: Cadmium	7440-43-9	12.5 µg/L	100	70.0	130
		EG094A-T: Chromium	7440-47-3	50 µg/L	96.5	70.0	130
		EG094A-T: Cobalt	7440-48-4	50 µg/L	98.1	70.0	130
		EG094A-T: Copper	7440-50-8	50 µg/L	95.1	70.0	130
		EG094A-T: Lead	7439-92-1	50 µg/L	94.4	70.0	130
		EG094A-T: Manganese	7439-96-5	50 µg/L	94.3	70.0	130
		EG094A-T: Nickel	7440-02-0	50 µg/L	97.4	70.0	130
		EG094A-T: Vanadium	7440-62-2	50 µg/L	98.8	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG094T: Total metals in Fresh water by ORC-ICPMS (QCLot: 5958275) - continued							
EP2410623-004	Anonymous	EG094A-T: Zinc	7440-66-6	50 µg/L	98.0	70.0	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 5952576)							
EP2410574-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	101	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 5952876)							
EP2410590-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	110	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5952577)							
EP2410574-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	100	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5951793)							
EP2410564-005	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	99.4	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5951792)							
EP2410564-005	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	99.0	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 5952877)							
EP2410590-001	Anonymous	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	106	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5953769)							
EP2410540-010	Anonymous	EP080: C6 - C9 Fraction	----	240 µg/L	108	77.0	137
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5959925)							
EP2410557-001	Anonymous	EP071: C10 - C14 Fraction	----	400 µg/L	58.5	44.5	122
		EP071: C15 - C28 Fraction	----	600 µg/L	# 52.5	55.1	143
		EP071: C29 - C36 Fraction	----	400 µg/L	# 33.4	53.6	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5953769)							
EP2410540-010	Anonymous	EP080: C6 - C10 Fraction	C6_C10	290 µg/L	98.5	77.0	137
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5959925)							
EP2410557-001	Anonymous	EP071: >C10 - C16 Fraction	----	500 µg/L	60.4	44.5	122
		EP071: >C16 - C34 Fraction	----	700 µg/L	# 39.4	55.1	143
		EP071: >C34 - C40 Fraction	----	300 µg/L	# 51.0	53.6	128
EP080: BTEXN (QCLot: 5953769)							
EP2410540-010	Anonymous	EP080: Benzene	71-43-2	20 µg/L	116	77.0	122
		EP080: Toluene	108-88-3	20 µg/L	116	73.5	126

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EP2410566**	Page	: 1 of 12
Amendment	: **2**		
Client	: **LWC MANAGEMENT PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: EMILY PICKEN	Telephone	: +61881625130
Project	: QI-01	Date Samples Received	: 26-Jul-2024
Site	: ----	Issue Date	: 07-Aug-2024
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP080/071: Total Petroleum Hydrocarbons	EP2410557--001	Anonymous	**C15 - C28 Fraction**	----	52.5 %	55.1-143%	**Recovery less than lower data quality objective**
EP080/071: Total Petroleum Hydrocarbons	EP2410557--001	Anonymous	**C29 - C36 Fraction**	----	33.4 %	53.6-128%	**Recovery less than lower data quality objective**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	EP2410557--001	Anonymous	**>C16 - C34 Fraction**	----	39.4 %	55.1-143%	**Recovery less than lower data quality objective**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	EP2410557--001	Anonymous	**>C34 - C40 Fraction**	----	51.0 %	53.6-128%	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)		Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
DUP1,	DUP2	----	----	----	01-Aug-2024	24-Jul-2024	**8**
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
DUP1,	DUP2	----	----	----	27-Jul-2024	26-Jul-2024	**1**
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural							
DUP1,	DUP2	----	----	----	27-Jul-2024	26-Jul-2024	**1**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
DUP1,	DUP2	**24-Jul-2024**	**----**	----	----	**01-Aug-2024**	24-Jul-2024	✗

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**01-Aug-2024**	21-Aug-2024	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**31-Jul-2024**	31-Jul-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**31-Jul-2024**	31-Jul-2024	✓
EA065: Total Hardness as CaCO3							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (ED093F)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**30-Jul-2024**	21-Aug-2024	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**01-Aug-2024**	07-Aug-2024	✓
ED040F: Dissolved Major Anions							
Clear Plastic Bottle - Natural (ED040F)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**29-Jul-2024**	21-Aug-2024	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**27-Jul-2024**	21-Aug-2024	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**27-Jul-2024**	21-Aug-2024	✓
ED093F: Dissolved Major Cations							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (ED093F)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**30-Jul-2024**	21-Aug-2024	✓
EG020F: Dissolved Metals by ICP-MS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020D-F)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**30-Jul-2024**	20-Jan-2025	✓
EG020T: Total Metals by ICP-MS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020D-T)							
DUP1, DUP2	**24-Jul-2024**	**30-Jul-2024**	20-Jan-2025	✓	**30-Jul-2024**	20-Jan-2025	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**30-Jul-2024**	21-Aug-2024	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	----	**29-Jul-2024**	21-Aug-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG051G: Ferrous Iron by Discrete Analyser							
Clear Plastic Bottle - HCl - Filtered (EG051G)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	**----**	**30-Jul-2024**	31-Jul-2024	✓
EG094F: Dissolved Metals in Fresh Water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG094B-F)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	**----**	**31-Jul-2024**	20-Jan-2025	✓
EG094T: Total metals in Fresh water by ORC-ICPMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG094B-T)							
DUP1, DUP2	**24-Jul-2024**	**31-Jul-2024**	20-Jan-2025	✓	**31-Jul-2024**	20-Jan-2025	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	**----**	**26-Jul-2024**	21-Aug-2024	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	**----**	**27-Jul-2024**	26-Jul-2024	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	**----**	**26-Jul-2024**	21-Aug-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
DUP1, DUP2	**24-Jul-2024**	**29-Jul-2024**	21-Aug-2024	✓	**02-Aug-2024**	21-Aug-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
DUP1	**24-Jul-2024**	**29-Jul-2024**	21-Aug-2024	✓	**01-Aug-2024**	21-Aug-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
DUP2	**24-Jul-2024**	**29-Jul-2024**	21-Aug-2024	✓	**02-Aug-2024**	21-Aug-2024	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Clear Plastic Bottle - Natural (EK071G)							
DUP1, DUP2	**24-Jul-2024**	**----**	----	**----**	**27-Jul-2024**	26-Jul-2024	×
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
DUP1, DUP2	**24-Jul-2024**	**29-Jul-2024**	31-Jul-2024	✓	**31-Jul-2024**	07-Sep-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
DUP1, DUP2, Tripblank	**24-Jul-2024**	**29-Jul-2024**	07-Aug-2024	✓	**30-Jul-2024**	07-Aug-2024	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
DUP1, DUP2	**24-Jul-2024**	**29-Jul-2024**	31-Jul-2024	✓	**31-Jul-2024**	07-Sep-2024	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
DUP1, DUP2, Tripblank	**24-Jul-2024**	**29-Jul-2024**	07-Aug-2024	✓	**30-Jul-2024**	07-Aug-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) DUP1, DUP2, Tripblank	**24-Jul-2024**	**29-Jul-2024**	07-Aug-2024	✓	**30-Jul-2024**	07-Aug-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Alkalinity by Auto Titrator	ED037-P	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite D	EG020D-F	2	7	**28.57**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Anions - Dissolved	ED040F	2	8	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite D	EG020D-T	2	7	**28.57**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	14	**21.43**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by Auto Titrator	ED037-P	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite D	EG020D-F	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Major Anions - Dissolved	ED040F	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	19	**15.79**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	19	**15.79**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite D	EG020D-T	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Alkalinity by Auto Titrator	ED037-P	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite D	EG020D-F	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Anions - Dissolved	ED040F	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite D	EG020D-T	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Phosphorus as P By Discrete Analyser	EK067G	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite D	EG020D-F	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite D	EG020D-T	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	* ED037 CC	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Alkalinity by Auto Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) on a settled supernatant aliquot of the sample using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM Schedule B(3)
Major Anions - Dissolved	ED040F	WATER	In house: Referenced to APHA 3120. The 0.45µm filtered samples are determined by ICP/AES for Sulfur and/or Silcon content and reported as Sulfate and/or Silica after conversion by gravimetric factor.
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm.
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite D	EG020D-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite D	EG020D-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Ferrous Iron by Discrete Analyser	EG051G	WATER	In house: Referenced to APHA 3500 Fe-B. A colorimetric determination based on the reaction between phenanthroline and ferrous iron at pH 3.2-3.3 to form an orange-red complex that is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Ferric Iron - Dissolved	EG053FG-MS	WATER	In house: Referenced to APHA 3500 Fe-B. The 0.45µm filtered Ferric Iron is determined as the difference between Filtered Iron and Filtered Ferrous Iron quantify by ICPMS and Discrete Analyser.
Dissolved Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3).
Total Metals in Fresh Water -Suite A by ORC-ICPMS	EG094A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3).
Dissolved Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020 Samples are 0.45µm filtered prior to analysis. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3).
Total Metals in Fresh Water -Suite B by ORC-ICPMS	EG094B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020. The ORC-ICPMS technique removes interfering species through a series of chemical reactions prior to ion detection. Ions are passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to measurement by a discrete dynode ion detector. This method is compliant with NEPM Schedule B(3).
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	In house: Referenced to APHA 4500-P F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with othophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	* EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals - ORC	* EN25-ORC	WATER	In house: Referenced to USEPA SW846-3005. This is an Ultrapure Nitric acid digestion procedure used to prepare surface and ground water samples for analysis by ORC- ICPMS. This method is compliant with NEPM Schedule B(3)

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EP2410566**

Client	: **LWC MANAGEMENT PTY LTD**	Laboratory	: Environmental Division Perth
Contact	: EMILY PICKEN	Contact	: Kieren Burns
Address	: LEVEL 7, 191 ST GEORGES TERRACE PERTH 6000	Address	: 26 Rigali Way Wangara WA Australia 6065
E-mail	: epicken@lwconsulting.com.au	E-mail	: kieren.burns@alsglobal.com
Telephone	: 08 8271 5255	Telephone	: +61881625130
Facsimile	: 08 8357 1307	Facsimile	: +61-8-9406 1399
Project	: QI-01	Page	: 1 of 3
Order number	: ----	Quote number	: EP2024LANWAT0001 (EP24LANWAT0001)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 26-Jul-2024 11:45	Issue Date	: 26-Jul-2024
Client Requested Due Date	: 02-Aug-2024	Scheduled Reporting Date	: **02-Aug-2024**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 12.1 - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 3 / 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Please see scanned COC for sample discrepencies: extra samples , samples not received etc.
- Please direct any queries related to sample condition / numbering / breakages to Sample Receipt (Samples.Perth@alsglobal.com)
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Perth, NATA accreditation no. 825, site no. 15847.
- Please direct any turnaround / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- **pH analysis should be conducted within 6 hours of sampling.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- 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. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA005P pH (Auto Titrator)	WATER - EA010P Electrical Conductivity (Auto Titrator)	WATER - ED040F Dissolved Major Anions	WATER - EG035T Total Mercury	WATER - EG051G Ferrous Iron	WATER - EG053FG-MS Dissolved Ferric Iron by ICPMS/DA	WATER - W-04 TRH/BTEXN
EP2410566-001	24-Jul-2024 00:00	DUP1	✓	✓	✓	✓	✓	✓	✓
EP2410566-002	24-Jul-2024 00:00	DUP2	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EA025H Suspended Solids - Standard Level	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EG020T Total Metals by ICP/MS (including digestion)	WATER - EG035F Dissolved Mercury	WATER - EG093-F Dissolved Metals by ORC - Ultra Trace in Saline	WATER - NT-08A Total Nitrogen + NO2 + NO3 + NH3 + Total P +
EP2410566-001	24-Jul-2024 00:00	DUP1	✓	✓	✓	✓	✓	✓	✓
EP2410566-002	24-Jul-2024 00:00	DUP2	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - ED037_CC Alkalinity by Auto Titrator	WATER - EG093-T Total Metals by ORC - Ultra Trace in Saline	WATER - NT-01D & 02 Major Cations & Anions (Ca, Mg, Na, K, Cl, SO4,	WATER - W-18 TRH(C6 - C9)/BTEXN
EP2410566-001	24-Jul-2024 00:00	DUP1	✓	✓	✓	
EP2410566-002	24-Jul-2024 00:00	DUP2	✓	✓	✓	
EP2410566-003	24-Jul-2024 00:00	Tripblank				✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received		Instructions Received	
				Date	Evaluation	Date	Evaluation
EA005-P: pH by Auto Titrator							
DUP1	Clear Plastic Bottle - Natural	----	24-Jul-2024	26-Jul-2024	✘	----	----
DUP2	Clear Plastic Bottle - Natural	----	24-Jul-2024	26-Jul-2024	✘	----	----

Requested Deliverables

EMILY PICKEN

- *AU Certificate of Analysis - NATA (COA)	Email	epicken@lwconsulting.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	epicken@lwconsulting.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	epicken@lwconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	epicken@lwconsulting.com.au
- Chain of Custody (CoC) (COC)	Email	epicken@lwconsulting.com.au
- EDI Format - XTab (XTAB)	Email	epicken@lwconsulting.com.au

INVOICES ADDRESS

- A4 - AU Tax Invoice (INV)	Email	admin@lwconsulting.com.au

RESULTS/INVOICES ADDRESS

- *AU Certificate of Analysis - NATA (COA)	Email	laboratoryresults@lwconsulting.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	laboratoryresults@lwconsulting.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	laboratoryresults@lwconsulting.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	laboratoryresults@lwconsulting.com.au
- Chain of Custody (CoC) (COC)	Email	laboratoryresults@lwconsulting.com.au
- EDI Format - XTab (XTAB)	Email	laboratoryresults@lwconsulting.com.au

FORWARD TO ALS

CHAIN OF CUSTODY FORM

From : Land & Water Consulting Pty Ltd
Suite 3, 4-8 Goodwood Road, WAYVILLE, SA, 5034
ph: (08) 8271 5255 fax: (08) 8357 1307

LWC

LAB Quote Number: EP24LANWAT0001

LWC Contact Information:
Contact Name:
Emily Picken
Contact Email:
laboratoryresults@lwconsulting.com.au

Phone Number:
08 8271 5255

LWC Project No:
QI-01
Project Manager:
Emily Picken
Date Samples Sent:
25/07/2024
COC Checked by: A Vaughan

ALS
Sample Analysis

Lab ID	Date	Matrix	Sample ID	No. Bottles	Tick required analytes									
					*Suite 1	*Suite 2	*Suite 3	*Suite 4						
1	24/07/2024	W	DUP1	8	X	X								
2	24/07/2024	W	DUP2	8	X	X								
3	24/07/2024	W	Tripblank	2				X						
			TOTAL	18	2	2		1						

Environmental Division
Perth
Work Order Reference
EP2410566

Telephone : +61-8-9406 1301

ADDITIONAL COMMENTS:

*Suite 1 - Major components, metals and nutrients:
☐EC
☐Total dissolved solids (TDS) and Total Suspended Solids (TSS).
☐Laboratory pH
☐Major Ions including calcium, sodium, potassium, magnesium, chloride, sulphate, bicarbonate and carbonate.
☐Hydroxide alkalinity as CaCO3, carbonate alkalinity as CaCO3 and bicarbonate as CaCO3.
☐Water Hardness
☐Total and dissolved metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Hg, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO2, Se, Sr, Th, Tl, U, V, Zn and Zr.
☐Speciation of Ferric Iron and Ferrous Iron (actual and not calculated).
☐Nutrients including total nitrogen, nitrate as N, nitrite as N, ammonia, TKN and filtered reactive phosphorous.

*Suite 2 - Hydrocarbons:
☐Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, total Xylenes, Naphthalene (BTEXN)

*Suite 3 - Rinsate Screen:
☐Total metals including Al, As, Be, Bi, Cd, Co, Cr, Cu, Fe, Li, Mn, Mo, Ni, Pb, Sb, Ag, SiO2, Se, Sr, Th, Tl, U, V, Zn and Zr.

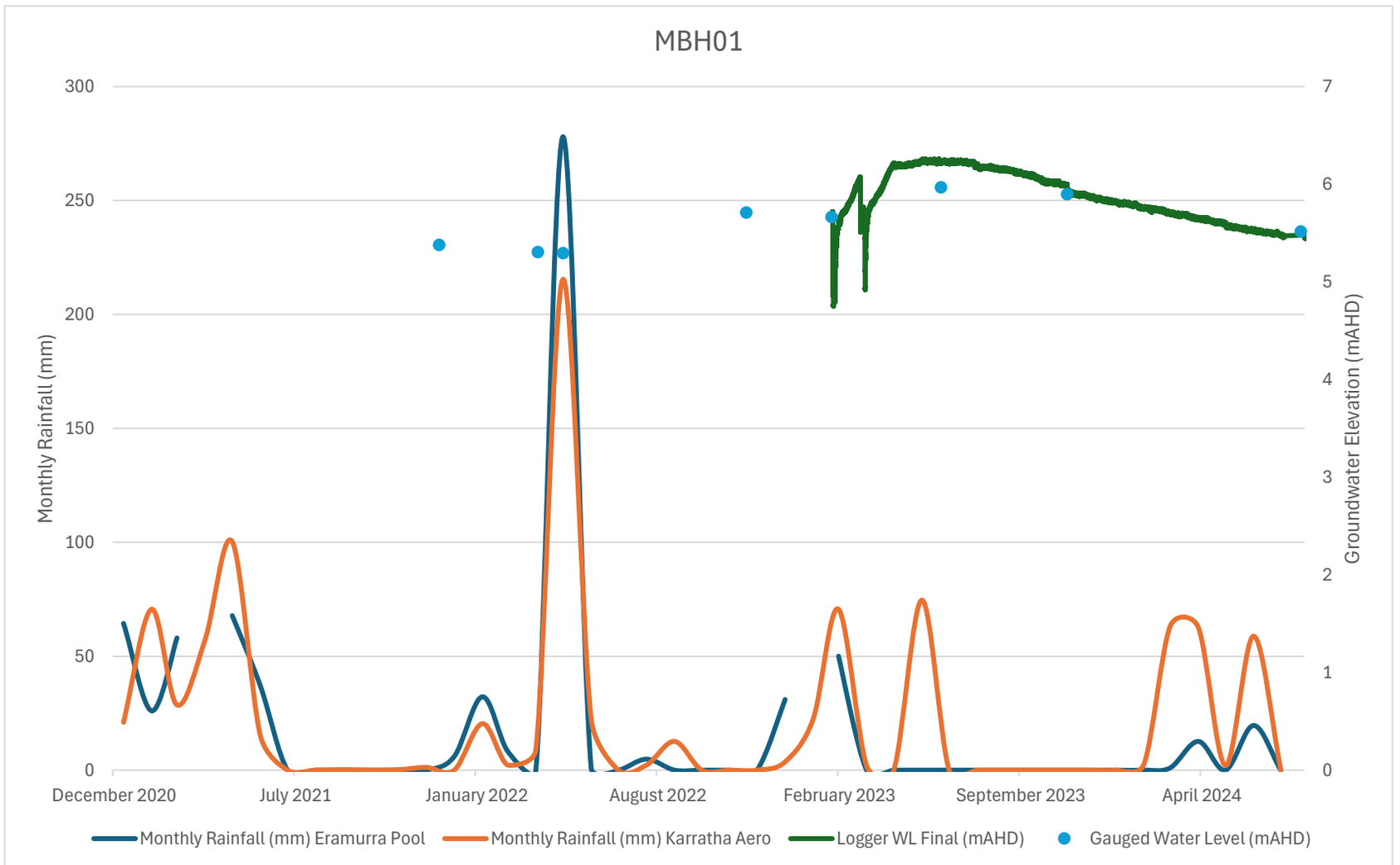
*Suite 4 - Tripblank
☐TRH Fraction C6-C10 and BTEXN

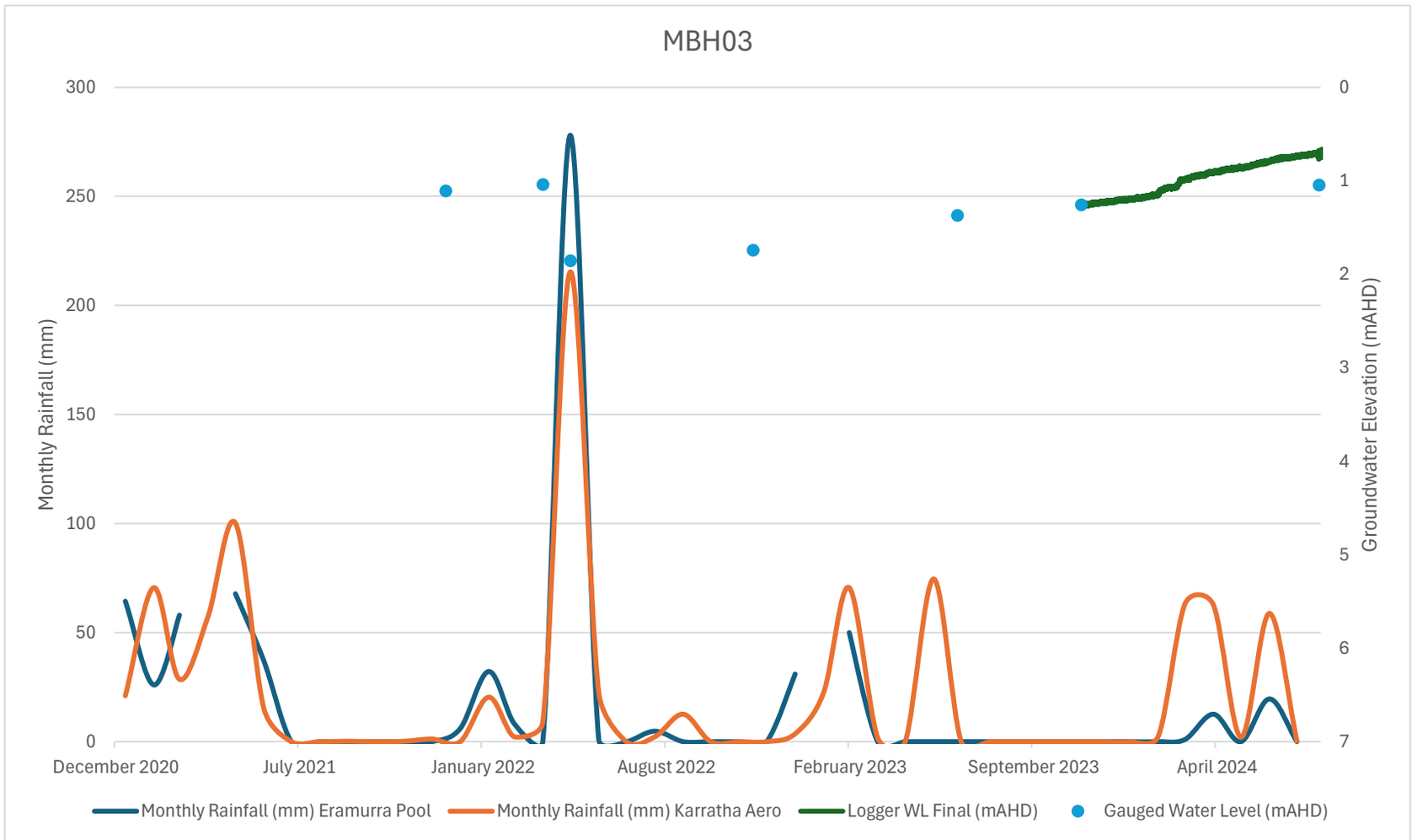
PLEASE FORWARD THIS COC AND ASSOCIATED SAMPLES TO ALS LABORATORY.

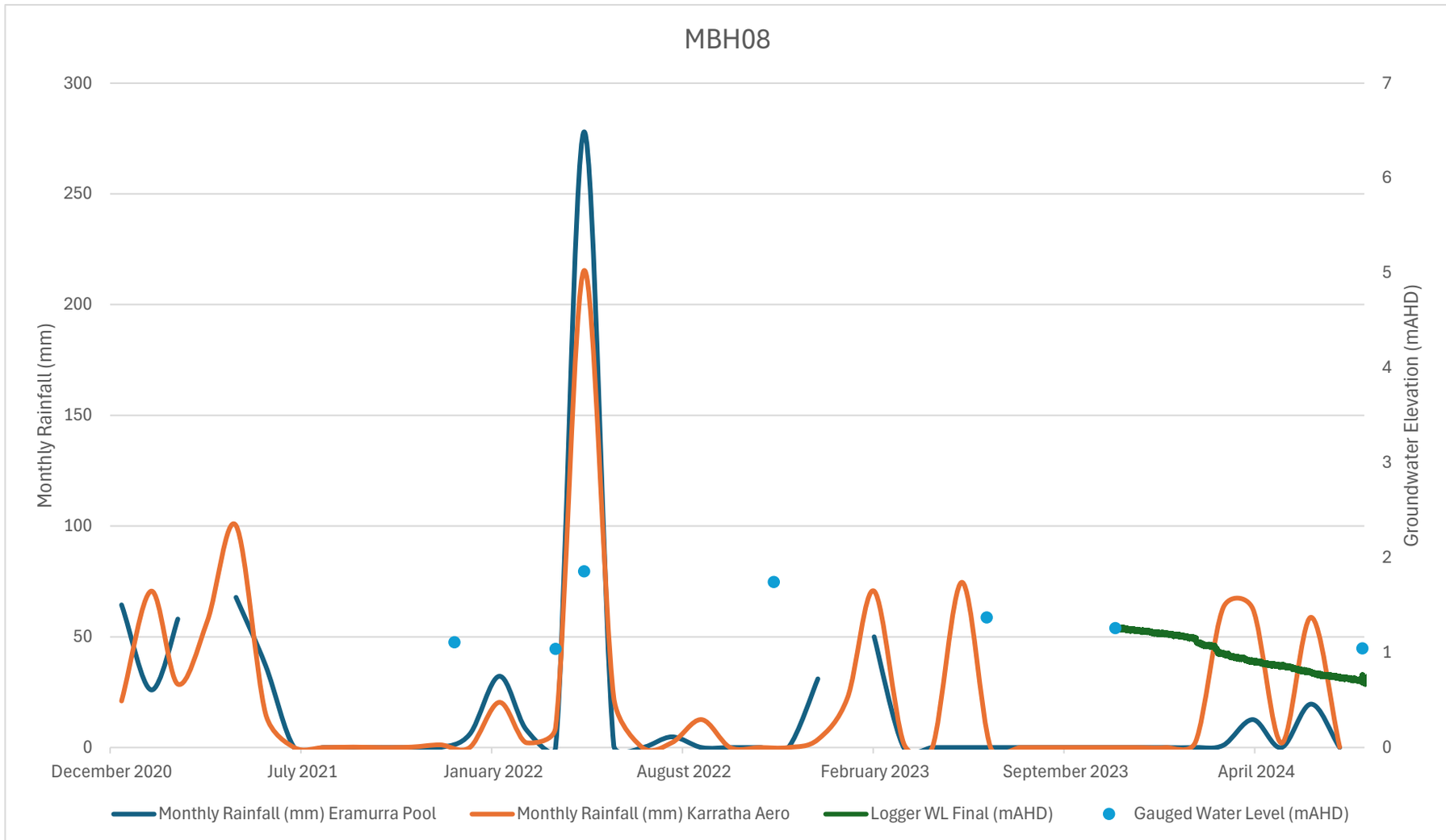
***LOR must be sufficient for comparision to ANZG 2018 freshwater guidelines 95% protection, water samples will have salinity ranging from 500 - 150,000 mg/L. PLEASE ANALYSE TO MEET THIS GUIDELINE**

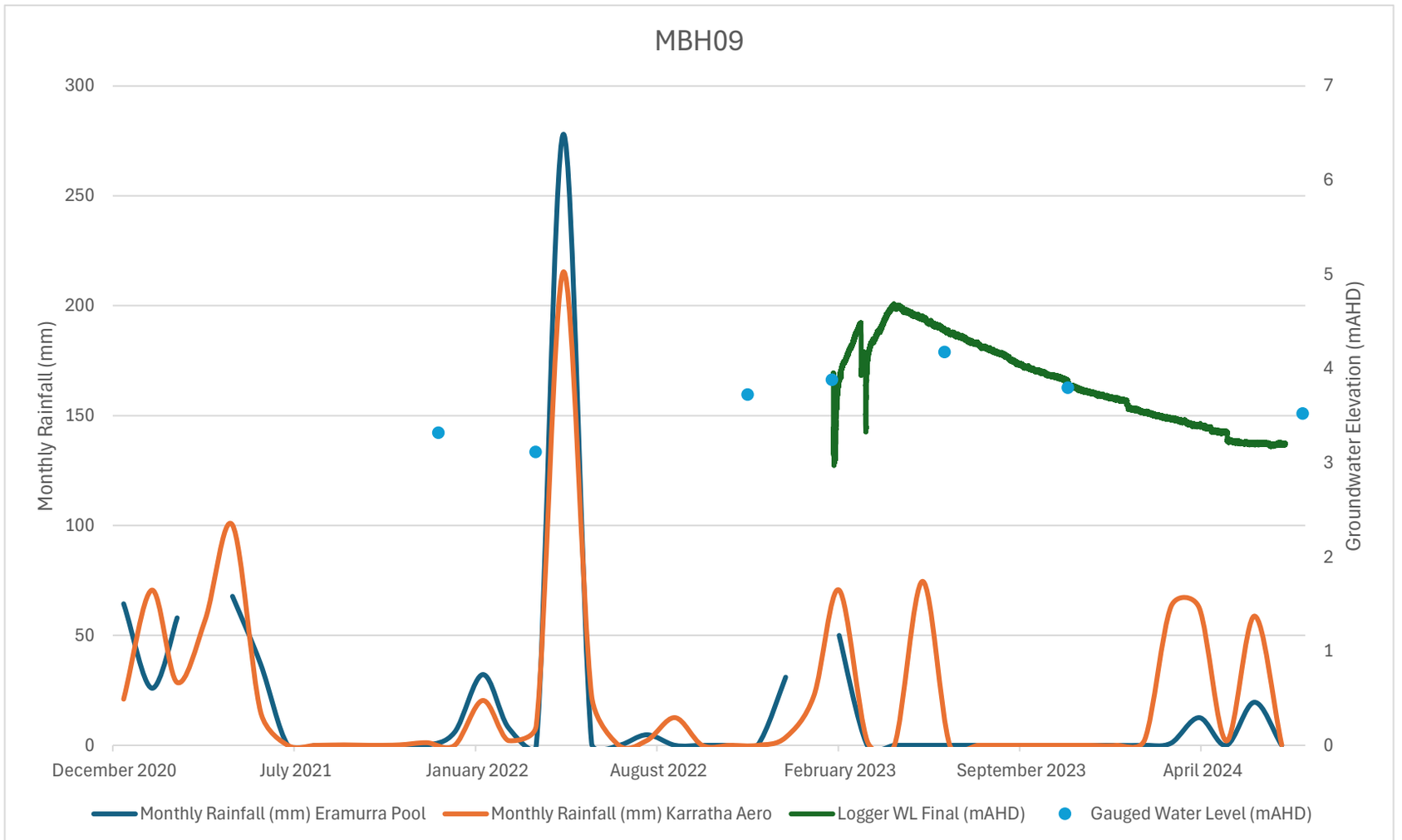
Rec'd 1145 26/7

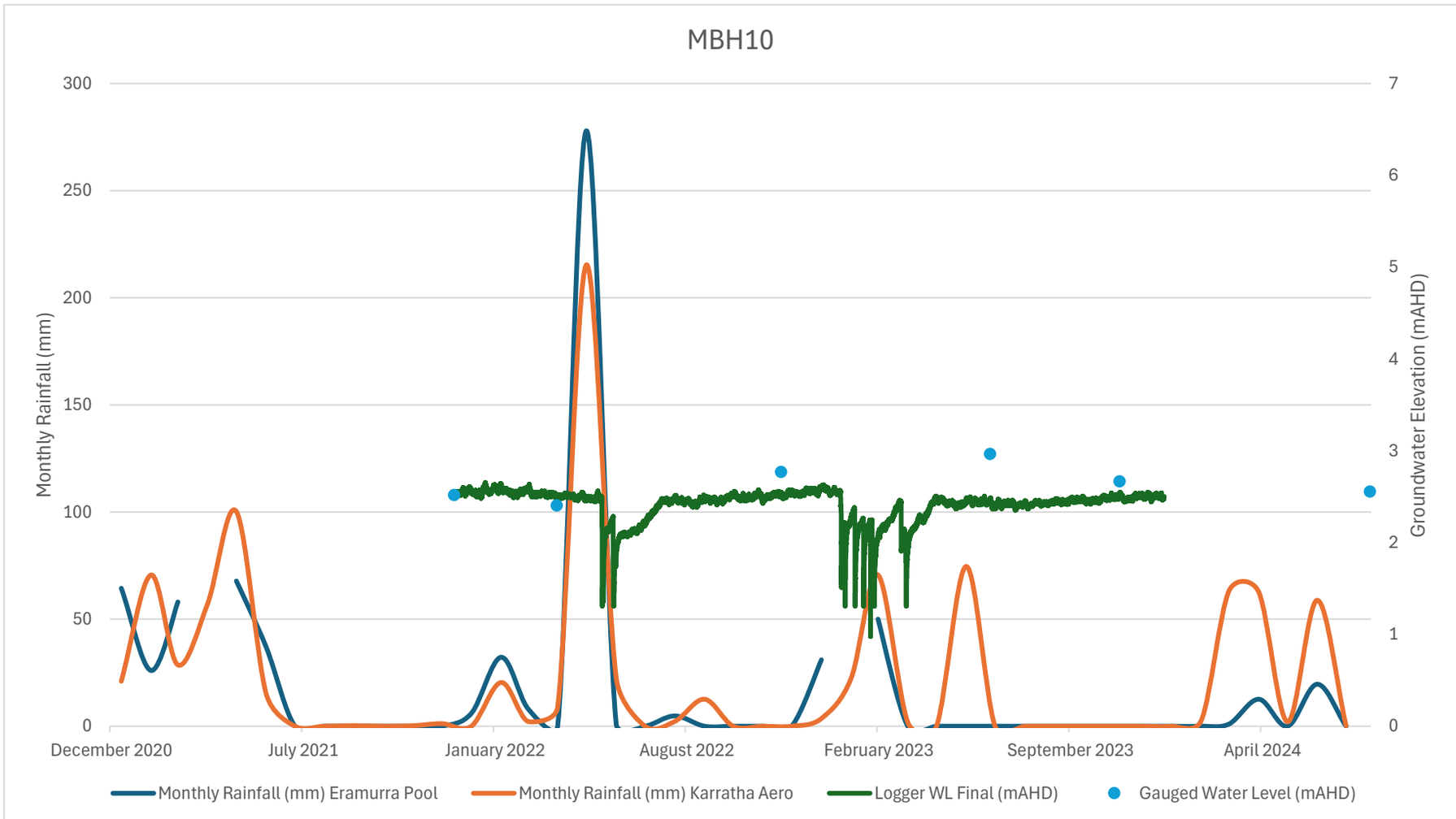
APPENDIX E
HYDROGRAPHS

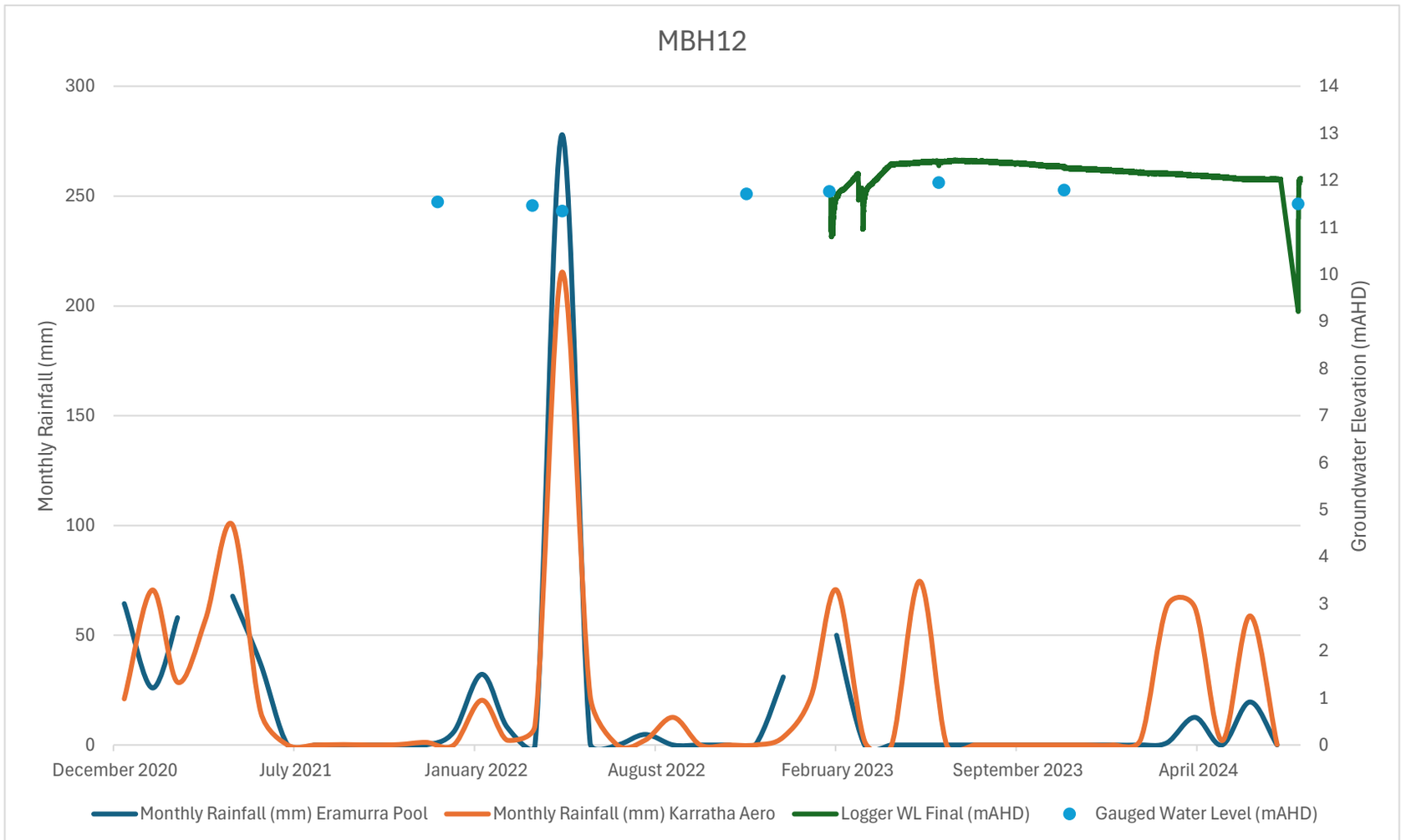

MBH01
300
250
200
150
100
50
0
Monthly Rainfall (mm)
7
6
5
4
3
2
1
0
Groundwater Elevation (mAHD)
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Logger WL Final (mAHD)
Gauged Water Level (mAHD)

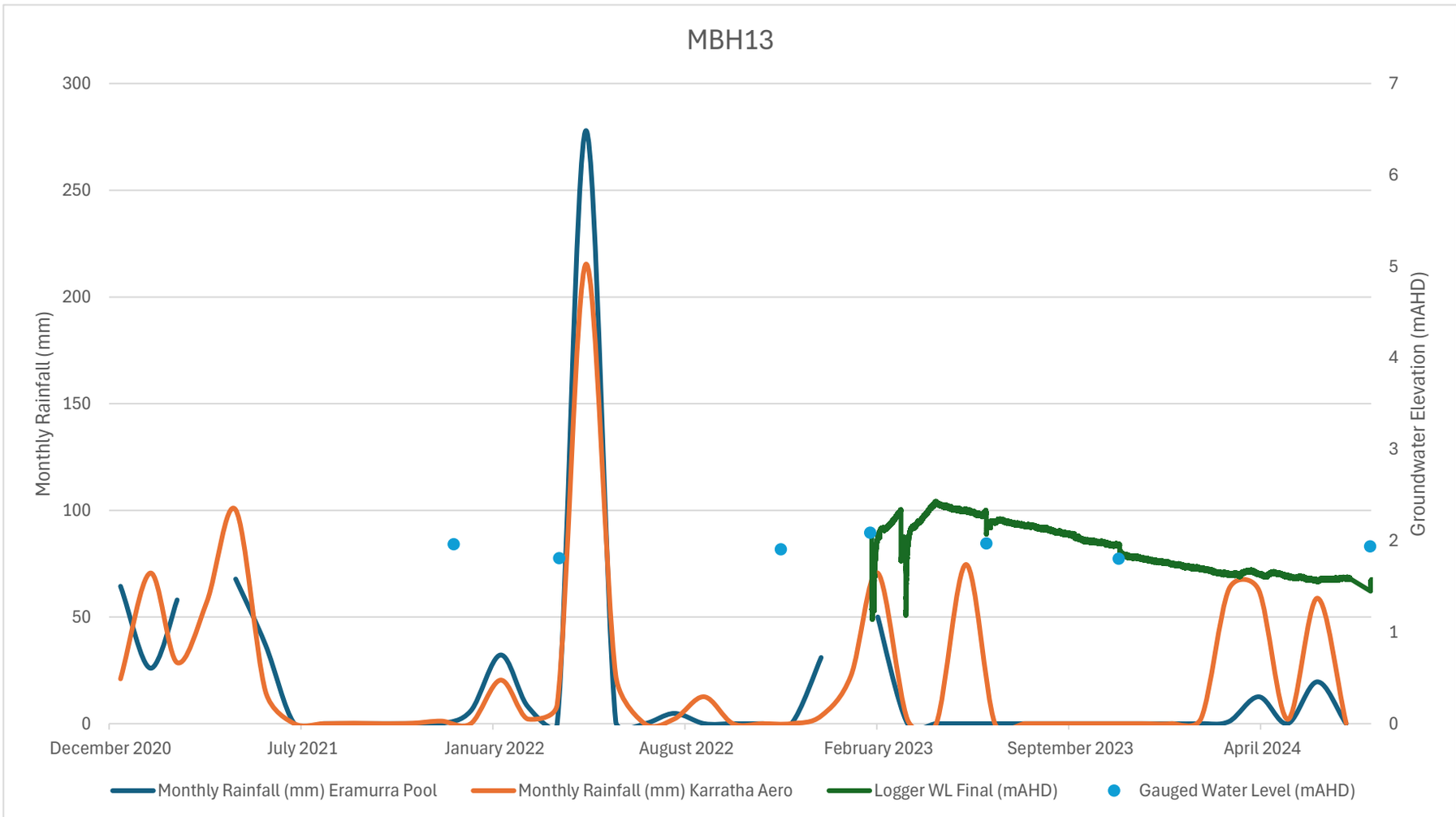

MBH03
300
250
200
150
100
50
0
Monthly Rainfall (mm)
0
1
2
3
4
5
6
7
Groundwater Elevation (mAHD)
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Logger WL Final (mAHD)
Gauged Water Level (mAHD)

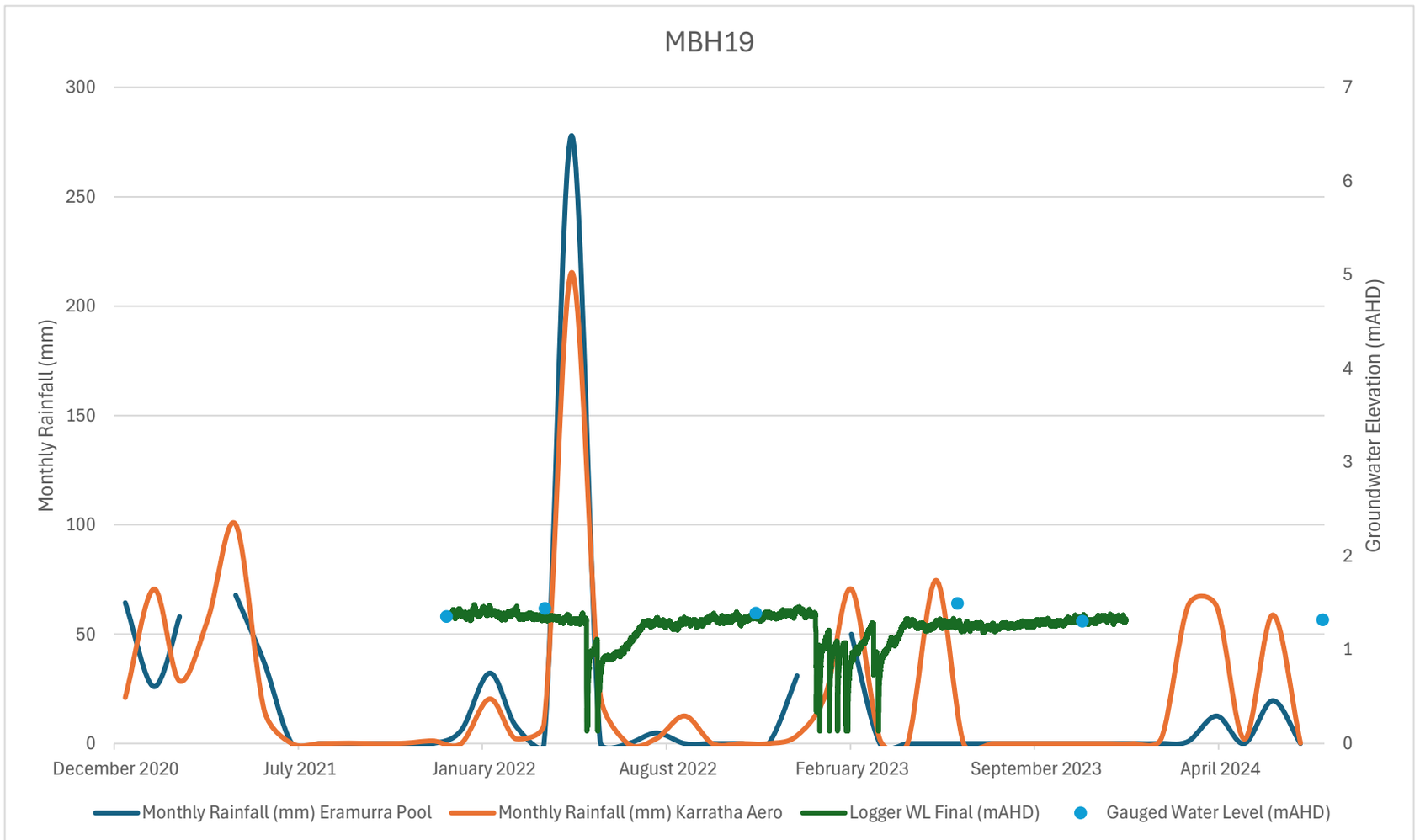

MBH08
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Logger WL Final (mAHD)
Gauged Water Level (mAHD)

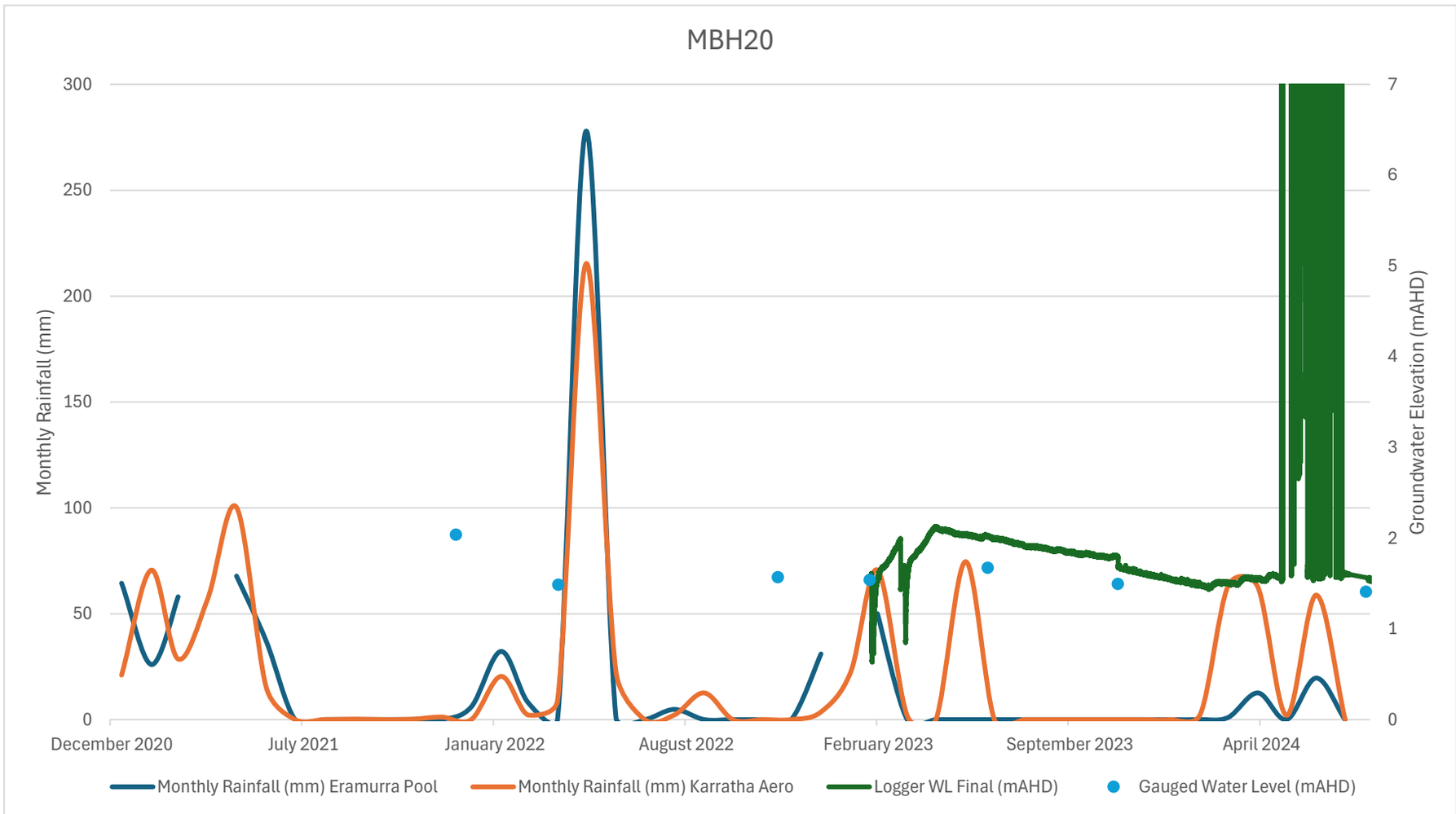

MBH09
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Logger WL Final (mAHD)
Gauged Water Level (mAHD)

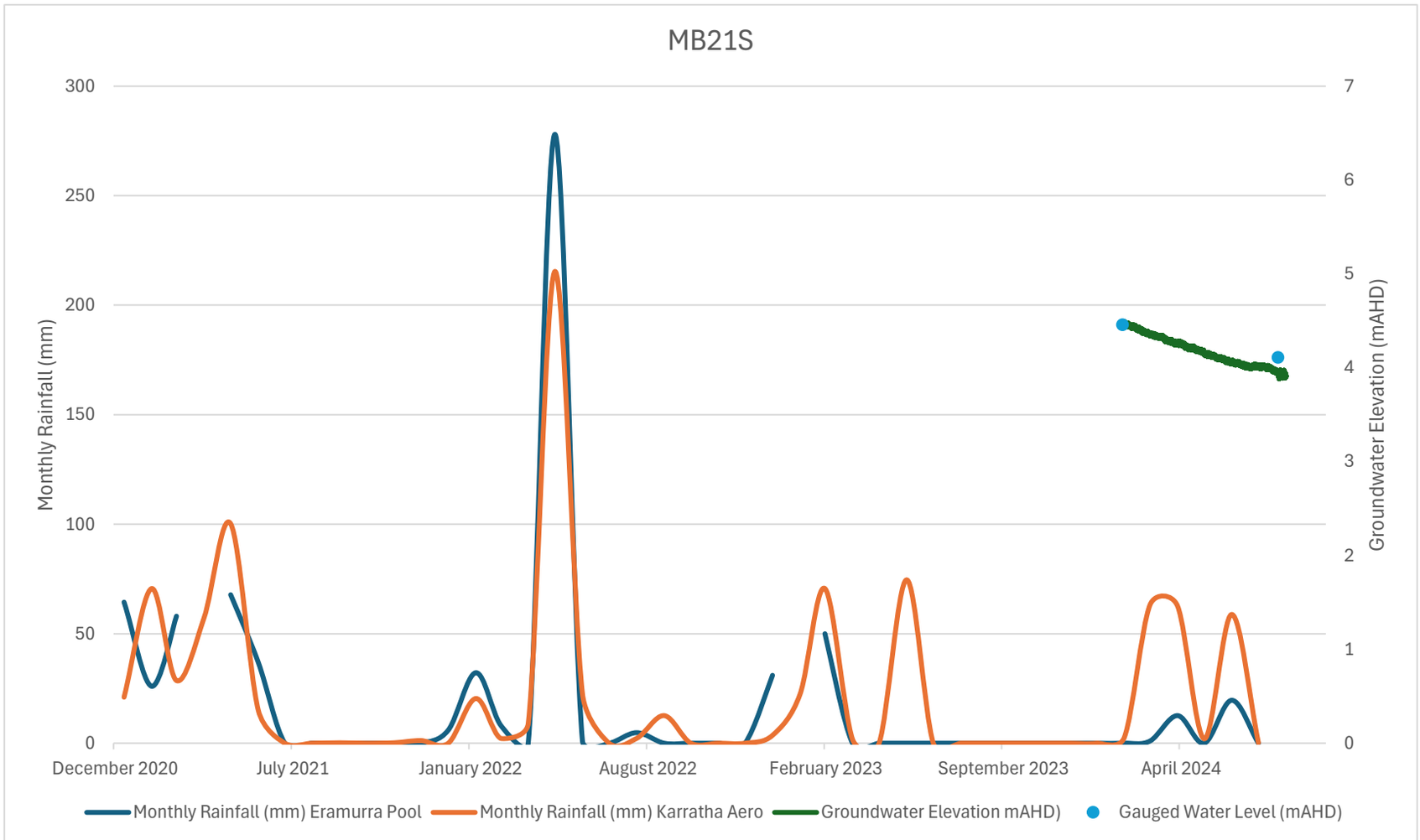

MBH10
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Logger WL Final (mAHD)
Gauged Water Level (mAHD)

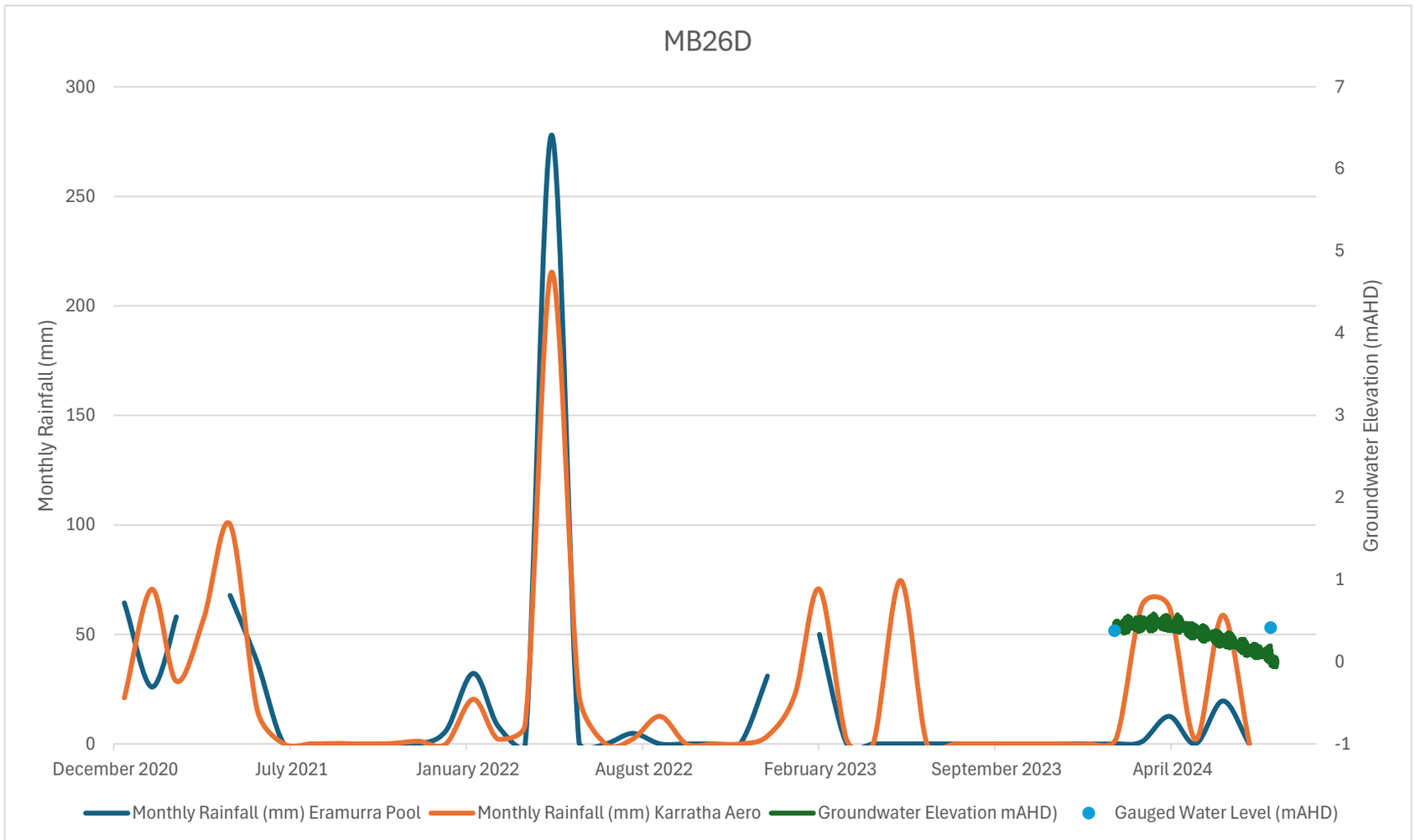

MBH12
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Logger WL Final (mAHD)
Gauged Water Level (mAHD)

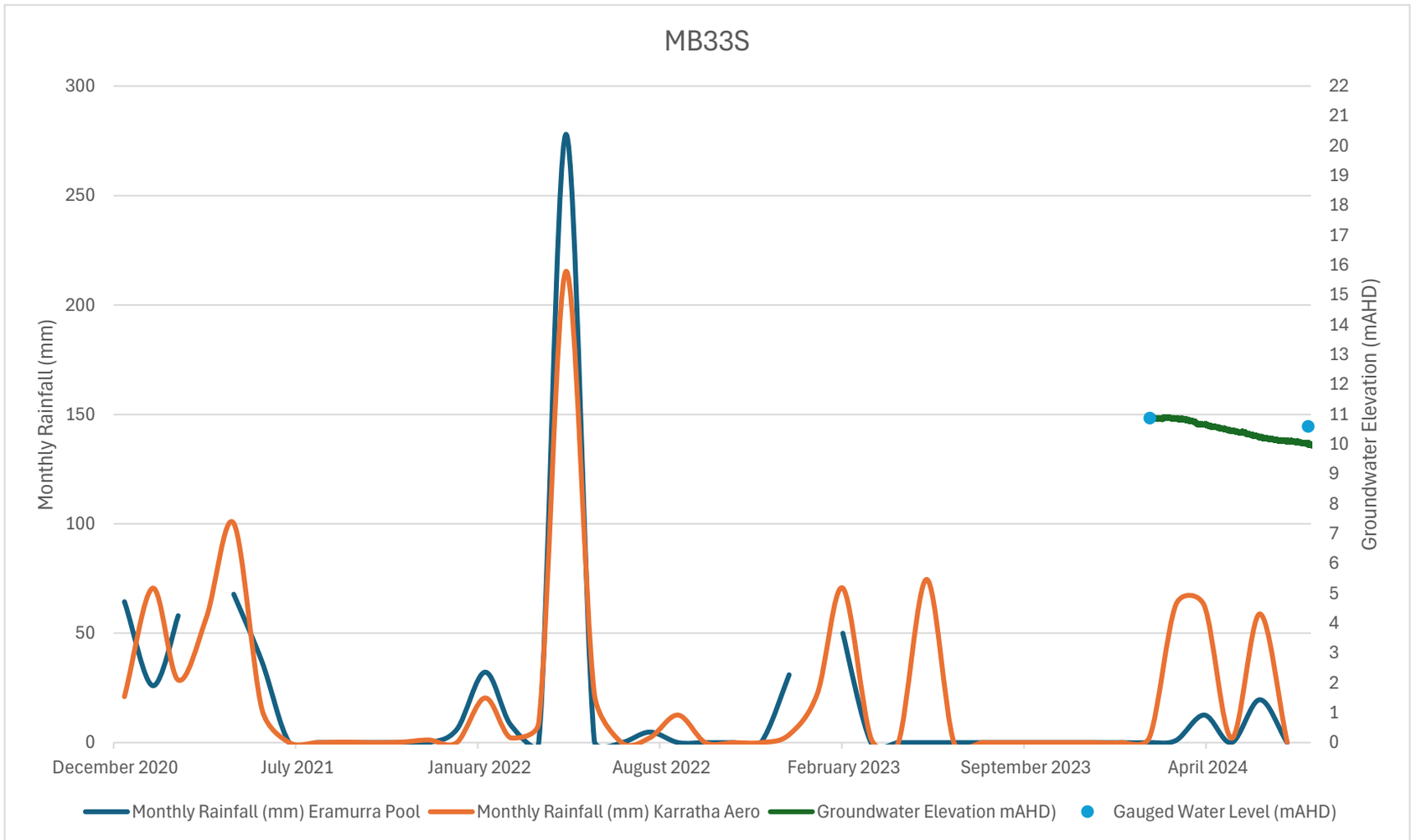

MBH13
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Logger WL Final (mAHD)
Gauged Water Level (mAHD)

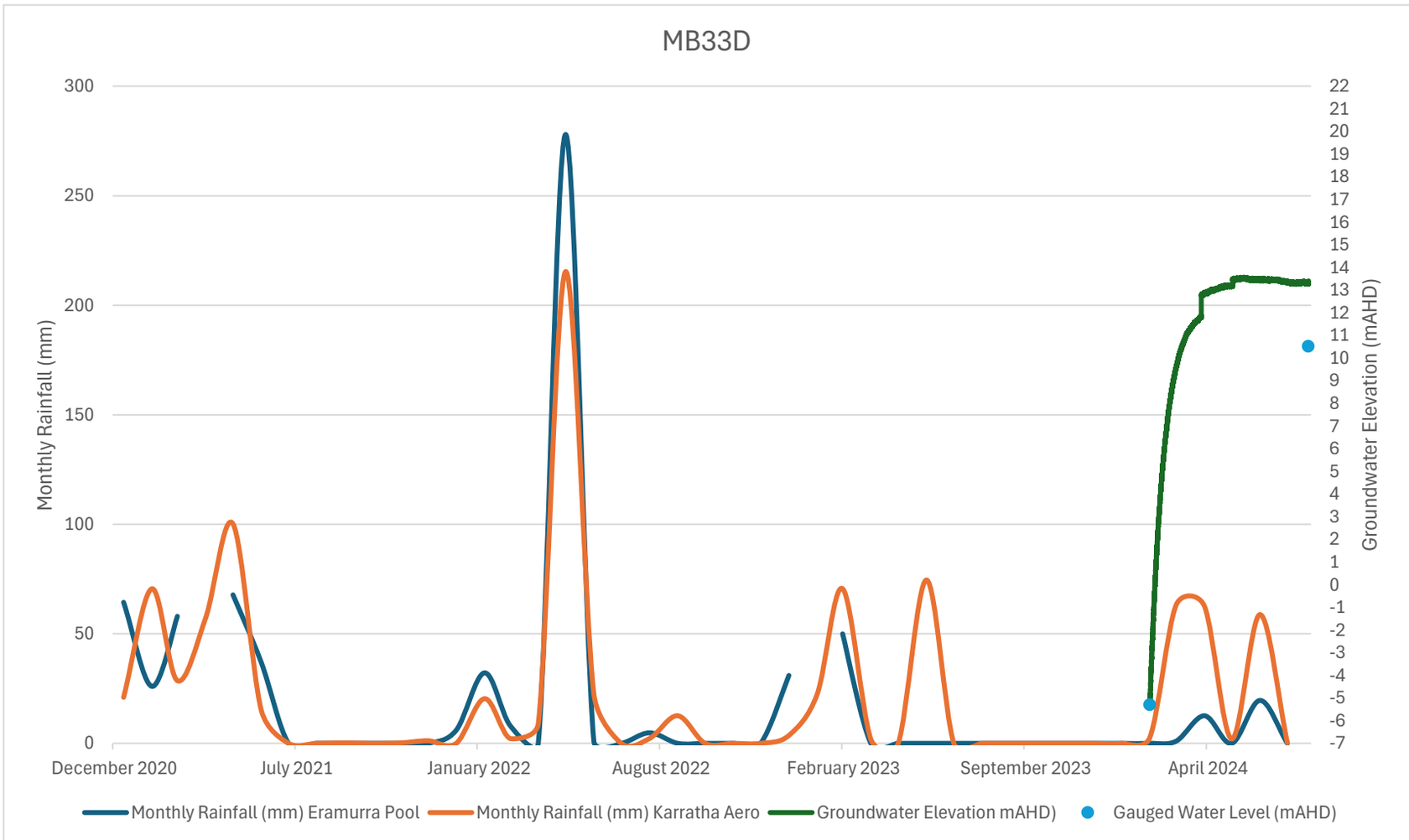

MBH19
300
250
200
150
100
50
0
Monthly Rainfall (mm)
7
6
5
4
3
2
1
0
Groundwater Elevation (mAHD)
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Logger WL Final (mAHD)
Gauged Water Level (mAHD)

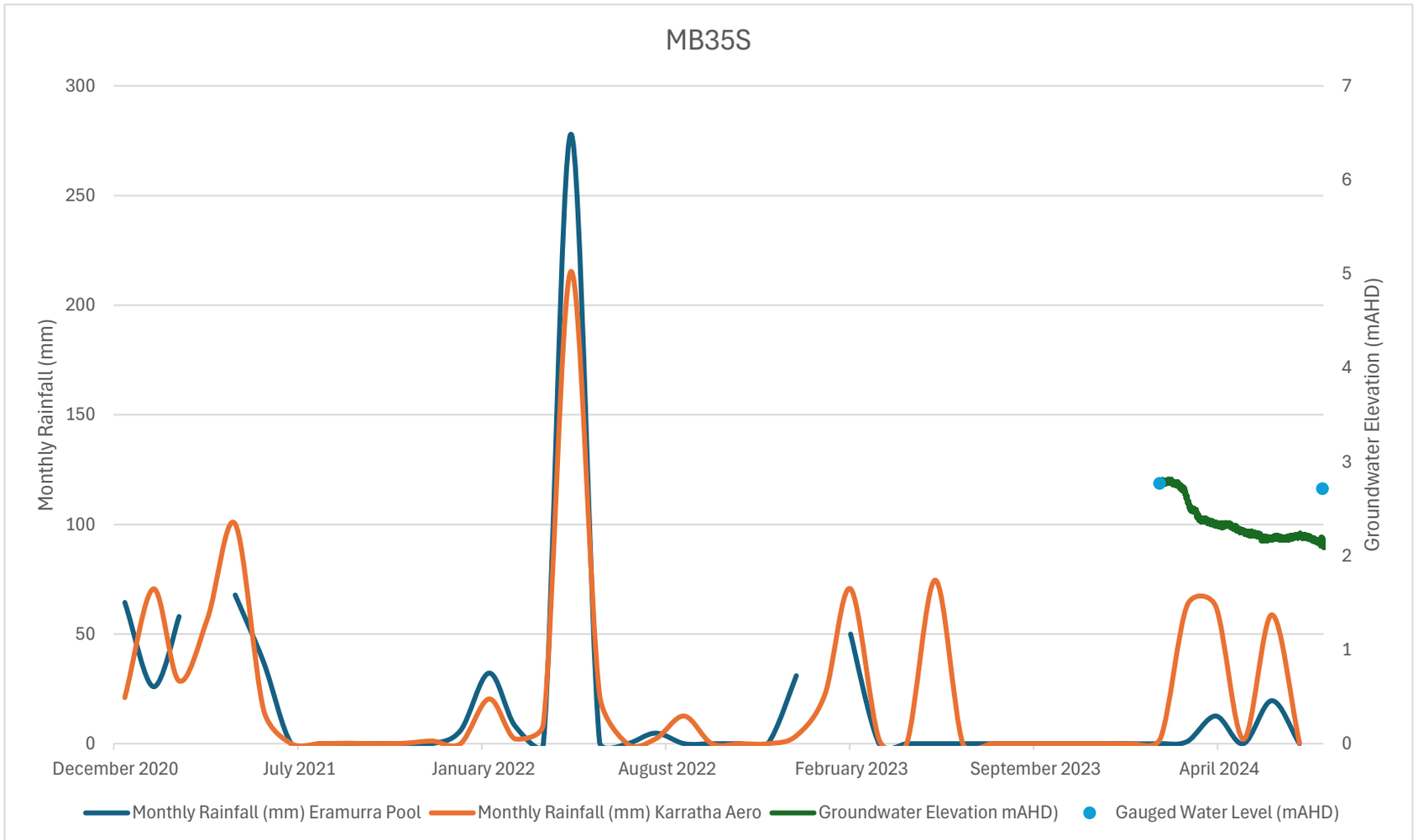

MBH20
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Logger WL Final (mAHD)
Gauged Water Level (mAHD)

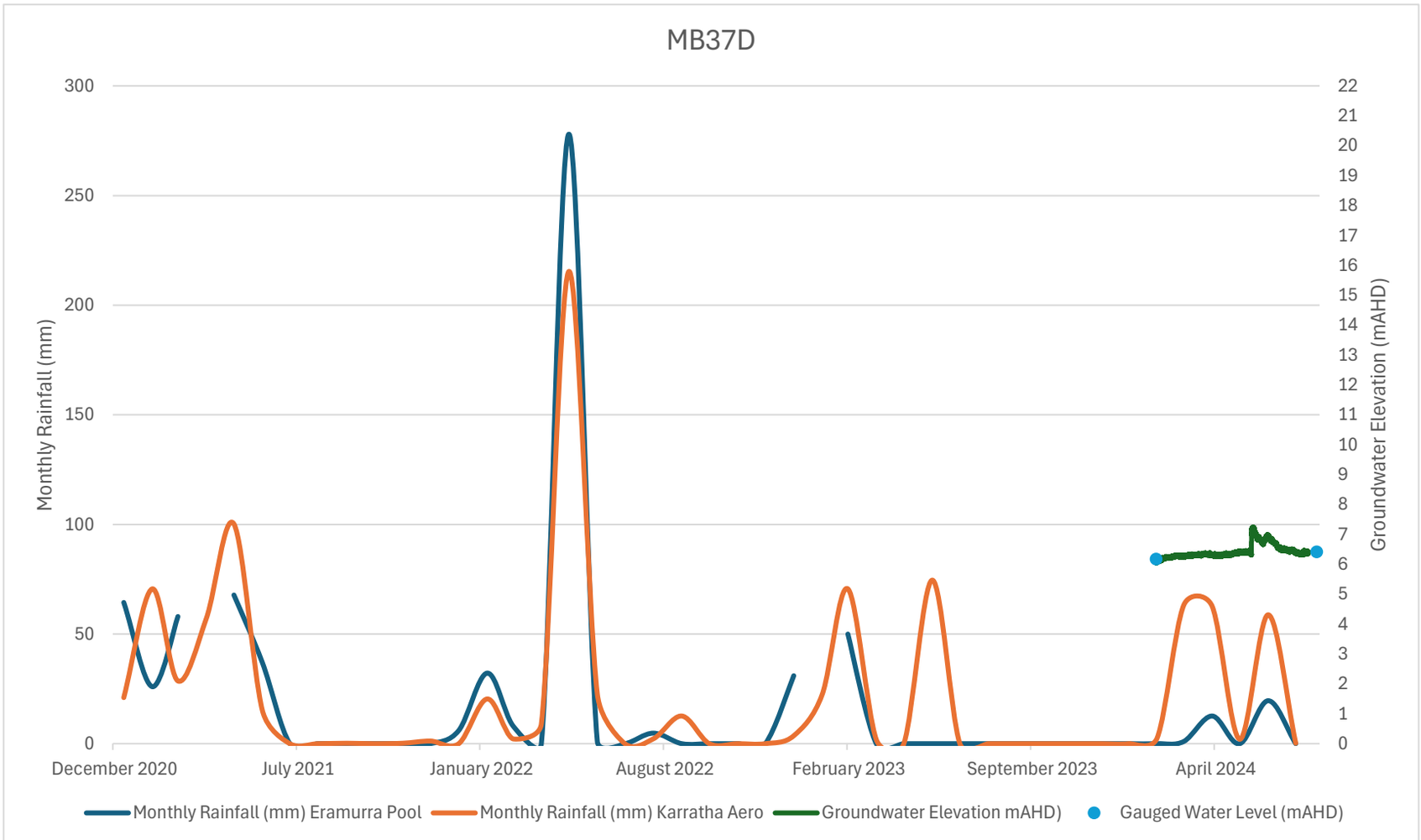

MB21S
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Groundwater Elevation mAHD)
Gauged Water Level (mAHD)

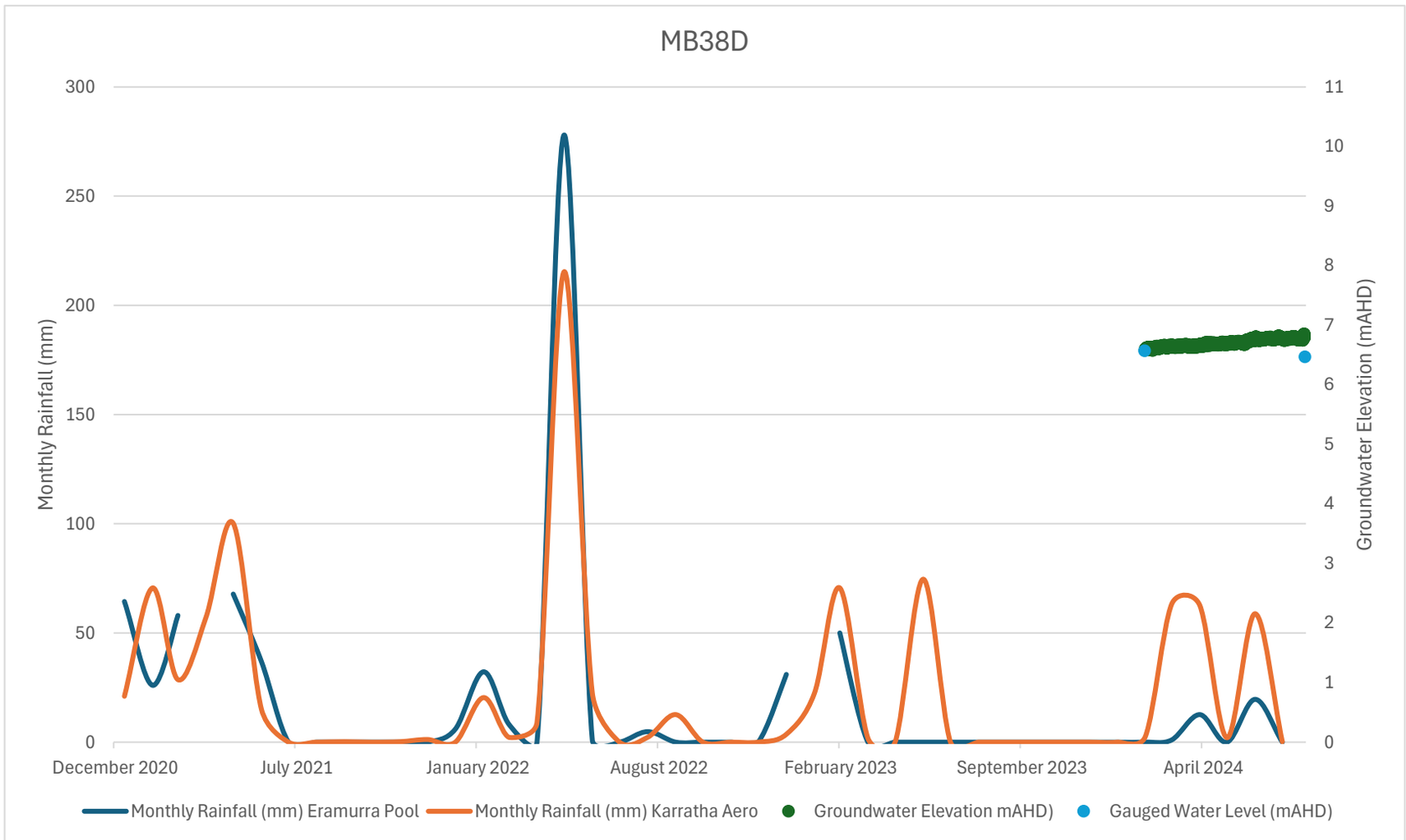

MB26D
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
7
6
5
4
3
2
1
0
-1
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Groundwater Elevation mAHD)
Gauged Water Level (mAHD)

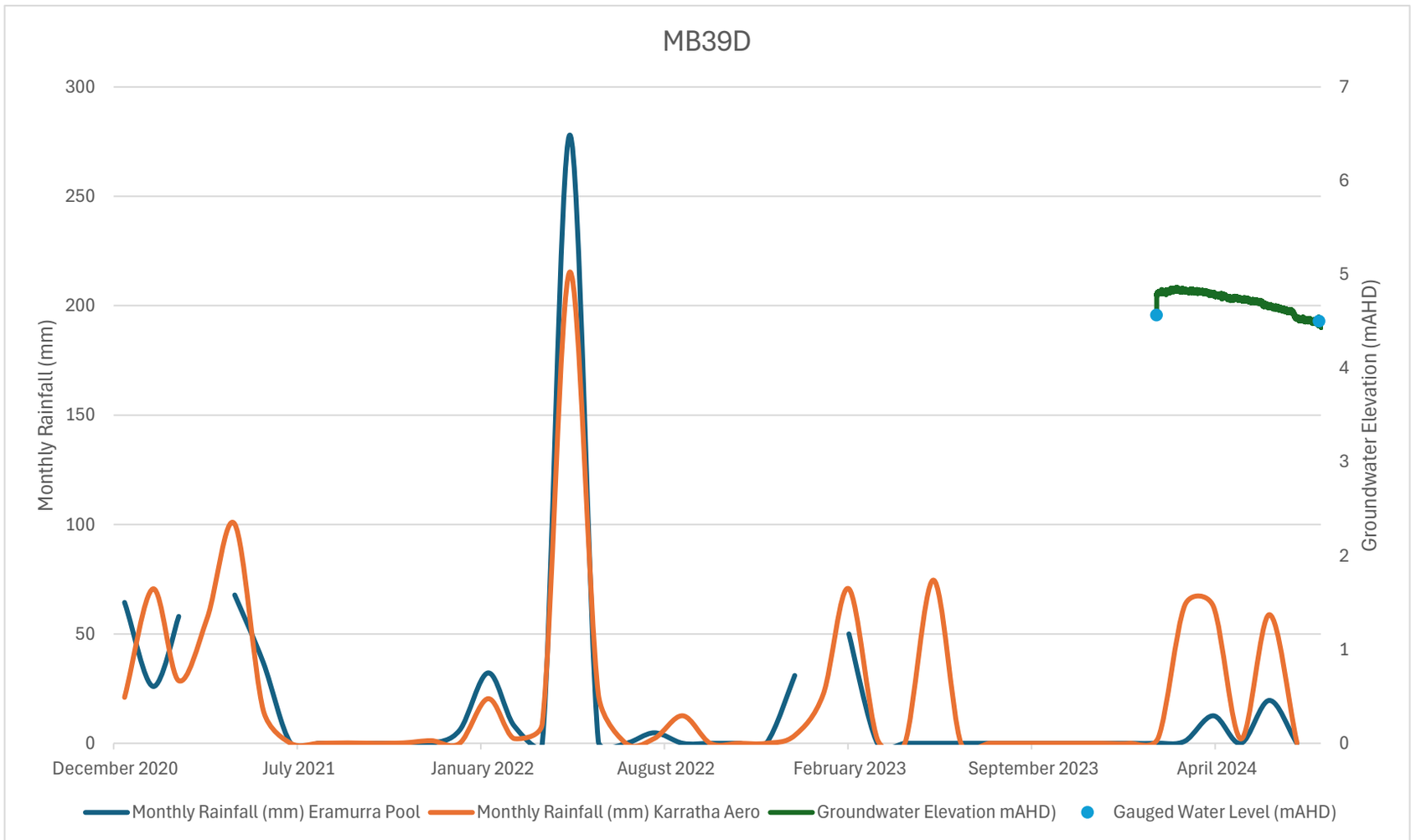

MB33S
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Groundwater Elevation mAHD)
Gauged Water Level (mAHD)

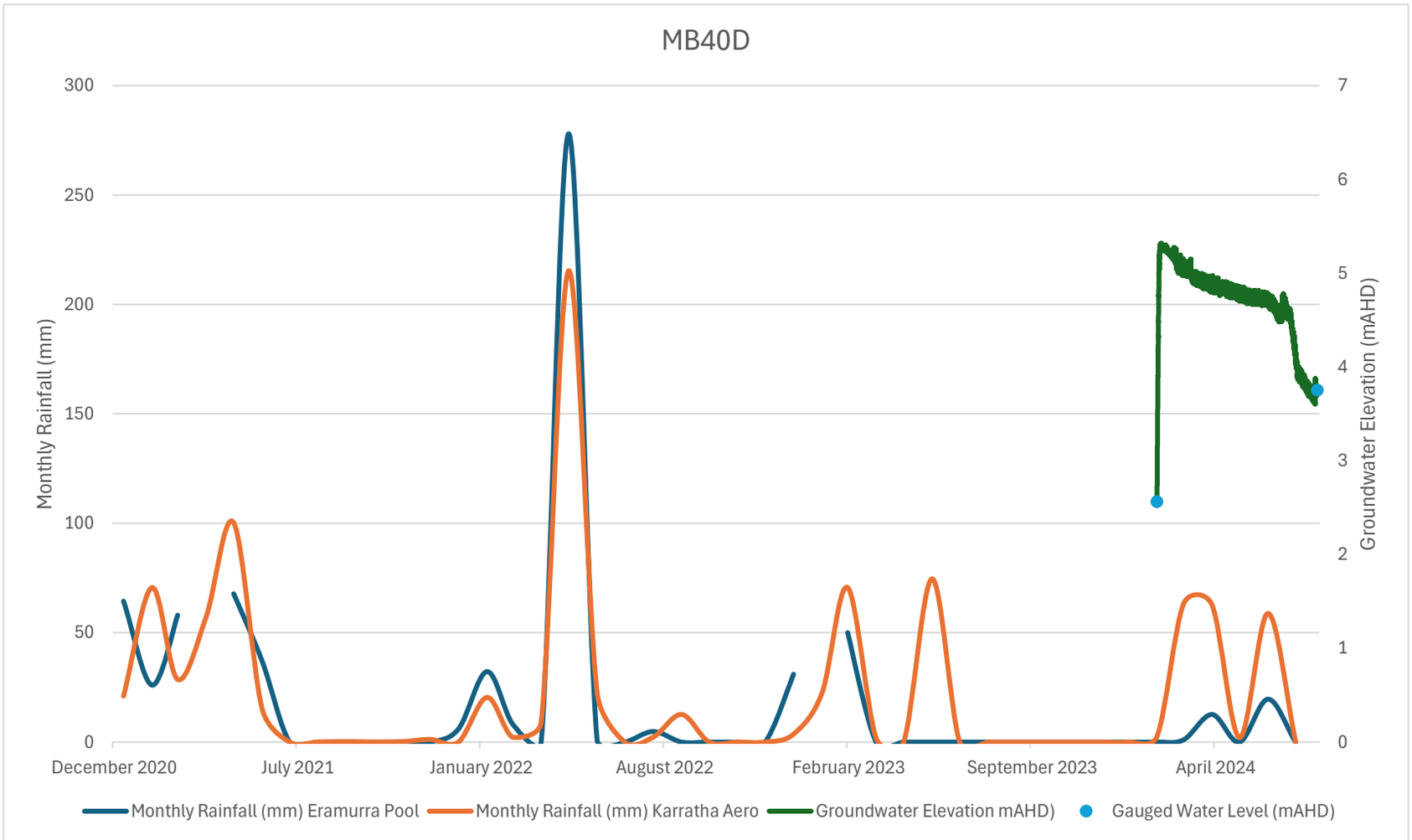

MB33D
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Groundwater Elevation mAHD)
Gauged Water Level (mAHD)


MB35S
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Groundwater Elevation mAHD)
Gauged Water Level (mAHD)

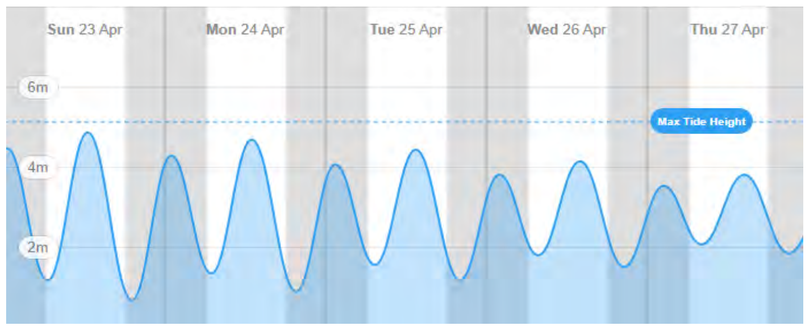

MB37D
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Groundwater Elevation mAHD)
Gauged Water Level (mAHD)


MB38D
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
11
10
9
8
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Groundwater Elevation mAHD)
Gauged Water Level (mAHD)

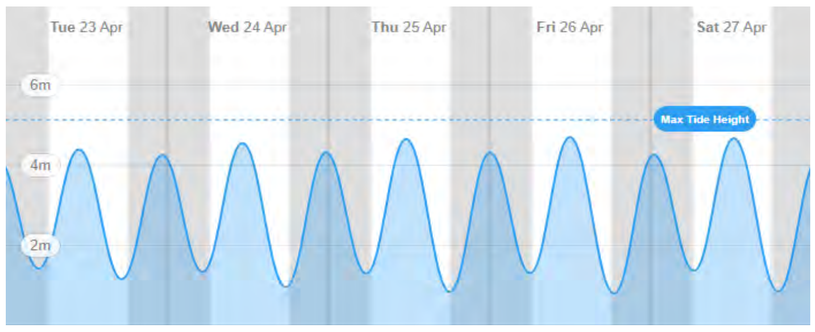

MB39D
Monthly Rainfall (mm)
Groundwater Elevation (mAHD)
300
250
200
150
100
50
0
7
6
5
4
3
2
1
0
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Groundwater Elevation mAHD)
Gauged Water Level (mAHD)

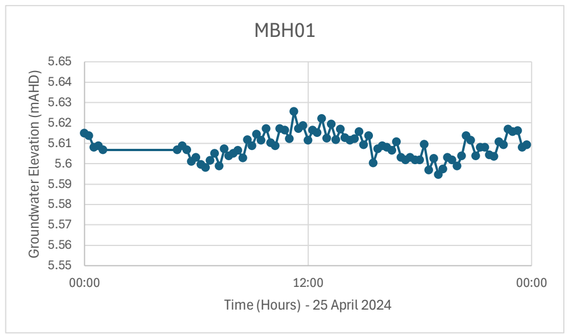

MB40D
300
250
200
150
100
50
0
Monthly Rainfall (mm)
7
6
5
4
3
2
1
0
Groundwater Elevation (mAHD)
December 2020
July 2021
January 2022
August 2022
February 2023
September 2023
April 2024
Monthly Rainfall (mm) Eramurra Pool
Monthly Rainfall (mm) Karratha Aero
Groundwater Elevation mAHD)
Gauged Water Level (mAHD)

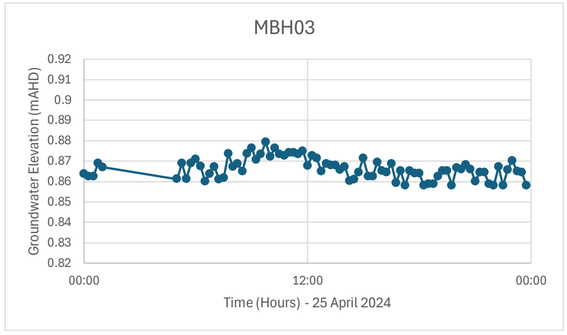
Tidal Range - 25 April 2023 @ Gnoorea Point

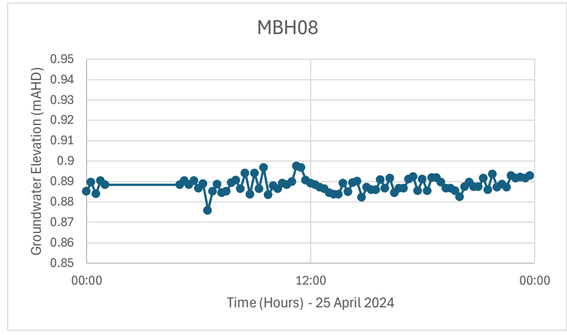


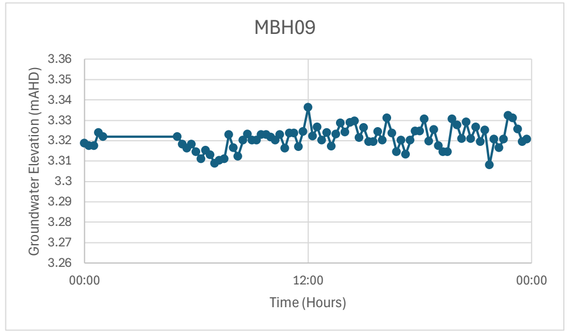
Tidal Range - 25 April 2024 @ Gnoorea Point

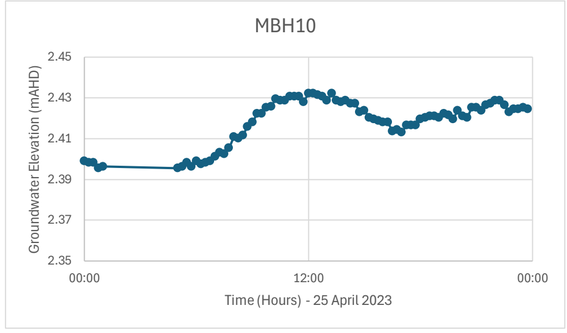


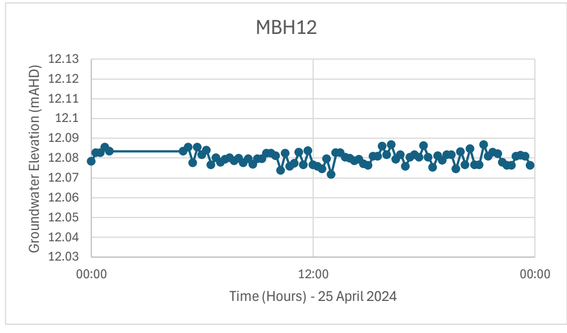


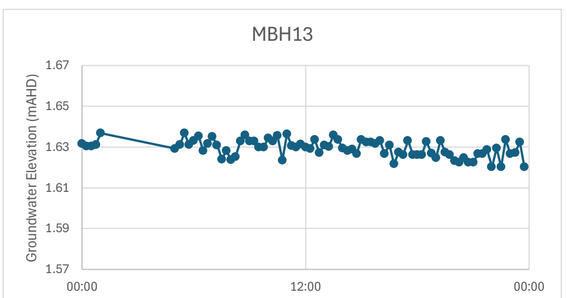


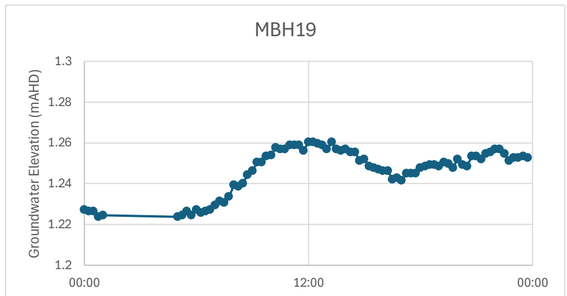


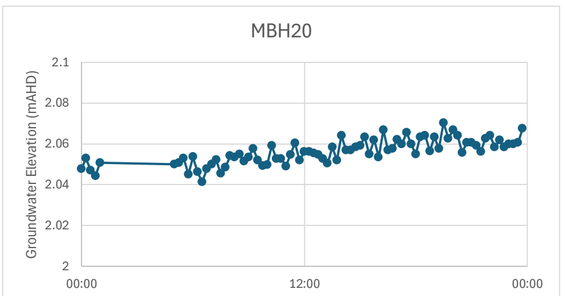


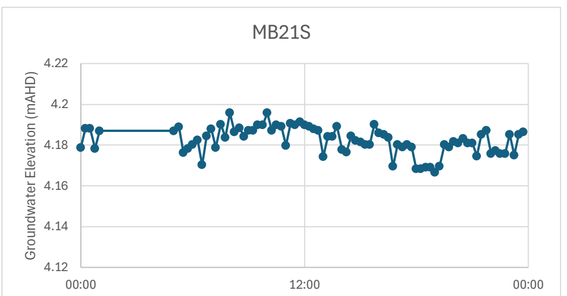


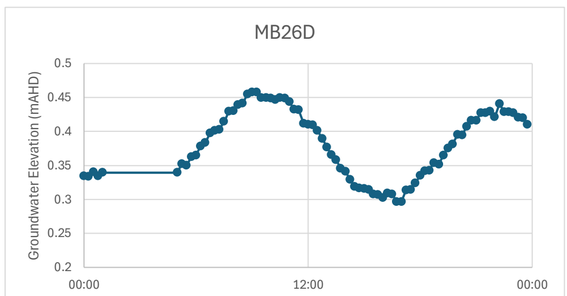


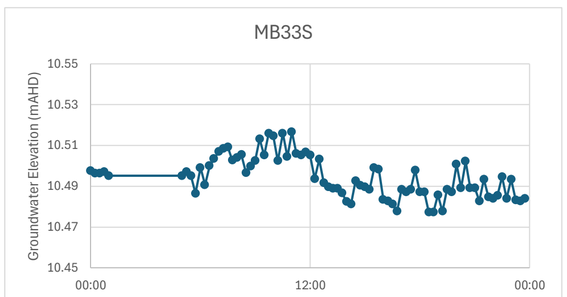


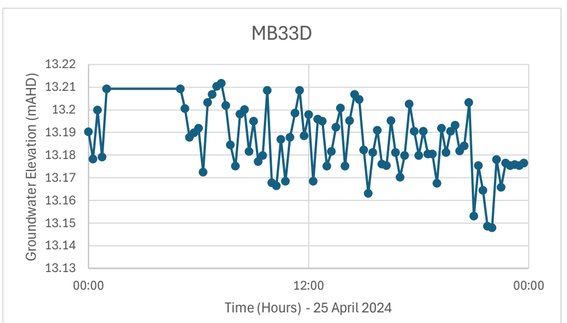


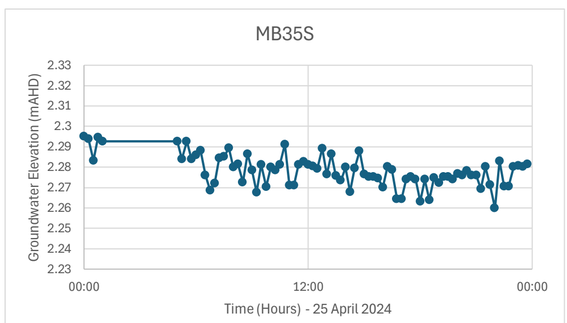


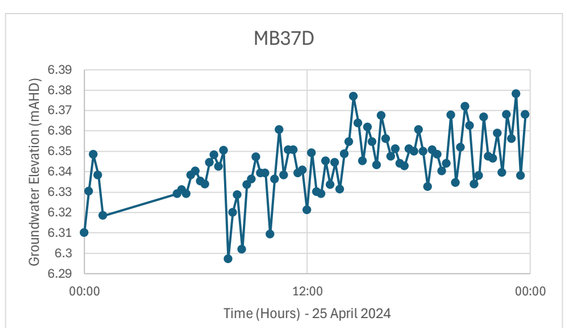


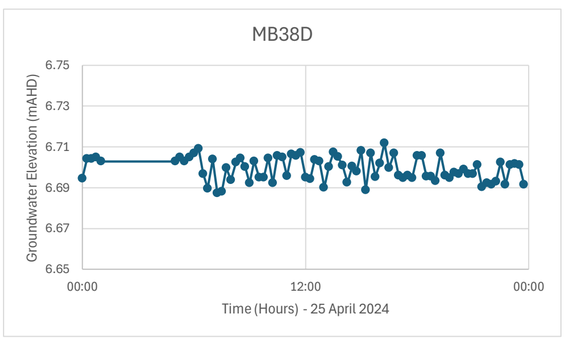


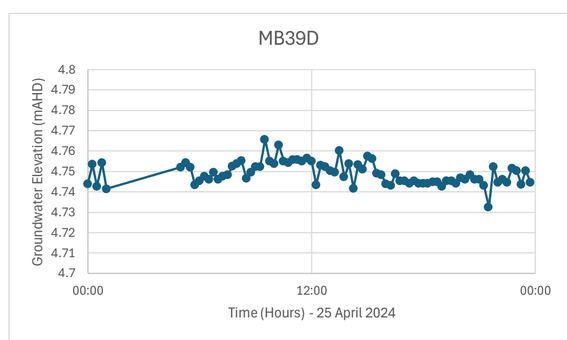


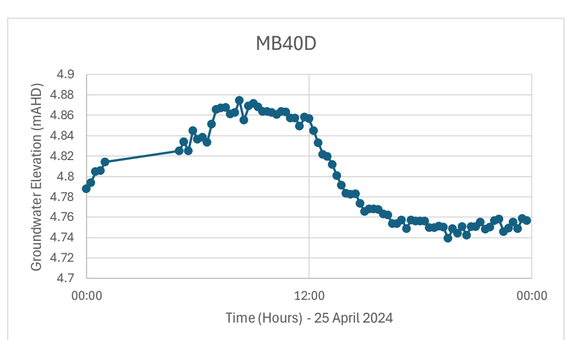




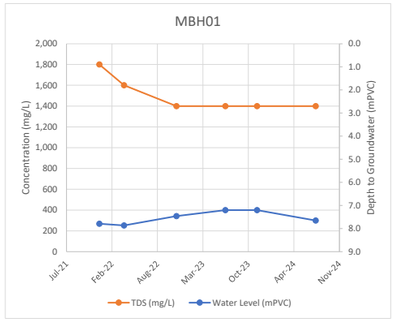


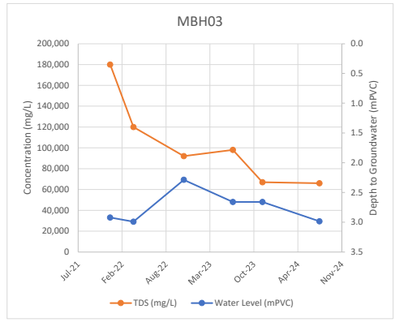


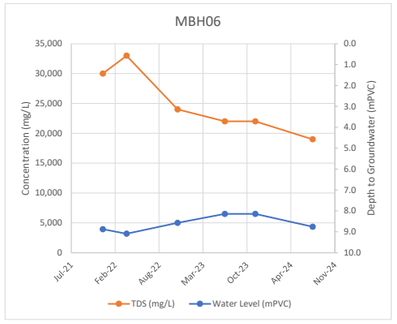


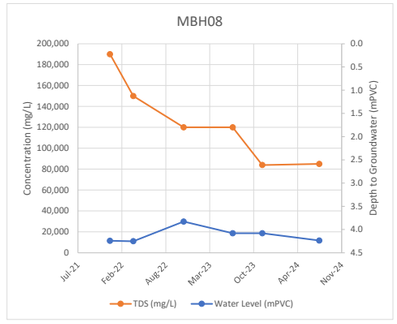


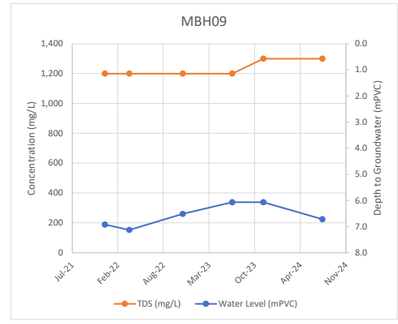
APPENDIX F
XY PLOTS FOR PH AND SALINITY

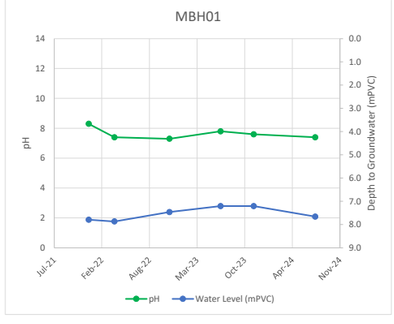

MBH01
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

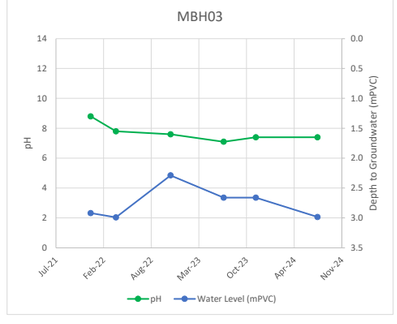

MBH03
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

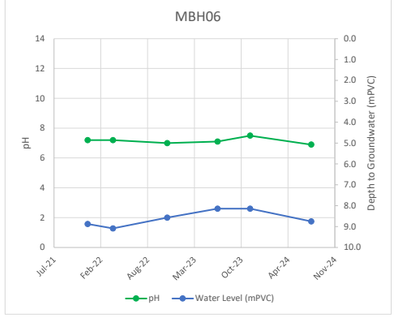

MBH06
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

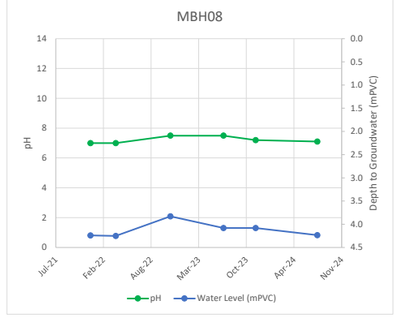

MBH08
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

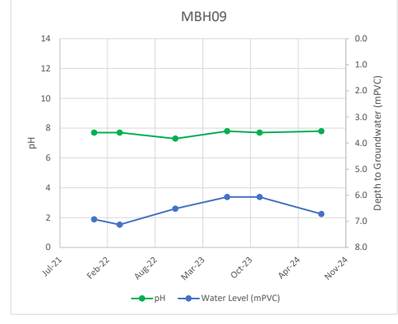

MBH09
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

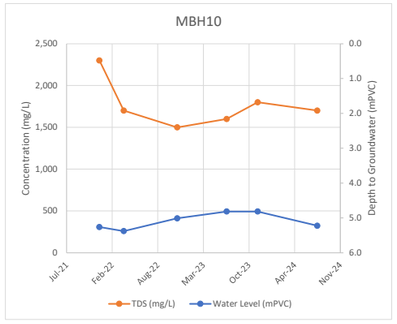

MBH01
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

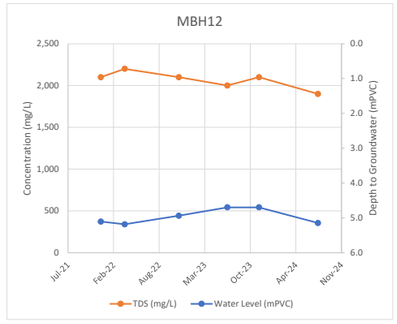

MBH03
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

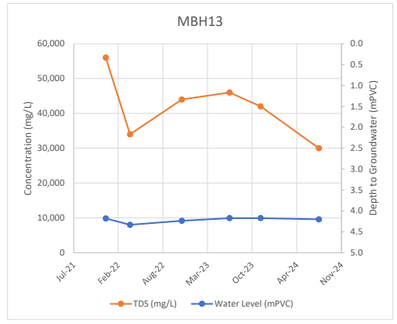

MBH06
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

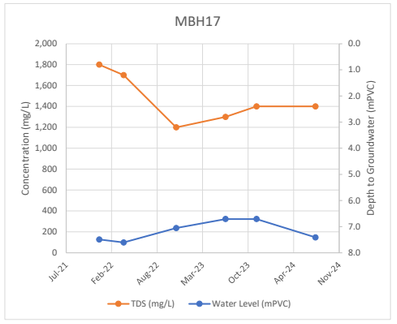

MBH08
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

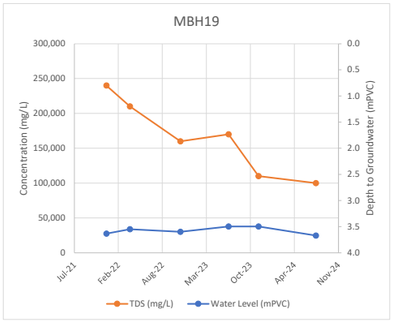

MBH09
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

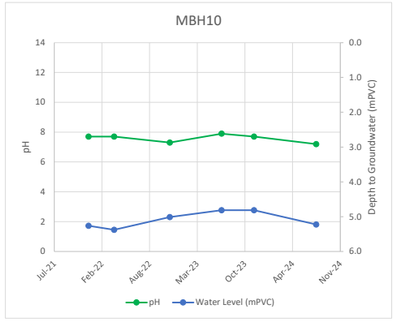

MBH10
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

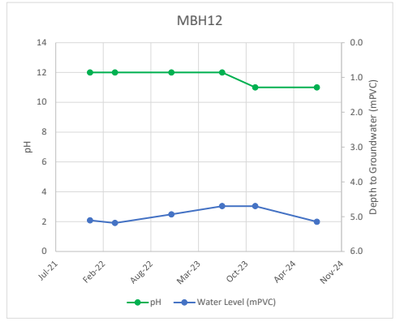

MBH12
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

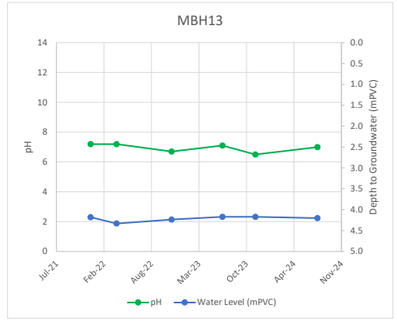

MBH13
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

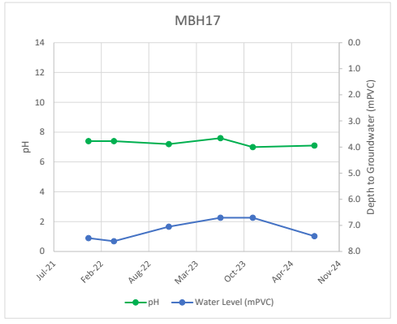

MBH17
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

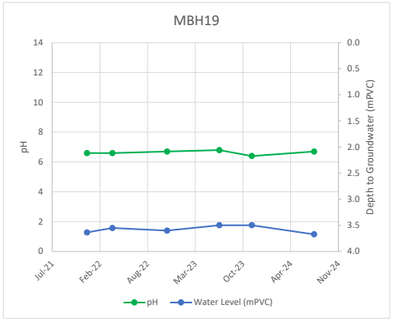

MBH19
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

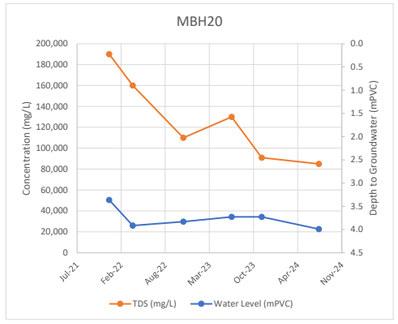

MBH10
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

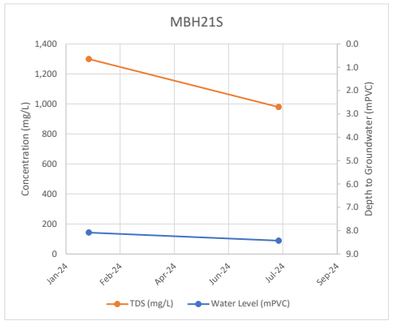

MBH12
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

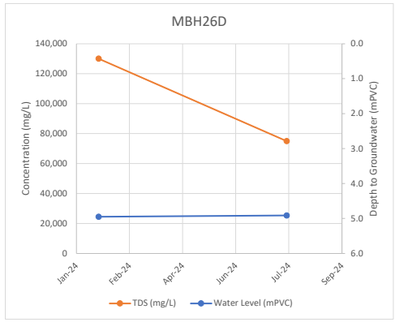

MBH13
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

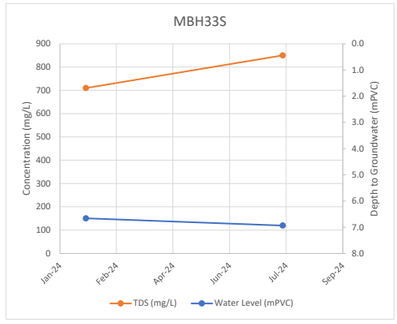

MBH17
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

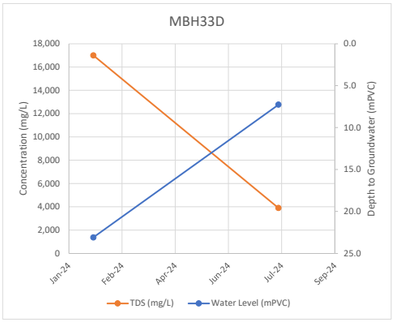

MBH19
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

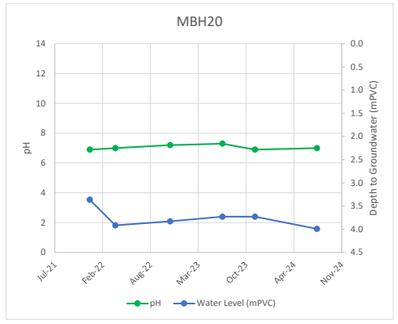

MBH20
Concentration (mg/L)
Depth to Groundwater (mPVC)
Jul-21
Feb-22
Aug-22
Mar-23
Oct-23
Apr-24
Nov-24
TDS (mg/L)
Water Level (mPVC)

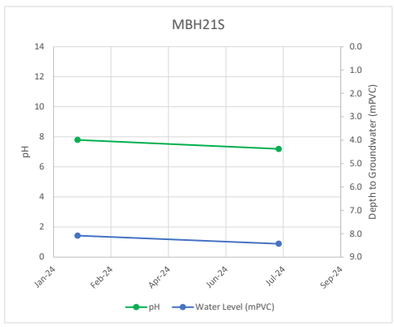

MBH21S
Concentration (mg/L)
Depth to Groundwater (mPVC)
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
TDS (mg/L)
Water Level (mPVC)

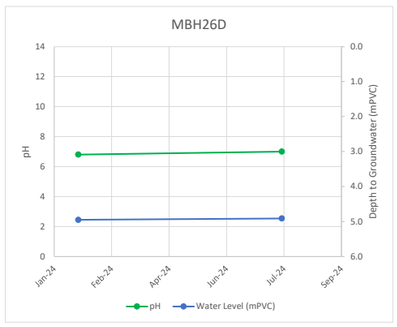

MBH26D
Concentration (mg/L)
Depth to Groundwater (mPVC)
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
TDS (mg/L)
Water Level (mPVC)

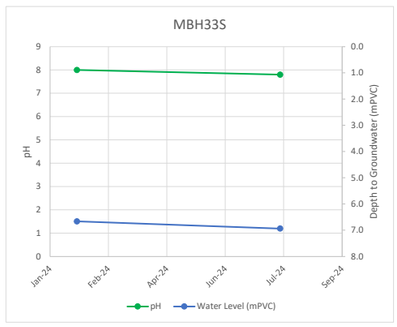

MBH33S
Concentration (mg/L)
Depth to Groundwater (mPVC)
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
TDS (mg/L)
Water Level (mPVC)

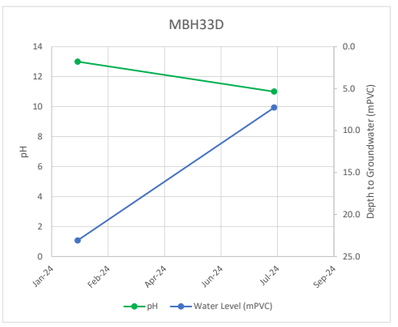

MBH33D
Concentration (mg/L)
Depth to Groundwater (mPVC)
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
TDS (mg/L)
Water Level (mPVC)

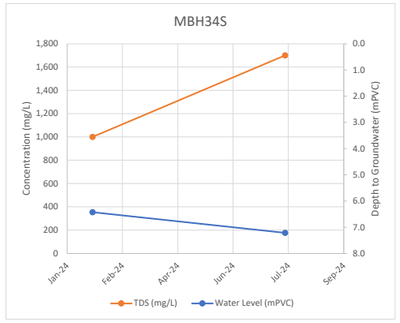

MBH20
pH
Depth to Groundwater (mPVC)
Jul-21
Feb-22
Aug-22
Mar-23
Oct-23
Apr-24
Nov-24
pH
Water Level (mPVC)

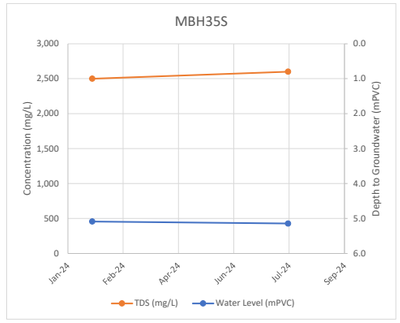

MBH21S
pH
Depth to Groundwater (mPVC)
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
pH
Water Level (mPVC)

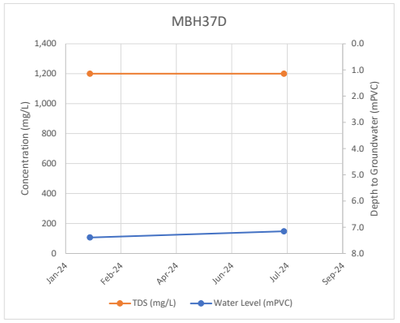

MBH26D
pH
Depth to Groundwater (mPVC)
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
pH
Water Level (mPVC)

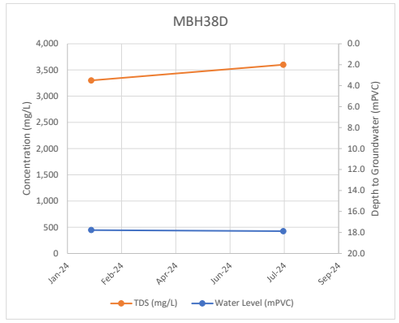

MBH33S
pH
Depth to Groundwater (mPVC)
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
pH
Water Level (mPVC)

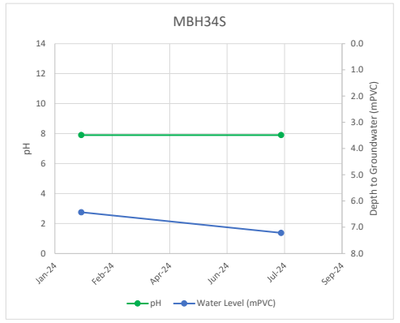

MBH33D
pH
Depth to Groundwater (mPVC)
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
pH
Water Level (mPVC)

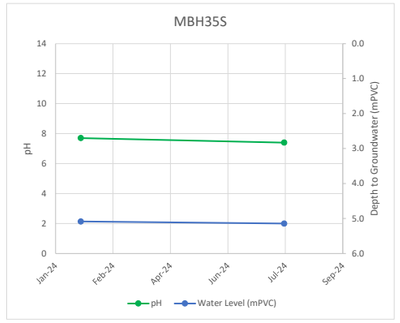

MBH34S
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

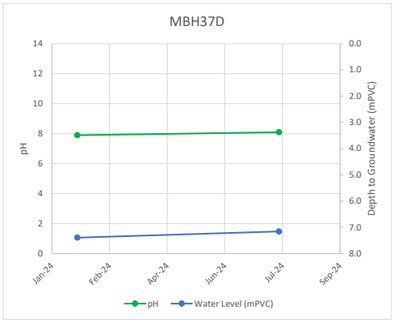

MBH35S
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

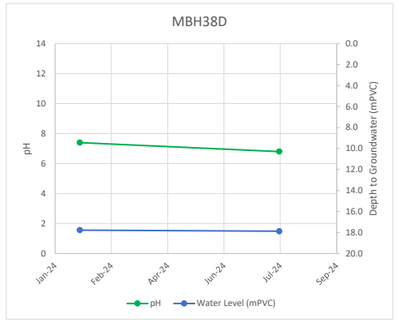

MBH37D
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

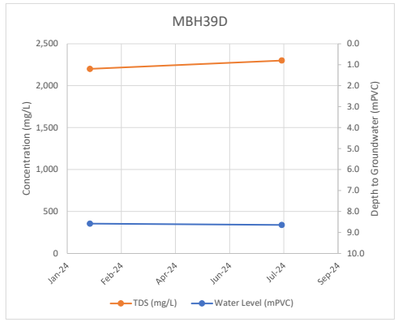

MBH38D
Concentration (mg/L)
Depth to Groundwater (mPVC)
TDS (mg/L)
Water Level (mPVC)

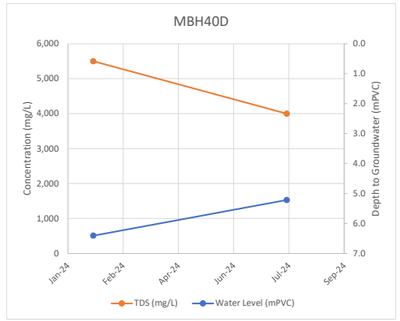

MBH34S
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

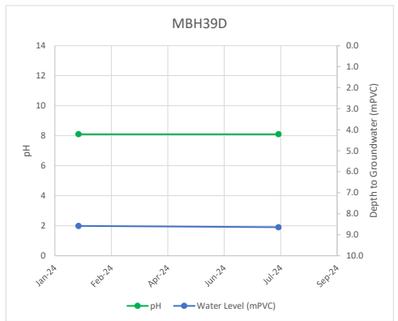

MBH35S
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)

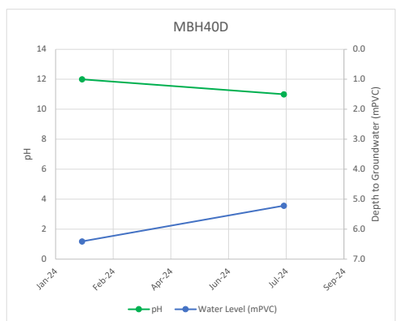

MBH37D
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)


MBH38D
pH
Depth to Groundwater (mPVC)
pH
Water Level (mPVC)


MBH39D
Concentration (mg/L)
Depth to Groundwater (mPVC)
2,500
2,000
1,500
1,000
500
0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
TDS (mg/L)
Water Level (mPVC)


MBH40D
Concentration (mg/L)
Depth to Groundwater (mPVC)
6,000
5,000
4,000
3,000
2,000
1,000
0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
TDS (mg/L)
Water Level (mPVC)


MBH39D
pH
Depth to Groundwater (mPVC)
14
12
10
8
6
4
2
0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
pH
Water Level (mPVC)


MBH40D
pH
Depth to Groundwater (mPVC)
14
12
10
8
6
4
2
0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
Jan-24
Feb-24
Apr-24
Jun-24
Jul-24
Sep-24
pH
Water Level (mPVC)

APPENDIX G
MANN-KENDALL STATISTICAL ASSESSMENT

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

Notice: This form is the DNR supplied spreadsheet referenced in Appendices A of Comm 46 and NR 746, Wis. Adm. Code. It is provided to consultants as an optional tool for groundwater contaminant trend analysis to support site closure requests under s. Comm 46.07, Comm 46.08, NR 746.07, NR 746.08, Wis. Adm. Code. Use this form or a manual method when seeking case closure under those rules. Earlier versions of this form should not be used.

Instructions: Do not change formulas or other information in cells with a blue background, only cells with a yellow background are used for data entry. To use the spreadsheet, provide at least four rounds and not more than ten rounds of data that is not seasonally affected. Use consistent units. The spreadsheet contains several error checks, and a data entry error may cause "DATA ERR" or "DATE ERR" to be displayed. Dates that are not consecutive will show an error message and will not display the test results. The spreadsheet tests the data for both increasing and decreasing trends at both 80 percent and 90 percent confidence levels. If a declining trend is present at 80 percent but not at 90 percent, a site is still eligible for closure under Comm 46 and NR 746 provided that other conditions in those rules are met. If an increasing or decreasing trend is not present, an additional coefficient of variation test is used to test for stability, as proposed by Wiedemeier et al, 1999. For additional information, refer to the Interim Guidance on Natural Attenuation for Petroleum Releases, dated October 1999. Refer to the guidance for recommendations on data entry for non-detect values.

Site Name =	Eramurra Salt	BRRTS No. =		Well Number =	Aluminium

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.05	2.80	0.05	0.50	0.05	0.37
2	2-Apr-22	0.07	0.02	0.01	0.01	0.01	0.01
3	19-Nov-22	0.50	0.20	0.50	0.20	0.05	0.05
4	22-Jun-23	0.05	0.05	0.05	0.05	0.05	0.05
5	8-Nov-23	0.05	0.50	0.05	0.50	0.05	0.05
6	23-Jul-24	0.05	0.05	0.05	0.05	0.05	0.05
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-3.0	-2.0	1.0	-1.0	3.0	-1.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.13	0.60	0.12	0.22	0.04	0.10
	Standard Deviation =	0.182	1.091	0.188	0.228	0.016	0.135
	Coefficient of Variation(CV)=	1.420	1.808	1.586	1.043	0.377	1.395
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV <= 1 STABLE	CV > 1 NON-STABLE

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Aluminium	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	5.00	0.06	0.08	0.50	0.05	
2	2-Apr-22	3.70	0.14	0.01	0.02	0.01	
3	19-Nov-22	3.40	0.05	0.05	0.05	0.16	
4	22-Jun-23	3.10	0.05	0.05	0.05	0.05	
5	8-Nov-23	2.40	0.05		0.50	0.50	
6	24-Jul-24	1.50	0.07	0.33	0.05	0.05	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-15.0	-2.0	3.0	1.0	4.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	3.18	0.07	0.10	0.20	0.14	#DIV/0!
	Standard Deviation =	1.189	0.035	0.129	0.237	0.185	#DIV/0!
	Coefficient of Variation(CV)=	0.374	0.502	1.238	1.213	1.354	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		**DECREASING**	No Trend	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		**DECREASING**	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

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Site Name = Eramurra Salt				BRRTS No. =		Well Number = Antimony	
	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.05	0.01	0.05	0.01	0.01
2	2-Apr-22	0.00	0.01	0.01	0.01	0.00	0.00
3	19-Nov-22	0.05	0.01	0.05	0.01	0.05	0.05
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	0.00
5	8-Nov-23	0.00	0.05	0.00	0.05	0.00	0.00
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	-4.0	-7.0	-6.0	-5.0	-5.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.01	0.02	0.01	0.02	0.01	0.01
	Standard Deviation =	0.020	0.024	0.019	0.023	0.020	0.020
	Coefficient of Variation(CV)=	2.008	1.188	1.852	1.147	2.008	2.008
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	DECREASING	DECREASING	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	CV > 1 NON-STABLE	NA	NA	CV > 1 NON-STABLE	CV > 1 NON-STABLE

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

State of Wisconsin
Department of Natural Resources
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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Antimony	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.01	0.01	0.05	0.01	
2	2-Apr-22	0.00	0.00	0.00	0.00	0.00	
3	19-Nov-22	0.00	0.05	0.05	0.00	0.00	
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	
5	8-Nov-23	0.00	0.00		0.05	0.05	
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-1.0	-5.0	-3.0	-2.0	2.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.00	0.01	0.01	0.02	0.01	#DIV/0!
	Standard Deviation =	0.002	0.020	0.022	0.025	0.020	#DIV/0!
	Coefficient of Variation(CV)=	0.874	2.008	1.857	1.460	1.966	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Site Name =	Eramurra Salt	BRRTS No. =		Well Number =	Arsenic

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.01	0.00	0.01	0.00	0.00
2	2-Apr-22	0.00	0.01	0.01	0.03	0.00	0.00
3	19-Nov-22	0.05	0.02	0.05	0.02	0.05	0.05
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	0.00
5	8-Nov-23	0.00	0.01	0.00	0.01	0.00	0.00
6	23-Jul-24	0.00	0.01	0.00	0.02	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-3.0	2.0	-2.0	0.0	0.0	-3.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.01	0.01	0.01	0.01	0.01	0.01
	Standard Deviation =	0.020	0.006	0.019	0.009	0.020	0.019
	Coefficient of Variation(CV)=	2.135	0.620	1.782	0.604	1.973	1.882
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	CV <= 1 STABLE	CV > 1 NON-STABLE	CV <= 1 STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

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Remediation and Redevelopment Program

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Arsenic	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.00	0.00	0.01	0.00	
2	2-Apr-22	0.02	0.01	0.00	0.00	0.00	
3	19-Nov-22	0.05	0.05	0.05	0.01	0.01	
4	22-Jun-23	0.01	0.00	0.00	0.00	0.00	
5	8-Nov-23	0.02	0.00		0.01	0.01	
6	23-Jul-24	0.01	0.00	0.00	0.01	0.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	0.0	0.0	0.0	-2.0	-2.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.02	0.01	0.01	0.01	0.00	#DIV/0!
	Standard Deviation =	0.015	0.019	0.022	0.004	0.004	#DIV/0!
	Coefficient of Variation(CV)=	0.754	1.748	2.029	0.595	1.018	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		CV <= 1 STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV <= 1 STABLE	CV > 1 NON-STABLE	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Site Name =	Eramurra Salt		BRRTS No. =		Well Number =	Beryllium

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.01	0.00	0.01	0.00	0.00
2	2-Apr-22	0.01	0.01	0.01	0.01	0.01	0.01
3	19-Nov-22	0.05	0.01	0.05	0.01	0.05	0.05
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	0.00
5	8-Nov-23	0.00	0.01	0.00	0.01	0.00	0.00
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-3.0	-6.0	-3.0	-6.0	-3.0	-3.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.01	0.01	0.01	0.01	0.01	0.01
	Standard Deviation =	0.020	0.005	0.020	0.005	0.020	0.020
	Coefficient of Variation(CV)=	1.838	0.664	1.838	0.664	1.838	1.838
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	**DECREASING**	No Trend	**DECREASING**	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		**CV > 1 NON-STABLE**	NA	**CV > 1 NON-STABLE**	NA	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Beryllium	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.00	0.00	0.01	0.00	
2	2-Apr-22	0.01	0.01	0.01	0.01	0.01	
3	19-Nov-22	0.00	0.05	0.05	0.00	0.01	
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	
5	8-Nov-23	0.00	0.00		0.01	0.01	
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-3.0	-3.0	-1.0	-5.0	-1.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.00	0.01	0.01	0.01	0.01	#DIV/0!
	Standard Deviation =	0.004	0.020	0.021	0.005	0.005	#DIV/0!
	Coefficient of Variation(CV)=	1.470	1.838	1.688	0.896	0.895	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV <= 1 STABLE	CV <= 1 STABLE	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name =	Eramurra Salt		BRRTS No. =		Well Number =	Bismuth

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.05	0.01	0.05	0.01	0.01
2	2-Apr-22	0.01	0.01	0.01	0.01	0.01	0.01
3	19-Nov-22	0.05	0.02	0.05	0.02	0.05	0.05
4	22-Jun-23	0.01	0.01	0.01	0.01	0.01	0.01
5	8-Nov-23	0.01	0.05	0.01	0.05	0.01	0.01
6	23-Jul-24	0.01	0.01	0.01	0.01	0.01	0.01
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-3.0	-5.0	-3.0	-5.0	-3.0	-3.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.01	0.02	0.01	0.02	0.01	0.01
	Standard Deviation =	0.018	0.021	0.018	0.021	0.018	0.018
	Coefficient of Variation(CV)=	1.356	0.916	1.356	0.916	1.356	1.356
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	CV <= 1 STABLE	CV > 1 NON-STABLE	CV <= 1 STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Bismuth	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.01	0.01	0.05	0.01	
2	2-Apr-22	0.01	0.01	0.01	0.01	0.01	
3	19-Nov-22	5.00	0.05	0.05	0.05	0.05	
4	22-Jun-23	0.01	0.01	0.01	0.01	0.01	
5	8-Nov-23	0.01	0.01		0.05	0.05	
6	23-Jul-24	0.01	0.01	0.01	0.01	0.01	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-3.0	-3.0	-1.0	-5.0	1.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.84	0.01	0.02	0.03	0.02	#DIV/0!
	Standard Deviation =	2.039	0.018	0.020	0.024	0.023	#DIV/0!
	Coefficient of Variation(CV)=	2.432	1.356	1.312	0.840	1.088	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV <= 1 STABLE	CV > 1 NON-STABLE	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

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Site Name =	Eramurra Salt		BRRTS No. =		Well Number =	Bismuth

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.00	0.00	0.00	0.00	0.00
2	2-Apr-22	0.00	0.00	0.00	0.00	0.00	0.00
3	19-Nov-22	0.00	0.00	0.00	0.00	0.00	0.00
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	0.00
5	8-Nov-23	0.00	0.00	0.00	0.00	0.00	0.00
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	-7.0	5.0	-7.0	-5.0	-5.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.00	0.00	0.00	0.00	0.00	0.00
	Standard Deviation =	0.001	0.001	0.001	0.001	0.001	0.001
	Coefficient of Variation(CV)=	1.774	0.802	0.825	1.393	1.774	1.774
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	**DECREASING**	No Trend	**DECREASING**	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		**CV > 1 NON-STABLE**	NA	**CV <= 1 STABLE**	NA	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

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Site Name =	Eramurra Salt		BRRTS No. =		Well Number =	Bismuth

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.00	0.00	0.00	0.00	0.00
2	2-Apr-22	0.00	0.00	0.00	0.00	0.00	0.00
3	19-Nov-22	0.00	0.00	0.00	0.00	0.00	0.00
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	0.00
5	8-Nov-23	0.00	0.00	0.00	0.00	0.00	0.00
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	-7.0	5.0	-7.0	-5.0	-5.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.00	0.00	0.00	0.00	0.00	0.00
	Standard Deviation =	0.001	0.001	0.001	0.001	0.001	0.001
	Coefficient of Variation(CV)=	1.774	0.802	0.825	1.393	1.774	1.774
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	**DECREASING**	No Trend	**DECREASING**	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		**CV > 1 NON-STABLE**	NA	**CV <= 1 STABLE**	NA	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Cadmium	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.00	0.00	0.00	0.00	
2	2-Apr-22	0.00	0.00	0.00	0.00	0.00	
3	19-Nov-22	0.00	0.00	0.00	0.00	0.00	
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	
5	8-Nov-23	0.00	0.00		0.00	0.00	
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	0.0	-3.0	0.0	-7.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.00	0.00	0.00	0.00	0.00	#DIV/0!
	Standard Deviation =	0.001	0.001	0.001	0.001	0.001	#DIV/0!
	Coefficient of Variation(CV)=	1.774	0.806	1.679	0.393	1.271	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	**DECREASING**	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		**CV > 1 NON-STABLE**	**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	**CV <= 1 STABLE**	NA	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Site Name =	Eramurra Salt	BRRTS No. =		Well Number =	Chromium (III+VI

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.46	0.00	0.01	0.00	0.00
2	2-Apr-22	0.00	0.57	0.00	0.43	0.00	0.00
3	19-Nov-22	0.01	0.23	0.01	0.23	0.01	0.01
4	22-Jun-23	0.00	0.29	0.00	0.00	0.00	0.00
5	8-Nov-23	0.00	0.11	0.00	0.00	0.00	0.00
6	23-Jul-24	0.00	0.06	0.00	0.00	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-3.0	-11.0	-1.0	-10.0	-1.0	-1.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.00	0.29	0.00	0.11	0.00	0.00
	Standard Deviation =	0.004	0.197	0.004	0.180	0.004	0.004
	Coefficient of Variation(CV)=	1.356	0.687	1.470	1.603	1.470	1.356
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	DECREASING	No Trend	DECREASING	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	DECREASING	No Trend	DECREASING	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	NA	CV > 1 NON-STABLE	NA	CV > 1 NON-STABLE	CV > 1 NON-STABLE

Data Entry By =	CW	Date =	28-Oct-28	Checked By =	AV

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Site Name = Eramurra Salt	BRRTS No. =	Well Number = Chromium (III+VI

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.00	0.00	0.01	0.00	
2	2-Apr-22	0.00	0.01	0.00	0.01	0.00	
3	19-Nov-22	0.00	0.00	0.01	0.00	0.00	
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	
5	8-Nov-23	0.00	0.01		0.00	0.00	
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	-1.0	-1.0	-10.0	-7.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.00	0.00	0.00	0.00	0.00	#DIV/0!
	Standard Deviation =	0.002	0.004	0.004	0.004	0.001	#DIV/0!
	Coefficient of Variation(CV)=	0.980	1.178	1.312	1.059	0.490	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	**DECREASING**	**DECREASING**	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	**DECREASING**	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	NA	NA	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Remediation and Redevelopment Program

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Site Name =	Eramurra Salt		BRRTS No. =		Well Number =	Cobalt

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.01	0.00	0.05	0.00	0.00
2	2-Apr-22	0.00	0.00	0.01	0.07	0.00	0.00
3	19-Nov-22	0.01	0.01	0.01	0.01	0.01	0.01
4	22-Jun-23	0.00	0.00	0.00	0.01	0.00	0.00
5	8-Nov-23	0.00	0.00	0.00	0.01	0.00	0.00
6	23-Jul-24	0.00	0.00	0.00	0.03	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-1.0	-6.0	-5.0	-1.0	-1.0	-1.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.00	0.00	0.00	0.03	0.00	0.00
	Standard Deviation =	0.004	0.005	0.003	0.024	0.004	0.004
	Coefficient of Variation(CV)=	1.470	1.162	0.887	0.815	1.470	1.470
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	**DECREASING**	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		**CV > 1 NON-STABLE**	NA	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name =	Eramurra Salt	BRRTS No. =		Well Number =	Cobalt

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.00	0.00	0.01	0.01	
2	2-Apr-22	0.00	0.01	0.00	0.00	0.01	
3	19-Nov-22	0.01	0.01	0.01	0.00	0.00	
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	
5	8-Nov-23	0.00	0.00		0.00	0.00	
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	-6.0	0.0	-6.0	-9.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.00	0.00	0.00	0.00	0.00	#DIV/0!
	Standard Deviation =	0.004	0.004	0.004	0.004	0.003	#DIV/0!
	Coefficient of Variation(CV)=	1.356	1.001	1.437	1.128	0.997	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	**DECREASING**	No Trend	**DECREASING**	**DECREASING**	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	**DECREASING**	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		**CV > 1 NON-STABLE**	NA	**CV > 1 NON-STABLE**	NA	NA	n<4 n<4

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name = Eramurra Salt				BRRTS No. =		Well Number = Copper	
	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.02	0.00	0.03	0.00	0.00
2	2-Apr-22	0.01	0.04	0.02	0.04	0.00	0.00
3	19-Nov-22	0.01	0.01	0.01	0.01	0.01	0.01
4	22-Jun-23	0.00	0.01	0.01	0.00	0.00	0.00
5	8-Nov-23	0.00	0.02	0.04	0.00	0.00	0.00
6	23-Jul-24	0.00	0.02	0.01	0.00	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-4.0	-3.0	2.0	-8.0	-3.0	-1.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.00	0.02	0.01	0.01	0.00	0.00
	Standard Deviation =	0.005	0.011	0.014	0.017	0.004	0.003
	Coefficient of Variation(CV)=	1.162	0.592	1.011	1.194	1.251	1.155
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	**DECREASING**	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	**DECREASING**	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		**CV > 1 NON-STABLE**	**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	NA	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Copper	
Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.00	0.00	0.01	0.01	
2	2-Apr-22	0.00	0.02	0.01	0.02	0.04	
3	19-Nov-22	0.00	0.01	0.01	0.00	0.00	
4	22-Jun-23	0.00	0.02	0.00	0.01	0.00	
5	8-Nov-23	0.00	0.03		0.04	0.00	
6	23-Jul-24	0.00	0.01	0.00	0.05	0.00	
7							
8							
9							
10							
Mann Kendall Statistic (S) =		-11.0	6.0	-1.0	7.0	-7.0	0.0
Number of Rounds (n) =		6	6	5	6	6	0
Average =		0.00	0.01	0.00	0.02	0.01	#DIV/0!
Standard Deviation =		0.001	0.008	0.004	0.021	0.015	#DIV/0!
Coefficient of Variation(CV)=		0.490	0.588	0.984	0.928	1.909	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		DECREASING	INCREASING	No Trend	INCREASING	DECREASING	n<4
Trend ≥ 90% Confidence Level		DECREASING	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	CV <= 1 STABLE	NA	NA	n<4 n<4

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

State of Wisconsin
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Site Name =	Eramurra Salt	BRRTS No. =		Well Number =	Iron

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.05	2.00	0.05	0.50	0.05	0.47
2	2-Apr-22	0.09	0.03	0.02	1.20	0.01	0.01
3	19-Nov-22	0.50	0.50	0.50	0.50	0.50	0.50
4	22-Jun-23	0.01	0.05	0.01	2.40	0.01	0.01
5	8-Nov-23	0.01	0.50	0.01	1.00	0.01	0.01
6	23-Jul-24	0.01	0.01	0.01	1.20	0.01	0.01
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-6.0	-6.0	-8.0	5.0	-5.0	-5.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.11	0.52	0.10	1.13	0.10	0.17
	Standard Deviation =	0.193	0.763	0.197	0.698	0.197	0.245
	Coefficient of Variation(CV)=	1.728	1.482	1.966	0.616	2.008	1.458
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		**DECREASING**	**DECREASING**	**DECREASING**	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	**DECREASING**	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	NA	**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

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Department of Natural Resources
Remediation and Redevelopment Program

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Iron	
Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.53	0.08	0.05	0.50	0.10	
2	2-Apr-22	0.12	0.01	0.01	0.01	0.01	
3	19-Nov-22	0.50	0.50	0.50	0.08	0.01	
4	22-Jun-23	0.04	0.06	0.01	0.01	0.08	
5	8-Nov-23	0.04	0.01		0.50	0.50	
6	23-Jul-24	0.01	0.05	0.17	0.01	0.06	
7							
8							
9							
10							
Mann Kendall Statistic (S) =		-12.0	-4.0	1.0	-3.0	2.0	0.0
Number of Rounds (n) =		6	6	5	6	6	0
Average =		0.21	0.12	0.15	0.19	0.13	#DIV/0!
Standard Deviation =		0.242	0.189	0.207	0.245	0.187	#DIV/0!
Coefficient of Variation(CV)=		1.170	1.598	1.401	1.322	1.472	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		DECREASING	No Trend	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		DECREASING	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	n<4 n<4

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

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Site Name =	Eramurra Salt	BRRTS No. =		Well Number =	Lead

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.01	0.00	0.01	0.00	0.00
2	2-Apr-22	0.00	0.00	0.00	0.00	0.00	0.00
3	19-Nov-22	0.01	0.01	0.01	0.01	0.01	0.01
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	0.00
5	8-Nov-23	0.00	0.00	0.00	0.00	0.00	0.00
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-1.0	-6.0	-1.0	-9.0	-1.0	-6.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.00	0.00	0.00	0.00	0.00	0.00
	Standard Deviation =	0.004	0.005	0.004	0.005	0.004	0.004
	Coefficient of Variation(CV)=	1.470	1.162	1.470	1.088	1.470	1.174

Error Check, Blank if No Errors Detected

Trend ≥ 80% Confidence Level	No Trend	**DECREASING**	No Trend	**DECREASING**	No Trend	**DECREASING**
Trend ≥ 90% Confidence Level	No Trend	No Trend	No Trend	**DECREASING**	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level	**CV > 1 NON-STABLE**	NA	**CV > 1 NON-STABLE**	NA	**CV > 1 NON-STABLE**	NA

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Lead	
	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.00	0.00	0.01	0.00	
2	2-Apr-22	0.00	0.01	0.00	0.01	0.01	
3	19-Nov-22	0.00	0.01	0.01	0.00	0.00	
4	22-Jun-23	0.00	0.00	0.00	0.01	0.00	
5	8-Nov-23	0.00	0.00		0.00	0.00	
6	23-Jul-24	0.00	0.00	0.00	0.01	0.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	-6.0	0.0	-4.0	-2.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.00	0.00	0.00	0.01	0.00	#DIV/0!
	Standard Deviation =	0.000	0.004	0.004	0.005	0.002	#DIV/0!
	Coefficient of Variation(CV)=	0.350	1.001	1.437	0.750	0.843	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	**DECREASING**	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		**CV <= 1 STABLE**	NA	**CV > 1 NON-STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	n<4 n<4

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

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Site Name =	Eramurra Salt		BRRTS No. =		Well Number =	Lithium

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.54	0.17	0.39	0.01	0.02
2	2-Apr-22	0.01	1.00	0.22	0.67	0.02	0.02
3	19-Nov-22	0.11	0.48	0.19	0.39	0.01	0.00
4	22-Jun-23	0.01	1.10	0.11	1.10	0.02	0.02
5	8-Nov-23	0.01	0.43	0.13	0.41	0.01	0.01
6	23-Jul-24	0.01	0.41	0.10	0.37	0.01	0.01
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-4.0	-7.0	-9.0	-2.0	-8.0	-6.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.02	0.66	0.15	0.56	0.01	0.01
	Standard Deviation =	0.042	0.307	0.048	0.290	0.003	0.007
	Coefficient of Variation(CV)=	1.758	0.465	0.310	0.522	0.175	0.482
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	DECREASING	DECREASING	No Trend	DECREASING	DECREASING
Trend ≥ 90% Confidence Level		No Trend	No Trend	DECREASING	No Trend	DECREASING	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	NA	NA	CV <= 1 STABLE	NA	NA

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Lithium	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.36	0.18	0.01	0.51	0.42	
2	2-Apr-22	0.08	0.17	0.01	0.62	0.46	
3	19-Nov-22	0.05	0.28	0.01	0.22	0.36	
4	22-Jun-23	0.06	0.20	0.01	0.97	0.74	
5	8-Nov-23	0.05	0.20		0.59	0.45	
6	23-Jul-24	0.02	0.13	0.01	0.35	0.36	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-11.0	-2.0	-2.0	-1.0	-2.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.10	0.19	0.01	0.54	0.47	#DIV/0!
	Standard Deviation =	0.127	0.050	0.001	0.258	0.141	#DIV/0!
	Coefficient of Variation(CV)=	1.231	0.257	0.123	0.475	0.304	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		**DECREASING**	No Trend	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		**DECREASING**	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Remediation and Redevelopment Program

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Site Name =	Eramurra Salt		BRRTS No. =		Well Number =	Manganese

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.08	0.58	0.62	0.01	0.05
2	2-Apr-22	0.01	0.01	0.65	5.20	0.01	0.01
3	19-Nov-22	0.05	0.01	0.26	0.01	0.05	0.05
4	22-Jun-23	0.01	0.01	0.28	3.20	0.01	0.02
5	8-Nov-23	0.01	0.05	0.27	2.10	0.01	0.01
6	23-Jul-24	0.01	0.05	0.25	1.90	0.01	0.01
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-3.0	-2.0	-9.0	-1.0	-3.0	-10.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.01	0.03	0.38	2.17	0.01	0.02
	Standard Deviation =	0.018	0.029	0.182	1.865	0.018	0.022
	Coefficient of Variation(CV)=	1.356	0.882	0.478	0.859	1.356	0.898
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	DECREASING	No Trend	No Trend	DECREASING
Trend ≥ 90% Confidence Level		No Trend	No Trend	DECREASING	No Trend	No Trend	DECREASING
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	CV <= 1 STABLE	NA	CV <= 1 STABLE	CV > 1 NON-STABLE	NA

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

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Department of Natural Resources
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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Manganese	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.02	0.09	0.01	0.09	0.40	
2	2-Apr-22	0.01	0.05	0.01	0.03	0.49	
3	19-Nov-22	0.05	0.05	0.05	0.05	0.22	
4	22-Jun-23	0.01	0.01	0.01	0.02	0.29	
5	8-Nov-23	0.01	0.01		0.05	0.55	
6	23-Jul-24	0.01	0.01	0.01	0.03	3.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-8.0	-11.0	-3.0	-3.0	7.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.02	0.03	0.02	0.04	0.83	#DIV/0!
	Standard Deviation =	0.018	0.034	0.019	0.024	1.073	#DIV/0!
	Coefficient of Variation(CV)=	1.103	0.977	1.263	0.547	1.300	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		DECREASING	DECREASING	No Trend	No Trend	INCREASING	n<4
Trend ≥ 90% Confidence Level		DECREASING	DECREASING	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	CV > 1 NON-STABLE	CV <= 1 STABLE	NA	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Site Name = Eramurra Salt				BRRTS No. =		Well Number = Molybdenum	
	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.06	0.02	0.05	0.01	0.01
2	2-Apr-22	0.01	0.12	0.04	0.21	0.00	0.01
3	19-Nov-22	0.05	0.04	0.05	0.03	0.05	0.05
4	22-Jun-23	0.00	0.04	0.01	0.01	0.00	0.00
5	8-Nov-23	0.00	0.04	0.01	0.01	0.00	0.00
6	23-Jul-24	0.00	0.04	0.01	0.01	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-6.0	-10.0	-9.0	-7.0	-11.0	-9.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.01	0.05	0.02	0.05	0.01	0.01
	Standard Deviation =	0.019	0.033	0.017	0.078	0.019	0.019
	Coefficient of Variation(CV)=	1.819	0.610	0.783	1.437	1.776	1.665
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		DECREASING	DECREASING	DECREASING	DECREASING	DECREASING	DECREASING
Trend ≥ 90% Confidence Level		No Trend	DECREASING	DECREASING	No Trend	DECREASING	DECREASING
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	NA	NA	NA	NA

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

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Site Name =	Eramurra Salt	BRRTS No. =		Well Number =	Molybdenum

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.06	0.01	0.01	0.05	0.01	
2	2-Apr-22	0.08	0.02	0.02	0.02	0.01	
3	19-Nov-22	0.08	0.05	0.05	0.03	0.02	
4	22-Jun-23	0.04	0.00	0.00	0.00	0.00	
5	8-Nov-23	0.04	0.00		0.01	0.01	
6	23-Jul-24	0.02	0.00	0.00	0.00	0.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-7.0	-6.0	-2.0	-10.0	-3.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.05	0.01	0.02	0.02	0.01	#DIV/0!
	Standard Deviation =	0.023	0.019	0.021	0.019	0.008	#DIV/0!
	Coefficient of Variation(CV)=	0.454	1.403	1.341	1.085	1.053	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		DECREASING	DECREASING	No Trend	DECREASING	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	DECREASING	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	CV > 1 NON-STABLE	NA	CV > 1 NON-STABLE	n<4 n<4

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

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Site Name =	Eramurra Salt	BRRTS No. =		Well Number =	Nickel

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.01	0.01	0.04	0.00	0.00
2	2-Apr-22	0.03	0.01	0.14	0.11	0.01	0.01
3	19-Nov-22	0.01	0.01	0.01	0.01	0.01	0.01
4	22-Jun-23	0.00	0.00	0.04	0.02	0.00	0.01
5	8-Nov-23	0.00	0.00	0.02	0.05	0.00	0.01
6	23-Jul-24	0.00	0.01	0.05	0.06	0.00	0.02
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-6.0	-8.0	5.0	3.0	-4.0	10.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.01	0.01	0.04	0.05	0.01	0.01
	Standard Deviation =	0.012	0.004	0.050	0.036	0.005	0.007
	Coefficient of Variation(CV)=	1.449	0.679	1.154	0.770	1.063	0.696
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		DECREASING	DECREASING	No Trend	No Trend	No Trend	INCREASING
Trend ≥ 90% Confidence Level		No Trend	DECREASING	No Trend	No Trend	No Trend	INCREASING
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	CV > 1 NON-STABLE	CV <= 1 STABLE	CV > 1 NON-STABLE	NA

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Nickel	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.01	0.00	0.01	0.02	
2	2-Apr-22	0.00	0.02	0.01	0.03	0.04	
3	19-Nov-22	0.01	0.01	0.01	0.03	0.04	
4	22-Jun-23	0.00	0.01	0.00	0.00	0.00	
5	8-Nov-23	0.00	0.06		0.02	0.02	
6	23-Jul-24	0.01	0.13	0.00	0.03	0.01	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	0.0	9.0	-1.0	3.0	-5.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.00	0.04	0.00	0.02	0.02	#DIV/0!
	Standard Deviation =	0.001	0.049	0.004	0.011	0.014	#DIV/0!
	Coefficient of Variation(CV)=	0.224	1.244	0.904	0.534	0.661	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	INCREASING	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	INCREASING	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		CV <= 1 STABLE	NA	CV <= 1 STABLE	CV <= 1 STABLE	CV <= 1 STABLE	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name =	Eramurra Salt	BRRTS No. =		Well Number =	Selenium

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.01	0.01	0.01	0.00	0.00
2	2-Apr-22	0.01	0.02	0.03	0.07	0.00	0.00
3	19-Nov-22	0.05	0.05	0.05	0.05	0.05	0.05
4	22-Jun-23	0.00	0.01	0.00	0.00	0.00	0.00
5	8-Nov-23	0.00	0.02	0.00	0.02	0.00	0.00
6	23-Jul-24	0.00	0.03	0.00	0.03	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-3.0	3.0	-8.0	-1.0	-5.0	-2.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.01	0.02	0.02	0.03	0.01	0.01
	Standard Deviation =	0.019	0.016	0.020	0.025	0.020	0.020
	Coefficient of Variation(CV)=	1.846	0.708	1.221	0.883	2.028	1.937
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	**DECREASING**	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	**DECREASING**	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		**CV > 1 NON-STABLE**	**CV <= 1 STABLE**	NA	**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

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Form 4400-215 (2/2001)

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Site Name =	Eramurra Salt		BRRTS No. =		Well Number =	Selenium

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.00	0.00	0.01	0.00	
2	2-Apr-22	0.00	0.01	0.00	0.00	0.01	
3	19-Nov-22	0.01	0.05	0.05	0.01	0.00	
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	
5	8-Nov-23	0.00	0.00		0.01	0.01	
6	23-Jul-24	0.00	0.00	0.00	0.04	0.01	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-7.0	-4.0	0.0	4.0	5.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.00	0.01	0.01	0.01	0.01	#DIV/0!
	Standard Deviation =	0.003	0.019	0.022	0.015	0.004	#DIV/0!
	Coefficient of Variation(CV)=	0.664	1.743	1.937	1.151	0.638	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		**DECREASING**	No Trend	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	**CV <= 1 STABLE**	n<4 n<4

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Silver	

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.05	0.01	0.05	0.01	0.01
2	2-Apr-22	0.00	0.00	0.00	0.00	0.00	0.00
3	19-Nov-22	0.01	0.00	0.01	0.00	0.01	0.01
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	0.00
5	8-Nov-23	0.00	0.00	0.00	0.00	0.00	0.00
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.00	0.01	0.00	0.01	0.00	0.00
	Standard Deviation =	0.004	0.020	0.004	0.020	0.004	0.004
	Coefficient of Variation(CV)=	1.172	2.182	1.172	2.182	1.172	1.172
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Silver	
Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.01	0.01	0.05	0.01	
2	2-Apr-22	0.00	0.00	0.00	0.00	0.00	
3	19-Nov-22	0.00	0.01	0.01	0.00	0.00	
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	
5	8-Nov-23	0.00	0.00		0.00	0.00	
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	
7							
8							
9							
10							
Mann Kendall Statistic (S) =		-5.0	-5.0	-3.0	-9.0	-4.0	0.0
Number of Rounds (n) =		6	6	5	6	6	0
Average =		0.00	0.00	0.00	0.01	0.00	#DIV/0!
Standard Deviation =		0.002	0.004	0.004	0.020	0.002	#DIV/0!
Coefficient of Variation(CV)=		0.980	1.172	1.104	2.135	0.739	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	**DECREASING**	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	**DECREASING**	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	NA	**CV <= 1 STABLE**	n<4 n<4

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

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Site Name = Eramurra Salt				BRRTS No. =		Well Number = Strontium	
	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	1.60	38.00	47.00	22.00	0.86	1.80
2	2-Apr-22	1.90	73.00	57.00	31.00	1.60	1.40
3	19-Nov-22	1.80	45.00	29.00	29.00	1.60	1.70
4	22-Jun-23	1.60	56.00	51.00	25.00	1.40	1.40
5	8-Nov-23	1.80	44.00	46.00	28.00	1.60	1.60
6	23-Jul-24	1.60	47.00	51.00	31.00	1.50	1.70
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-3.0	1.0	0.0	4.0	2.0	-1.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	1.72	50.50	46.83	27.67	1.43	1.60
	Standard Deviation =	0.133	12.470	9.559	3.559	0.289	0.167
	Coefficient of Variation(CV)=	0.077	0.247	0.204	0.129	0.203	0.105
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Site Name =	Eramurra Salt	BRRTS No. =		Well Number =	Strontium

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	1.20	37.00	1.50	30.00	22.00	
2	2-Apr-22	1.40	25.00	1.70	29.00	23.00	
3	19-Nov-22	0.75	51.00	1.90	37.00	26.00	
4	22-Jun-23	0.91	78.00	1.60	32.00	24.00	
5	8-Nov-23	0.88	46.00		37.00	27.00	
6	23-Jul-24	0.69	32.00	1.80	39.00	26.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-9.0	1.0	4.0	10.0	10.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.97	44.83	1.70	34.00	24.67	#DIV/0!
	Standard Deviation =	0.274	18.755	0.158	4.195	1.966	#DIV/0!
	Coefficient of Variation(CV)=	0.282	0.418	0.093	0.123	0.080	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		**DECREASING**	No Trend	No Trend	**INCREASING**	**INCREASING**	n<4
Trend ≥ 90% Confidence Level		**DECREASING**	No Trend	No Trend	**INCREASING**	**INCREASING**	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	**CV <= 1 STABLE**	**CV <= 1 STABLE**	NA	NA	n<4 n<4

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

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Site Name = Eramurra Salt				BRRTS No. =		Well Number = Thorium	
	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.05	0.21	0.13	0.30	0.05	0.14
2	2-Apr-22	0.01	0.01	0.01	0.01	0.01	0.01
3	19-Nov-22	0.70	0.01	0.05	0.01	0.05	0.05
4	22-Jun-23	0.05	0.05	0.05	0.05	0.05	0.05
5	8-Nov-23	0.05	0.05	0.05	0.05	0.05	0.05
6	23-Jul-24	0.05	0.05	0.05	0.05	0.05	0.05
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	1.0	1.0	-1.0	1.0	3.0	-1.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.15	0.06	0.06	0.08	0.04	0.06
	Standard Deviation =	0.269	0.074	0.039	0.110	0.016	0.043
	Coefficient of Variation(CV)=	1.774	1.176	0.694	1.409	0.377	0.739
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	CV > 1 NON-STABLE	CV <= 1 STABLE	CV > 1 NON-STABLE	CV <= 1 STABLE	CV <= 1 STABLE

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Thorium	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.05	0.17	0.05	0.37	0.31	
2	2-Apr-22	0.01	0.01	0.01	0.01	0.01	
3	19-Nov-22	0.05	0.05	0.05	0.05	0.05	
4	22-Jun-23	0.05	0.05	0.05	0.05	0.05	
5	8-Nov-23	0.05	0.05		0.05	0.05	
6	23-Jul-24	0.05	0.05	0.05	0.05	0.05	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	3.0	-1.0	2.0	-1.0	-1.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.04	0.06	0.04	0.10	0.09	#DIV/0!
	Standard Deviation =	0.016	0.055	0.018	0.135	0.111	#DIV/0!
	Coefficient of Variation(CV)=	0.377	0.863	0.426	1.395	1.276	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name = Eramurra Salt				BRRTS No. =		Well Number = Titanium	
	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.14	0.01	0.05	0.01	0.01
2	2-Apr-22	0.01	0.04	0.02	0.10	0.01	0.01
3	19-Nov-22	0.05	0.01	0.05	0.01	0.05	0.05
4	22-Jun-23	0.01	0.89	0.01	0.62	0.02	0.03
5	8-Nov-23	0.01	0.05	0.01	0.05	0.01	0.01
6	23-Jul-24	0.01	0.01	0.01	0.01	0.01	0.01
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-3.0	-5.0	-3.0	-4.0	-2.0	-6.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.01	0.19	0.02	0.14	0.02	0.02
	Standard Deviation =	0.018	0.347	0.018	0.238	0.018	0.018
	Coefficient of Variation(CV)=	1.356	1.833	1.211	1.710	1.119	0.934
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	**DECREASING**
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	NA

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Titanium	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.01	0.01	0.05	0.01	
2	2-Apr-22	0.01	0.01	0.01	0.01	0.01	
3	19-Nov-22	0.01	0.05	0.05	0.01	0.01	
4	22-Jun-23	0.01	0.01	0.05	0.78	0.62	
5	8-Nov-23	0.01	0.01		0.05	0.05	
6	23-Jul-24	0.01	0.01	0.01	0.01	0.01	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-8.0	0.0	2.0	-3.0	2.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.01	0.01	0.02	0.15	0.12	#DIV/0!
	Standard Deviation =	0.003	0.018	0.023	0.309	0.248	#DIV/0!
	Coefficient of Variation(CV)=	0.387	1.332	0.924	2.062	2.138	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		DECREASING	No Trend	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		DECREASING	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	CV > 1 NON-STABLE	CV <= 1 STABLE	CV > 1 NON-STABLE	CV > 1 NON-STABLE	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

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Site Name = Eramurra Salt				BRRTS No. =		Well Number = Uranium	
	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.05	0.06	0.05	0.01	0.01
2	2-Apr-22	0.00	0.00	0.06	0.03	0.01	0.01
3	19-Nov-22	0.05	0.01	0.05	0.01	0.05	0.05
4	22-Jun-23	0.00	0.01	0.04	0.01	0.01	0.01
5	8-Nov-23	0.00	0.05	0.05	0.05	0.00	0.00
6	23-Jul-24	0.00	0.01	0.04	0.01	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	-2.0	-11.0	-7.0	-6.0	-7.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.01	0.02	0.05	0.03	0.01	0.01
	Standard Deviation =	0.019	0.023	0.009	0.020	0.019	0.018
	Coefficient of Variation(CV)=	1.705	1.075	0.170	0.792	1.504	1.454
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	DECREASING	DECREASING	DECREASING	DECREASING
Trend ≥ 90% Confidence Level		No Trend	No Trend	DECREASING	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	CV > 1 NON-STABLE	NA	NA	NA	NA

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Uranium	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.03	0.01	0.05	0.01	
2	2-Apr-22	0.00	0.02	0.00	0.00	0.02	
3	19-Nov-22	0.05	0.05	0.05	0.00	0.00	
4	22-Jun-23	0.00	0.02	0.01	0.01	0.01	
5	8-Nov-23	0.00	0.01		0.05	0.05	
6	23-Jul-24	0.00	0.02	0.00	0.00	0.01	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	-7.0	-2.0	-2.0	5.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.01	0.02	0.01	0.02	0.02	#DIV/0!
	Standard Deviation =	0.020	0.014	0.021	0.024	0.018	#DIV/0!
	Coefficient of Variation(CV)=	2.008	0.628	1.560	1.308	1.087	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	**DECREASING**	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		**CV > 1 NON-STABLE**	NA	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Department of Natural Resources
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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Vanadium	

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.02	0.05	0.01	0.05	0.01	0.03
2	2-Apr-22	0.02	0.01	0.01	0.01	0.04	0.03
3	19-Nov-22	0.05	0.01	0.05	0.01	0.05	0.05
4	22-Jun-23	0.02	0.01	0.01	0.01	0.04	0.03
5	8-Nov-23	0.01	0.01	0.01	0.01	0.03	0.03
6	23-Jul-24	0.01	0.02	0.01	0.03	0.02	0.02
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-9.0	-5.0	-3.0	-5.0	-3.0	-5.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.02	0.02	0.01	0.02	0.03	0.03
	Standard Deviation =	0.016	0.017	0.018	0.019	0.017	0.011
	Coefficient of Variation(CV)=	0.847	1.013	1.356	0.982	0.550	0.350
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		**DECREASING**	No Trend	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		**DECREASING**	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		NA	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Vanadium	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.19	0.01	0.02	0.05	0.01	
2	2-Apr-22	0.15	0.02	0.02	0.01	0.01	
3	19-Nov-22	0.40	0.05	0.05	0.02	0.03	
4	22-Jun-23	0.33	0.00	0.02	0.01	0.01	
5	8-Nov-23	0.45	0.01		0.01	0.01	
6	23-Jul-24	0.29	0.01	0.01	0.04	0.01	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	5.0	-4.0	-1.0	-5.0	-8.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.30	0.01	0.02	0.02	0.01	#DIV/0!
	Standard Deviation =	0.117	0.018	0.016	0.018	0.008	#DIV/0!
	Coefficient of Variation(CV)=	0.387	1.261	0.723	0.838	0.781	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	**DECREASING**	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	**DECREASING**	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	NA	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Site Name = Eramurra Salt				BRRTS No. =		Well Number = Zinc	
	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.06	0.01	0.05	0.01	0.01
2	2-Apr-22	0.17	0.27	0.09	0.35	0.01	0.04
3	19-Nov-22	0.05	0.20	0.05	0.20	0.05	0.05
4	22-Jun-23	0.02	0.01	0.05	0.01	0.01	0.02
5	8-Nov-23	0.01	0.01	0.26	0.01	0.01	0.02
6	23-Jul-24	0.01	0.02	0.11	0.02	0.01	0.02
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-7.0	-6.0	7.0	-6.0	7.0	1.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.05	0.09	0.09	0.10	0.01	0.03
	Standard Deviation =	0.063	0.114	0.088	0.141	0.018	0.017
	Coefficient of Variation(CV)=	1.387	1.226	0.929	1.352	1.216	0.673
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		DECREASING	DECREASING	INCREASING	DECREASING	INCREASING	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	NA	NA	NA	CV <= 1 STABLE

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Site Name = Eramurra Salt				BRRTS No. =		Well Number = Zinc	
	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.02	0.01	0.01	0.05	0.03	
2	2-Apr-22	0.01	0.01	0.01	0.21	0.04	
3	19-Nov-22	0.05	0.05	0.05	0.20	0.28	
4	22-Jun-23	0.01	0.02	0.01	0.01	0.01	
5	8-Nov-23	0.01	0.03		0.01	0.01	
6	23-Jul-24	0.01	0.03	0.01	0.03	0.01	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	9.0	-3.0	-7.0	-4.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.02	0.03	0.02	0.09	0.06	#DIV/0!
	Standard Deviation =	0.018	0.015	0.019	0.094	0.108	#DIV/0!
	Coefficient of Variation(CV)=	1.202	0.571	1.137	1.111	1.730	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	INCREASING	No Trend	DECREASING	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	INCREASING	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		CV > 1 NON-STABLE	NA	CV > 1 NON-STABLE	NA	CV > 1 NON-STABLE	n<4 n<4

Data Entry By = CW Date = 28-Oct-24 Checked By = AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Zirconium	

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.01	0.06	0.01	0.05	0.01	0.01
2	2-Apr-22	0.17	0.27	0.09	0.35	0.01	0.04
3	19-Nov-22	0.05	0.20	0.05	0.20	0.05	0.05
4	22-Jun-23	0.02	0.01	0.05	0.01	0.01	0.02
5	8-Nov-23	0.01	0.01	0.01	0.01	0.01	0.01
6	23-Jul-24	0.01	0.01	0.01	0.01	0.01	0.01
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-8.0	-6.0	-8.0	-6.0	7.0	-2.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	0.04	0.09	0.04	0.10	0.01	0.02
	Standard Deviation =	0.063	0.115	0.032	0.142	0.018	0.019
	Coefficient of Variation(CV)=	1.417	1.248	0.875	1.358	1.209	0.827
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		**DECREASING**	**DECREASING**	**DECREASING**	**DECREASING**	**INCREASING**	No Trend
Trend ≥ 90% Confidence Level		**DECREASING**	No Trend	**DECREASING**	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	NA	NA	NA	**CV <= 1 STABLE**

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

State of Wisconsin
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Remediation and Redevelopment Program

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Zirconium	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.05	0.05	0.05	0.05	0.05	
2	2-Apr-22	0.01	0.01	0.01	0.01	0.01	
3	19-Nov-22	0.01	0.01	0.01	0.01	0.01	
4	22-Jun-23	0.01	0.01	0.01	0.01	0.01	
5	8-Nov-23	0.01	0.01		0.01	0.01	
6	23-Jul-24	0.01	0.01	0.01	0.01	0.01	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-5.0	-5.0	-4.0	-5.0	-5.0	0.0
	Number of Rounds (n) =	6	6	5	6	6	0
	Average =	0.02	0.02	0.02	0.02	0.02	#DIV/0!
	Standard Deviation =	0.016	0.016	0.018	0.016	0.016	#DIV/0!
	Coefficient of Variation(CV)=	0.980	0.980	0.994	0.980	0.980	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

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Site Name = Eramurra Salt				BRRTS No. =		Well Number = pH	
	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	8.30	8.80	7.20	7.00	7.70	7.70
2	2-Apr-22	7.40	7.80	7.20	7.00	7.70	7.70
3	19-Nov-22	7.30	7.60	7.00	7.50	7.30	7.30
4	22-Jun-23	7.80	7.10	7.10	7.50	7.80	7.90
5	8-Nov-23	7.60	7.40	7.50	7.20	7.70	7.70
6	23-Jul-24	7.40	7.40	6.90	7.10	7.80	7.20
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-4.0	-10.0	-4.0	3.0	5.0	-4.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	7.63	7.68	7.15	7.22	7.67	7.58
	Standard Deviation =	0.372	0.595	0.207	0.232	0.186	0.271
	Coefficient of Variation(CV)=	0.049	0.077	0.029	0.032	0.024	0.036
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	**DECREASING**	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	**DECREASING**	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		**CV <= 1 STABLE**	NA	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = pH	
Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	12.00	7.20	7.40	6.60	6.90	
2	2-Apr-22	12.00	7.20	7.40	6.60	7.00	
3	19-Nov-22	12.00	6.70	7.20	6.70	7.20	
4	22-Jun-23	12.00	7.10	7.60	6.80	7.30	
5	8-Nov-23	11.00	6.50	7.00	6.40	6.90	
6	23-Jul-24	11.00	7.00	7.10	6.70	7.00	
7							
8							
9							
10							
Mann Kendall Statistic (S) =		-8.0	-8.0	-6.0	3.0	3.0	0.0
Number of Rounds (n) =		6	6	6	6	6	0
Average =		11.67	6.95	7.28	6.63	7.05	#DIV/0!
Standard Deviation =		0.516	0.288	0.223	0.137	0.164	#DIV/0!
Coefficient of Variation(CV)=		0.044	0.041	0.031	0.021	0.023	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		**DECREASING**	**DECREASING**	**DECREASING**	No Trend	No Trend	n<4
Trend ≥ 90% Confidence Level		**DECREASING**	**DECREASING**	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	NA	**CV <= 1 STABLE**	**CV <= 1 STABLE**	n<4 n<4

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

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Site Name = Eramurra Salt | BRRTS No. = | Well Number = TDS

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	1,800.00	180,000.00	30,000.00	190,000.00	1,200.00	2,300.00
2	2-Apr-22	1,600.00	120,000.00	33,000.00	150,000.00	1,200.00	1,700.00
3	19-Nov-22	1,400.00	92,000.00	24,000.00	120,000.00	1,200.00	1,500.00
4	22-Jun-23	1,400.00	98,000.00	22,000.00	120,000.00	1,200.00	1,600.00
5	8-Nov-23	1,400.00	67,000.00	22,000.00	84,000.00	1,300.00	1,800.00
6	23-Jul-24	1,400.00	66,000.00	19,000.00	85,000.00	1,300.00	1,700.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-9.0	-13.0	-12.0	-12.0	8.0	-2.0
	Number of Rounds (n) =	6	6	6	6	6	6
	Average =	1500.00	103833.33	25000.00	124833.33	1233.33	1766.67
	Standard Deviation =	167.332	42484.899	5366.563	40449.557	51.640	280.476
	Coefficient of Variation(CV)=	0.112	0.409	0.215	0.324	0.042	0.159
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		DECREASING	DECREASING	DECREASING	DECREASING	INCREASING	No Trend
Trend ≥ 90% Confidence Level		DECREASING	DECREASING	DECREASING	DECREASING	INCREASING	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	NA	NA	NA	CV <= 1 STABLE

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

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Site Name = Eramurra Salt | BRRTS No. = | Well Number = TDS

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	2,100.00	56,000.00	1,800.00	240,000.00	190,000.00	
2	2-Apr-22	2,200.00	34,000.00	1,700.00	210,000.00	160,000.00	
3	19-Nov-22	2,100.00	44,000.00	1,200.00	160,000.00	110,000.00	
4	22-Jun-23	2,000.00	46,000.00	1,300.00	170,000.00	130,000.00	
5	8-Nov-23	2,100.00	42,000.00	1,400.00	110,000.00	91,000.00	
6	23-Jul-24	1,900.00	30,000.00	1,400.00	100,000.00	85,000.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-8.0	-7.0	-4.0	-13.0	-13.0	0.0
	Number of Rounds (n) =	6	6	6	6	6	0
	Average =	2066.67	42000.00	1466.67	165000.00	127666.67	#DIV/0!
	Standard Deviation =	103.280	9208.692	233.809	54680.892	41020.320	#DIV/0!
	Coefficient of Variation(CV)=	0.050	0.219	0.159	0.331	0.321	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		**DECREASING**	**DECREASING**	No Trend	**DECREASING**	**DECREASING**	n<4
Trend ≥ 90% Confidence Level		**DECREASING**	No Trend	No Trend	**DECREASING**	**DECREASING**	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	**CV <= 1 STABLE**	NA	NA	n<4 n<4

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

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Site Name =	Eramurra Salt		BRRTS No. =		Well Number =	Mercury

	Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.00	0.00	0.00	0.00	0.00
2	2-Apr-22						
3	19-Nov-22	0.00	0.00	0.00	0.00	0.00	0.00
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	0.00
5	8-Nov-23	0.00	0.00	0.00	0.00	0.00	0.00
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	0.00
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	1.0	-6.0	-2.0	-6.0	1.0	-2.0
	Number of Rounds (n) =	5	5	5	5	5	5
	Average =	0.00	0.00	0.00	0.00	0.00	0.00
	Standard Deviation =	0.000	0.000	0.000	0.000	0.000	0.000
	Coefficient of Variation(CV)=	1.218	1.072	1.437	1.072	1.145	1.437
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	**DECREASING**	No Trend	**DECREASING**	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		**CV > 1 NON-STABLE**	NA	**CV > 1 NON-STABLE**	NA	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**

Data Entry By =	CW	Date =	28-Oct-24	Checked By =	AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

Notice: This form is the DNR supplied spreadsheet referenced in Appendices A of Comm 46 and NR 746, Wis. Adm. Code. It is provided to consultants as an optional tool for groundwater contaminant trend analysis to support site closure requests under s. Comm 46.07, Comm 46.08, NR 746.07, NR 746.08, Wis. Adm. Code. Use this form or a manual method when seeking case closure under those rules. Earlier versions of this form should not be used.

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Mercury	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	0.00	0.00	0.00	0.00	0.00	
2	2-Apr-22						
3	19-Nov-22	0.00	0.00	0.00	0.00	0.00	
4	22-Jun-23	0.00	0.00	0.00	0.00	0.00	
5	8-Nov-23	0.00	0.00		0.00		
6	23-Jul-24	0.00	0.00	0.00	0.00	0.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	3.0	1.0	-1.0	-6.0	1.0	0.0
	Number of Rounds (n) =	5	5	4	5	4	0
	Average =	0.00	0.00	0.00	0.00	0.00	#DIV/0!
	Standard Deviation =	0.000	0.001	0.000	0.000	0.000	#DIV/0!
	Coefficient of Variation(CV)=	0.395	1.213	1.385	1.072	1.139	#DIV/0!
Error Check, Blank if No Errors Detected							n<4
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	**DECREASING**	No Trend	n<4
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		**CV <= 1 STABLE**	**CV > 1 NON-STABLE**	**CV > 1 NON-STABLE**	NA	**CV > 1 NON-STABLE**	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Silicon	
Compound ->	MBH01	MBH03	MBH06	MBH08	MBH09	MBH10
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	60.00	10.00	53.00	44.00	71.00	71.00
2	2-Apr-22	56.00	6.00	43.00	21.00	69.00	66.00
3	19-Nov-22	65.00	6.50	45.00	17.00	82.00	77.00
4	22-Jun-23	63.00	8.60	45.00	15.00	64.00	64.00
5	8-Nov-23						
6	23-Jul-24	63.00	12.00	48.00	26.00	78.00	74.00
7							
8							
9							
10							
Mann Kendall Statistic (S) =		3.0	4.0	1.0	-4.0	0.0	0.0
Number of Rounds (n) =		5	5	5	5	5	5
Average =		61.40	8.62	46.80	24.60	72.80	70.40
Standard Deviation =		3.507	2.484	3.899	11.632	7.190	5.413
Coefficient of Variation(CV)=		0.057	0.288	0.083	0.473	0.099	0.077
Error Check, Blank if No Errors Detected							
Trend ≥ 80% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No Trend	No Trend	No Trend	No Trend
Stability Test, If No Trend Exists at 80% Confidence Level		**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**	**CV <= 1 STABLE**

Data Entry By = CW | Date = 28-Oct-24 | Checked By = AV

State of Wisconsin
Department of Natural Resources
Remediation and Redevelopment Program

Mann-Kendall Statistical Test
Form 4400-215 (2/2001)

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Site Name = Eramurra Salt			BRRTS No. =		Well Number = Silicon	

	Compound ->	MBH12	MBH13	MBH17	MBH19	MBH20	
Event Number	Sampling Date (most recent last)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)	Concentration (leave blank if no data)
1	15-Dec-21	120.00	45.00	72.00	58.00	31.00	
2	2-Apr-22	28.00	36.00	60.00	33.00	17.00	
3	19-Nov-22	42.00	55.00	65.00	31.00	20.00	
4	22-Jun-23	43.00	53.00	54.00	29.00	18.00	
5	8-Nov-23						
6	23-Jul-24	38.00	55.00	62.00	32.00	22.00	
7							
8							
9							
10							
	Mann Kendall Statistic (S) =	-2.0	5.0	-4.0	-6.0	0.0	0.0
	Number of Rounds (n) =	5	5	5	5	5	0
	Average =	54.20	48.80	62.60	36.60	21.60	#DIV/0!
	Standard Deviation =	37.259	8.258	6.618	12.054	5.595	#DIV/0!
	Coefficient of Variation(CV)=	0.687	0.169	0.106	0.329	0.259	#DIV/0!

Error Check, Blank if No Errors Detected						n<4
Trend ≥ 80% Confidence Level	No Trend	**INCREASING**	No Trend	**DECREASING**	No Trend	n<4
Trend ≥ 90% Confidence Level	No Trend	No Trend	No Trend	No Trend	No Trend	n<4
Stability Test, If No Trend Exists at 80% Confidence Level	**CV <= 1 STABLE**	NA	**CV <= 1 STABLE**	NA	**CV <= 1 STABLE**	n<4 n<4

Data Entry By = CW	Date = 28-Oct-24	Checked By = AV

APPENDIX H
IONIC BALANCE CALCULATIONS

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water	MBH01	MBH01	MBH01	MBH01	MBH01	**MBH01**	MBH03	MBH03	MBH03	MBH03	MBH03	**MBH03**	MBH06	MBH06	MBH06	MBH06	MBH06	**MBH06**
Field ID										MBH01	MBH01	MBH01	MBH01	MBH01	**MBH01**	MBH03	MBH03	MBH03	MBH03	MBH03	**MBH03**	MBH06	MBH06	MBH06	MBH06	MBH06	**MBH06**
Date										15/12/2021	2/04/2022	19/11/2022	22/06/2023	8/11/2023	**23/07/2024**	16/12/2021	1/04/2022	16/11/2022	27/06/2023	9/11/2023	**25/07/2024**	14/12/2021	1/04/2022	19/11/2022	22/06/2023	8/11/2023	**26/07/2024**
Lab Name										Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**
Lab Report Number										851738	877251	943244	1002271	1043049	**1121332**	851898	867913	942263	1003528	1043857	**1122482**	851738	867913	943244	1002271	1043049	**1122734**
Duplicate										Primary	Primary	Primary	Primary	Primary	**Primary**	Primary	Primary	Primary	Primary	Primary	**Primary**	Primary	Primary	Primary	Primary	Primary	**Primary**
Alkalinity																											
Bicarbonate Alkalinity (as CaCO3)	mg/L									**390**	**360**	**350**	**390**	**350**	**350**	< 20	**38**	**57**	**60**	**60**	**71**	**190**	**170**	**170**	**180**	**180**	**160**
Carbonate Alkalinity (as CaCO3)	mg/L									< 20	< 5	< 5	< 5	< 5	< 5	**26**	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	mg/L									< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	mg/L									**390**	**360**	**350**	**390**	**350**	**350**	**39**	**38**	**57**	**60**	**60**	**71**	**190**	**170**	**170**	**180**	**180**	**160**
Alkali Metals																											
Calcium	mg/L								1000	**100**	**97**	**130**	**120**	**150**	**99**	**5100**	**4000**	**3400**	**2400**	**2800**	**2400**	**1800**	**1900**	**1000**	**2300**	**2600**	**1900**
Chloride	mg/L	250		250						**540**	**530**	**490**	**520**	**560**	**550**	**84000**	**55000**	**56000**	**65000**	**46000**	**49000**	**10000**	**13000**	**11000**	**12000**	**11000**	**9800**
Magnesium	mg/L									**75**	**81**	**99**	**86**	**110**	**75**	**1800**	**1600**	**2900**	**2200**	**2100**	**2500**	**1000**	**1100**	**700**	**1400**	**1500**	**1100**
Potassium	mg/L									**2.3**	**3.6**	< 50	**3**	**2.4**	**2.2**	**1100**	**1100**	**1200**	**860**	**900**	**860**	**23**	**31**	< 50	**15**	**18**	**21**
Sodium	mg/L	180		180						**240**	**440**	**180**	**260**	**330**	**230**	**43000**	**38000**	**43000**	**27000**	**25000**	**28000**	**4200**	**4300**	**2200**	**3900**	**5300**	**3800**
Sulphate (as SO4)	mg/L	250		250					1000	**56**	**61**	**64**	**56**	**64**	**63**	**2700**	**3300**	**4500**	**4200**	**3800**	**4400**	**950**	**1200**	**1100**	**940**	**1100**	**1100**
Ionic Balance																											
Calculated Ionic balance	%									**-3%**	**17%**	**7%**	**5%**	**16%**	**-3%**	**-3%**	**12%**	**17%**	**-13%**	**2%**	**3%**	**8%**	**-3%**	**-26%**	**6%**	**20%**	**8%**

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water
Field ID									
Date									
Lab Name									
Lab Report Number									
Duplicate									
Alkalinity									
Bicarbonate Alkalinity (as CaCO3)	mg/L								
Carbonate Alkalinity (as CaCO3)	mg/L								
Hydroxide Alkalinity (as CaCO3)	mg/L								
Total Alkalinity (as CaCO3)	mg/L								
Alkali Metals									
Calcium	mg/L								1000
Chloride	mg/L	250		250					
Magnesium	mg/L								
Potassium	mg/L								
Sodium	mg/L	180		180					
Sulphate (as SO4)	mg/L	250		250					1000
Ionic Balance									
Calculated Ionic balance	%								

Field ID	Analyte	MBH08	MBH08	MBH08	MBH08	MBH08	**MBH08**	MBH09	DUP2	DUP2	MBH09	DUP1	DUP1	MBH09	DUP2	DUP2
Date		16/12/2021	1/04/2022	16/11/2022	27/06/2023	9/11/2023	**25/07/2024**	14-15/12/2021	15/12/2021	15/12/2021	31/03/2022	31/03/2022	31/03/2022	20/11/2022	20/11/2022	20/11/2022
Lab Name		Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS
Lab Report Number		851898	867913	942263	1003528	1043857	**1122482**	851738	851738	EP2115675	877286	877286	EP2203944	943244	943244	EP2216117
Duplicate		Primary	Primary	Primary	Primary	Primary	**Primary**	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory
Alkalinity																
Bicarbonate Alkalinity (as CaCO3)	mg/L	**230**	**210**	**220**	**230**	**220**	**200**	**460**	**-**	**-**	**400**	**420**	**387**	**400**	**420**	**402**
Carbonate Alkalinity (as CaCO3)	mg/L	< 20	< 5	< 5	< 5	< 5	< 5	< 20	**-**	**-**	< 5	< 5	<1	< 5	< 5	<1
Hydroxide Alkalinity (as CaCO3)	mg/L	< 20	< 5	< 5	< 5	< 5	< 5	< 20	**-**	**-**	< 5	< 5	<1	< 5	< 5	<1
Total Alkalinity (as CaCO3)	mg/L	**230**	**210**	**220**	**230**	**220**	**200**	**460**	**-**	**-**	**400**	**420**	**387**	**400**	**420**	**402**
Alkali Metals																
Calcium	mg/L	**1200**	**1600**	**1500**	**1100**	**1300**	**1500**	**59**	**-**	**-**	**70**	**72**	**66**	**51**	**52**	**60**
Chloride	mg/L	**57000**	**66000**	**67000**	**79000**	**61000**	**75000**	**430**	**-**	**-**	**440**	**450**	**459**	**370**	**380**	**405**
Magnesium	mg/L	**3900**	**4700**	**5400**	**3400**	**4100**	**4700**	**63**	**-**	**-**	**63**	**64**	**61**	**62**	**60**	**56**
Potassium	mg/L	**1300**	**1400**	**1700**	**1200**	**1400**	**1600**	**1.7**	**-**	**-**	**1.8**	**1.7**	**1**	**1.1**	**1.1**	**1**
Sodium	mg/L	**36000**	**52000**	**50000**	**30000**	**37000**	**42000**	**290**	**-**	**-**	**310**	**310**	**298**	**310**	**310**	**276**
Sulphate (as SO4)	mg/L	**7300**	**9600**	**9100**	**10000**	**10000**	**8900**	**53**	**-**	**-**	**54**	**54**	**52**	**46**	**46**	**53**
Ionic Balance																
Calculated Ionic balance	%	**6%**	**16%**	**15%**	**-21%**	**3%**	**1%**	**0%**			**5%**	**4%**	**2%**	**8%**	**6%**	**1%**

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water									
Field ID										MBH09	DUP1	DUP1	MBH09	DUP1	DUP1	**MBH09**	**DUP1**	**DUP1**
Date										25/06/2023	25/06/2023	25/06/2023	8/11/2023	8/11/2023	8/11/2023	**24/07/2024**	**24/07/2024**	**24/07/2024**
Lab Name										Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS	**Eurofins**	**Eurofins**	**ALS**
Lab Report Number										1002605	1002605	EP2308597	1043049	1043049	EP2315880	**1121879**	**1121879**	**EP2410566**
Duplicate										Primary	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory	**Primary**	**Intra-Laboratory**	**Inter-Laboratory**
Alkalinity																		
Bicarbonate Alkalinity (as CaCO3)	mg/L									**420**	**430**	**401**	**440**	**-**	**407**	**390**	**400**	**397**
Carbonate Alkalinity (as CaCO3)	mg/L									< 5	< 5	<1	< 5	**-**	<1	< 5	< 5	<1
Hydroxide Alkalinity (as CaCO3)	mg/L									< 5	< 5	<1	< 5	**-**	<1	< 5	< 5	<1
Total Alkalinity (as CaCO3)	mg/L									**420**	**430**	**401**	**440**	**-**	**407**	**390**	**400**	**397**
Alkali Metals																		
Calcium	mg/L								1000	**61**	**68**	**66**	**77**	**-**	**63**	**58**	**59**	**64**
Chloride	mg/L	250		250						**410**	**440**	**423**	**410**	**-**	**480**	**440**	**440**	**466**
Magnesium	mg/L									**68**	**86**	**61**	**83**	**-**	**58**	**62**	**65**	**65**
Potassium	mg/L									**2.1**	**6.3**	**1**	**1.7**	**-**	**1**	**1.2**	**1.2**	**2**
Sodium	mg/L	180		180						**390**	**490**	**286**	**370**	**-**	**273**	**280**	**290**	**282**
Sulphate (as SO4)	mg/L	250		250					1000	**52**	**53**	**51**	**53**	**-**	**58**	**54**	**53**	**51**
Ionic Balance																		
Calculated Ionic balance	%									**14%**	**22%**	**3%**	**15%**		**-4%**	**1%**	**2%**	**0%**

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water	MBH10	DUP1	DUP1	MBH10	MBH10	MBH10	MBH10	**MBH010**	MBH12	MBH12	MBH12	MBH12	MBH12	**MBH12**
Field ID										MBH10	DUP1	DUP1	MBH10	MBH10	MBH10	MBH10	**MBH010**	MBH12	MBH12	MBH12	MBH12	MBH12	**MBH12**
Date										14/12/2021	14/12/2021	14/12/2021	31/03/2022	20/11/2022	25/06/2023	8/11/2023	**26/07/2024**	14/12/2021	29/03/2022	21/11/2022	22/06/2023	8/11/2023	**24/07/2024**
Lab Name										Eurofins	Eurofins	ALS	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**
Lab Report Number										851738	851738	EP2115675	877286	943244	1002605	1043049	**1122734**	851738	867013	943366	1002271	1043049	**1121879**
Duplicate										Primary	Intra-Laboratory	Inter-Laboratory	Primary	Primary	Primary	Primary	**Primary**	Primary	Primary	Primary	Primary	Primary	**Primary**
Alkalinity																							
Bicarbonate Alkalinity (as CaCO3)	mg/L									**410**	**400**	**346**	**370**	**370**	**390**	**410**	**360**	< 20	< 5	**260**	< 5	< 5	< 5
Carbonate Alkalinity (as CaCO3)	mg/L									< 20	**21**	<1	< 5	< 5	< 5	< 5	< 5	**230**	**360**	< 5	**270**	**160**	**130**
Hydroxide Alkalinity (as CaCO3)	mg/L									< 20	< 20	<1	< 5	< 5	< 5	< 5	< 5	**790**	**260**	**190**	**140**	**190**	**90**
Total Alkalinity (as CaCO3)	mg/L									**410**	**420**	**346**	**370**	**370**	**390**	**410**	**360**	**1000**	**620**	**440**	**420**	**350**	**220**
Alkali Metals																							
Calcium	mg/L								1000	**84**	**85**	**86**	**57**	**54**	**56**	**71**	**64**	**55**	**50**	**52**	**63**	**77**	**56**
Chloride	mg/L	250		250						**1100**	**1200**	**1150**	**680**	**650**	**740**	**730**	**660**	**540**	**590**	**580**	**560**	**660**	**630**
Magnesium	mg/L									**100**	**110**	**99**	**63**	**62**	**62**	**70**	**67**	**0.8**	**1.5**	**2**	**2.5**	**1.6**	**0.8**
Potassium	mg/L									**3.9**	**5**	**4**	**2.3**	**1.7**	**3.9**	**2.4**	**1.9**	**59**	**48**	**42**	**47**	**49**	**31**
Sodium	mg/L	180		180						**700**	**690**	**668**	**470**	**540**	**650**	**610**	**480**	**640**	**610**	**650**	**590**	**730**	**530**
Sulphate (as SO4)	mg/L	250		250					1000	**97**	**97**	**84**	**72**	**74**	**72**	**75**	**78**	**190**	**210**	**300**	**230**	**330**	**380**
Ionic Balance																							
Calculated Ionic balance	%									**4%**	**1%**	**2%**	**3%**	**10%**	**12%**	**11%**	**6%**	**25%**	**18%**	**9%**	**19%**	**19%**	**2%**

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water	Field ID	MBH13	MBH13	MBH13	MBH13	MBH13	**MBH13**	MBH17	MBH17	MBH17	MBH17	MBH17	**MBH17**	MBH19	MBH19	MBH19	MBH19	MBH19	**MBH19**
										Date	14/12/2021	2/04/2022	20/11/2022	22/06/2023	8/11/2023	**26/07/2024**	16/12/2021	2/04/2022	19/11/2022	24/06/2023	7/11/2023	**23/07/2024**	16/12/2021	2/04/2022	17/11/2022	24/06/2023	7/11/2023	**25/07/2024**
										Lab Name	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	**Eurofins**
										Lab Report Number	851738	877251	943244	1002271	1043049	**1122734**	851898	877251	943244	1002605	1044243	**1121332**	851898	877251	942841	1002605	1044243	**1122482**
										Duplicate	Primary	Primary	Primary	Primary	Primary	**Primary**	Primary	Primary	Primary	Primary	Primary	**Primary**	Primary	Primary	Primary	Primary	Primary	**Primary**
Alkalinity																												
Bicarbonate Alkalinity (as CaCO3)	mg/L										**180**	**210**	**220**	**210**	**230**	**240**	**370**	**330**	**350**	**350**	**370**	**330**	**130**	**110**	**110**	**110**	**110**	**110**
Carbonate Alkalinity (as CaCO3)	mg/L										< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	mg/L										< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5	< 20	< 5	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	mg/L										**180**	**210**	**220**	**210**	**230**	**240**	**370**	**330**	**350**	**350**	**370**	**330**	**130**	**110**	**110**	**110**	**110**	**110**
Alkali Metals																												
Calcium	mg/L								1000		**1400**	**1700**	**2800**	**2000**	**2400**	**1200**	**98**	**130**	**110**	**110**	**120**	**120**	**1600**	**2000**	**1800**	**2000**	**1100**	**1500**
Chloride	mg/L	250		250							**20000**	**15000**	**27000**	**31000**	**29000**	**17000**	**550**	**580**	**500**	**590**	**510**	**520**	**120000**	**99000**	**99000**	**100000**	**87000**	**100000**
Magnesium	mg/L										**1800**	**1200**	**3900**	**2800**	**3200**	**1700**	**70**	**75**	**85**	**85**	**61**	**86**	**6100**	**6100**	**7900**	**7000**	**5300**	**6400**
Potassium	mg/L										**69**	**48**	**180**	**280**	**94**	**69**	**2.3**	**5.3**	**2.5**	**3.9**	**2.2**	**2.7**	**1500**	**1300**	**2000**	**4300**	**1300**	**1600**
Sodium	mg/L	180		180							**9200**	**7000**	**19000**	**12000**	**15000**	**9100**	**230**	**970**	**270**	**320**	**250**	**270**	**50000**	**46000**	**64000**	**79000**	**47000**	**52000**
Sulphate (as SO4)	mg/L	250		250					1000		**2400**	**1900**	**2700**	**2600**	**3000**	**2300**	**54**	**63**	**58**	**53**	**62**	**57**	**9100**	**9400**	**10000**	**11000**	**10000**	**8900**
Ionic Balance																												
Calculated Ionic balance	%										**0%**	**3%**	**25%**	**-4%**	**9%**	**6%**	**-5%**	**42%**	**7%**	**6%**	**0%**	**8%**	**-14%**	**-7%**	**10%**	**18%**	**-2%**	**-2%**

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water
Field ID									
Date									
Lab Name									
Lab Report Number									
Duplicate									
Alkalinity									
Bicarbonate Alkalinity (as CaCO3)	mg/L								
Carbonate Alkalinity (as CaCO3)	mg/L								
Hydroxide Alkalinity (as CaCO3)	mg/L								
Total Alkalinity (as CaCO3)	mg/L								
Alkali Metals									
Calcium	mg/L								1000
Chloride	mg/L	250		250					
Magnesium	mg/L								
Potassium	mg/L								
Sodium	mg/L	180		180					
Sulphate (as SO4)	mg/L	250		250					1000
Ionic Balance									
Calculated Ionic balance	%								

Analyte	MBH20 16/12/2021 Eurofins 851898 Primary	MBH20 2/04/2022 Eurofins 877251 Primary	MBH20 17/11/2022 Eurofins 942841 Primary	MBH20 24/06/2023 Eurofins 1002605 Primary	MBH20 7/11/2023 Eurofins 1044243 Primary	**MBH20 23/07/2024 Eurofins 1121332 Primary**	MB21S 30/01/2024 Eurofins 1064367 Primary	**MB21S 23/07/2024 Eurofins 1121332 Primary**	MB26D 30/01/2024 Eurofins 1064367 Primary	**MB26D 25/07/2024 Eurofins 1122482 Primary**	MB33S 1/02/2024 Eurofins 1065212 Primary	**MB33S 24/07/2024 Eurofins 1121879 Primary**	MB33D 1/02/2024 Eurofins 1065212 Primary	**MB33D 24/07/2024 Eurofins 1121879 Primary**
Alkalinity														
Bicarbonate Alkalinity (as CaCO3)	**170**	**160**	**160**	**170**	**180**	**200**	**340**	**330**	**110**	**99**	**330**	**310**	< 5	< 5
Carbonate Alkalinity (as CaCO3)	< 20	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**460**	**500**
Hydroxide Alkalinity (as CaCO3)	< 20	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	**2200**	**1300**
Total Alkalinity (as CaCO3)	**170**	**160**	**160**	**170**	**180**	**200**	**340**	**330**	**110**	**99**	**330**	**310**	**2700**	**1800**
Alkali Metals														
Calcium	**1400**	**3400**	**1700**	**1900**	**1200**	**1400**	**150**	**130**	**1900**	**2100**	**87**	**89**	**500**	**230**
Chloride	**71000**	**78000**	**71000**	**75000**	**68000**	**72000**	**350**	**330**	**61000**	**60000**	**280**	**270**	**170**	**180**
Magnesium	**4400**	**4500**	**6100**	**5300**	**3700**	**4400**	**50**	**40**	**2800**	**2900**	**41**	**43**	**1.1**	< 0.5
Potassium	**1200**	**2000**	**1600**	**3600**	**1100**	**1100**	**2.4**	**1.8**	**1100**	**1200**	**2**	**2.2**	**270**	**310**
Sodium	**37000**	**34000**	**49000**	**61000**	**36000**	**36000**	**140**	**120**	**31000**	**33000**	**140**	**140**	**350**	**390**
Sulphate (as SO4)	**7200**	**7700**	**8100**	**8300**	**8000**	**7800**	**23**	**39**	**2600**	**6000**	**42**	**32**	**57**	**24**
Ionic Balance														
Calculated Ionic balance	**-2%**	**-7%**	**13%**	**20%**	**-3%**	**-4%**	**6%**	**-2%**	**-2%**	**0%**	**-1%**	**3%**	**79%**	**74%**

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Analyte	Unit	ADWG (2018) Aesthetic	ADWG (2018) Health	NHMRC (2008) Recreational Water - Aesthetics	NHMRC (2008) Recreational Water - Health (Primary Contact)	ANZG 2018 Fresh Water 95% Protection	ANZG (2018) Marine Water 95% Toxicant DGVs	ANZECC (2000) Irrigation Long Term Trigger Values	ANZECC (2000) Livestock Drinking Water	MB34S	DUP1	DUP1	MB34S	DUP2	DUP2	MB35S	MB35S	MB37D	MB37D	MB38D	MB38D	MB39D	MB39D
Field ID										MB34S	DUP1	DUP1	MB34S	DUP2	DUP2	MB35S	MB35S	MB37D	MB37D	MB38D	MB38D	MB39D	MB39D
Date										1/02/2024	1/02/2024	1/02/2024	24/07/2024	24/07/2024	24/07/2024	31/01/2024	26/07/2024	31/01/2024	24/07/2024	31/01/2024	26/07/2024	30/01/2024	25/07/2024
Lab Name										Eurofins	Eurofins	ALS	Eurofins	Eurofins	ALS	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
Lab Report Number										1065212	1065212	EP2401443	1121879	1121879	EP2410566	1064888	1122734	1064888	1121879	1064888	1122734	1064367	1122482
Duplicate										Primary	Intra-Laboratory	Inter-Laboratory	Primary	Intra-Laboratory	Inter-Laboratory	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Alkalinity																							
Bicarbonate Alkalinity (as CaCO3)	mg/L									320	320	333	490	480	480	330	320	260	330	380	340	300	320
Carbonate Alkalinity (as CaCO3)	mg/L									< 5	< 5	<1	< 5	< 5	<1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Hydroxide Alkalinity (as CaCO3)	mg/L									< 5	< 5	<1	< 5	< 5	<1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Total Alkalinity (as CaCO3)	mg/L									320	320	333	490	480	480	330	320	260	330	380	340	300	320
Alkali Metals																							
Calcium	mg/L								1000	57	66	59	66	66	66	150	150	71	70	250	240	170	150
Chloride	mg/L	250		250						450	460	472	640	640	655	1200	980	420	410	1700	1700	860	810
Magnesium	mg/L									70	90	68	75	75	70	130	130	42	51	270	250	71	64
Potassium	mg/L									3.3	3.8	3	4.6	4.6	4	2.4	2.4	11	7.5	4.7	4.6	12	13
Sodium	mg/L	180		180						230	290	220	430	430	414	660	620	350	310	780	710	600	560
Sulphate (as SO4)	mg/L	250		250					1000	54	54	34	4.3	4.8	4	190	190	180	190	390	370	220	350
Ionic Balance																							
Calculated Ionic balance	%									-1%	-10%	-4%	4%	4%	1%	4%	11%	7%	1%	5%	2%	10%	3%

Table 4 - Comparison of Recent and Historical Groundwater Analytical Results to Adopted Guideline Criteria

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

										Field ID	MB40D	**MB40D**
										Date	1/02/2024	**25/07/2024**
										Lab Name	Eurofins	**Eurofins**
										Lab Report Number	1065212	**1122482**
										Duplicate	Primary	**Primary**
Analyte	**Unit**	**ADWG (2018) Aesthetic**	**ADWG (2018) Health**	**NHMRC (2008) Recreational Water - Aesthetics**	**NHMRC (2008) Recreational Water - Health (Primary Contact)**	**ANZG 2018 Fresh Water 95% Protection**	**ANZG (2018) Marine Water 95% Toxicant DGVs**	**ANZECC (2000) Irrigation Long Term Trigger Values**	**ANZECC (2000) Livestock Drinking Water**			
Alkalinity												
Bicarbonate Alkalinity (as CaCO3)	mg/L									< 5	< 5
Carbonate Alkalinity (as CaCO3)	mg/L									**530**	**490**
Hydroxide Alkalinity (as CaCO3)	mg/L									**960**	**1200**
Total Alkalinity (as CaCO3)	mg/L									**1500**	**1700**
Alkali Metals												
Calcium	mg/L								1000	**110**	**360**
Chloride	mg/L	250		250						**340**	**470**
Magnesium	mg/L									<0.5	< 0.5
Potassium	mg/L									**300**	**380**
Sodium	mg/L	180		180						**400**	**450**
Sulphate (as SO4)	mg/L	250		250					1000	**156**	**370**
Ionic Balance												
Calculated Ionic balance	%									**42%**	**41%**

APPENDIX I DATA QUALITY ASSESSMENT

Appendix I – Data Quality Assessment

I1. Quality Assurance and Quality Control

Land and Water Consulting (LWC) has adopted quality assurance and quality control procedures consistent with guidance from the following sources:

- NEPC 1999. National Environmental Protection (Assessment of Site Contamination) Measure 1999, National Environment Protection Council as amended 15 May 2013, Comlaw No. F2013C00288
- NSW Environment Protection Authority (EPA) 2022. Contaminated Land Guidelines – Sampling Design Part 2 – Interpretation
- Standards Australia AS/NZ, Australian/New Zealand Standard 1998, AS 5667.1:1998 Water Quality – Sampling Part 1: Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples.
- USEPA 2006, Guidance on Systematic Planning Using the Data Quality Objective Process (EPA QA/G-4), EPA/240/B-06, February 2006.
- USEPA 2008, Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8), EPA/240/R-02/004, published November 2007, re-issued 7 January 2008.

I.2 Field and Laboratory Procedures

A summary of the field and laboratory quality assurance and quality control (QA/QC) procedures conducted as part of the investigation is provided below in Table Q-1. Laboratory QA/QC procedures and results are detailed in the groundwater certified laboratory results contained in Appendix D.

Relative Percentage Differences (RPDs) were assessed where the reported concentrations were greater than the laboratory LOR in accordance with the following acceptance criteria:

- Where both reported concentrations are greater than 20 times the LOR: RPD% <30%;
- Where the higher of the two concentrations is between 10 and 20 times the LOR: RPD% <50%; and
- Where both concentrations are less than 10 times the LOR: RPD% has no limit.

A summary of the data quality assessment including tabulated RPDs, rinsate and trip blank data is presented further below.

The overall assessment of data quality was undertaken in accordance with the Data Quality Objective (DQO) and Data Quality Indicator (DQI) processes.

I.3 Data Quality Summary

The quality of analytical data produced for this project has been assessed with reference to the following issues:

- Sampling technique;
- Preservation and storage of samples upon collection and during transport to the laboratory;
- Sample holding times;
- Analytical procedures;
- Laboratory limits of reporting;
- Field duplicate agreement;
- Laboratory QA/QC procedures; and
- The occurrence of apparently unusual or anomalous results.

It was considered that laboratory data collected during this program of works is suitably robust for the purposes of the assessment, subject to the comments and limitations outlined in the data quality assessment table and laboratory

reports. It is considered that quality control information indicates an acceptable degree of QA/QC information was collected and reported providing confidence in the accuracy and precision of reported results subject to the limitations discussed.

Table H-1 - Summary of Quality Assurance and Control

Component	Frequency	Frequency Acceptable?	Acceptance Criteria	Reference	Criteria met?	Comments/ Appendix
	Field QC					
Field Calibration	All instruments to be calibrated correctly prior to use in field	✓	Field instrumentation calibrated prior to use. Calibration certificates and records documented	ASC NEPM (Schedule B2)	✓	Calibration of field equipment was completed by the equipment provider. Provider Calibration Certificates are presented in **Appendix B.**
Sample Preservation and Storage	All samples preserved, stored and transported in a manner such that sample integrity is maintained	✓	0 – 6 degrees Celsius	ASC NEPM (Schedule B3)		All samples were received by the laboratory with an attempt to chill evident. Due to freight logistics, samples may have been slightly over the upper adopted limit of 6 degrees Celsius. This was not considered to impact on the integrity of the sample being provided for analysis.
Field Replicate (intra)	1 in 20 primary samples or 1 per batch.	✓	RPD <30% if both results >20 LOR RPD <50% if the higher of the two results <>10-20 LOR No limit for RPD if both results <10 LOR	ASC NEPM (Schedule B2 & B3)	✓	The following analytes breached the RPD criteria for DUP1 and DUP2: <u>DUP1</u> ▪ Mercury (82.8%) <u>DUP2</u> ▪ Chromium (106.7%) The exceedances were not considered to significantly impact on the interpretation of the results as the reported concentrations of were generally within historical variation and/ or the analytes were reported below the adopted guideline criteria and/ or the primary result was the higher concentration leading to a conservative interpretation of results.
Field Replicate (inter)	1 in 20 primary samples or 1 per batch.	✓	RPD <30% if both results >20 LOR RPD <50% if the higher of the two	ASC NEPM (Schedule B2 & B3)	✓	The following analytes breached the RPD criteria for DUP1 and DUP2 <u>DUP1</u> ▪ Phosphate Total (175%) ▪ Total Nitrogen (159.0%)

Component	Frequency	Frequency Acceptable?	Acceptance Criteria	Reference	Criteria met?	Comments/ Appendix
			results <>10-20 LOR No limit for RPD if both results <10 LOR			DUP2 ▪ Aluminium (57.4%) ▪ Antimony (52.0%) ▪ Antimony (filtered) (61.8%) ▪ Chromium (71.4%) The exceedances were not considered to significantly impact on the interpretation of the results as the reported concentrations of were generally within historical variation and/ or the analytes were reported below the adopted guideline criteria and/ or the primary result was the higher concentration leading to a conservative interpretation of results and/ or the RPD exceedance only marginally exceeded the acceptable value.
Rinsate Blanks	1 per day, per matrix, per item of equipment	Four rinsate blanks were collected during the GME program on 23, 24, 25 and 27 July 2024. These were the days on which groundwater sampling (using the decontaminated groundwater pump) occurred. Decontamination procedures were generally consistent between all well sampling locations and so the rinsate samples are considered to be reflective of the adequacy of decontamination procedures throughout the program of works.	<LOR	ASC NEPM (Schedule B3)	✓	All analytes were reported below LOR, with exception of the following: ▪ Rinse_25/07– chromium (0.003 mg/L), copper (0.009 mg/L), molybdenum (0.002 mg/L) and selenium (0.003 mg/L). ▪ Rinse_26/07 – iron (0.02 mg/L) and vanadium (0.006 mg/L) The reported breaches were not considered to significantly impact upon the overall interpretation of results as the they were only marginally above the laboratory LOR and/ or reported concentrations of the same analytes were not systematically reported above laboratory LOR or guideline criteria at locations sampled on the days the breaches occurred.
Trip Blanks (water samples for volatile organic marker compounds only – to assess potential for contamination of the	1 per esky or 1 per laboratory batch including analysis of volatile compounds.	✓	<LOR	ASC NEPM (Schedule B3)	✓	✓

Component	Frequency	Frequency Acceptable?	Acceptance Criteria	Reference	Criteria met?	Comments/ Appendix
samples by volatile compounds during transfer to the laboratory)						
Laboratory QC						
Primary Laboratory Batch Reference						1121332 1121879 1122482 1122734
Secondary Laboratory Batch Reference						EP2410566
Analysis undertaken in specific holding times			Variable depending on the chemical substance.	Eurofins and ALS QC Requirements	**ALS Report EP2410566** A holding time breach was reported for pH (same day), nitrite as N and reactive phosphorus. Given the short holding time and regional location of the investigation, samples were analysed as quick as possible (accounting for delays during transit and laboratory processing). The holding time breach was not considered significantly impact upon the overall interpretation of results.	Refer to **Appendix D**
Method blanks	1 analysed per process batch of 20 samples.	✓	<LOR	ASC NEPM (Schedule B3)	✓	All laboratory method blanks were <LOR. Refer to **Appendix D**
Duplicates	1 in 10 primary samples or 2 per batch of 20 samples.	✓	RPD <50% if results >10 LOR	ASC NEPM (Schedule B3) NATA laboratory practice.	✓	Refer to **Appendix D**
Matrix spikes	1 analysed per process batch of 20 samples.	✓	Recovery 70 - 130%	ASC NEPM (Schedule B3) NATA laboratory practice	**Eurofins Report 1122482** The matrix spike recovery for calcium, strontium (filtered), silver (filtered), bismuth (filtered), and sodium was not determined and/or determined to be less than lower data quality objective. This was not considered to significantly impact on the overall interpretation of the results as this breach was reported	Refer to **Appendix D**

Component	Frequency	Frequency Acceptable?	Acceptance Criteria	Reference	Criteria met?	Comments/ Appendix
					for an anonymous sample, which are not considered relevant to the reported outcomes. Further, reported concentrations of these analytes were consistent with the historical results. **Eurofins Report 1121879** The matrix spike recovery for iron (filtered), manganese, manganese (filtered), molybdenum (filtered), TRH C10-C14, TRH >C10-C16) was not determined and/or determined to be outside the data quality objective. This was not considered to significantly impact on the overall interpretation of the results as this breach was reported for an anonymous sample, which are not considered relevant to the reported outcomes. Further, reported concentrations of these analytes were consistent with the historical results. **ALS Report EP2410566** The matrix spike recovery for C15 - C28, C29 - C36, >C16 - C34, >C34 - C40 was determined to be less than the data quality objective. This was not considered to significantly impact on the overall interpretation of the results as this breach was reported for an anonymous sample, which are not considered relevant to the reported outcomes. Further, reported concentrations of hydrocarbons were consistent with the historical results.	
Laboratory control sample spikes	1 analysed per process batch of 20 samples.	✓	Recovery 70 - 130%	ASC NEPM (Schedule B3)	✓	All LCS were reported within the adopted acceptability range. **Appendix D**
Surrogate spikes	Each analysis undertaken by GC-MS (all organics except TRH >C_{10}).	✓	Recovery 50 – 150%	ASC NEPM (Schedule B3) NATA laboratory practice.	✓	All Surrogate Spike recoveries were reported within the adopted acceptability range. Refer to **Appendix D**

Data Quality Assessment Tables

Summary of Relative Percentage Differences (RPD's)

Project: Hydrogeological Investigation

Client: Eramurra Solar Salt Project

Job Number: QI-01

Location	MBH09	DUP1		DUP1	
Date Sampled	24/07/2024	24/07/2024		24/07/2024	
Laboratory	Eurofins	Eurofins	RPD%	ALS	RPD%
Report Number	1121879	1121879		EP2410566	
Duplicate	Primary	Intra-Laboratory		Inter-Laboratory	

Exceedance of RPD% Criterion of 30% of mean concentration where both concentrations >20 x EQL

Exceedance of RPD% Criterion of 50% of mean concentration where higher concentration 10-20 x EQL

Analyte	LOR	Unit					
Heavy Metals							
Aluminium	0.05	mg/L	< 0.05	< 0.05	-	**0.009**	139.0
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	-	<0.005	-
Antimony	0.001	mg/L	< 0.001	< 0.001	-	<0.0002	-
Antimony (filtered)	0.001	mg/L	< 0.001	< 0.001	-	<0.0002	-
Arsenic	0.001	mg/L	**0.003**	**0.003**	0.0	**0.0024**	22.2
Arsenic (filtered)	0.001	mg/L	**0.002**	**0.002**	0.0	**0.0024**	18.2
Beryllium	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Bismuth	0.005	mg/L	< 0.005	< 0.005	-	<0.00005	-
Bismuth (filtered)	0.005	mg/L	< 0.005	< 0.005	-	<0.00005	-
Cadmium	0.0001	mg/L	< 0.0001	< 0.0001	-	<0.00005	-
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	-	<0.00005	-
Chromium (III+VI)	0.001	mg/L	< 0.001	< 0.001	-	**0.0004**	85.7
Chromium (III+VI) (filtered)	0.001	mg/L	< 0.001	< 0.001	-	**0.0003**	107.7
Cobalt	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Cobalt (filtered)	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Copper	0.001	mg/L	< 0.001	**0.001**	0.0	**0.001**	0.0
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	-	**0.0007**	35.3
Iron	0.01	mg/L	**0.02**	**0.03**	40.0	**0.009**	75.9
Iron (filtered)	0.01	mg/L	< 0.01	< 0.01	-	<0.002	-
Lead	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Lithium	0.001	mg/L	**0.014**	**0.015**	6.9	**0.0098**	35.3
Lithium (filtered)	0.005	mg/L	**0.012**	**0.011**	8.7	**0.0115**	4.3
Manganese	0.005	mg/L	< 0.005	< 0.005	-	**0.0014**	112.5
Manganese (filtered)	0.005	mg/L	< 0.005	< 0.005	-	**0.0006**	157.1
Mercury	0.0001	mg/L	**0.00041**	**0.00017**	82.8	<0.0001	121.6
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	-	<0.0001	-
Molybdenum	0.001	mg/L	**0.003**	**0.003**	0.0	**0.0031**	3.3
Molybdenum (filtered)	0.001	mg/L	< 0.001	**0.001**	0.0	**0.0024**	82.4
Nickel	0.001	mg/L	**0.001**	**0.001**	0.0	**0.001**	0.0
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	-	**0.0009**	10.5
Selenium	0.001	mg/L	**0.002**	**0.001**	66.7	**0.0015**	28.6
Selenium (filtered)	0.001	mg/L	**0.001**	**0.001**	0.0	**0.0016**	46.2
Silver	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Silver (filtered)	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Strontium	0.005	mg/L	**1.5**	**1.6**	6.5	**1.41**	6.2
Strontium (filtered)	0.005	mg/L	**1.5**	**1.5**	0.0	**1.31**	13.5
Thorium	0.05	mg/L	< 0.05	< 0.05	-	<0.0001	-
Thorium (filtered)	0.05	mg/L	< 0.05	< 0.05	-	<0.0001	-
Titanium	0.005	mg/L	< 0.005	< 0.005	-	<0.001	-
Titanium (filtered)	0.005	mg/L	< 0.005	< 0.005	-	<0.001	-
Uranium	0.001	mg/L	**0.005**	**0.005**	0.0	**0.00516**	3.1
Uranium (filtered)	0.001	mg/L	**0.002**	**0.002**	0.0	**0.00445**	76.0
Vanadium	0.005	mg/L	**0.040**	**0.041**	2.5	**0.0387**	3.3
Vanadium (filtered)	0.005	mg/L	**0.016**	**0.016**	0.0	**0.0382**	81.9
Zinc	0.005	mg/L	**0.013**	**0.015**	14.3	**0.012**	8.0
Zinc (filtered)	0.005	mg/L	**0.013**	**0.011**	16.7	**0.011**	16.7
Zirconium	0.01	mg/L	< 0.01	< 0.01	-	<0.005	-
Zirconium (filtered)	0.01	mg/L	< 0.01	< 0.01	-	<0.005	-
BTEX							
Benzene	1	µg/L	< 1	< 1	-	<1	-
Ethylbenzene	1	µg/L	< 1	< 1	-	<2	-
m&p-Xylenes	2	µg/L	< 2	< 2	-	<2	-
o-Xylene	1	µg/L	< 1	< 1	-	<2	-
Toluene	1	µg/L	< 1	< 1	-	<2	-
Xylenes - Total	3	µg/L	< 3	< 3	-	<2	-
TRH							
TRH C6-C10	20	µg/L	< 20	< 20	-	<20	-
TRH C6-C10 less BTEX (F1)	20	µg/L	< 20	< 20	-	<20	-
TRH C10-C14	50	µg/L	< 20	< 20	-	<50	-
TRH C10-C36 (Total)	100	µg/L	< 40	< 40	-	<50	-
TRH C15-C28	100	µg/L	< 40	< 40	-	<100	-
TRH C29-C36	100	µg/L	< 40	< 40	-	<50	-
TRH C6-C9	20	µg/L	< 20	< 20	-	<20	-
Naphthalene	10	µg/L	< 1	< 1	-	<5	-
TRH >C10-C16	50	µg/L	< 20	< 20	-	<100	-
TRH >C10-C16 less Naphthalene (F2)	50	µg/L	< 20	< 20	-	<100	-
TRH >C10-C40 (total)	100	µg/L	< 50	< 50	-	<100	-
TRH >C16-C34	100	µg/L	< 50	< 50	-	<100	-
TRH >C34-C40	100	µg/L	< 50	< 50	-	<100	-
Alkalinity							
Bicarbonate Alkalinity (as CaCO3)	5	mg/L	**390**	**400**	2.5	**397**	1.8
Carbonate Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	-	<1	-
Hydroxide Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	-	<1	-
Total Alkalinity (as CaCO3)	5	mg/L	**390**	**400**	2.5	**397**	1.8
Alkali Metals							
Calcium	0.5	mg/L	**58**	**59**	1.7	**64**	9.8
Chloride	5	mg/L	**440**	**440**	0.0	**466**	5.7
Magnesium	0.5	mg/L	**62**	**65**	4.7	**65**	4.7
Potassium	0.5	mg/L	**1.2**	**1.2**	0.0	**2**	50.0
Sodium	0.5	mg/L	**280**	**290**	3.5	**282**	0.7
Sulphate (as SO4)	1	mg/L	**54**	**53**	1.9	**51**	5.7
Inorganics							
Hardness mg equivalent CaCO3/L	5	mg/L	**400**	**410**	2.5	**427**	6.5
Total Dissolved Solids	5	mg/L	**1300**	**1300**	0.0	**1150**	12.2
Total Suspended Solids	5	mg/L	**5.0**	< 5	-	<5	-
Ammonia (as N)	0.02	mg/L	< 0.02	< 0.02	-	<0.01	-
Conductivity (at 25°C)	10	uS/cm	**2100**	**2100**	0.0	**2000**	4.9
Ferric Iron - Fe3+	0.5	mg/L	< 0.05	< 0.05	-	<0.05	-
Ferrous Iron - Fe2+	0.05	mg/L	< 0.05	< 0.05	-	<0.05	-
Nitrate & Nitrite (as N)	0.01	mg/L	**3.5**	**3.4**	2.9	**3.27**	6.8
Nitrate (as N)	0.01	mg/L	**3.5**	**3.4**	2.9	**3.27**	6.8
Nitrite (as N)	0.01	mg/L	< 0.01	< 0.01	-	<0.01	-
pH (at 25 °C)	0.1	pH Units	**7.8**	**8.0**	2.5	**7.94**	1.8
Phosphate total (as P)	0.01	mg/L	**0.15**	**0.18**	18.2	<0.01	175.0
Phosphorus reactive (as P)	0.1	mg/L	**0.10**	**0.09**	10.5	<0.01	-
Silica (calculation from Si filtered)	0.1	mg/L	**-**	**-**	-	**80.4**	-
Silica (calculation from Si)	0.1	mg/L	**78**	**77**	1.3	**-**	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	< 0.2	< 0.2	-	**3.7**	-
Total Nitrogen (as N)	0.2	mg/L	**3.5**	**3.4**	2.9	**0.4**	159.0

Summary of Relative Percentage Differences (RPD's)

Project: Hydrogeological Investigation

Client: Eramurra Solar Salt Project

Job Number: QI-01

Location	MB34S	DUP2		DUP2	
Date Sampled	24/07/2024	24/07/2024		24/07/2024	
Laboratory	Eurofins	Eurofins	RPD%	ALS	RPD%
Report Number	1121879	1121879		EP2410566	
Duplicate	Primary	Intra-Laboratory		Inter-Laboratory	

Exceedance of RPD% Criterion of 30% of mean concentration where b
Exceedance of RPD% Criterion of 50% of mean concentration where hi

Analyte	LOR	Unit					
Heavy Metals							
Aluminium	0.05	mg/L	**4.0**	**3.4**	16.2	**7.22**	57.4
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	-	<0.005	-
Antimony	0.001	mg/L	**0.031**	**0.032**	3.2	**0.0528**	52.0
Antimony (filtered)	0.001	mg/L	**0.030**	**0.031**	3.3	**0.0568**	61.8
Arsenic	0.001	mg/L	**0.020**	**0.021**	4.9	**0.0215**	7.2
Arsenic (filtered)	0.001	mg/L	**0.020**	**0.021**	4.9	**0.0221**	10.0
Beryllium	0.001	mg/L	< 0.001	< 0.001	-	**0.0003**	107.7
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Bismuth	0.005	mg/L	< 0.005	< 0.005	-	<0.00005	-
Bismuth (filtered)	0.005	mg/L	< 0.005	< 0.005	-	<0.00005	-
Cadmium	0.0001	mg/L	< 0.0001	< 0.0001	-	<0.00005	-
Cadmium (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	-	<0.00005	-
Chromium (III+VI)	0.001	mg/L	**0.023**	**0.007**	106.7	**0.0109**	71.4
Chromium (III+VI) (filtered)	0.001	mg/L	< 0.001	< 0.001	-	<0.0002	-
Cobalt	0.001	mg/L	**0.005**	**0.005**	0.0	**0.0067**	29.1
Cobalt (filtered)	0.001	mg/L	< 0.001	< 0.001	-	**0.0004**	85.7
Copper	0.001	mg/L	**0.006**	**0.007**	15.4	**0.0092**	42.1
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	-	<0.0005	-
Iron	0.01	mg/L	**16**	**16**	0.0	**17.2**	7.2
Iron (filtered)	0.01	mg/L	**6.9**	**7.0**	1.4	**6.44**	6.9
Lead	0.001	mg/L	**0.004**	**0.004**	0.0	**0.0056**	33.3
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Lithium	0.001	mg/L	**0.007**	**0.007**	0.0	**0.006**	15.4
Lithium (filtered)	0.005	mg/L	< 0.005	< 0.005	-	**0.0039**	24.7
Manganese	0.005	mg/L	**0.89**	**0.92**	3.3	**0.8**	10.7
Manganese (filtered)	0.005	mg/L	**0.56**	**0.55**	1.8	**0.508**	9.7
Mercury	0.0001	mg/L	**0.00016**	**0.00021**	27.0	<0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	-	<0.0001	-
Molybdenum	0.001	mg/L	**0.003**	**0.004**	28.6	**0.0036**	18.2
Molybdenum (filtered)	0.001	mg/L	**0.002**	**0.001**	66.7	**0.0026**	26.1
Nickel	0.001	mg/L	**0.018**	**0.019**	5.4	**0.0225**	22.2
Nickel (filtered)	0.001	mg/L	**0.023**	**0.022**	4.4	**0.0237**	3.0
Selenium	0.001	mg/L	< 0.001	< 0.001	-	<0.0002	-
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001	-	<0.0002	-
Silver	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Silver (filtered)	0.001	mg/L	< 0.001	< 0.001	-	<0.0001	-
Strontium	0.005	mg/L	**1.9**	**2.0**	5.1	**1.77**	7.1
Strontium (filtered)	0.005	mg/L	**1.9**	**1.9**	0.0	**1.66**	13.5
Thorium	0.05	mg/L	< 0.05	< 0.05	-	**0.024**	70.3
Thorium (filtered)	0.05	mg/L	< 0.05	< 0.05	-	<0.0001	-
Titanium	0.005	mg/L	**0.034**	**0.021**	47.3	**0.061**	56.8
Titanium (filtered)	0.005	mg/L	< 0.005	< 0.005	-	<0.001	-
Uranium	0.001	mg/L	**0.001**	**0.001**	0.0	**0.00122**	19.8
Uranium (filtered)	0.001	mg/L	< 0.001	< 0.001	-	**0.00013**	154.0
Vanadium	0.005	mg/L	**0.018**	**0.019**	5.4	**0.0206**	13.5
Vanadium (filtered)	0.005	mg/L	< 0.005	< 0.005	-	**0.0006**	157.1
Zinc	0.005	mg/L	**0.041**	**0.057**	32.7	**0.063**	42.3
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	-	**0.004**	22.2
Zirconium	0.01	mg/L	**0.03**	< 0.01	100.0	<0.005	-
Zirconium (filtered)	0.01	mg/L	< 0.01	< 0.01	-	<0.005	-
BTEX							
Benzene	1	µg/L	< 1	< 1	-	<1	-
Ethylbenzene	1	µg/L	< 1	< 1	-	<2	-
m&p-Xylenes	2	µg/L	< 2	< 2	-	<2	-
o-Xylene	1	µg/L	< 1	< 1	-	<2	-
Toluene	1	µg/L	< 1	< 1	-	<2	-
Xylenes - Total	3	µg/L	< 3	< 3	-	<2	-
TRH							
TRH C6-C10	20	µg/L	< 20	< 20	-	<20	-
TRH C6-C10 less BTEX (F1)	20	µg/L	< 20	< 20	-	<20	-
TRH C10-C14	50	µg/L	**60.0**	**100.0**	50.0	**80**	28.6
TRH C10-C36 (Total)	100	µg/L	**300.0**	**460.0**	42.1	**80**	115.8
TRH C15-C28	100	µg/L	**240.0**	**360.0**	40.0	<100	-
TRH C29-C36	100	µg/L	< 40	< 40	-	<50	-
TRH C6-C9	20	µg/L	< 20	< 20	-	<20	-
Naphthalene	10	µg/L	< 1	< 1	-	<5	-
TRH >C10-C16	50	µg/L	**140**	**180**	25.0	**110**	24.0
TRH >C10-C16 less Naphthalene (F2)	50	µg/L	**140**	**180**	25.0	**110**	24.0
TRH >C10-C40 (total)	100	µg/L	**250**	**460**	59.2	**110**	77.8
TRH >C16-C34	100	µg/L	**110.0**	**280.0**	87.2	<100	-
TRH >C34-C40	100	µg/L	< 50	< 50	-	<100	-
Alkalinity							
Bicarbonate Alkalinity (as CaCO3)	5	mg/L	**490**	**480**	2.1	**480**	2.1
Carbonate Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	-	<1	-
Hydroxide Alkalinity (as CaCO3)	5	mg/L	< 5	< 5	-	<1	-
Total Alkalinity (as CaCO3)	5	mg/L	**490**	**480**	2.1	**480**	2.1
Alkali Metals							
Calcium	0.5	mg/L	**66**	**66**	0.0	**66**	0.0
Chloride	5	mg/L	**640**	**640**	0.0	**655**	2.3
Magnesium	0.5	mg/L	**75**	**75**	0.0	**70**	6.9
Potassium	0.5	mg/L	**4.6**	**4.6**	0.0	**4**	14.0
Sodium	0.5	mg/L	**430**	**430**	0.0	**414**	3.8
Sulphate (as SO4)	1	mg/L	**4.3**	**4.8**	11.0	**4**	7.2
Inorganics							
Hardness mg equivalent CaCO3/L	5	mg/L	**470**	**480**	2.1	**453**	3.7
Total Dissolved Solids	5	mg/L	**1700**	**1600**	6.1	**1480**	13.8
Total Suspended Solids	5	mg/L	**340**	**420**	21.1	**1400**	121.8
Ammonia (as N)	0.02	mg/L	< 0.02	< 0.02	-	<0.01	-
Conductivity (at 25°C)	10	uS/cm	**2800**	**2700**	3.6	**2560**	9.0
Ferric Iron - Fe3+	0.5	mg/L	**6.1**	**2.1**	97.6	**0.31**	180.7
Ferrous Iron - Fe2+	0.05	mg/L	**0.81**	**4.9**	143.3	**6.39**	155.0
Nitrate & Nitrite (as N)	0.01	mg/L	< 0.01	< 0.01	-	<0.01	-
Nitrate (as N)	0.01	mg/L	< 0.01	< 0.01	-	<0.01	-
Nitrite (as N)	0.01	mg/L	< 0.01	< 0.01	-	<0.01	-
pH (at 25 °C)	0.1	pH Units	**7.9**	**8.0**	1.3	**7.60**	3.9
Phosphate total (as P)	0.01	mg/L	**0.22**	**0.14**	44.4	**0.52**	81.1
Phosphorus reactive (as P)	0.1	mg/L	**0.06**	**0.06**	0.0	<0.01	142.9
Silica (calculation from Si filtered)	0.1	mg/L	**-**	**-**	-	**44.6**	-
Silica (calculation from Si)	0.1	mg/L	**42**	**42**	0.0	**-**	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	**0.4**	**0.4**	0.0	**2.4**	142.9
Total Nitrogen (as N)	0.2	mg/L	**0.4**	**0.4**	0.0	**2.4**	142.9

Summary of Rinsate Results

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Sample	Rinse 23/7	Rinse 24/7	Rinse 25/7	Rinse 26/7
Date Sampled	23/07/2024	24/07/2024	25/07/2024	26/07/2024
Laboratory	Eurofins	Eurofins	Eurofins	Eurofins
Report Number	1121332	1121879	1122482	1122734

Chemical	LOR	Units				
Metals/ Metalloids						
Aluminium	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Antimony	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bismuth	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Cadmium	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Chromium	0.001	mg/L	< 0.001	< 0.001	**0.003**	< 0.001
Cobalt	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001	**0.009**	< 0.001
Iron	0.01	mg/L	< 0.01	< 0.01	< 0.01	**0.02**
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Lithium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Manganese	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Molybdenum	0.001	mg/L	< 0.001	< 0.001	**0.002**	< 0.001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Selenium	0.001	mg/L	< 0.001	< 0.001	**0.003**	< 0.001
Silver	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Strontium	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Thorium	0.005	mg/L	< 0.01	< 0.01	< 0.01	< 0.005
Titanium	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Uranium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vanadium	0.005	mg/L	< 0.005	< 0.005	< 0.005	**0.006**
Zinc	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zirconium	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Tripblank Results

Project: Hydrogeological Investigation
Client: Eramurra Solar Salt Project
Job Number: QI-01

Sample	Trip Blank	Trip Blank
Date Sampled	24/07/2024	24/07/2024
Laboratory	Eurofins	ALS
Report Number	1121879	EP2410566

Chemical	LOR	Units		
Metals/ Metalloids				
Benzene	1	µg/L	< 1	< 1
Ethylbenzene	1	µg/L	< 1	< 2
m&p-Xylenes	2	µg/L	< 2	< 2
o-Xylene	1	µg/L	< 1	< 2
Toluene	1	µg/L	< 1	< 2
Xylenes - Total	3	µg/L	< 3	< 2
TRH C6-C10	20	µg/L	< 20	< 20
TRH C6-C10 less BTEX (F1)	20	µg/L	< 20	< 20
TRH C6-C9	20	µg/L	< 20	< 20

APPENDIX J
STATEMENT OF LIMITATIONS

STATEMENT OF LIMITATIONS & IMPORTANT INFORMATION REGARDING YOUR REPORT

INTRODUCTION

This report has been prepared by Land & Water Consulting for you, as Land & Water Consulting's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. Assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice.

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment. Land & Water Consulting may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Land & Water Consulting has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

No warranty or guarantee of the site conditions is intended.

This report was prepared for the sole use of you, the Client and may not contain sufficient information for purposes of other parties or for other uses. Any reliance on this report by third parties shall be at such parties sole risk. This report shall only be presented in full and may not be used to support any other objectives than those set out in the report, except where written approval with comments are provided by Land & Water Consulting.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

LIMITATIONS OF THE REPORT

The scope of works undertaken and the report prepared to complete the assessment was in accordance with the information provided by the client and the specifications for works required under the contract. As such, works undertaken and statements made are based on those specifications (such as levels of risks and significance of any contamination) and should be considered and interpreted within this context. The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

Your environmental report should not be used without reference to Land & Water Consulting in the first instance:

- When the nature of the proposed development is changed, for example if a residential development is proposed instead of a commercial one;
- When the size or configuration of the proposed development is altered;
- When the location or orientation of the proposed structures are modified;
- When there is a change in ownership;
- For application to an adjacent site.

In addition, advancements in professional practice regarding contaminated land and changes in applicable statues and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

ENVIRONMENTAL ASSESSMENT "FINDINGS" ARE PROFESSIONAL ESTIMATES

The information in this report is considered to be accurate with respect to conditions encountered at the site at the time of investigation and considering the inherent limitations associated with extrapolating information from a sample set. Note however that site assessment identifies actual subsurface conditions only at those specific points where samples are taken, when they are taken. Environmental data derived through sampling and analysis are interpreted by consultants who then render an opinion about overall subsurface conditions, the nature and extent of contamination and potential impacts on the use of the land. Actual conditions may differ from those inferred to exist as no professional and no subsurface assessment program can reveal every detail within the ground across a site. Subsurface conditions can vary across a particular site and no practical degree of sampling can ever eliminate the possibility that conditions may be present at a site that have not been represented though sampling.

SUBSURFACE CONDITIONS CAN CHANGE

This report is valid as of the date of preparation. The condition of the site (including subsurface conditions) and extent or nature of contamination or other environmental hazards can change over time, as a result of either natural processes or human influence. Land & Water Consulting should be kept appraised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where excavations often reveal subsurface conditions. Since subsurface conditions (including contamination concentrations) can change within a limited period of time and space, this inherent limitation to the representation of site conditions provided by this report should always be taken into consideration particularly if the report is used after a delay in time.

DATA SHOULD NOT BE SEPARATED FROM THE REPORT

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists or engineers based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

RESPONSIBILITY

Environmental reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all environmental media at all depths and locations across the site.