# Groundwater Construction Monitoring Report – December 2024 to July 2025

SMWSASSM-PLD-SWD-SW000-WA-RPT-000006

Parklife Metro D&C


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# Document Approval

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# Six-monthly Groundwater Monitoring Report December 2024 – July 2025

## Sydney Metro West – The Stations, System, Trains, Operations and Maintenance Works (SSTOM)

Prepared for: Parklife Metro D&C (Parklife Metro JV)

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# Abbreviations

| Abbreviation | Definition |
|---|---|
| ADE | ADE Consulting Group Pty Ltd |
| AEC | Area of Environmental Concern |
| AHD | Australian Height Datum |
| APDS | Airport Portal Dive Structure |
| AS | Australian Standard |
| ASS | Acid Sulfate Soil |
| ATL | Airport Terminal Station |
| BGL | Below Ground Level |
| BoM | Bureau of Meteorology |
| BR | Blind Replicate |
| BTEXN | Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene |
| CLM | Claremont Meadows |
| CoC | Chain of Custody |
| CoPC | Contaminants of Potential Concern |
| CPBG | CPB Contractors Ghella Joint Venture |
| CSM | Conceptual Site Model |
| DEC | Department of Environment and Conservation |
| DP | Deposited Plan |
| DBYD | Dial Before You Dig |
| DQI | Data Quality Indicator |
| DQO | Data Quality Objectives |
| DO | Dissolved Oxygen |
| EC | Electrical Conductivity |
| EIS | Environmental Impact Assessment (Sydney Metro Western Sydney Airport) |
| EPA | Environment Protection Authority |
| EMP | Environmental Management Plan |
| EPL | Environmental Protection Licence |
| ESLs | Ecological Screening Levels |
| GDE | Groundwater Dependent Ecosystem |
| GME | Groundwater Monitoring Event |
| GMP | Groundwater Management Plan |
| GWMP | Groundwater Monitoring Plan |
| HEVAE | High Ecological Value Aquatic Ecosystems |
| LOR | Limit of Reporting |
| m BGL | meters Below Ground Level |
| m BTOC | meters Below Top Casing |
| NATA | National Association of Testing Authorities |
| NEPC | National Environmental Protection Council |
| NEPM | National Environmental Protection Measure |
| NSW | New South Wales |
| NSW EPA | New South Wales Environment Protection Authority |
| PAHs | Polycyclic Aromatic Hydrocarbons |
| PARCC | Precision, Accuracy, Representativeness, Comparability, Completeness |
| PFAS | Per-fluoroalkyl substances |
| PLM | Parklife Metro |
| PQL | Practical Quantification Limit |
| OHE | Orchard Hills Excavation |
| QA/QC | Quality Assurance/Quality Control |
| RAMSAR | Rare or unique wetland or a wetland that is important for conserving biological diversity |

| Abbreviation | Definition |
|---|---|
| RAP | Remediation Action Plan |
| RL | Relative Level |
| RPD | Relative Percent Difference |
| SAC | Site Assessment Criteria |
| SAS | Standard Analytical Suite |
| SBT | Station Boxes and Tunnelling |
| SCAW | Surface and Civil Alignment Works |
| SF | Service Facility |
| SMWSA | Sydney Metro Western Sydney Airport |
| SOP | Standard Operating Procedure |
| SSTOM | Stations, System, Trains, Operations and Maintenance |
| SSTV | Site Specific Trigger Value |
| SWL | Standing Water Level |
| SWMP | Soil and Water Management Sub-Plan |
| TDS | Total Dissolved Solids |
| TKN | Total Kjeldahl Nitrogen |
| TOC | Total Organic Carbon |
| TPH | Total Petroleum Hydrocarbons |
| TRH | Total Recoverable Hydrocarbons |
| VOC | Volatile Organic Compounds |
| VWP | Vibrating Wire Piezometer |
| WSA | Western Sydney Airport |
| WSI | Western Sydney International |
| WTP | Waste Water Treatment Plant |

# 1 Introduction

## 1.1 Project Background and Location

Sydney Metro has engaged Parklife Metro (PLM) to design and construct the Stations, Systems, Trains, Operations and Maintenance (SSTOM) package of the Sydney Metro Western Sydney Airport project that includes the construction and operation of 23 km of new Metro rail line linking the existing St Marys station on the T1 Western Line in the north to Bradfield (previously named Aerotropolis) at Bringelly in the south. The previous project stages, Station Boxes and Tunnelling Works (SBT) and Surface and Civil Alignment Works (SCAW) have been completed and the whole project alignment has been handed over to PLM for completion of the SSTOM package. At this stage, SSTOM works are expected to be completed in 2027.

ADE Consulting Group Pty Ltd (ADE) was commissioned by PLM to prepare a six-monthly groundwater monitoring report for the period December 2024 to July 2025 for the Sydney Metro Western Sydney Airport project (the Project). For this event the monitoring period was conducted over seven months so as to include the results from replacement monitoring wells (**Section 3.1**) constructed in June and July 2025.

This report generally complies with the requirements of the PLM Groundwater Monitoring Program (which is included as an Appendix to the Soil and Water Management Plan (PLM, 2024)). This report also incorporates recommendations made in previous monitoring reports including those prepared for SBT by Tetra Tech (Tetra Tech, 2024a) for the period July to November 2023 and for the period December 2023 to June 2024 (Tetra Tech, 2024b). The inconsistencies with the requirements of the PLM Groundwater Monitoring Program relate to monitoring locations that could not be sampled due to the monitoring points being either inaccessible, faulty sensors or destroyed. This report generally follows the format of the previous ADE groundwater monitoring reports prepared for the period December 2023 to August 2024 (ADE, 2025a) and September 2024 to November 2024 (ADE, 2025b) and incorporates recommendations made in these prior reports.

Full handover of the entire project alignment to PLM was completed in January 2025, with the handover of the final tunnel portions and the Claremont Meadows and Bringelly service shaft sites. This groundwater monitoring event (GME) is therefore the first GME completed by PLM that covers the entire project alignment. This GME also incorporates monitoring of 15 wells that were installed (or rehabilitated) by Tetra Tech throughout July 2025 as part of a rehabilitation project to replace and reinstall previously damaged groundwater wells. Details of the drilling program and additional monitoring are included in this report. This monitoring report varies slightly from the previous reports in that it includes routine quarterly monitoring conducted on-airport (Airport Terminal and Airport Business Park).

This report addresses groundwater monitoring requirements for off-airport work sites under the State Significant Infrastructure (SSI) 10051 Planning Approval – Modification 2 (dated 20 December 2024), and on-airport site as required by the Western Sydney Airport (WSA) – Airport Plan and Sydney Metro WSA Soil and Water CEMP, Rev 3 – Off-Airport (Sydney Metro, 2023).

To ensure its contextual integrity, this report must be read in its entirety along with the limitations and disclaimer (**Section 11)** and should not be copied, distributed or referred to in part, except as expressly permitted for submission to relevant regulatory authorities.

## 1.2 Scope of Report

This Groundwater Construction Monitoring Report has been prepared for works approved under the Infrastructure Approval SSI-10051 (Modification 2). The complete monitoring program is detailed in the PLM GMP and summarised in the sections below, with current monitoring locations shown on Figures A-1 to A-7

(**Appendix A – Figures**). A summary of the current groundwater monitoring network is provided in **Table 2** and **Table 6**.

## 1.3 Project Overview

The scope of the SSTOM package comprises:

- construction of the six new stations;
- construction of two temporary service shafts at Claremont Meadows and Bringelly;
- installation of tracks, signalling, mechanical and electrical systems;
- supplying new driverless trains;
- construction of stabling and maintenance facility at Orchard Hills;
- operation and maintenance of the line and its assets; and
- handback of operations and maintenance at the end of term.

The alignment includes tunnels and civil structures, including a viaduct, bridges, and surface and open cut troughs between two tunnel sections.

This monitoring program addresses the groundwater risks at the following locations associated with the deep, bulk excavations and tunnelling works that were constructed under the SBT scope of works:

- Northern Tunnels (between Orchard Hills and St Marys);
- Southern Tunnels (between Western Sydney International (WSI) and Bradfield);
- Four station boxes with temporary ground support at St Mary's, Orchard Hills, Airport Terminal (on-airport) and Bradfield; and
- Two temporary service shafts, one for each tunnel sections at Claremont Meadows (CLM) and Bringelly.

The six stations announced for the Metro and service facilities are shown in **Figure 1.**

Groundwater monitoring includes groundwater levels within vibrating wire piezometers (VWPs) and monitoring wells and groundwater quality monitoring in monitoring wells. The monitoring has been undertaken within the precincts of St Marys, Airport Business Park, Airport Terminal, Orchard Hills, Bradfield, and now service shafts at Bringelly and Claremont Meadows as shown in **Table 1.**

It is noted that the location 'Airport Business Park', as described in the SBT groundwater monitoring reports, refers to the tunnel dive structure just to the southwest of the Airport Business Park (ABP) station location. In this groundwater monitoring report, the tunnel dive structure is known as the Airport Dive Structure (APDS) and Airport Business Park only describes the station location. Groundwater interactions and impacts are only due to works associated with the Airport Dive Structure.

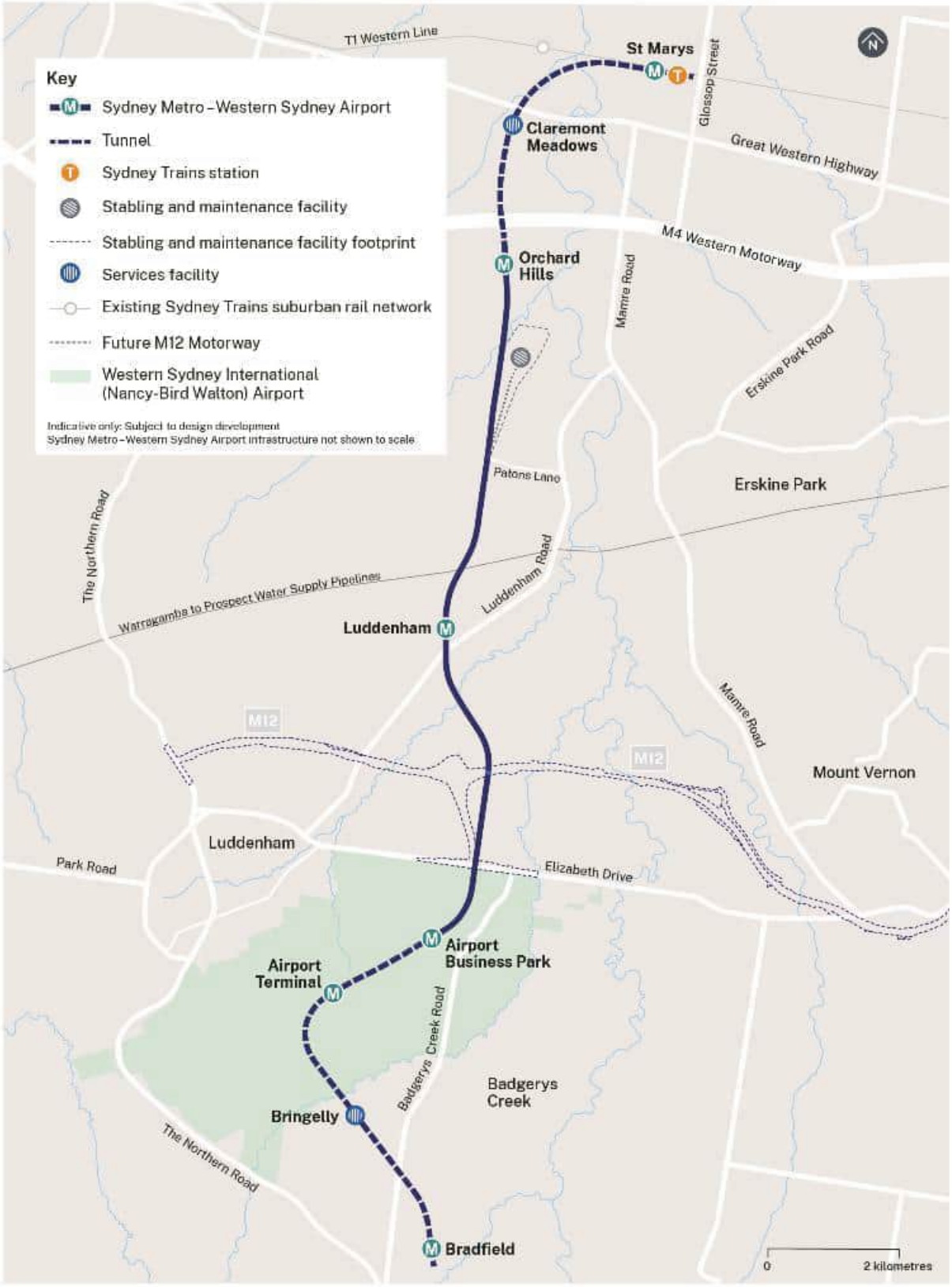


**Figure 1 Location of the project alignment and station locations.**

## 1.4 Project Construction Status

Works completed at the station boxes throughout the monitoring period and ongoing works as provided by PLM is given in **Table 1** along with proposed handover dates. These works have the potential to impact groundwater levels and/or quality.

**Table 1 Works Activity Schedule**

| Site | Works within deep excavation areas | Start | Finish |
|---|---|---|---|
| **St Marys** | Station box walls | July 2024 | Anticipated January 2026 |
| | Station box structural completion/close forecast. Final tanked structure | | Anticipated June 2026 |
| **Claremont Meadows Service Facility** | Works ongoing within existing structure until final closure | January 2025 | Anticipated April 2026 |
| **Northern Running Tunnel** | Rail installation and all associated works within existing final tunnel structure as handed over by the SBT contractor | January 2025 | Occupied until completion |
| **Orchard Hills** | Station box walls | September 2023 | Anticipated September 2025 |
| | Station box structural completion/close forecast. Final tanked structure | | Anticipated October 2025 |
| **Airport Business Park** | Works at the ABP station site have limited potential to interact with groundwater as they are generally within a cutting and have not involved major subsurface excavations. Works are discussed here for completeness. | | Ongoing |
| | FRP works for station construction | March 2024 | Anticipated August 2025 |
| **Airport Portal Dive Structure** | Waterproofing membrane within station box | December 2024 | Anticipated September 2025 |
| | Station box walls | January 2025 | July 2025 |
| | Station box structural completion/close forecast. Final tanked structure | | Anticipated September 2025 |
| **Airport Terminal** | Waterproofing membrane completed within station box | August 2024 | January 2025 |
| | Station box base slab | September 2024 | January 2025 |
| | Station walls | December 2024 | Anticipated November 2025 |
| | Station box structural completion/close forecast. Final tanked structure | | Anticipated January 2026 |
| **Bringelly Service Facility** | Works ongoing within existing structure until final closure | January 2025 | Anticipated March 2026 |
| **Southern Running Tunnel** | Rail installation and all associated works within existing final tunnel structure as handed over by the SBT contractor | January 2026 | Occupied until completion |

| Site | Works within deep excavation areas | Start | Finish |
|---|---|---|---|
| **Bradfield** | Station box walls | 6 August 2024 | Anticipated November 2025 |
| | Station box structural completion/close forecast. Final tanked structure | | Anticipated November 2025 |

Groundwater inflows to the station box excavations are likely to drawdown the local water table. Temporary construction dewatering will continue until base slabs and wall pours are completed.

# 2 Groundwater Monitoring Program Requirements

## 2.1 Monitoring Program

The Groundwater Monitoring Program (GWMP) prepared by PLM (Revision 02 dated December 2024) (Parklife, 2024) was prepared as per requirements C13, C14 and C16 of the conditions of approval for Sydney Metro – Western Sydney Airport (SSI 10051) (DPIE, 2021), as well as requirements of the WSA – Airport Plan and Sydney Metro WSA Soil and Water Construction Environmental Management Plan as applicable to the SSTOM works. The GWMP is part of the Groundwater Management Procedure which is an appendix to the Soil and Water Management Sub-Plan (SWMP) (PLM, 2024). The GWMP describes the process of groundwater monitoring to understand the impacts of SSTOM works including fluctuation of groundwater levels and/or changes in groundwater quality.

The technical content and details included in the PLM GWMP were adopted from the SBT Groundwater Monitoring Program (SMWSASBT-CPG-SWD-SW000-GE-RPT-040404) prepared by CPB Contractors Ghella Joint Venture (CPBG). This monitoring report also references the monitoring carried out under the SBT Groundwater Monitoring Program, specifically:

- Tetra Tech Major Projects (2023), *Baseline Groundwater Report (Project-wide)* Ref: SMWSASBT-CPG-SWD-SW000-GE-RPT-040405 (Tetra Tech, 2023a).
- Tetra Tech (2024), *Biannual Groundwater Monitoring Report July 2023 to November 2023*. Ref: SMWSASBT-CPG-SWD-SW000-GE-RPT-040410 (Tetra Tech, 2024a).
- Tetra Tech (2024), *Biannual Groundwater Monitoring Report December 2023 to June 2024*. Ref: SMWSASBT-CPG-SWD-SW000-GE-RPT-040419 (Tetra Tech, 2024b).

Groundwater monitoring responsibilities for the Sydney Metro Western Sydney Airport (SMWSA) Project have been progressively transferred to PLM as SBT works were completed. All work areas have now been handed over to PLM and the entire groundwater network is the subject of this monitoring report as summarised in **Table 1.**

The groundwater monitoring program is structured to record groundwater levels manually in monitoring wells and collect time series pore pressure data using vibrating wire piezometers and pressure transducers positioned near Groundwater Dependent Ecosystems (GDEs). Additionally, time series electrical conductivity measurements are obtained from monitoring wells equipped with dataloggers. Groundwater extraction from monitoring wells occurs to assess quality parameters and obtain samples for laboratory analysis. All monitoring activities follow the methodologies detailed in PLM, 2024.

**Table 2** below compares the monitoring network sampled in this groundwater monitoring event with the monitoring network described in the GWMP. The current network reflects recommendations made in prior monitoring reports and also captures any monitoring well replacements/remediation or destruction within this monitoring period. Updates to the GWMP are made annually in accordance with the process agreed described in the GWMP and in conjunction with Sydney Metro and the Environmental Representative.

**Table 2 Groundwater Monitoring Network**

| Area | Location ID | Alternate ID | Monitoring Type (GWL, WQA, GDE)[1] | Monitored? Y or N | Location status |
|---|---|---|---|---|---|
| St Marys | SWD-TU100-17275-VWP01-A | - | GWL | Y | **Active** |
| St Marys | SWD-TU100-17275-VWP01-B | - | GWL | Y | **Active** |
| St Marys | SWD-TU100-17443-VWP03-A | - | GWL | Y | **Active** |
| St Marys | SWD-TU100-17443-VWP03-B | - | GWL | N | **Active. Sensor not active in monitoring round** |
| St Marys | SWD-TU100-17720-VWP04 | SBT-VWP-1401 | GWL | N | **Data was specific for wall design during SBT construction phase. Removed from network.** |
| St Marys | SBT-GW-1001 | - | GWL / WQA | N | **Destroyed. Removed from network** |
| St Marys | SBT-GW-1001-S | - | WQA | Y | **Active** |
| St Marys | SBT-GW-1002 | - | GWL / WQA | Y | **Active** |
| St Marys | SBT-GW-1005-S | SBT-GW-1005 | WQA | Y | **Active** |
| St Marys | SBT-GW-1016 | - | GWL / WQA | Y | **Active** |
| St Marys | SBT-GW-1017 | - | GWL / WQA | Y | **Active** |
| St Marys | SBT-GW-1019R3 | - | GWL / WQA | N | **Destroyed by SBT and removed from network.** |
| St Marys | SBT-GW-1021 | - | GWL / WQA | Y | **Active** |
| St Marys | SMGW-BH-A360 | - | GWL / WQA | N | **Destroyed by SBT and removed from network.** |
| St Marys | SBT-GW-1803 | - | GWL / WQA | N | **Never located onsite, suspected destroyed.** |
| St Marys | SMGW-BH-A401 | - | GWL / WQA | Y | **Active** |
| TBM Tunnel - South Creek | SMGW-BH-A105S | - | GWL / GDE | N | **SBT recommended no ongoing monitoring. Removed from network.** |
| TBM Tunnel - South Creek | SMGW-BH-A107 | - | GWL / GDE | N | **Active but missed during this monitoring event** |
| TBM Tunnel - South Creek | SBT-GW-1804 | - | GWL / WQA / GDE | N | **SBT recommended no ongoing monitoring. Removed from network.** |
| Cross passage / Tunnel (XPN13) | SBT-GW-1030 | - | GWL / WQA | Y | **Active** |
| Cross passage / Tunnel (XPN14) | SBT-GW-1031 | - | GWL / WQA | N | **SBT recommended no ongoing monitoring. Removed from network.** |
| Claremont Meadows | SBT-GW-1024 | - | GWL / WQA | Y | **Active** |

| Area | Location ID | Alternate ID | Monitoring Type (GWL, WQA, GDE)[1] | Monitored? Y or N | Location status |
|---|---|---|---|---|---|
| Claremont Meadows | SBT-GW-1805 | - | GWL / WQA / GDE | Y | **Active** |
| Claremont Meadows | SWD-TU100-19992-VWP06-01 | SBT-VWP-1403 | GWL | N | **Destroyed. No data from SBT since July 24. Remove from network** |
| Claremont Meadows | SWD-TU100-19992-VWP06-02 | SBT-VWP-1403 | GWL | N | **As above** |
| Claremont Meadows | SWD-TU100-19992-VWP06-03 | SBT-VWP-1403 | GWL | N | **As above** |
| Claremont Meadows | SWD-TU100-20071-VWP07-A | - | GWL / WQA | Y | **Active** |
| Claremont Meadows | SWD-TU100-20071-VWP07-B | - | GWL / WQA | Y | **Active** |
| Claremont Meadows | SBT-GW-1028 | - | GWL / WQA / GDE | N | **Within asbestos exclusion zone (locationSWD-TU100-20071-VWP07(A&B) used as surrogate). Remove from network** |
| Orchard Hills | SWD-TU150-21965-VWP01-A | SBT-GW-1037 (S) | GWL | N | **Destroyed. Removed from network** |
| Orchard Hills | SWD-TU150-21965-VWP01-B | SBT-GW-1037 (N) | GWL | N | **Destroyed. Removed from network** |
| Orchard Hills | SWD-TU150-22010-VWP02 | SBT-VWP-1404 | GWL / GDE | Y | **Active** |
| Orchard Hills | SWD-TU150-22115-VWP03 | SBT-VWP-1405 | GWL | N | **Destroyed. Removed from network** |
| Orchard Hills | SBT-GW-1042 | - | GWL / WQA / GDE | Y | **Active** |
| Orchard Hills | SWD-TU150-22193-VWP05-A | SBT-GW-1043 | GWL | N | **Could not be located. Suspected destroyed. Removed from network** |
| Orchard Hills | SWD-TU150-22193-VWP05-B | SBT-GW-1043 | GWL | N | **Could not be located. Suspected destroyed. Removed from network** |
| Orchard Hills | SWD-TU150-22205-VWP06 | - | GWL | N | **Destroyed. Removed from network** |
| Orchard Hills | SWD-TU150-22333-VWP07 | - | No record GWL | N | **No monitoring records from SBT. Destroyed. Removed from network** |
| Orchard Hills | SMGW-BH-A315 | - | GWL / WQA | N | **Destroyed and replaced** |
| Orchard Hills | SMGW-BH-A315-R | - | GWL / WQA / GDE | Y | **Active** |
| Orchard Hills | SBT-GW-1063 | - | GWL / WQA / GDE | Y | **Active** |
| Orchard Hills | SBT-GW-1806 | - | GWL / WQA | Y | **Active** |
| Orchard Hills | SBT-GW-1807 | - | GWL / WQA | Y | **Active** |
| Orchard Hills | SBT-GW-1808 | - | GWL / WQA | Y | **Active** |
| Orchard Hills | SBT-GW-1042 | - | GWL / WQA | Y | **Active** |
| Orchard Hills | SBT-GW-1048 | - | WQA | N | **Destroyed and replaced** |
| Orchard Hills | SBT-GW-1048-R | - | WQA | Y | **Active** |
| Airport Portal (APDS) | SWD-TU300-33565-VWP02 | SBT-VWP-3401 | GWL | N | **Replaced** |

| Area | Location ID | Alternate ID | Monitoring Type (GWL, WQA, GDE)[1] | Monitored? Y or N | Location status |
|---|---|---|---|---|---|
| Airport Portal (APDS) | SWD-TU300-33565-VWP02-R | SBT-VWP-3401-R | GWL | Y | **Active** |
| Airport Terminal (APDS) | ABP-TD300-VWP01 | ABP-TD300-1 | GWL | N | **Logger broken. Remove from network** |
| Airport Terminal (APDS) | ABP-TD300-VWP02 | ABP-TD300-2 | GWL | Y | **Active** |
| Airport Terminal (APDS) | ABP-TD300-VWP03 | ABP-TD300-3 | GWL | Y | **Active** |
| Airport Terminal (APDS) | ABP-TD300-VWP04 | ABP-TD300-4 | GWL | N | **Logger broken. Remove from network** |
| Portal / Cross passage XPS01 (APDS) | SBT-GW-3003-A | - | GWL / WQA | N | **Replaced** |
| Portal / Cross passage XPS01 (APDS) | SBT-GW-3003-B | - | GWL / WQA | N | **Replaced** |
| Portal / Cross passage XPS01 (APDS) | SBT-GW-3003-C | - | GWL / WQA | N | **Replaced** |
| Portal / Cross passage XPS01 (APDS) | SBT-GW-3003-A-R | - | GWL / WQA | Y | **Active** |
| Portal / Cross passage XPS01 (APDS) | SBT-GW-3003-B-R | - | GWL / WQA | Y | **Active** |
| Portal / Cross passage XPS01 (APDS) | SBT-GW-3003-C-R | - | GWL / WQA | Y | **Active** |
| Airport Terminal | SBT-GW-3006 | - | GWL / WQA | N | **Replaced** |
| Airport Terminal | SBT-GW-3006-R | - | GWL / WQA / GDE | Y | **Active** |
| Airport Terminal | SWD-TU300-34874-VWP03-01 | ATL-SN350-VWP01-01 | GWL | Y | **Active** |
| Airport Terminal | SWD-TU300-34874-VWP03-02 | ATL-SN350-VWP01-02 | GWL | Y | **Active** |
| Airport Terminal | SWD-TU300-34874-VWP03-03 | ATL-SN350-VWP01-03 | GWL | Y | **Active** |
| Airport Terminal | SWD-TU300-34874-VWP03-04 | ATL-SN350-VWP01-04 | GWL | Y | **Active** |
| Airport Terminal | SWD-TU300-34893-VWP04-04 | ATL-SN350-VWP02 | GWL | N | **Destroyed. Removed from network** |
| Airport Terminal | SWD-TU300-34893-VWP04-01 | ATL-SN350-VWP02 | GWL | N | **Destroyed. Removed from network** |
| Airport Terminal | SWD-TU300-34893-VWP04-02 | ATL-SN350-VWP02 | GWL | N | **Destroyed. Removed from network** |
| Airport Terminal | SWD-TU300-34893-VWP04-03 | ATL-SN350-VWP02 | GWL | N | **Destroyed. Removed from network** |
| Airport Terminal | SBT-GW-3012-A | - | GWL / WQA | Y | **Active** |
| Airport Terminal | SBT-GW-3012-B | - | GWL / WQA | Y | **Active** |

| Area | Location ID | Alternate ID | Monitoring Type (GWL, WQA, GDE)[1] | Monitored? Y or N | Location status |
|---|---|---|---|---|---|
| Airport Terminal | SBT-GW-3012-C | - | GWL / WQA | Y | **Active** |
| Airport Terminal | SBT-GW-3022 | - | GWL / WQA | Y | **Active** |
| Airport Terminal Temp Shaft | SWD-TU351-35209-VWP01 | SBT-VWP-3404 | | N | **Destroyed. Removed from network** |
| Airport Terminal Temp Shaft | SWD-TU351-35240-VWP02 | SBT-VWP-3405 | | N | **Destroyed. Removed from network** |
| Western Sydney Airport | SBT-GW-4000 | - | GWL / GDE | Y | **Active** |
| Western Sydney Airport | SMGW-BH-C320 | - | GWL / WQA | Y | **Active** |
| Western Sydney Airport | SMGW-BH-C321 | - | GWL / WQA | N | **Destroyed. Removed from network** |
| Western Sydney Airport | SMGW-BH-C330 | - | GWL / WQA | N | **Destroyed. Removed from network** |
| Bringelly SF | SWD-TU351-37371-VWP04 | SBT-VWP-4400 | GWL | N | **Destroyed. Removed from network** |
| Bringelly SF | SWD-TU351-37377-VWP05 | SBT-VWP-4401 | GWL | N | **Destroyed. Removed from network** |
| Bringelly SF | SWD-TU351-37471-VWP06 | SBT-VWP-4402 | GWL | N | **Destroyed. Removed from network** |
| Bringelly SF | SBT-GW-4800 | - | GWL / WQA | Y | **Active** |
| Bringelly SF | SBT-GW-4801 | - | GWL / WQA | Y | **Active** |
| Bringelly SF | SBT-GW-4802 | - | GWL / WQA | Y | **Active** |
| Bringelly SF | SBT-GW-4003 | - | GWL / WQA | Y | **Active** |
| Bringelly SF | SBT-GW-4005 | - | GWL / WQA | Y | **Active** |
| Bradfield | SBT-GW-4008 | - | GWL / WQA / GDE | Y | **Active** |
| Bradfield | SBT-GW-4010 | - | GWL / WQA / GDE | N | **Never located onsite. Suspected destroyed.** |
| Bradfield | SWD-TU400-39287-VWP01 | SBT-VWP-4403 | GWL | N | **Replaced** |
| Bradfield | SWD-TU400-39287-VWP01-R | SBT-VWP-4403-R | GWL | Y | **Active** |
| Bradfield | SWD-TU400-39340-VWP02 | SBT-VWP-4404 | GWL | Y | **Active** |
| Bradfield | AEC-SN450-EW-VWP07 | - | GWL | N | **Never located onsite. Suspected destroyed.** |
| Bradfield | SBT-GW-4803 | - | GWL / WQA | N | **Replaced** |
| Bradfield | SBT-GW-4803-R | | GWL / WQA | Y | **Active** |
| Bradfield | SBT-GW-4014 | SBT-GW-4014-S | GWL / WQA | N | **Replaced** |
| Bradfield | SBT-GW-4014-R | - | GWL / WQA | Y | **Active** |
| Bradfield | SBT-GW-4017 | - | GWL / WQA | N | **Replaced** |

| Area | Location ID | Alternate ID | Monitoring Type (GWL, WQA, GDE)[1] | Monitored? Y or N | Location status |
|---|---|---|---|---|---|
| Bradfield | SBT-GW-4017-R | - | GWL / WQA | Y | **Active** |
| Bradfield | SBT-GW-4021 | | GWL / WQA / GDE | Y | **Active** |

## 2.2 Methodology

The groundwater monitoring methodology has been undertaken in accordance with the GWMP (PLM, 2024). The GWMP includes procedures for the collection of continuous and discrete groundwater monitoring data, including all quality assurance / quality control (QA/QC) requirements. Specifically, the methodology provides an approach for collection and assessment of the following environmental datasets:

- Groundwater level as mBTOC groundwater and mAHD (measurement and datalogger download);
- Groundwater quality at key locations (field measurement and sample collection); and
- Quality assurance / quality control procedures for collecting and managing environmental datasets.

The purpose for collecting this groundwater data is to identify any potential impacts to groundwater quality during the construction stage (and later during operation stage, if required) of the Sydney West Metro project.

The groundwater sampling methodology has been developed with reference to the following Australian and International standards and guidance:

- AS/NZS 5667.1:1998: Water Quality – *Sampling Part 1: Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples* (Reconfirmed 2016).
- AS/NZS 5667.11:1998: *Water Quality – Sampling Part 11: Guidance on Sampling of Groundwaters* (Reconfirmed 2016).
- Sundaram, B., et. al., 2024. *Groundwater Sampling and Analysis – A Field Guide 2nd Edition*. Geoscience Australia, Record 2024/33.

Groundwater monitoring was undertaken by suitably qualified and experienced ADE personnel, and one well was sampled by Tetra Tech personnel. Groundwater monitoring was undertaken across the network over eight days (9 – 11, 14 – 15 and 29 - 31 July 2025).

The approach in generating the methodology was developed with consideration of current Work Health, and Safety (WHS) regulations, relevant codes of practice, the NSW Environmental Protection Authority (NSW EPA), the National Environment Protection Measures (NEPM), PFAS National Environmental Management Plan (NEMP 2.0), relevant Australian Standards and the GWMP for the project.

The project area and monitoring precincts are presented on **Figure A1, Appendix A – Figures**. The location of monitoring wells sampled/gauged and VWPs downloaded are presented on **Figures A2 to A7, Appendix A – Figures** for St Marys, Claremont Meadows, Orchard Hills, Airport Terminal and Airport Business Park, Bringelly, and Bradfield, respectively.

### 2.2.1 Groundwater Levels

#### 2.2.1.1 Vibrating Wire Piezometers (VWPs)

Data logger data were downloaded from 21 VWPs as shown in **Table 3** and converted to groundwater levels where calibration data were available. In addition, three dataloggers (SBT-GW-3003A/B/C) were downloaded at Airport Business Park for electrical conductivity data. At Orchard Hills two dataloggers (SBT-GW-1042 and SBT-GW-1063) were downloaded for both groundwater pressure and electrical conductivity. The data were downloaded by connecting the download cable to the VWP "Loadsensing" monitoring box.

Some VWPs could not be downloaded or accessed as outlined in **Table 3.** Construction and monitoring details of the VWPs provided in a handover document provided by PLM are summarised in **Section 3.3.** Reducing the VWP data to produce hydrographs requires calibration parameters to undertake a polynomial correction to convert the pore pressure data to groundwater levels. VWP sensor depths and elevations provided in PLM handover documents are summarised in **Table 3.**

**Table 3 Vibrating Wire Piezometers monitored**

| Site | VWPs Downloaded | RL VWP mAHD | Sensor Depth mAHD | Sensor ID | Figure |
|---|---|---|---|---|---|
| Bradfield | SBT-VWP-4405 [SWD-TU400-39532-VWP03} | 73.8 | 55.167 | 60786 | D1 |
| Claremont Meadows | SBT-VWP-1402_01 [SWD-TU100-19957-VWP05-01] | 26.948 | 6.002 | 64166 | D8 |
| | SBT-VWP-1402_02 [SWD-TU100-19957-VWP05-02] | 26.948 | 15.87 | 64166 | D9 |
| | SBT-VWP-1402_03 [SWD-TU100-19957-VWP05-03] | 26.948 | 9.372 | 64166 | D10 |
| | SWD-TU100-20071-VWP07-A | 30.813 | 2.813 | 69523 | D11 |
| | SWD-TU100-20071-VWP07-B | 30.813 | 7.810 | 73926 | D12 |
| | SBT-VWP-1805 | 27.296 | Unknown | 63312 | E3 |
| Airport Business Park | SBT-VWP-3401 [ABP-TD300- VWP02] | 62.94 | 56.28 | 77655 | D2 |
| | ABP-TD300-VWP03 | 62.94 | 56.3 | 77622 | D3 |
| | SBT-GW-3003A [SBT-GW-3003] | 67.706 | 62.596 | 3003 | Dry |
| | SBT-GW-3003B [SBT-GW-3004] | 67.378 | 54.278 | 3004 | E1 |
| | SBT-GW-3003C [SBT-GW-3005] | 67.328 | 45.228 | 3005 | E2 |
| Airport Terminal | ATL-SN350-VWP02 [SWD-TU300-34874-VWP03-02] | 84.6 | 60 | 54960 | D4 |
| | ATL-SN350-VWP01 [SWD-TU300-34874-VWP03-01] | 84.6 | 64 | 54960 | D5 |
| | ATL-SN350-VWP03 [SWD-TU300-34874-VWP03-03] | 84.60 | 68 | 54960 | D6 |
| | ATL-SN350-VWP04 [SWD-TU300-34874-VWP03-04] | 84.60 | 73 | 54960 | D7 |
| Orchard Hills | SBT-VWP-1042 | 40.069 | unknown | 62455 | E5 |
| | STB-VWP-1404 [SWD-TU150-22010-VWP02] | 40.280 | 22.81 | 89034 | D13 |
| | SBT-VWP-1063 | 31.558 | unknown | 63339 | E4 |
| St Marys | SBT-GWSWD-TU100-17275-VWP01-A | 37.671 | 20.155 | 56021 | D14 |
| | SWD-TU100-17275-VWP01-B | 44.557 | 20.155 | 56021 | D15 |
| | SWD-TU100-17443-VWP03-A | 44.557 | 24.795 | 55566 | D16 |

### 2.2.1.2 Electrical conductivity/ groundwater level monitoring

Time series electrical conductivity (EC) and groundwater level data are monitored to assess potential risks to GDEs due to the construction program. This monitoring was previously conducted at six locations with data loggers (Tetra Tech, 2024a/b). Salinity monitoring is also monitored at monitoring wells manually.

The monitoring wells required to be monitored for salinity and levels as outlined in Table 22 of the Groundwater Monitoring Program (Sydney Metro, 2023) are outlined in **Table 4**. Since the Groundwater Monitoring Program site conditions have changed with some monitoring wells having been removed from the program, destroyed or replaced. Monitored time series groundwater levels and electrical conductivity results are discussed in **Sections 6.1.1** and **6.3.3** respectively.

**Table 4 EC monitoring locations**

| Precinct | Well ID | Screened Unit |
|---|---|---|
| Orchard Hills | SBT-GW-1042 | Alluvium |
| Orchard Hills | SBT-GW-1063 | Alluvium/Bedrock |
| Orchard Hills | SMGW-BH-A315-R[1] | Alluvium/Bedrock |
| Claremont Meadows | SBT-GW-1805 | Residual |
| Airport Portal Dive Structure | SBT-GW-3003-A-EC | Bedrock |
| Airport Portal Dive Structure | SBT-GW-3003-B-EC | Bedrock |
| Airport Portal Dive Structure | SBT-GW-3003-C-EC | Bedrock |
| Airport Terminal | SBT-BH-3006-R[1] | Bedrock |
| Bradfield | SBT-VWP-4403-R[1] | Bedrock |

Notes: 1. EC monitor installed post ADE sampling event; data will be available in the next sampling round.

### 2.2.1.3 Manual Groundwater Levels

Manual gauging to measure groundwater levels was undertaken in groundwater monitoring wells prior to sampling for groundwater quality. All monitoring wells gauged were constructed with 50 mm diameter PVC casing and machine slotted screens. Gauging was conducted using an electronic groundwater level interface meter from a known (surveyed) point at the top of the well casing. Measurements were recorded to the nearest mm and recorded as metres below the top of casing (mBTOC) and converted to mAHD. Well details including co-ordinates, screened interval, lithology intersected, monitored depth, standing water level (SWL) and stick up, where monitored are presented in **Table 4**. It is noted that there are additional wells in **Table 4** compared to the November 2024 monitoring (ADE, 2025b) as newly installed and previously inaccessible wells are now included. Replacement wells are shown in red.

The status of monitoring for wells not sampled is shown in **Table 4**. It is noted that SBT-GW-4010 at Bradfield could not be located and presumed destroyed, however it is considered there is sufficient coverage in the four replacement wells: SBT-VWP-4403R, SBT-VWP-4803R, SBT-VWP-4014R and SBT-VWP-4017R. In addition SMGW-BH-A107 was inadvertently not monitored due to a communication error.

At Airport Business Park SBT-GW-3003 could not be monitored as it was dry.

At Claremont Meadows SBT-GW-1028 was found to be destroyed but groundwater levels will continue to be monitored in nearby surrogate VWPs SWD-TU100-20071-VWP07-A/B.

**Table 5 Monitoring well gauging results**

| Site | Well ID | Easting GDA2020 | Northing GDA2020 | TOC mAHD | Screen Interval mAHD | Lithology screened | SWL mbtoc | SWL mAHD | Time Sampled | Total Well Depth (m) | Stick-up (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bradfield | GW-4021 | 291112.5 | 6243748 | 62.847 | 51.9 - 60.9 | Alluvium/Bedrock | 3.871 | 59.365 | 12:46 PM | 5.805 | 1 |
| Bradfield | GW-4017 | 290805.8 | 6243870.8 | 71.334 | 59.3 - 61.3 | Residual | 8.171 | 62.054 | 7:49 AM | 13.696 | 0.5 |
| Bradfield | GW-4403-R | 290677.0 | 6244222.3 | 73.228 | 61.7 – 67.7 | Bedrock | 14.187 | 59.041 | 9:28 AM | 17.946 | 0 |
| Bradfield | GW-4803-R | 290621.1 | 6244162.8 | 74.214 | 61.7 – 67.7 | Bedrock | 10.165 | 64.049 | 8:55 AM | 12.132 | 0 |
| Bradfield | GW-4014_S-R | 290624.4 | 6243980.9 | 73.975 | 59.9 – 68.9 | Residual/bedrock | 12.541 | 61.434 | 3:39 PM | 14.371 | 0 |
| Bradfield | GW-4008 | 290230 | 6244991.9 | 78.269 | 50.27 - 56.27 | Bedrock | ^^ | ^^ | ^^ | ^^ | ^^ |
| XP-13 | SBT-GW-4000 | 289140.5 | 6246360.3 | 72.235 | 59.24 – 69.74 | Bedrock | 4.323 | 67.912 | 10:46 AM | 10.872 | 0.5 |
| XP South Creek | SBT-GW-1804 | 292194.9 | 6261580.1 | 21.021 | 16.0 – 19.0 | Residual | ## | ## | ## | ## | ## |
| Airport Terminal | GW-3012-A | 289133.2 | 6247685.6 | 83.958 | 76 - 82 | Bedrock | 7.072 | 76.884 | 3:58 PM | 9.024 | 0 |
| Airport Terminal | GW-3012-B | 289134.8 | 6247682.9 | 83.9 | 67.9 - 73.9 | Bedrock | 13.847 | 69.822 | 4:23 PM | 17.157 | 0 |
| Airport Terminal | GW-3012-C | 289136.4 | 6247680.3 | 83.777 | 57.8 - 63.8 | Bedrock | 22.094 | 61.936 | 8:39 AM | 27.321 | 0 |
| Airport Terminal | GW-3022 | 289446.1 | 6247614.1 | 77.776 | 62.8 – 74.8 | Bedrock | 9.475 | 66.333 | 7:31 AM | 16.452 | 0 |
| Airport Terminal | BH-3006-R | 289353.2 | 6247825.7 | 84.38 | 49.3 – 55.3 | Bedrock | 28.266 | 56.11 | 11:22 AM | 35 | 1.2 |
| Airport Terminal | SBT-3401-R | 290582.9 | 6248504.9 | 65.02 | 48.5 – 53.5 | Bedrock | 8.61 | 56.41 | 11:53 AM | 10.0 | 0 |
| Airport Terminal | BH-C320 | 289629.3 | 6246534.9 | 66.47 | 57.5 – 63.5 | Bedrock | 3.841 | 62.63 | 10:13 AM | 5.305 | 0.45 |
| Orchard Hills | GW-1042 | 291874.7 | 6259123.7 | 40.069 | 32.1 - 38.1 | Alluvium | 2.296 | 36.806 | 11:41 AM | 10.059 | 0.86 |
| Orchard Hills | GW-1806 | 291755.3 | 6258999.8 | 42.957 | 19 - 28 | Bedrock | 12.457 | 30.005 | 10:33 AM | 24.807 | 0 |
| Orchard Hills | GW-1807 | 291901.4 | 6258843.1 | 37.479 | 21.5 - 27.5 | Bedrock | 10.045 | 27.925 | 1:13 PM | 17.390 | 0 |
| Orchard Hills | GW-1808 | 291902.3 | 6258845.2 | 37.455 | 32.5 - 35.5 | Residual | 2.085 | 35.281 | 12:55 PM | 6.031 | 0 |
| Orchard Hills | GW-1063 | 292193.5 | 6258861.3 | 31.558 | 20.6 – 29.6 | Alluvium/bedrock | 5.619 | 25.287 | 8:35 AM | 11.993 | 0 |
| Orchard Hills | BH-A315-R | 291750.4 | 6258871.4 | 41.761 | 31.8 – 37.8 | Residual/Bedrock | 6.83^ | 34.93 | 10:51 AM | 9.95^ | 0 |
| Orchard Hills | GW-1048-R | 291938.3 | 6258986.8 | 39.967 | 32.0 – 38.0 | Alluvium/Bedrock | 4.233 | 35.734 | 11:29 AM | 9.435 | 0 |
| St Marys | GW-1005-S | 294262.4 | 6261825.2 | 44.195 | 36.2 - 42.2 | Residual/ Bedrock | 3.858 | 37.241 | 9:09 AM | 8.892 | -0.25 |
| St Marys | GW-1001-S | 294435.2 | 6261848.3 | 48.827 | 40.8 - 46.8 | Residual/ Bedrock | 2.917 | 45.773 | 11:17 AM | 8.563 | -0.27 |

| Site | Well ID | Easting GDA2020 | Northing GDA2020 | TOC mAHD | Screen Interval mAHD | Lithology screened | SWL mbtoc | SWL mAHD | Time Sampled | Total Well Depth (m) | Stick-up (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| St Marys | GW-1002 | 294464.6 | 6261979.9 | 42.605 | 34.6 - 40.6 | Residual/ Bedrock | 4.588 | 37.854 | 9:34 AM | 8.119 | -0.08 |
| St Marys | GW-1016 | 293905.8 | 6261847.7 | 36.122 | 26.1 - 31.1 | Residual/ Bedrock | 3.643 | 32.571 | 9:09 AM | 10.871 | 0 |
| St Marys | GW-1021 | 293847.8 | 6262056.4 | 33.906 | 25.6 - 31.6 | Residual/ Bedrock | 2.714 | 31.257 | 10:08 AM | 8.884 | 0.75 |
| St Marys | BH-A401 | 294106.3 | 6261997.8 | 36.51 | 27.5 - 33.5 | Residual/Bedrock | 5.615 | 30.895 | 12:36 AM | 8.879 | 0 |
| St Marys | GW-1017 | 293946.1 | 6262114.9 | 32.475 | 22.5 - 30.5 | Residual/ Bedrock | 2.713 | 29.762 | 7:31 AM | 6.007 | 0 |
| Airport Business Park | GW-3003A-R | 290426.0 | 6248383.2 | 67.846 | 62.8 – 65.8 | Alluvium/fill | Dry | 61.78 ^ | 1:45 PM | 6.063 | 0 |
| Airport Business Park | GW-3003B-R | 290426.0 | 6248383.2 | 67.735 | 54.7 – 57.7 | Shale | 9.425 | 58.31 | 1:37 PM | 14.649 | 0 |
| Airport Business Park | GW-3003C-R | 290426.0 | 6248383.2 | 67.637 | 45.6 – 48.6 | Sandstone | 13.585 | 54.052 | 1:32 PM | 23.738 | 0 |
| Claremont Meadows | GW-1805 | 292046.7 | 6261326.1 | 27.296 | 18.3 - 24.3 | Residual | 2.689 | 24.607 | 8:42 AM | 9.001 | 0 |
| Claremont Meadows | GW-1024 | 292108.9 | 6261303 | 28.506 | 16.51 - 25.51 | Alluvium/Bedrock | 3.731 | 24.775 | 8:16 AM | 11.221 | 0 |
| Claremont Meadows | GW-1030 | 291872.1 | 6260654 | 40.808 | 20.8 - 25.8 | Bedrock | 2.729 | 38.079 | 3:15 PM | 5.242 | 0.37 |
| TBM Tunnel South Creek | SMGW-BH-A107 | 292413 | 6261713 | 22.5 | 19.0 – 26.0 | Bedrock | ## | ## | ## | ## | ## |
| Bringelly | GW-4003 | 289518.7 | 6245851.2 | 71.932 | 64.9 - 69.9 | Residual/Bedrock | 10.788 | 61.144 | 3:50 PM | 18.245 | 0.38 |
| Bringelly | GW-4005 | 289666.8 | 6245749.6 | 73.613 | 53.6 - 53.6 | Bedrock | 13.943 | 59.67 | 11:35 AM | 18.400 | 0.12 |
| Bringelly | GW-4800 | 289626.6 | 6245830 | 71.432 | 64.4 - 69.4 | Residual/ Bedrock | 7. 537 | 63.895 | 2:43 PM | 12.950 | 0.50 |
| Bringelly | GW-4801 | 289580.1 | 6245835.6 | 71.372 | 55.4- 67.4 | Residual/ Bedrock | 11.831 | 59.541 | 4:13 PM | 17.925 | 0.38 |
| Bringelly | GW-4802 | 289583.3 | 6245761.2 | 74.348 | 58.4 - 70.4 | Bedrock | 15.049 | 59.299 | 1:42 PM | 18.070 | 0.54 |

**Notes**: Replacement Wells.
^ from development records (Tetra Tech, 2025b).
^^ electronic malfunction with recording equipment.
# water quality analysis not required.
## not sampled in GME 3, proposed for GME 4.
TOC = top of casing.

### 2.2.2 Groundwater Quality

Groundwater quality monitoring was undertaken in 37 monitoring wells. All samples were analysed for the baseline suite with additional analytical requirements as shown in **Table 6.** Not all wells outlined in Table 19 of the Groundwater Monitoring Program (Sydney Metro, 2023) could be sampled for a variety of reasons including the wells being destroyed or not able to be identified in the field or recommendations to discontinue monitoring. Additional wells have been added to many precincts and are being sampled to compensate for the no longer active monitoring wells.

The standard analytical suite (SAS) consisted of:

- Field parameters (pH, electrical conductivity (EC), total dissolved solids (TDS), redox and temperature);
- Total organic carbon (TOC);
- Major cations (calcium, magnesium, sodium, potassium);
- Major anions (chloride, sulphate) and speciated alkalinity);
- Dissolved metals (aluminium, arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, zinc);
- Total metals (aluminium, cobalt, iron, manganese); and
- Nutrients (ammonia, nitrate, nitrite, total Kjeldahl nitrogen, total nitrogen, total phosphorous, reactive phosphorous.

Additional analytes included for selected monitoring wells where compounds were detected and/or exceeded the adopted site assessment criteria in the baseline assessment (Tetra Tech, 2023a) are:

- Total Recoverable Hydrocarbons (TRH);
- Benzene, Toluene, Ethylbenzene, Xylene (BTEX);
- Phenols;
- Per- and Polyfluoroalkyl Substances (PFAS) (short suite); and
- Volatile Organic Compounds (VOCs).

**Table 6 Wells sampled for groundwater quality**

| Site | Well ID | Date Sampled | Lab Batch | Analytes |
|---|---|---|---|---|
| Bradfield | GW-4017 | 30.07.25 | 387359 | SAS, TRH/BTEX, PFAS |
| Bradfield | GW-4021 | 14.07.25 | 386021 | SAS |
| Bradfield | SBT-GW-4803 | 30.07.25 | 387359 | SAS |
| Bradfield | BH-4014_S | 29.07.25 | 387359 | SAS, PFAS |
| Bradfield | SBT-GW-4403 | 30.07.25 | 387359 | SAS, TRH/BTEX |
| Bradfield | GW-4008 | 14.07.25 | 386021 | SAS |
| Airport Terminal | GW-3012-A | 10.07.25 | 386021 | SAS |
| Airport Terminal | GW-3012-B | 11.07.25 | 386021 | SAS, TRH |
| Airport Terminal | GW-3012-C | 11.07.25 | 386021 | SAS |
| Airport Terminal | GW-3022 | 11.07.25 | 386021 | SAS, TRH |
| Airport Terminal | SBT-BH-3006 | 07.30.25 | 387359 | SAS |
| Airport Terminal | SBT-BH-C320 | 11.07.25 | 386021 | SAS, TRH, BTEX, PFAS |
| Orchard Hills | GW-1042 | 10.07.25 | 386021 | SAS |
| Orchard Hills | GW-1806 | 29.07.25 | 387359 | SAS, TRH/BTEX, |
| Orchard Hills | GW-1807 | 10.07.25 | 386021 | SAS |
| Orchard Hills | GW-1063 | 10.07.25 | 386021 | SAS |
| Orchard Hills | GW-1808 | 10.07.25 | 386021 | SAS |
| Orchard Hills | SMGW-BH-A315 | 29.07.25 | 387359 | SAS, TRH/BTEX, PFAS |
| Orchard Hills | SBT-GW-1048 | 29.07.25 | 387359 | SAS |
| St Marys | GW-1005_S | 09.07.25 | 386021 | SAS |
| St Marys | GW-1001_S | 09.07.25 | 386021 | SAS |
| St Marys | GW-1002 | 09.07.25 | 386021 | SAS |
| St Marys | GW-1021 | 09.07.25 | 386021 | SAS, Phenols |
| St Marys | GW-1016 | 09.07.25 | 386021 | SAS, TRH/BTEX, PFAS |
| St Marys | GW-1017 | 09.07.25 | 386021 | SAS, TRH/BTEX, PFAS |
| St Marys | GW-A401 | 15.07.25 | 386021 | SAS, TRH/BTEX, PFAS |
| Claremont Meadows | SBT-GW-1805 | 29.07.25 | 387359 | SAS, PFAS, Total Phosphorus, Total Nitrogen |
| Claremont Meadows | SBT-GW-1024 | 29.07.25 | 387359 | SAS, TRH/BTEX, PFAS |
| Claremont Meadows | SBT-GW-1021 | 09.07.25 | 386021 | SAS, PFAS |
| Claremont Meadows | SBT-GW-1028 | | | |
| Airport Business Park | SBT-GW-3401* | 31.07.25 | ES2523490 | SAS, TRH/BTEX, |
| Airport Business Park | ABP-SBT-GW-3003/B | 29.07.25 | 387359 | SAS |
| Airport Business Park | ABP-SBT-GW-3003/C | 29.07.25 | 387359 | SAS |
| Bringelly | GW-4003 | 14.07.25 | 386021 | SAS, TRH, BTEX, PFAS |
| Bringelly | GW-4801 | 14.07.25 | 386021 | SAS |

| Site | Well ID | Date Sampled | Lab Batch | Analytes |
|---|---|---|---|---|
| Bringelly | GW-4802 | 14.07.25 | 386021 | SAS |
| Bringelly | GW-4800 | 14.07.25 | 386021 | SAS |
| Bringelly | GW-4005 | 14.07.25 | 386021 | SAS |

**Note:** *Sampled by Coffey

#### 2.2.2.1 Sampling Procedure

Groundwater sampling was conducted by a suitably qualified and experienced ADE environmental consultant. Throughout the sampling program, disposable nitrile gloves were worn and changed between sampling locations. Prior to sampling for water quality, groundwater levels were manually gauged. Groundwater samples were collected using the Hydrasleeve™ method. A Hydrasleeve captures a core of water, typically one litre, from the screened interval of the well. The Hydrasleeve™ was deployed to a target depth based on screened interval and remains in place until conditions are considered to have stabilised. The time to stabilisation depends on the transmissivity of the aquifer, with more transmissive aquifer stabilising more rapidly. It is understood that the methodology provided in the GWMP was followed by SSTOM, with the hydrasleeves allowed a minimum of five days to stabilise given most of the wells are screened within the bedrock aquifer. The Hydrasleeve™ is sealed except during sample collection when it is pulled up through the sampling interval, and re-seals once full. Therefore, only groundwater from the target depth interval is sampled and recovered. Groundwater sampling and field testing was carried out in select monitoring wells where sampling locations were accessible. Groundwater samples were collected in appropriate laboratory supplied bottles and transferred to a National Association of Testing Authorities (NATA) accredited laboratory for analysis under the Chain of Custody (CoC) process. The analytical suites are outlined in **Table 6**.

Groundwater parameters were monitored by using a calibrated YSI water quality meter. The calibration certificate provided by Active Environmental Solutions Australia is presented in **Appendix B – Monitored Field Parameters.**

#### 2.2.2.2 Decontamination

The decontamination of reusable sampling equipment was performed between each sampling location. Equipment was initially rinsed with tap water, cleaned using Liquinox and subsequently rinsed again with tap water followed by deionised water. The equipment was then allowed to air dry before being reused.

Equipment that required triple rinsing during the groundwater sampling program included:

- Solinst interface probe.
- Water quality meter probes.

#### 2.2.2.3 Quality Assurance/ Quality Control

Quality Assurance and Quality Control (QA/QC) practices were applied to all stages of data gathering and subsequent handling procedures. The field investigation sampling procedures conformed to standard operating procedures (SOP) to prevent cross contamination, preserve the sample integrity and allow collection of a suitable data set from which to make technically sound and justifiable decisions with data of adequate useability. Where possible disposable equipment was used to minimise the risk of cross contamination.

Field QA/QC samples collected throughout the site investigation program consisted of:

- Equipment rinsates;
- BTEX Trip spikes;
- BTEX Trip blanks;
- Field duplicate; and

- Inter-laboratory duplicates.

The rationale, methodology and discussion of the QA/QC procedures are discussed further in **Section 6.4** and the results are presented in **Appendix H – QA/QC Analysis**.

Laboratory quality control procedures were undertaken by the laboratory with each batch of samples for every 10 or 20 samples as required by the NATA registration. These procedures include analyses of laboratory duplicates, spiked samples, certified reference standards, surrogate standard/spikes and laboratory blanks. Laboratory analytical report sheets including summaries of the internal QA/QC procedures and results are included in **Appendix G – Laboratory Report Sheets** with each batch number.

#### 2.2.2.4 Documentation of results

Field results were logged on a digital field form or hard copy. Field forms recorded the following information:

- Time and date of sampling;
- Details of the sampler;
- Well location, condition and type of equipment used (Hydrasleeve);
- Well diameter, depth and groundwater level;
- Field parameters, odour, colour, sheen and any other observations made during sampling ; and
- Chain of custody documentation included the date of sampling, date samples were relinquished to the laboratory, sample identification, analytes to be analysed, names of samplers.

# 3 Compliance Review

A review of the monitoring program indicates one monitoring location (SBT-VWP-3003A) could not be sampled due to the groundwater well being dry.

## 3.1 Monitoring Well Replacement and Rectification

In the previous monitoring report (ADE, 2025b) 15 wells were identified as being damaged and requiring replacement or requiring minor rectification to the head works or development. In July 2025 a drilling program was conducted to replace or rectify the damaged monitoring wells (Terratest, 2025b). This report is provided in **Appendix J**. In addition, data loggers were installed in some of the wells to continuously monitor groundwater levels and/or electrical conductivity. Details of the monitoring well rectification program and instrumentation to be installed are provided in **Table 7.** The nomenclature of the monitoring wells has been retained but a 'R' has been added as a suffix for 'Replacement' to distinguish the old and new wells. In some cases, damaged VWPs were replaced with a monitoring well but the well name remains similar. For example, at Bradfield VWP SBT-VWP-4403 was replaced with a monitoring well now labelled SBT-VWP-4403-R.

At St Marys monitoring well SMGW-BH-A401 was not sampled in November 2024 as it was thought to be destroyed. However, it was located during the July sampling program, found to be functional and thus replacement was not required.

**Table 7 Monitoring Wells Replaced and Instrumentation to be Installed.**

| SSTOM Precinct | Replacement Well | Alternative ID | Data Logger Installation |
|---|---|---|---|
| Orchard Hills | SMGW-BH-A315-R | - | EC and Levels |
| | SBT-GW-1048-R | - | |
| Airport Business Park | SBT-GW-3003-A-R | SBT-GW-3003 | EC and Levels |
| | SBT-GW-3003-B-R | SBT-GW-3004 | EC and Levels |
| | SBT-GW-3003-C-R | SBT-GW-3005 | EC and Levels |
| | SBT-VWP-3401-R | SWD-TU300-33565-VWP02 | |
| Airport Terminal | SBT-GW-3006-R | SBT-BH-3006<br>SBT-GW-3006-w | EC and Levels |
| Bradfield | SBT-GW-4803-R | - | |
| | SBT-GW-4014-R | SBT-GW-4014_S | |
| | SBT-GW-4017-R | - | |
| | SBT-VWP-4403-R | - | EC and Levels |

As part of the drilling program, rectification works were undertaken on four monitoring wells as outlined in **Table 8**.

**Table 8 Rectification works on monitoring wells.**

| SSTOM Precinct | Monitoring Well | Monitoring rectification |
|---|---|---|
| Orchard Hills | SBT-GW-1806 | Well Development |
| Claremont Meadows | SBT-GW-1024 | Bund removed and new gatic cover installed |
| | SBT-GW-1805 | Well Development |
| Bradfield | SBT-GW-4017^ | Install well cap and hydrasleeve |

Note: ^ Rectification conducted by ADE/PLM.

The replacement monitoring wells were installed between 8 and 21 July 2025 and following installation were developed with a bailer and Waterra foot valve between 8 and 23 July 2025 (Tetra Tech Coffey, 2025b). The monitoring wells were then sampled for water quality between 29 and 30 of July 2025 allowing sufficient time between groundwater well development and sampling.

## 3.2 Addition to Monitoring Network

Prior to monitoring the precincts of Claremont Meadows and Bringelly for the first time the monitoring wells and VWPs, as handed over by SBT, were inspected and reviewed. Where well points were identified as destroyed, an assessment of their purpose and relevance was made to inform the ongoing monitoring program.

**Claremont Meadows:**

- SBT-GW-1031: This location was established for Cross-passage / Tunnel monitoring only and was not handed to SSTOM by SBT.
- SBT-GW-1028: This well has been replaced by surrogate well SWD-TU100-20071-VWP07-A/B.
- SBT-GW-1804: The purpose of this well was to monitor groundwater impacts associated with the TBM Tunnel at South Creek.
- SMG-BH-A107: Groundwater levels only are recommended to continue at this location. This monitoring requirement was mistakenly missed during the GME 3 and will be collected in the next round.

In summary groundwater level monitoring will continue to be monitored in SBT-1804, SMG-BH-A107 and surrogate VWP (SWD-TU100-20071-VWP07-A/B) for SBT-GW-1028 in GME 4, to monitor potential groundwater rebound following the cessation of tunnelling.

**Bringelly**

- VWPs SWD-TU351-37371-VWP04 (SBT-VWP-4400), SWD-TU351-37377-VWP05 (SBT-VWP-4401), and SWD-TU351-37471-VWP06 (SBT-VWP-4402) were destroyed by SBT and were not repaired prior to their final monitoring round.

As SBT did not recommend repair or replacement of these monitoring points and given that five active monitoring wells remain within a relatively small area, the loss of these three monitoring points is not considered significant.

## 3.3 Groundwater levels

Previous monitoring by SBT and PLM as part of this program monitored locations for time series groundwater level and EC data (as outlined in **Table 4**) to monitor potential impacts on nearby GDEs.

Not all VWPs were available to be downloaded as they have been either destroyed or were inaccessible in July 2025 as outlined in **Table 3.**

## 3.4 Groundwater Quality

The groundwater quality analysis was undertaken as proposed, Groundwater quality results are discussed in **Section 6.3** and groundwater quality assurance and quality control (QA/QC) are discussed with **Section 6.4**. Tabulated analytical results are presented in **Appendix C – Tabulated Analytical Results** and QA/QC analysis and discussion are presented in **Appendix H – QA/QC Analysis**.

# 4 Existing Environment

## 4.1 Topography

The new Metro rail line extends from the St Marys Railway Station in the north to Bradfield in the south. The line extends beneath the Great Western Highway and M4 Motorway within a tunnel emerging at Orchard Hills. The alignment continues south crossing Luddenham Road, the future M12 Motorway and Elizabeth Drive, diving into a tunnel at the Airport Business Park with underground stations at the Airport Terminal, Bringelly and Bradfield. The landscape is relatively flat although over the 23km alignment the relief increases from St Marys (approximately 40mAHD) to around 80 MAHD at the Airport Terminal. This topography is typical of the relief underlain by the Bringelly Shale.

## 4.2 Rainfall and Climate

Sydney's climate is characterised as temperate, having no dry season with a slight predominance of rainfall throughout the autumn and winter months. An incomplete rainfall record has been obtained from the Bureau of Meteorology (BoM) Station 67108 located at Badgerys Creek AWS with data gaps infilled from nearby Station 67084 at the Orchard Hills Treatment Works. It is noted that the Orchard Hills Treatment works no longer collected data after February 2025. Rainfall has been measured at Badgerys Creek station (south) since 1995 and Orchard Hills (north) since 1970. Evaporation data is derived from the BoM website that presents Australia's open pan evaporation on a detailed contoured map based on data collected between 1975 and 2005. Monthly rainfall, evaporation and the rainfall difference at Badgerys Creek are summarised on **Table 9** and **Table 10** at Penrith Lakes (Station 67113). The monthly rainfall difference is the deficit or surplus difference between monthly rainfall, and the combined results is representative of the long-term average. Of note there has been a climate anomaly with sustained high rainfall above historic averages since 2020, with 2024 being the driest year since 2020 (approximately 70-80% of the other years).

**Table 9 Summary of monthly rainfall and average evaporation (mm) – Badgerys Creek**

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rainfall mean[1] | 78.5 | 106 | 106.7 | 52.0 | 41.2 | 54.7 | 34.7 | 36.3 | 34.8 | 57.2 | 69.6 | 55.9 | 727.6 |
| Rainfall 2025 | 78.4 | 50.8 | 117.4 | 63.8 | 98.2 | 1.0 | 79.8 | 121.4 | - | - | 91.2[2] | 44.6[2] | - |
| Rainfall difference | -0.1 | -55.2 | 10.7 | 11.8 | 57.0 | -53.7 | 45.1 | 85.1 | - | - | 21.6 | -11.3 | - |
| Evaporation | 160 | 110 | 140 | 110 | 70 | 55 | 70 | 90 | 110 | 160 | 180 | 180 | 1435 |

**Notes:**

1 Rainfall averages from 1995 to 2024 (accessed August 2025).
2 2024 Monthly Rainfall.

**Table 10 Summary of monthly rainfall (mm) – Penrith Lakes**

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rainfall mean[1] | 94.2 | 117.2 | 103.6 | 57.6 | 39.9 | 44.5 | 37.9 | 32.1 | 30.6 | 53.8 | 81.7 | 64.1 | 757.2 |
| Rainfall 2025 | 67.6 | 71.8 | 70.6 | 59.2 | 149.2 | 3.4 | 65.0 | 100.4 | - | - | 31.2[2] | 38.2[2] | - |
| Rainfall difference | -26.6 | -45.4 | -33.0 | 1.6 | 109.3 | -41.1 | 27.1 | 68.3 | - | - | -50.5 | -25.9 | - |

**Notes:**

1 Rainfall averages from 1995 to 2024 (accessed September 2025).
2 2024 Monthly Rainfall.

Mean rainfall is highest during late summer and early autumn peaking in February and March. The lowest average rainfall is in late winter and early spring from July through to September. Evaporation is highest in November and December and lowest in June and exceeds mean rainfall for all months. Average monthly rainfall and recorded 2024/25 monthly rainfall from Badgerys Creek BoM Station are shown in **Figure 2**.

At Badgerys Creek mean monthly rainfall (since 1995) has been compared to the recorded 2024/25 monthly rainfall from November 2024 to July 2025. Most months were typical of average conditions except for rainfall deficits recorded in February 2025 (deficit of 55.2 mm) and June 2025 (deficit of 54.1 mm). Significant rainfall surpluses were recorded in May 2025 (57.0 mm) and July 2025 (45.1 mm).

Review of daily rainfall monitored at Badgerys Creek over the monitoring period (November 2024 to August 2025) indicates there were nine significant rainfall events exceeding 20 mm that could be major groundwater recharge events as shown in **Table 11.**

**Table 11 Rainfall events exceeding 20 mm over the monitoring period**

| Date | Badgerys Creek Rainfall (mm) | Penrith Lakes Rainfall (mm) |
|---|---|---|
| 13 November 2024 | 27.2 | - |
| 30 November 2024 | 24.8 | 21.6 |
| 8 December 2024 | 21.4 | - |
| 11 January 2025 | 20.6 | 33.0 |
| 16 January 2025 | 20.0 | 20.2 |
| 11 February 2025 | - | 46.2 |
| 20 March 2025 | 44.0 | - |
| 29 March 2025 | 21.0 | 20.8 |
| 27 April 2025 | 30.4 | - |
| 23 May 2025 | 73.6 | 115.6 |
| 2 July 2025 | 48.0 | 38.0 |
| 2 August 2025 | 21.6 | - |
| 21 August 2025 | 34.0 | 40.4 |

These elevated rainfall events were spread throughout the monitoring period. The largest rainfall event at Badgerys Creek and Penrith Lakes was on 23 May 2025 (73.6 mm and 115.6 respectively) which is likely to have been a major recharge event increasing groundwater levels and pressures prior to sampling in July 2025. Since this May event it is expected that groundwater levels would have declined without any localised influences of pumping and dewatering, although higher than average monthly rainfall may have stabilised groundwater levels. Comparison of rainfall at Badgerys Creek and Penrith Lakes indicates rainfall is quite variable across the alignment. For example, on 11 February 46.2mm was recorded at Penrith Lakes and only 18.0 mm recorded at Badgerys Creek.

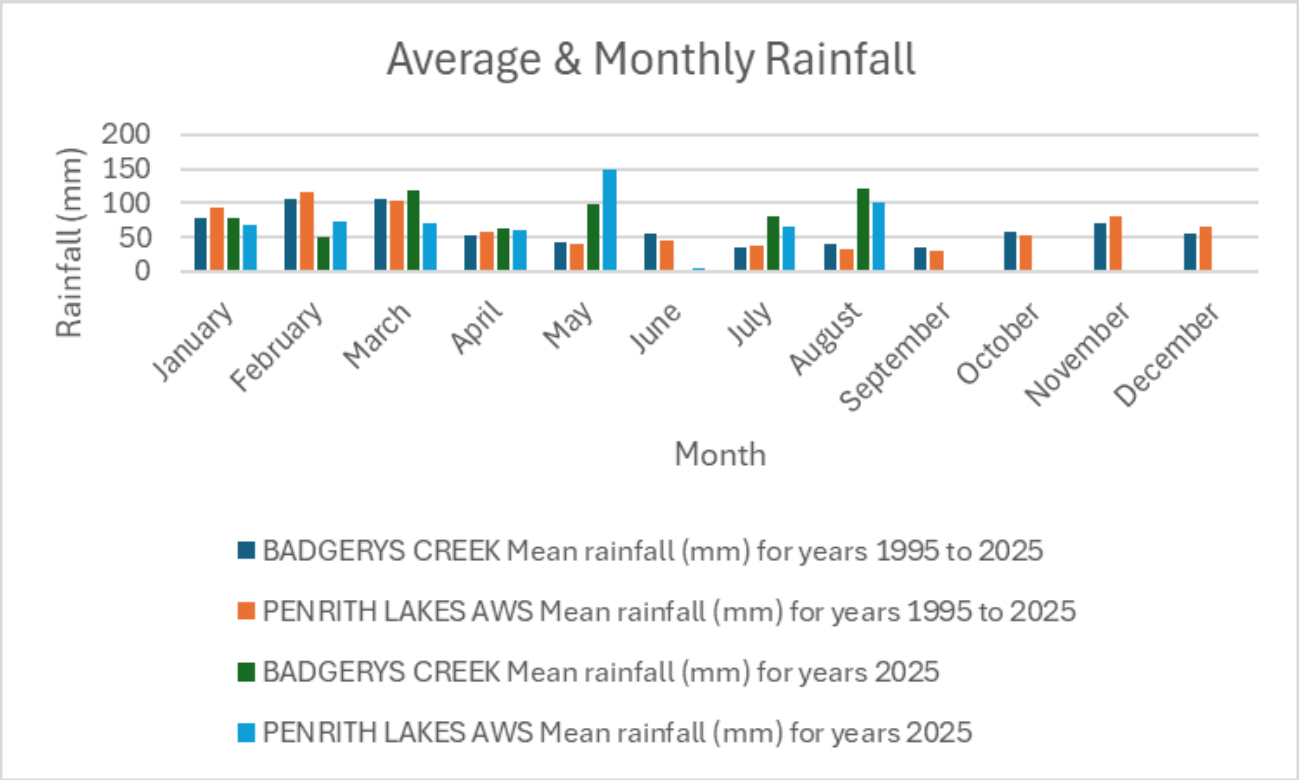


**Figure 2 Average monthly rainfall compared to 2025 at Badgerys Creek**

## 4.3 Surface Water Features

The project alignment is located within the South Creek Catchment. South Creek flows northward, discharging into the Hawkesbury-Nepean system. South Creek is one of the most degraded catchments within the Hawkesbury-Nepean catchment due to extensive vegetation clearing causing an increase in sediment loads to South Creek and rising saline groundwater resulting in an increase dryland salinity. Water quality in South Creek is also degraded due to increased urbanisation and associated impacts. The water quality may have been impacted by industrial impacts to the north and agricultural and WSA impacts to the south. In the past 12 months there has also been land development for commercial warehouses from St Marys Facility south as well as road works on Mamre Road that have impacted surface water. The project alignment crosses the following creeks from north to south:

- Claremont Creek;
- Blaxland Creek;
- South Creek;
- Cosgrove Creek; and
- Badgerys Creek.

There are no RAMSAR wetlands within the Project footprint or close by.

## 4.4 Soil Landscape

Two soil landscapes were described in PLM, 2023b. The primary soil across the Project area is the Blacktown soil landscape that is derived from weathered shale. These soils are sandy and typically deeper than one metre. The soils are characterised by seasonal waterlogging, low fertility and are highly plastic, leading to a low hydraulic conductivity.

In contrast the South Creek soil landscape is derived from alluvium within the current floodplain and is composed of deep layered sediments including clays and loams. The soils are characterised by seasonal waterlogging, localised permanently high-water tables and present a localised water erosion hazard.

Across western Sydney naturally occurring saline groundwater can adversely impact soils when the water table approaches the ground surface and either causing the development of salt scalds or discharge into creek systems. The development of salt scalds can degrade the soil structure and increase soil erosion, in addition to damaging natural vegetation. Where the water table is shallow and the groundwater is saline there is potential for salt scalds to develop.

Acid sulfate soils (ASS) are the common name given to naturally occurring sediments and soils containing iron sulphides, the most common being pyrite formed in coastal lowlands subject to tidal inundation. The exposure of the sulphide in these soils to oxygen by drainage or excavation can lead to the generation of sulphuric acid. The release of sulphuric acid from ASS often mobilises metals such as aluminium, iron and magnesium at toxic levels from otherwise stable soil matrices. Elevated concentrations of metals in site runoff may result in changes which are potentially detrimental to receiving water bodies and associated aquatic organisms. It is noted that the risk of ASS from coastal processes is low to extremely low since the project area is not within a coastal area (PLM, 2023b). It is also noted that there is some potential for ASS to have developed in large dams, creeks and wetlands where there are waterlogged soils with a high organic matter content.

## 4.5 Geological Setting

Regionally the Project alignment is located within the Cumberland Basin which forms part of the Permo-Triassic Sydney Basin. Western Sydney is underlain by the Bringelly Shale of mid Triassic age, the uppermost unit of the Wianamatta Shale. The Bringelly Shale is characterised by sub-horizontal, laminated, carbonaceous shale that is intermittently interbedded with laminated siltstone. Weathered shale bedrock is characterised by residual soil, extremely weathered rock and highly weathered rock. Residual soil comprising silty clay occurs along the alignment with varying thicknesses but is generally thicker at the northern part of the project area.

A basalt and dolerite dyke of Jurassic age intrudes the Bringelly Shale and forms a prominent north-west trending ridgeline in the south-west of the airport site.

Alluvium of Quaternary age typically consisting of sand silt and clay overlies the Bringelly Shale along the major creek lines outlined in **Section 4.4**.

## 4.6 Hydrogeological Setting

Two aquifers have been identified across the project site these being within the unconfined Quaternary alluvium and a confined deep regional aquifer within the Bringelly Shale. Minor perched groundwater is also present within the weathered shale profile however these weathered lenses are not continuous and do not form an aquifer. Groundwater salinity within the Bringelly Shale is typically saline and thus groundwater is low economic value. Groundwater quality within the alluvium is variable but typically better quality than groundwater in the shale but is also of limited economic value due to limited storage.

Groundwater levels have been monitored in nested groundwater monitoring wells within the alluvium and underlying Bringelly Shale (DTRS, 1998). The standing water levels monitored in the alluvium were higher than those in the shale aquifer. These differential heads suggest poor hydraulic interconnection between the two groundwater systems. Groundwater levels within the shallow alluvial aquifer were compared to the base of creek beds and indicated that in the upper reaches of the creek, groundwater within the alluvial aquifer discharges into the creek bed.

Rainfall is the only source of recharge to each aquifer across the project area and infiltration to the clayey subsoils is low. Consequently, most rainfall on the local catchment discharges to the local creek systems as surface water runoff. Groundwater discharges into creeks in low topographical areas.

Standing water levels (SWL) monitored at stations along the alignment in this investigation is variable and typically shallow as outlined in PLM, 2023b and summarised in **Table 12.**

**Table 12 Standing water levels monitored at Metro Stations (from PLM, 2023b)**

| Station | Standing Water Level (mbgl) & (m AHD) |
|---|---|
| St Marys | 1.7 - 7.7 / 26.7 to 36 |
| Claremont Meadows | 1.6 – 2.4 / 24.9 – 25.6 |
| Orchard Hills | 4.1 – 5.7 / 36.3 to 38.1 |
| Bringelly Service Facility | 2.8 – 7.4 / not available |
| Bradfield | 1.8 – 5.0 / 57.6 to 67.3 |

Groundwater within the Project alignment has the potential to be contaminated from former and current land-use practices including agricultural use, industrial use, fuel and chemical storage, landfills and the use of hazardous building materials. The Environmental Impact Statement identified 53 areas of environmental concern (AEC) along the alignment that could impact groundwater quality. Should groundwater be found to be contaminated, reference will be made to these AECs to establish whether the source area can be identified. Contaminants including chlorinated hydrocarbons, petroleum hydrocarbons and PFAS have been identified along the Project alignment. These contaminants have the potential to cause environmental degradation and pose a risk to construction workers during construction.

## 4.7 Groundwater Dependent Ecosystems

Groundwater dependent ecosystems (GDEs) are communities of plants, animals and other organisms whose extent and life processes are dependent on groundwater, such as wetlands and vegetation beside creek systems. Most wetland communities and many river systems have some degree of dependence on groundwater. GDEs within 10 km of the Project alignment have been identified in or near to the project footprint by PLM (2023a) and include:

- South Creek and associated tributaries;
- Cumberland Plain Woodland in the Sydney Basin Bioregion;
- River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and Southeast Corner Bioregions;
- Shale Gravel Transition Forest in the Sydney Basin Bioregion; and
- Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and Southeast Corner Bioregions.

The GWMP requires monitoring of terrestrial GDEs that have been identified at or near:

- Claremont Meadows within residual soils;
- Orchard Hills within alluvium; and
- Bradfield within alluvium.

Time series monitoring of electrical conductivity has been previously conducted at these sites to monitor groundwater quality at these GDEs (**Section 5.2**).

# 5 Performance Criteria

Performance criteria or trigger levels for groundwater levels, groundwater dependent ecosystems and groundwater quality is outlined in the GWMP (PLM, 2024). The trigger levels are consistent with those previously used by SBT to ensure consistency across the wider groundwater monitoring program. The justification for these trigger levels is described and tabulated in this Section.

It is noted that trigger levels for groundwater levels and groundwater quality have not been developed for every monitoring point.

## 5.1 Groundwater Level Trigger Development

Groundwater level trigger levels were developed to manage potential impacts due to drawdown associated with temporary dewatering during construction. It is anticipated that the trigger levels may be revised based on ongoing revised assessment as construction progresses.

A traffic light system was developed to manage actions based on baseline groundwater conditions and anticipated groundwater level drawdown as outlined in **Table 13.**

**Table 13 Traffic light trigger level system**

| Trigger Level | Action |
|---|---|
| Green | Groundwater levels observed are within the target / green trigger level range and require no additional action. |
| Amber | • Investigation to the possible reason for the drawdown or drawdown trend.<br>• Possible increase in monitoring frequency to confirm trend.<br>• Checks on instrumentation / monitoring equipment.<br>• Consideration for need of application of mitigation (i.e. targeted recharge) where drawdown is not found to be a seasonal variation and is identified to be due to project activities. |
| Red | • Investigation to the possible reason for the drawdown or drawdown trend.<br>• Increase in monitoring frequency to confirm trend.<br>• Changes to groundwater level management where trend is deemed to be a function of the Project activities. May include implementation of localised recharge or other hydraulic control. |

## 5.2 GDE Trigger Values

Site specific trigger values (SSTVs) as outlined in PLM, 2024 are applied to monitor the risk posed to GDE health by altered groundwater quality (salinity measured as electrical conductivity µS/cm) and groundwater levels. Relevant to this GME salinity monitoring points are located at Orchard Hills (SBT_GW-1042, SBT-GW-1063 and SMGW-BH-A315), Claremont Meadows (SBT-GW-1805, SBT-GW-1028) and Bradfield (SBT-GW-4021). Groundwater salinity was monitored manually at four of these locations but SBT-GW-1028 is no longer operational as a monitoring well but is close to SBT-GW-1805. SBT-GW-1028 was not monitored within SBT's final rounds and surrogate sample location SWD-TU100-20071-VWP07-A/B is monitored instead for groundwater levels. Continuous salinity monitoring and groundwater levels was also downloaded in five monitoring wells. The monitoring results are discussed in **Section 6.1.1**.

SSTVs developed for the GDEs are presented in **Table 14** and **Table 15.**

## 5.3 Groundwater Level Trigger Criteria

Groundwater level trigger levels (green, amber and red) for the monitoring wells and VWPs monitored in this investigation (PLM, 2024) along with sensor depth or screen intervals and predevelopment groundwater level ranges are presented in **Table 14**.

**Table 14 Groundwater level trigger levels**

| Precinct | Well ID | Monitoring VWP sensor elevation or screen interval (mAHD) | Pre-construction groundwater level range (mAHD) | Trigger levels based on anticipated groundwater level at completion of excavation and tunnelling (mAHD) | | |
|---|---|---|---|---|---|---|
| | | | | Green | Amber | Red |
| Bradfield | SBT-GW-4014-S | 47.75 | 66.2 – 68 | 59.3 | 58.8 | 58.3 |
| | | 50.75 | 66.8 – 68.6 | 59.9 | 59.4 | 58.9 |
| | GW-4021 | 51.9 – 60.9 (Screen) | 59.8 – 59.9 | 59.6 | 59.12 | 58.6 |
| | SBT-VWP-4404 | 55.17 | 65.6 – 66.8 | 55.6 | 55.1 | 54.6 |
| Airport Business Park | SBT-VWP-3400 | 55.1 | 59.3 – 62.9 | Note 1 | Note 1 | Note 1 |
| | ABP-TD300-VWP01 | 55.1 | 59.3 – 62.9 | Note 1 | Note 1 | Note 1 |
| | ABP-TD300-VWP02 | 56.277 | 59.8 – 61.7 | Note 1 | Note 1 | Note 1 |
| | ABP-TD300-VWP03 | 56.296 | 60 – 62.2 | Note 1 | Note 1 | Note 1 |
| | ABP-TD300-VWP04 | 55.123 | 60.5 – 62.7 | Note 1 | Note 1 | Note 1 |
| Airport Terminal | SBT-GW-3006 | 49.3 – 55.3 (Screen) | 72.9 – 74.6 | 65.0 | 64.5 | 64.0 |
| | ATL-SN350-VWP01-01 | 60 | 69.2 – 75 | 56.9 | 56.4 | 55.9 |
| | ATL-SN350-VWP01-02 | 64 | 69.1 – 75.1 | 56.8 | 56.3 | 55.8 |
| | ATL-SN350-VWP01-03 | 67.999 | 69.1 – 75.1 | 56.8 | 56.3 | 55.8 |
| | ATL-SN350-VWP01-04 | 72.998 | 73 – 74.1 | 60.7 | 60.2 | 59.7 |
| Orchard Hills | SBT-GW-1042 | 32.1 – 38.1 (Screen) | 37.7 – 37.8 | 33.5 | 33.0 | 32.5 |
| | SBT-GW-1063 | 20.6 – 29.6 | 25.4 – 25.7 | 24.8 | 24.3 | 23.8 |
| | SWD-TU150-22010-VWP02 | 22.81 | 33.8 – 35.3 | 31.5 | 31.0 | 30.5 |
| St Marys | SWD-TU100-17275-VWP-A | 15.15 | 42 – 43.3 | 35.0 | 34.5 | 34.0 |
| | SWD-TU100-17275-VWP-B | 20.15 | 42 – 43.3 | 35.0 | 34.5 | 34.0 |

| Precinct | Well ID | Monitoring VWP sensor elevation or screen interval (mAHD) | Pre-construction groundwater level range (mAHD) | Trigger levels based on anticipated groundwater level at completion of excavation and tunnelling (mAHD) | | |
|---|---|---|---|---|---|---|
| | | | | Green | Amber | Red |
| | SWD-TU100-17443-VWP-A | 13.56 | 26.2 – 32.8 | 19.9 | 19.4 | 18.9 |
| | SWD-TU100-17443-VWP-B | 18.56 | 28 - 34 | 21.3 | 20.8 | 20.3 |
| | SWD-TU150-22010-VWP02 [SBT-1005] | 22.81 | 33.8 – 35.3 | 31.5 | 31.0 | 30.5 |
| Claremont Meadows | SWD-TU100-20071-VWP07-A | 2.813 | 26.9 – 27.0 | 25.4 | 24.9 | 24.4 |
| | SWD-TU100-20071-VWP07-B | 7.813 | 27.1 – 27.3 | 25.6 | 25.1 | 24.6 |
| | SBT-GW-1028 | 22.5 – 27.5 (Screen) | 26.7 – 26.5 (Note 2) | 25.2 | 24.7 | 24.2 |
| | STB-GW-1805 | 18.696 | 24.7 – 25.6 | 22.0 | 21.5 | 21.0 |
| Bringelly | SWD-TU351-37371-VWP04 | 50.313 | 62.5 – 67.1 | 50.6 | 50.1 | 49.6 |
| | SWD-TU351-373717-VWP05 | 52.53 | 64.5 – 67.2 | 56.0 | 55.5 | 55.0 |
| | SWD-TU351-37371-VWP06 | 52.516 | 67.6 – 68.0 | 62.5 | 62.0 | 61.5 |

**Notes:** (1) Purpose of monitoring asset is well design where drawdown is not the critical design case.

(2) as reported in Tetra Tech, 2025a.

## 5.4 Groundwater Quality Triggers

### 5.4.1 Site Specific Groundwater Quality Triggers

Site specific groundwater quality triggers (PLM, 2024) have been developed in areas where the baseline assessment identified that groundwater contamination may be present and potentially influenced by temporary construction dewatering. The triggers are:

- Above detect for TRH or PFAS; or
- 10 x EPL for contaminants of potential concern (CoPCs) which typically exceed the EPL along the alignment (i.e. aluminium, cadmium, copper, zinc, total nitrogen and total phosphorus).

Triggers are based on detection of CoPC concentration above the baseline maximum, with metal action triggers relating to filtered metal concentrations. The Mann-Kendall statistical approach has been applied to assess contaminant trends, although in some cases the minimum of four values required has not been achieved.

In accordance with PLM, 2024, where a statistically increasing trend is reported, the baseline data range will be reviewed, and a trigger reported if the construction monitoring concentration is greater than 250% of the maximum historical concentration. Site specific triggers (PLM, 2024) are presented in **Table 15.**

Where a trigger is exceeded, or a statistically increasing trend is identified for select analytes and concentrations exceed the initial screening criteria, then an investigation will be carried out which may include:

- Further monitoring to confirm groundwater conditions (increased frequency).
- Assessment to identify if the exceedance represents an adverse change in risk profile and a remedial response is required, or if the Action Trigger should be revised or implemented in a sentinel well or for the CoPC triggered.

Where trigger exceedances were identified, and concentrations are outside the background range for groundwater along the alignment, the monitoring program will also be reviewed as updated as required.

### 5.4.2 On Airport Groundwater Quality Triggers

On-Airport groundwater quality trigger values are provided in the Sydney Metro Soil and Water Construction Environmental Management Plan (Sydney Metro, 2023) and are presented in **Table 16**. These trigger values are based on the following guidelines:

- ANZECC, 2000 Lowland Rivers (NSW Rivers);
- ANZECC 2000 Fresh water at 95% level of ecological protection; and
- Airports 1997 Freshwater.

A review of the laboratory analytical results for the on-airport sites at Airport Terminal and Airport Business Park and comparison with the above guidelines is discussed in **Section 6.3.2**.

**Table 15 Site Specific Groundwater Quality Triggers**

| Precinct | Well ID | Alternate ID | Al µg/L | Cd µg/L | Cu µg/L | Zn µg/L | pH | Total N µg/L | Total P µg/L | Total PFAS µg/L | TRH/BTEXN µg/L | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bradfield | SBT-GW-4017 | none | - | - | - | - | - | - | - | >0.0145 | >40 (TRH $C_6$-$C_9$)<br>>880 (TRH>$C_{10}$) | - |
| Bradfield | SBT-GW-4008 | SBT-BH-4008 | - | - | - | - | - | - | - | - | - | - |
| Bradfield | SBT-GW-4021 | none | - | - | - | - | - | 28,300 | 16,200 | - | - | - |
| XP-13 | SBT-GW-4000 | none | - | - | - | - | - | >5.4 | - | - | TRH $C_{10}$ >1,620 | Toluene > 46 µg/L |
| Airport Terminal | SBT-GW3012-A | none | - | - | - | - | - | - | - | - | - | - |
| Airport Terminal | SBT-GW3012-B | none | - | - | - | - | - | - | - | - | - | - |
| Airport Terminal | SBT-GW-3012-C | none | - | - | - | - | - | - | - | - | - | - |
| Airport Terminal | SBT-GW-3006 | SBT-BH-3006 | - | - | - | - | - | - | - | - | - | - |
| Airport Terminal | GW-3022 | none | - | - | - | - | - | - | - | - | >3,300 (TRH>$C_{10}$) | - |
| Airport Terminal | SMGW-BH-C320 | none | - | - | - | - | - | - | - | >0.5 | >34 (toluene) | - |
| Orchard Hills | SBT-GW-1042 | none | >1,900 | - | - | >2,182 | <5 | 183,000 | - | - | - | - |
| Orchard Hills | SBT-GW-1806 | none | - | >8.1 | 47 | - | 11-11.2 | - | - | - | >4 | - |
| Orchard Hills | SBT-GW-1807 | none | - | - | - | - | - | - | - | - | - | - |
| Orchard Hills | SBT-GW-1808 | none | >2,260 | - | >79 | >478 | <3.65 | - | - | - | - | - |
| St Marys | SBT-GW-1005_S | none | - | - | - | - | - | - | - | - | - | - |

| Precinct | Well ID | Alternate ID | Al µg/L | Cd µg/L | Cu µg/L | Zn µg/L | pH | Total N µg/L | Total P µg/L | Total PFAS µg/L | TRH/BTEXN µg/L | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| St Marys | SBT-GW-1001_S | none | >14,700 | - | >81 | >1,750 | <4.5 | - | - | - | - | - |
| St Marys | SBT-GW-1002 | none | >2,100 | - | >29 | >172 | <4.0 | - | - | - | - | - |
| St Marys | SBT-GW-1017 | none | - | - | - | - | - | >47,400 | >33,200 | >0.0102 | >500 (TRH>$C_{10}$) | - |
| St Marys | SBT-GW-1021 | none | - | - | - | - | - | - | - | - | - | Phenol >31 |
| St Marys | SBT-GW-1016 | none | - | - | - | >236 | - | >29,800 | >10,100 | >0.032 | >9 (BTEXN) | - |
| St Marys | SMGW-BH-A401 | none | >3,000 | - | 3,240 | >235 | <4.6 | - | >2,500 | >0.21 | - | - |
| Bringelly | SBT-GW-4800 | none | - | - | - | - | - | - | 2,200 | - | - | - |
| Bringelly | SBT-GW-4803 | none | - | - | - | - | - | - | - | - | 20 (TRH $C_6$-$C_9$) | - |
| Bringelly | SBT-GW-4805 | none | - | - | - | - | - | - | - | >0.01 | - | - |
| Claremont Meadows | SBT-CM-1030 | SBT-GW-1030 | >7,500 | - | >26 | >542 | <4.4 | - | - | 0.13 | - | - |
| Claremont Meadows | SBT-GW-1024 | none | - | - | - | - | - | - | - | >0.09 | >2,100 (TRH $C_6$-$C_9$) | |
| Claremont Meadows | SBT-GW-1805 | none | - | - | - | - | - | >1,990 | >6,600 | - | - | - |

**Notes:**

(-) no groundwater quality trigger provided

**Table 16 On-Airport Groundwater Quality Triggers**

| Analyte | ANZECC 2000 – Lowland Rivers (NSW Rivers) | Criteria ANZECC 2000 Fresh Water 95% | Airports (1997) Fresh Water |
|---|---|---|---|
| Nitrogen (Total) | 0.6 mg/L | - | 0.1 mg/L |
| Ammonia as N | 0.03 mg/L | 0.9 mg/L | - |
| Nitrate as N | - | 7.2 mg/L | - |
| Dissolved Metals (filtered) | - | - | - |
| Arsenic | - | 0.013 mg/L | 0.05 mg/L |
| Cadmium | - | 0.0002 mg/L | 0.0002 mg/L |
| Chromium (III + VI) | - | 0.001 mg/L | 0.01 mg/L |
| Copper | - | 0.0014 mg/L | 0.002 mg/L |
| Nickel | - | 0.011 mg/L | 0.015 mg/L |
| Lead | - | 0.0034 mg/L | 0.001 mg/L |
| Zinc | - | 0.008 mg/L | 0.005 mg/L |
| Mercury | - | 0.0006 mg/L | 0.0001 mg/L |
| TRH (C10 – C36) | - | - | 600 µg/L |
| Phenols | - | 320 µg/L | 50 µg/L |
| PAH | - | - | 3 µg/L |
| BTEX | - | - | - |
| Benzene | - | 950 µg/L | 300 µg/L |
| Toluene | - | - | 300 µg/L |
| Ethylbenzene | - | - | 140 µg/L |
| Xylene (O) | - | 350 µg/L | - |

## 5.5 Groundwater Modelling

Condition E134 of SSI-10051 – (DPHI, 2021) requires a revised groundwater modelling report before bulk excavation at the relevant construction location. A groundwater model and modelling report (Tetra Tech Major Projects, 2023c) was prepared for the whole project area to predict potential groundwater impacts during the early works construction program including the excavation of tunnels and station boxes.

No bulk excavation for tunnels or station boxes is being undertaken by PLM, and the Groundwater Modelling Report remains applicable to SSTOM scope of works. It is considered there are no technical reasons for any further updates to the Groundwater Modelling Report. At the Luddenham precinct, bulk earthworks are required to reshape the hill adjacent to Luddenham Road however this is unlikely to impact on groundwater which is outside of this modelling report.

# 6 Groundwater Monitoring Results

Groundwater monitoring results for the July 2025 GME are presented in the following appendices:

- Appendix B – Monitored Field Parameters;
- Appendix C – Tabulated Analytical Results;
- Appendix D – VWP Hydrographs (showing groundwater levels and trigger values);
- Appendix E – GDE Hydrographs and EC Trends; and
- Appendix F – Mann Kendall Analysis (Water quality).

Identified trigger exceedances for groundwater levels and quality are discussed in **Section 6.1** and **6.3** respectively.

## 6.1 Groundwater Levels

Groundwater levels are monitored in monitoring wells (manually and selected wells with dataloggers) and VWPs. Monitored groundwater level results relative to mAHD are presented in **Table 5**. Groundwater levels monitored within the alluvium are typically shallow ranging from 2.296 mbtoc in GW-1042 at Orchard Hills to 5.619 mbtoc in GW-1063 at Orchard Hills. Groundwater levels within the residual material and bedrock are typically deeper ranging from 2.71 mbtoc in GW-1017 at St Marys to 28.266 mbtoc in BH-3006-R at Airport Terminal.

Groundwater levels and pressures within the VWPs along with trigger levels where available are presented in hydrographs in **Appendix D – VWP Hydrographs** and discussed in **Section 6.1.2**. Review of these hydrographs indicates that there is very little influence of major rainfall events as outlined in **Section 4.2.**

### 6.1.1 GDE monitoring

Groundwater levels are monitored at seven locations as shown in **Table 17** along with the monitored SWL, SSTVs and well status. The dataloggers were downloaded in July 2025 and the data is presented from May 2023 (SBT-GW-1063 and SBT-GW-4021) and August 2023 (SBT_GW-1042) to July 2025.

**Table 17 Groundwater level monitoring at GDEs**

| Precinct | Well ID | Screened lithology | Screen/sensor depth | | SWL (mAHD) / status | SSTV (mAHD) |
|---|---|---|---|---|---|---|
| | | | mBGL | mAHD | | |
| Orchard Hills | SBT_GW-1042 | alluvium | 2.0 - 8.0 | 32.1 – 38.1 | 34.991 | 33.0 |
| Orchard Hills | SBT-GW-1063 | alluvium/bedrock | 10.7 – 11.0 | 20.6 – 29.6 | 24.98 | 24.3 |
| Orchard Hills | SMGW-BH-A315R | alluvium/bedrock | 3.0 – 9.0 | 32.3 – 38.3 | 34.93 | 36.9 |
| Orchard Hills | SBT_VWP-1404 | alluvium/bedrock | 17.47 | 22.81 | 30.92 | 30.5 |
| Bradfield | SBT-GW-4021 | alluvium/bedrock | 1.9 – 10.9 | 51.9 – 60.9 | 59.365 | 59.1 |
| Claremont Meadows | SBT-GW-1805 | residual | 3 - 9 | 18.3 – 24.3 | 24.61 | 21.5 |

| Precinct | Well ID | Screened lithology | Screen/sensor depth | | SWL (mAHD) / status | SSTV (mAHD) |
|---|---|---|---|---|---|---|
| | | | mBGL | mAHD | | |
| Claremont Meadows | SWD-TU100-20071-VWP07-A | residual | 24.059 | 2.813 | 24.48 | 24.4 |

There are two monitoring wells (Orchard Hills GW1042 and GW1063) that were continuously monitored for groundwater levels to monitor any impacts near GDEs. Monitored time series groundwater levels along with EC traces are presented in **Appendix E – GDE Hydrographs and EC Trends**. The raw datalogger data was analysed using formulas provided by Land Surveys (the installer). Calculations detailing the process to convert the raw datalogger data to groundwater levels and EC are provided in Section 3.6 of the monitoring well installation report (Tetra Tech, 2025b) attached to this report as **Appendix J – Groundwater Monitoring Well Installation Report (Tetratech, 2025b).**

At Orchard Hills monitoring location BH-A315R, the recorded groundwater level of 34.93 mAHD fell below the SSTV of 36.9 mAHD during the monitoring period. As BH-A315R is a replacement well, and this location has not been monitored since September 2023, further monitoring at this location is recommended to understand groundwater level trends. It is noted that groundwater levels across the Metro construction footprint, including at Orchard Hills (refer to Section 6.3.2), remain variable, despite recent above-average rainfall. Construction of the Orchard Hills station box is nearing completion, with the station box walls finalised in August 2025 and hydrostatic tanking of the structure scheduled for October 2025. Accordingly, if construction activities have been contributing to groundwater level drawdown at this location, that influence is expected to cease, allowing groundwater levels to recover. Therefore, no mitigation measures are considered necessary at this stage, aside from continued groundwater monitoring.

At Orchard Hills monitoring well SBT_GW-1042, the recorded groundwater level of 36.806 mAHD was above the SSTV of 33.0 mAHD, indicating compliance. The time-series groundwater data (**Figure E5**, **Appendix E – GDE Hydrographs and EC Trends**), collected between August 2023 and July 2025, shows only minor fluctuations and remained consistently above the SSTV throughout the monitoring period.

At Orchard Hills SBT_VWP-1404, the monitored groundwater level 30.92 mAHD was above the SSTV (green trigger level) of 30.5 mAHD, indicating compliance. The time series groundwater level data (**Figure D13**,**Appendix D – VWP Hydrographs**) recorded from November 2023 to July 2025, indicates minor variation. Water levels declined to the red trigger level between May and July 2024 but subsequently recovered, remaining above the green trigger level from November 2024 onwards.

At Orchard Hills SBT_GW-1063, the monitored groundwater level 24.98 mAHD was above the SSTV of 24.3 mAHD, indicating compliance. The time series groundwater level data (**Figure E4**, **Appendix E – GDE Hydrographs and EC Trends**),) recorded from August 2023 to July 2025 shows minor variation but is consistently above the SSTV for the whole period.

At Bradfield SBT_GW-4021, the monitored groundwater level 59.365 mAHD was marginally above the SSTV of 59.1 mAHD, indicating compliance.

At Claremont Meadows SBT-GW-1805 the monitored groundwater level 24.61 mAHD was above the SSTV of 21.5 mAHD, indicating compliance (refer to **Figure E3**, **Appendix E – GDE Hydrographs and EC Trends**).

At Claremont Meadows in monitoring well SBT-GW-1805 the groundwater level of 24.607 mAHD is significantly above the green trigger at 21.5 mAHD. Hence groundwater levels are compliant at this location. As discussed, monitoring well GW-1028 was discontinued by SBT and replaced by SWD-TU100-20071-VWP07-A/B which represents the surrogate monitoring point for groundwater levels. Hydrographs for SWD-TU100-

20071-VWP07-A/B are presented as Figure D11 and D12. Both hydrographs show similar trends although groundwater levels in VWP07-A are slightly higher than VWP07-B. VWP07-B. Groundwater levels in VWP07-A were below the red trigger level from January 2024 to November 2024, December 2024 to January 2025 and in May 2025 but were above the trigger level in July 2025. Similarly, groundwater levels in VWP07-B were below the red trigger level between January 2024 and January 2025 and from March 2025 to July 2025. The July 2025 result for VWP07-B is millimetres below the red trigger level, and the trend is rising. The current upward trend suggests groundwater levels are rebounding positively. Construction works at Claremont Meadows is forecast to continue until April 2026. Consequently, it is recommended that no mitigation measures are required other than continuing monitoring.

In summary there were two groundwater trigger exceedance locations at SWD-TU100-20071-VWP07-A/B (Claremont Meadows) and BH-A315R at Orchard Hills which had the potential to impact GDEs. All other GDE groundwater level trigger points were compliant when monitored in July 2025. In July 2025 VWP07-A was compliant and VWP07-B was millimetres away from being compliant and the groundwater trend was rising. As such no mitigation measures are recommended other than continuous monitoring. At Orchard Hills groundwater level monitoring was discontinued in September 2023 and recommenced in July 2025 in BH-A315R. In July 2025 the groundwater level was 1.97 m below the SSTV. If construction activities have been contributing to groundwater level drawdown at this location, that influence is expected to cease, allowing groundwater levels to recover. Mitigation measures include the installation of a datalogger for the collection of time series groundwater level data to assess whether the rebound trend as measured elsewhere continues.

Ecological monitoring adjacent to the GDEs was conducted in June 2025 by AMBS. The outcomes of this monitoring is discussed in **Section 6.3.1** and the full ecological report is included as **Appendix I – Orchard Hills Metro Station Vegetation Monitoring (AMBS, 2025)**.

### 6.1.2 Trigger Exceedances

Monitoring wells and VWPs monitored in this GME that have been assigned groundwater level trigger levels are outlined in **Table 14.** A summary of groundwater level trigger results is provided in **Table 18**. Monitoring intervals within each monitoring well (column 3 in **Table 18**) are either a screen interval in a monitoring well or a sensor depth in a VWP. A monitoring result is non-compliant if the red trigger point is exceeded, triggering corrective actions. The corrective actions undertaken included considering the reasons for the groundwater level decline, whether the fluctuation is due to seasonal variation and if additional actions are required. Groundwater level trigger levels based on anticipated groundwater levels at the completion of excavation developed as outlined in PLM, 2024 were not exceeded at any of the monitoring locations (monitoring wells and VWPs) in this GME as shown in **Table 18.**

At Airport Business Park nested monitoring wells GW-3003A/B/C were replaced in July 2025 and the former trigger levels have been applied. Review of the groundwater levels indicates that the shallow well (GW-3003A) is dry and the SWL is deeper than 61.78m AHD as compared to the red trigger level of 59.0m AHD. Thus is not known if this well is compliant. The SWL in intermediate well (GW-3003B) is 58.31 mAHD and hence complies as the red trigger level is 50.3m AHD. The SWL in the deep monitoring well (GW-3003C) is 54.05 m AHD and is below the red trigger level of 54.7m AHD. It is recommended that monitoring is increased at this location to three monthly to assess the trends more closely in these replacement wells.

At Bradfield (SBT-GW-4021), groundwater levels were between the amber and red trigger levels, indicating groundwater levels are yet to rebound in this location and therefore, continued monitoring is recommended. Continuous monitoring at SBT-VWP-4005 (Figure D1, Appendix D) shows that groundwater levels declined below the red trigger between September 2023 and July 2024 but have since recovered and are now consistently above the green trigger, indicating early groundwater level rebound.

At Orchard Hills in two monitoring wells (SBT-GW-1042 and SBT-GW-1063) as shown in Figures E4 and E5 the groundwater levels are consistently above the trigger levels. At VWP-1404 (Figure D13, Appendix D) the groundwater level has varied between since March 2023 and decreased to the red trigger level between June

and August 2024. However, groundwater levels have been above the green trigger levels for the last eight months, indicating early rebound at in this particular location. Consequently, no management measures are required other than continuing the monitoring to ensure levels remain consistent.

At St Marys, groundwater levels at two locations (GW-1001 & GW-1005) were significantly above the trigger levels, with no management measures required. The continuation of monitoring is recommended until the station box is hydrostatically tanked and the risk of groundwater drawdown is lowered.

At Bringelly, the three VWPs (SWD-TU351-37371-VWP04/05/06) have been damaged and have not provided data since May 2024. However, data continue to be collected from two nearby VWPs (SWD-TU351-37377-VWP05 and SWD-TU351-37471-VWP06), which are considered to provide adequate monitoring coverage for this site.

SBT-GW-4000 was constructed by SBT to monitor construction of tunnel cross-passage (XP-13) located between Bringelly and Airport Terminal. Groundwater levels have been monitored at this location periodically since September 2023 before any Metro related construction works. Since September 2023 there has been a steady decline in the groundwater level, however some rebound was initially indicated with SBT reporting that "monitoring data to September 2024 indicates groundwater levels were recovering in the two months after the cross passage was completed." The most recent reading collected by ADE on 9 July 2025 indicated groundwater levels have decreased to 67.91 mAHD despite no further groundwater-influencing construction activities being undertaken by PLM during this period, with only track laying works occurring and the monitoring bore located away from the station site. This is 1.59m below the red trigger level of 69.5m AHD. Further monitoring of this location is recommended as it is uncertain if groundwater decline is being influenced by prior tunnel construction (handover to PLM completed in January 2025) or if it may be attributed to broader natural or regional hydrogeological influences.

**Table 18 Groundwater Level Trigger Level Results Summary**

| Precinct | Well ID | Screen interval or sensor elevation (mAHD) | Pre-construction groundwater level range (mAHD) | Trigger Levels (mAHD) | | | Latest Reading | |
|---|---|---|---|---|---|---|---|---|
| | | | | Green | Amber | Red | Date | mAHD |
| Airport Terminal | ATL-SN350-VWP01-01 | 60 | 69.2 – 75.0 | 56.9 | 56.4 | 55.9 | Discontinued by SBT | |
| Airport Terminal | ATL-SN350-VWP01-02 | 64 | 69.1 – 75.1 | 56.8 | 56.3 | 55.8 | Discontinued by SBT | |
| Airport Terminal | ATL-SN350-VWP01-03 | 68 | 69.1 – 75.1 | 56.8 | 56.3 | 55.8 | Discontinued by SBT | |
| Airport Terminal | ATL-SN350-VWP01-04 | 73 | 73.0 – 74.1 | 60.7 | 60.2 | 59.7 | Discontinued by SBT | |
| Airport Terminal | SWD-TU300-34893-VWP04-01 | 60 | 72.7 – 73.7 | 61.3 | 60.8 | 60.3 | Discontinued by SBT | |
| Airport Terminal | SWD-TU300-34893-VWP04-02 | 64 | 72.7 – 73.7 | 61.3 | 60.8 | 60.3 | Discontinued by SBT | |
| Airport Terminal | SWD-TU300-34893-VWP04-03 | 68 | 73.0 – 73.8 | 61.6 | 61.1 | 60.6 | Discontinued by SBT | |
| Airport Terminal | SWD-TU300-34893-VWP04-04 | 73 | 74.0 – 74.7 | 62.6 | 62.1 | 61.6 | Discontinued by SBT | |
| APDS | SBT-GW-3003A | 62.7 – 65.7 | 62.7 – 65.7 | 60.0 | 59.5 | 59.0 | 29 Jul 2025 | 61.78- |
| APDS | SBT-GW-3003B | 54.4 – 57.4 | 54.4 – 57.4 | 51.3 | 50.8 | 50.3 | 29 Jul 2025 | 58.31 |
| APDS | SBT-GW-3003C | 45.3 – 48.3 | 45.3 – 48.3 | 55.7 | 55.2 | 54.7 | 29 Jul 2025 | 54.05 |
| Bradfield | SBT-GW-4021 | 51.9 – 60.9 | 59.8 – 59.9 | 59.6 | 59.1 | 58.6 | 14 Jul 2025 | 58.98 |
| Bradfield | SBT-VWP-4404^ | 55.17 | 65.6 – 66.8 | 55.6 | 55.1 | 54.6 | 19 Nov 2024 | 71.61 |
| XP-13 | SBT-GW-4000 | | 59.2 – 69.7 | 70.5 | 70.0 | 69.5 | 9 Jul 2025 | 67.91 |
| St Marys | SWD-TU-100-17443-VWP03A | 13.56 | 26.2 – 32.8 | 19.9 | 19.4 | 18.9 | 9 Jul 2025 | 37.24 |
| St Marys | SWD-TU100-17275-VWP01-A | 15.15 | 42 – 43.3 | 35.0 | 34.5 | 34.0 | 10 Jul 2025 | 48.23 |
| St Marys | SWD-TU100-17275-VWP01-B | 20.16 | 42 – 43.3 | 35.0 | 34.5 | 34.0 | 10 Jul 2025 | 43.24 |
| Orchard Hills | SBT_GW-1042 | 32.1 – 38.1 | 37.7 – 37.8 | 33.5 | 33.0 | 32.5 | 31 May 2025 | 36.81 |
| Orchard Hills | SBT-GW-1063 | 20.6 – 29.6 | 25.4 – 25.7 | 24.8 | 24.3 | 23.8 | 10 Jul 2025 | 25.26 |
| Orchard Hills | SWD-TU-150-22010-VWP02 (VWP-1404) | 22.81 | 33.8 - 35.3 | 31.5 | 31.0 | 30.5 | 10 Jul 2025 | 31.89 |
| Claremont Meadows | SBT-GW-1805 | 18.3 – 24.3 | 24.7 – 25.6 | 21.5 | 21.0 | 20.5 | 29 Jul 2025 | 24.61 |
| Claremont Meadows | SWD-TU100-20071-VWP07-A | 2.813 | 26.9 – 27.0 | 25.4 | 24.9 | 24.4 | 10 Jul 2025 | 24.48 |

| Precinct | Well ID | Screen interval or sensor elevation (mAHD) | Pre-construction groundwater level range (mAHD) | Trigger Levels (mAHD) | | | Latest Reading | |
|---|---|---|---|---|---|---|---|---|
| | | | | Green | Amber | Red | Date | mAHD |
| Bringelly | SWD-TU351-37371-VWP04 | 50.313 | 62.5 – 67.1 | 50.6 | 50.1 | 49.6 | Discontinued by SBT | |
| Bringelly | SWD-TU351-37371-VWP05 | 52.35 | 64.5 – 67.2 | 56.0 | 55.5 | 55.0 | Discontinued by SBT | |
| Bringelly | SWD-TU351-37371-VWP06 | 52.516 | 67.6 – 68.0 | 62.5 | 62.0 | 61.5 | Discontinued by SBT | |

**Notes:** ^ not sampled during this event as couldn't be located

## 6.2 Field Parameters

Field parameters were monitored at each monitoring well sampled and included pH, electrical conductivity, dissolved oxygen, redox potential and temperature. Measurements for the 37 monitoring wells sampled were monitored with a calibrated Solinst water quality meter and the results are presented in **Appendix B – Monitored Field Parameters.** Water from the Hydrasleeve™ was poured directly into the water quality meter capsules and the parameters monitored immediately. The calibration certificate for the water quality meter is presented in **Appendix B**.

Site specific trigger values (SSTVs) were developed for continuous electrical conductivity (EC) monitoring (PLM, 2024) and are discussed in **Section 6.3.3**.

### 6.2.1 pH

Values of pH across the monitoring area were variable, ranging from 3.86 at St Marys (GW-1002) to 7.66 at Bradfield (SBT-GW-4403). An elevated outlier of 9.33 was recorded at Airport Terminal (SBT-GW-3006), which is a replacement well with no previous monitoring history.

Overall, the results indicate conditions ranging from acidic through to slightly alkaline, with most values falling within the acidic to near-neutral range, consistent with natural conditions in the Bringelly Shale associated with sulfate mineralisation.

### 6.2.2 Electrical Conductivity

Electrical conductivity (EC) has been monitored in each of the 37 monitoring wells sampled for water quality. EC data has also been collected by dataloggers in three monitoring wells to monitor salinity adjacent to GDEs as described in **Section 6.3.3**.

Electrical conductivity ranged from 367 µS/cm (Airport Terminal – SBT-BH-3006) to 30,391 µS/cm (Orchard Hills – SBT-GW-1048) reflecting the natural variability of salinity within the Bringelly Shale. There were no trends identified between the sites or depth. The groundwater is characterised as fresh to brackish to saline.

### 6.2.3 Dissolved Oxygen

Dissolved oxygen results were variable ranging from ranging from 0.9 mg/L (GW-1021 – St Marys) to 30.3 mg/L (GW-4802– Bringelly) indicating well oxygenated groundwater, typical of unconfined aquifers.

### 6.2.4 Redox Potential

Redox potential (Eh) results were generally consistent and positive ranging from -122.3 mv (GW1063 – Orchard Hills) to 243.8 mv (SBT-GW-1021 – Claremont Meadows). It is noted that only four redox results were negative. Positive Eh results indicate the water is mild to moderate oxidising water which is consistent with the dissolved oxygen results. Negative Eh results are generally consistent with low DO and indicative of mild to moderately reducing water that may be influenced by sulphides within the shale.

### 6.2.5 Temperature

Groundwater temperatures ranged from 14.0 to 22.6°C reflecting variation of the aquifer water throughout the day.

## 6.3 Groundwater Quality

### 6.3.1 Site Specific Trigger Exceedances

Groundwater quality data collected in July 2025 has been compared to the trigger levels presented in **Table 15** with exceedances detailed in **Table 19**. The laboratory analytical results have been tabulated, compared to guideline values and are presented in **Appendix C – Tabulated Analytical Results**.

**Table 19 Groundwater quality trigger exceedances**

| Well ID | Site | Al (µg/L) | | pH | | Phenol (µg/L) | | Zinc (µg/L) | |
|---|---|---|---|---|---|---|---|---|---|
| | | Trigger | July 2025 Result | Trigger | July 2025 Result | Trigger | July 2025 Result | Trigger | July 2025 Result |
| GW-1042 | Orchard Hills | 1,900 | 2,100 | <5 | 4.8 | - | - | - | - |
| GW-1001-S | St Marys | 14,700 | 20,000 | - | - | - | - | - | - |
| GW-1002 | St Marys | - | - | <4.0 | 3.9 | - | - | - | - |
| GW-1016 | St Marys | - | - | - | - | - | - | 236 | 560 |
| GW-1021 | St Marys | - | - | - | - | >31 | <50 | - | - |

Groundwater quality triggers were exceeded at five of the 37 locations monitored for groundwater quality during construction monitoring.

At Orchard Hills (GW-1042) a dissolved aluminium concentration of 2,100 µg/L was recorded marginally exceeding the trigger value of 1,900 µg/L. Elevated aluminium concentrations could be due to increasing metal solubility due to low pH. The recorded pH value of 4.8 is slightly lower than the guideline value of 5.0. This compares to a pH of 3.3 recorded in November 2024 indicating pH levels are becoming less acidic. As pH levels increase it is anticipated that aluminium concentrations will decrease. It is recommended that monitoring should continue to assess whether these trends continue or if remedial actions are required.

At St Marys (GW-1001-S) elevated filtered aluminium concentrations (20,000 µg/L) were also detected exceeding the threshold of 14,700 µg/L. Elevated aluminium at this location could be attributed to a low pH and associated metal solubility but may also be influenced by rainfall fluctuations and natural variability. Ongoing monitoring is recommended. At GW1002 the pH was recorded at 3.9 which was below the threshold of 4.0. This marginal exceedance is attributed to natural variation as the groundwater within the Bringelly Shale is known to be naturally acidic. Elevated zinc at GW-1016 is also attributed to low pH conditions and increased metal solubility. It is recommended to continue monitoring to assess whether this trend continues.

At St Marys (SBT-CM-1021) the trigger level for phenol is 31 µg/L and the laboratory result was <50 µg/L. It is possible the actual phenol concentration was less than the trigger value. It is recommended that in the next GME samples are analysed for low level phenolics, which will lower the LOR.

In summary the exceedances recorded are minor and could be attributed to several factors including increased metal solubility due to naturally low pH conditions, fluctuating rainfall conditions, variable lithology and natural variation. PLM construction works are not considered to have impacted groundwater quality.

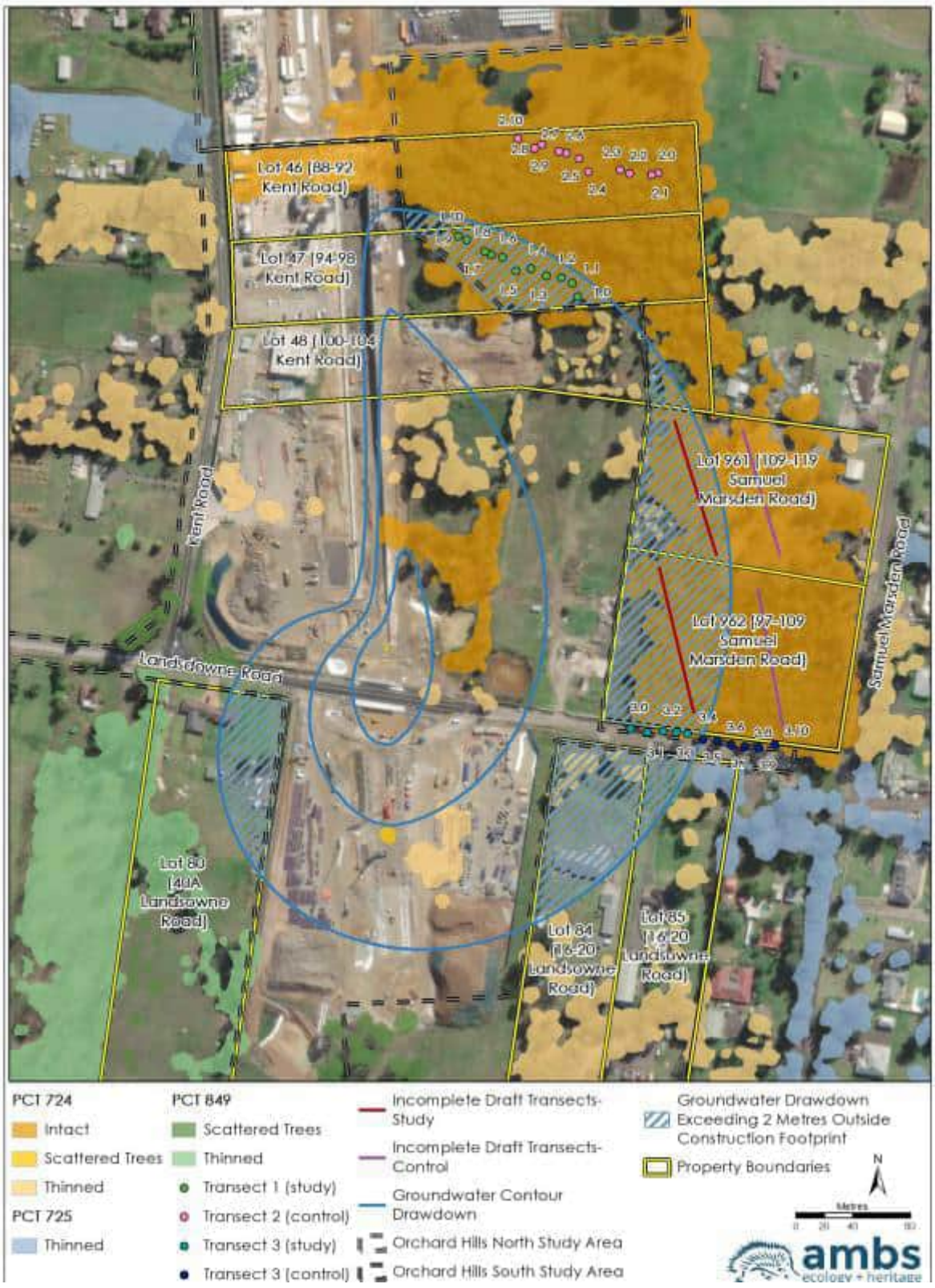


**Figure 3 Predicted extent of greater than 2m drawdown and vegetation monitoring (AMBS, 2025).**

The extent of predicted drawdown in excess of 2m (blue line) in relation to vegetation monitoring is shown in Figure 3 (adapted from AMBS, 2025). SWD-TU150-22010-VWP02 is located at the Orchard Hills site, with both groundwater level triggers (Table 6-4 of the GMP) and GDE level triggers (Table 6-11 of the GMP). Along with SBTGW-1042, the VWP monitors the impact of construction on nearby terrestrial GDEs, with drawdown predicted to be greater than 2m (Figure 3). Time series groundwater level data and EC data is shown for SBT-GW-1042 between August 2023 and July 2025 in Figure E5, **Appendix E – GDE Hydrographs and EC Trends**.

The plot shows groundwater levels and EC varied little over this period and did not exceed the trigger levels indicating the construction dewatering has had little impact on the local environment and GDEs. Similarly, time series groundwater levels have been monitored in SWD-TU150-22010-VWP02 and is shown in Figure D13, Appendix D. The trace shows that between March 2024 and September 2024 the groundwater level declined to the red trigger level and was then above the green trigger level by September 2024. This drawdown corresponds to temporary construction dewatering associated with the installation of the station box base slab at the Orchard Hills Station (**Table 1**). At this location groundwater could be being recharged from a nearby temporary turkey nest sump. Ongoing monitoring will show whether the eventual removal of the turkey nest sump locally impacts groundwater levels. The monitored drawdown within the sandstone aquifer did not breach the red trigger level and is unlikely to have impacted ecosystem health as the GDEs are primarily reliant on groundwater from the alluvial aquifer.

### 6.3.2 On-Airport Trigger Exceedances

A review of the laboratory analytical results for the on-airport sites at Airport Terminal and Airport Business Park and comparison with the above guidelines is as follows:

#### 6.3.2.1 Airport Business Park

At Airport Business Park groundwater quality monitoring was conducted in nested wells SBT-GW-3003A/B/C. It is noted that SBT-GW-3003A was dry and could not be sampled. Water quality exceedances are summarised in **Table 20**.

**Table 20 Airport Business Park - Water Quality Exceedances**

| Analyte | GW-3003B | GW3003C | Guideline value | Guideline |
|---|---|---|---|---|
| Nitrogen (total) | 1.1 mg/L | 5.5 mg/L | 0.1 mg/L | Airports 1997 |
| Ammonia | - | 5.2 mg/L | 0.9 mg/L | ANZECC 2000 FW 95% |
| Nickel | 0.028 | 0.031 | 0.15 mg/L | Airports 1997 |
| Zinc | - | 0.015 | 0.008 mg/L | ANZECC 2000 FW 95% |

Water quality trends and exceedances are discussed in Section **6.3.1.** In summary nutrient concentrations in groundwater appears to be impacted by historical land uses and groundwater appears to be leaking from the upper aquifers into lower aquifer. Metals including nickel and zinc are known to be naturally elevated within the groundwater of the Bringelly Shale, which is in part due to low pH values and increased metal solubility.

Analytes including total recoverable hydrocarbons, phenols, polyaromatic hydrocarbons and BTEX are not included in the analytical suite as required under the PLM Groundwater Monitoring Program.

#### 6.3.2.2 Airport Terminal

At Airport Business Park groundwater quality monitoring was conducted in nested wells SBT-GW-3012A/B/C, SBT-GW-3022, SBT-BH-320 and SBT-GW-3410. Water quality exceedances are summarised in **Table 21**.

**Table 21 Airport Terminal - Water Quality Exceedances**

| | GW-3012A | GW3012B | GW3012C | BH3006 | GW3401 | Guideline value | Guideline |
|---|---|---|---|---|---|---|---|
| Nitrogen (total) | 6.0 mg/L | - | 14.0 mg/L | 2.5 mg/L | 2.0 mg/L | 0.1 mg/L | Airports 1997 |
| Ammonia | - | - | 4.1 mg/L | 1.7 mg/L | 0.94 mg/L | 0.9 mg/L | ANZECC 2000 FW 95% |
| Copper | 0.003 mg/L | - | - | - | 0.018 mg/L | 0.002 mg/L | Airports 1997 |
| Nickel | - | - | - | - | 0.0696 mg/L | 0.15 mg/L | Airports 1997 |
| Zinc | 0.023 mg/L | 0.009 mg/L | 0.012 mg/L | - | 0.051 mg/L | 0.008 mg/L | ANZECC 2000 FW 95% |

Water quality trends and exceedances are discussed in Section **6.3.1.** No site specific trigger levels were exceeded. In summary nutrient concentrations in groundwater appears to be impacted by historical land uses and are unlikely to be due to construction impacts. Metals including copper, nickel and zinc are known to be naturally elevated within the groundwater of the Bringelly Shale, which is in part due to low pH values and increased metal solubility. These exceedances are considered to be natural and not related to construction activities.

Analytes including phenols and polyaromatic hydrocarbons and are not included in the analytical suite as required under the PLM Groundwater Monitoring Program. Total recoverable hydrocarbons and BTEX were included in some of the Airport Terminal analytical suites but all were below LOR.

### 6.3.3 GDE Monitoring

Groundwater EC (salinity) data is collected adjacent to GDEs at Orchard Hills (SBT_GW-1042, SBT-GW-1063) Bradfield (SBT-GW-4021) and Claremont Meadows (SBT-GW-1805). SBT-GW-1028 has since been discontinued however monitoring is continued nearby at SBT-GW-1805 which is considered to provide adequate coverage. The results of manual salinity monitoring from the laboratory results and associated SSTVs are presented in **Table 22**. Monitored time series EC traces are presented in **Appendix E – GDE Hydrographs and EC Trends**. The raw datalogger data has been analysed using mathematical formulas provided by LandSurveys and interpreted by ADE.

It is noted that above average rainfall since 2020 enhances recharge of shallow alluvial aquifers, which can benefit the health of GDEs.

**Table 22 GDE manual groundwater salinity monitoring**

| Precinct | Well ID | SSTV (µS/cm) | Salinity (µS/cm) (Lab) | Figure |
|---|---|---|---|---|
| Orchard Hills | SBT_GW-1042 | 18,600 | 12,000 | Appendix E, E5 |
| Orchard Hills | SBT-GW-1063 | 19,940 | 4,900 | Appendix E, E4 |
| Orchard Hills | SMGW-BH-A315R | 4,317 | 21,000 | - |
| Bradfield | SBT-GW-4021 | 33,000 | 3,700 | - |
| Claremont Meadows | SBT-GW-1805 | 3,650 | 2,300 | - |

At Orchard Hills SBT_GW-1042 the monitored EC of 12,000 µS/cm was below the SSTV of 18,600 µS/cm, indicating compliance. The time series EC data (Figure E1, **Appendix E – GDE Hydrographs and EC Trends**) recorded from August 2023 to July 2025 shows variation over an amplitude of approximately 1,000 µS/cm and is consistently below the SSTV for the whole period.

At Orchard Hills SBT_GW-1063 the monitored EC of 4,900 µS/cm was below the SSTV of 19,940 µS/cm, indicating compliance. The time series EC data (Figure E4, **Appendix E – GDE Hydrographs and EC Trends**) recorded from November 2023 to July 2025 shows variation over an amplitude of approximately 2,000 µS/cm and is consistently below the SSTV for the whole period.

At Orchard Hills SMGW-BH-A315R the monitored EC of 21,000 µS/cm exceeded the SSTV of 4,317 µS/cm. However, this well has been replaced with a new installation which, although constructed to the same specifications as the original, has a 6 m screen that intersects clay, sandy clay, siltstone, and sandstone. As suggested in Section 6.2.5 of the GMP (PLM, 2024c) it is recommended that this SSTV is revised. This recommendation is supported by EC readings of 23,000 µS/cm and 23,800 µS/cm recorded in 2019, as reported in the Environmental Impact Statement. In a third round an EC of 1,580 µS/cm was recorded that followed a significant rainfall event suggesting the EC varies significantly due to rainfall recharge. The elevated salinity may also be due to saline groundwater from the sandstone rather than the alluvium which impacts GDEs the most.

At Bradfield SBT_GW-4021 the monitored EC of 3,700 µS/cm was below the SSTV of 33,000 µS/cm, indicating compliance.

At Claremont Meadows SBT-GW-1805 the monitored EC of 2,300 µS/cm was below the SSTV of 3,650 µS/cm, indicating compliance. Also, at Claremont Meadows SBT-GW-1028 has been discontinued, however it is considered that SBT-GW-1805 provides adequate coverage for salinity at this location.

#### 6.3.3.1 GDE Ecological Monitoring

Vegetation surveys have been conducted to monitor the canopy cover at the Orchard Hills GDEs since May 2023 (AMBS, 2025). The location of the vegetation surveys is shown in **Figure 3**. Four of the vegetation surveys were undertaken during the SBT contract scope of work; May/June 2023 (before groundwater levels decreased), October 2023 after levels in SWD-TU150-22010-VWP02 decreased, and in June and October 2024. A further fifth round of monitoring was conducted in June 2025 at the locations established previously. The results of the surveys are summarised in **Table 23**.

**Table 23 Mean percent canopy cover (AMBS, 2024) Survey Transect Canopy Cover (%)**

| Survey | Canopy Cover (mean %) | | | | |
|---|---|---|---|---|---|
| | **Survey 1** | **Survey 2** | **Survey 3** | **Survey 4** | **Survey 5** |
| Transect (T/S) | 31 May & 21 June 2023 | 17 & 18 October 2023 | 3 & 5 June 2024 | 2 October 2024 | 6 June 2025 |
| T/S 1 (study) | 77 | 62 | 75 | 73 | 72 |
| T/S 2 (control) | 70 | 63 | 74 | 71 | 76 |
| T/S 3 (study) | 35 | 36 | 34 | 37 | 37 |
| T/S 4 (control) | 53 | 51 | 52 | 52 | 51 |

Transects 1 and 2 saw a decrease in canopy cover between Surveys 1 and 2, followed by an increase at Survey 3 and a decrease at Survey 4. Survey 5 found a little variation in canopy cover for Transect 1 and an increase in canopy cover for Transect 2. Canopy cover at Transect 3 has remained relatively consistent across all five surveys. Statistical analysis revealed average canopy cover did not significantly vary between study and control results for all three transects. Changes in canopy cover are likely to be within natural variation of the climate and unlikely to be a result of potential groundwater drawdown.

The report, which is included in full as **Appendix I – Orchard Hills Metro Station Vegetation Monitoring (AMBS, 2025),** concluded that the changes were likely to be within natural climate variation and unlikely to be due to groundwater drawdown. This conclusion is consistent the lack of impact reported in Transect 2 in June 2024 (CPB Ghella, 2025) when sustained groundwater drawdown had been reported nearby in SWD-TU150-22010-VWP02 for nine months (August 2023 to June 2024). These results are also consistent with groundwater level monitoring results as discussed in **Section 6.3.3** where groundwater drawdown in nearby monitoring wells at Orchard Hills did not exceed the red trigger level.

Monitoring visits are recommended by AMBS to continue to occur every six months, until the end of 2028.

### 6.3.4 Discussion of Trend Analysis

Historical water quality results for a selection of analytes have been collated along with the results of the previous monitoring conducted by Tetra Tech, 2024b and ADE, 2025a/b and the results of this July 2025 GME. The Mann-Kendall statistical analysis was used to assess statistically significant trends which have been categorised below in **Table 24.**

**Table 24 Mann-Kendall Statistical Analysis – Water quality**

| Site | Well ID | Al | Cd | Cu | Zn | Tot P | Tot N | pH lab | $C_6$-$C_9$ | $C_{10}$-$C_{40}$ | Phenol | Toluene | TCE | Naphthalene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Airport Terminal | GW-3022 | S | ∞ | S | S | ∞ | * | * | S (ND) | # | # | S (ND) | # | S (ND) |
| Airport Terminal | GW-3012-A | * | S | ∞ | ∞ | * | * Prob | S | S (ND) | # | # | # | # | S (ND) |
| Airport Terminal | GW-3012-B | * | * | S | ∞ | ^ | * | * | S (ND) | * Prob | # | S (ND) | # | S (ND) |
| Airport Terminal | GW-3012-C | ∞ | * | ∞ | S | S | ^ Prob | S | S (ND) | S | # | S (ND) | # | S (ND) |
| Airport Terminal | BH-3006 | # | # | # | # | # | # | # | # | # | # | # | # | # |
| Bradfield | GW-4017 | S (ND) | ∞ | # | # | # | ∞ | S | S (ND) | * | S (ND) | # | # | S (ND) |
| Bradfield | GW-4021 | ∞ | S | S (ND) | # | # | * | * Prob | # | # | # | # | # | S (ND) |
| Bradfield | GW-4803 | # | # | # | # | # | # | # | # | # | # | # | # | # |
| Bradfield | GW-4014_S | # | # | # | # | # | # | # | # | # | # | # | # | # |
| Bradfield | GW-4403 | # | # | # | # | # | # | # | # | # | # | # | # | # |
| Orchard Hills | GW-1042 | ∞ | S | ∞ | ^ | ∞ | S | *Prob | S (ND) | # | # | S (ND) | # | # |
| Orchard Hills | GW-1063 | S (ND) | S | ∞ | S | ∞ | # | * | ∞ | S (ND) | # | S (ND) | # | # |
| Orchard Hills | GW-1806 | S | ∞ | ∞ | ∞ | S | # | * | # | S (ND) | # | # | # | # |
| Orchard Hills | GW-1807 | S | S | S | S | ∞ | # | * | # | # | # | # | # | # |
| Orchard Hills | GW-1808 | ∞ | ∞ | ∞ | * | ^ | ∞ | ∞ | # | # | # | # | # | # |
| Orchard Hills | SMGW-BH-A315 | # | # | # | # | # | # | # | # | # | # | # | # | # |
| Orchard Hills | GW-1048 | # | # | # | # | # | # | # | # | # | # | # | # | # |
| St Marys | GW-1001_S | ^ | ∞ | ∞ | ∞ | ∞ | * | * | # | # | # | # | # | # |
| St Marys | GW-1002 | ∞ | * | * | * | ∞ | ∞ | * | S (ND) | S (ND) | S (ND) | S (ND) | S (ND) | S (ND) |
| St Marys | GW-1005_S | S | * Prob | ∞ | * | ∞ | S | * | # | # | # | # | # | # |
| St Marys | GW-1016 | ^ | * | ∞ | S | ∞ | * | S | S (ND) | * | S (ND) | * Prob | S (ND) | S (ND) |
| St Marys | GW-1021 | ∞ | ∞ | ∞ | ∞ | ∞ | * Prob | * | S (ND) | S | # | # | S (ND) | S (ND) |
| St Marys | GW-1017 | ∞ | ^ Prob | ∞ | ^ | ∞ | ∞ | S | S (ND) | * Prob | # | ∞ | # | # |
| St Marys | BH-A401 | * | * | * | S | S | S | ∞ | # | # | # | # | # | # |
| Southern Tunnels | SBT-BH-4008 | ∞ | S | S | S | ∞ | * | S | # | S (ND) | # | S (ND) | # | # |
| WSI | SMGW-BH-320 | # | # | # | # | # | # | # | # | # | # | # | # | # |
| Bringelly | GW-4003 | # | S | S | * Prob | S | ∞ | # | S (ND) | S (ND) | # | S (ND) | # | # |
| Bringelly | GW-4801 | # | # | # | # | # | # | # | # | # | # | # | # | # |

| Site | Well ID | Al | Cd | Cu | Zn | Tot P | Tot N | pH lab | $C_6$-$C_9$ | $C_{10}$-$C_{40}$ | Phenol | Toluene | TCE | Naphthalene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bringelly | GW-4802 | # | # | # | # | # | # | # | # | # | # | # | # | # |
| Bringelly | GW-4800 | # | # | # | # | # | # | # | # | # | # | # | # | # |
| Bringelly | GW-4005 | # | # | # | # | # | # | # | # | # | # | # | # | # |
| Claremont Meadows | GW-1030 | # | # | # | # | # | # | # | # | # | # | # | # | # |
| Claremont Meadows | GW-1805 | S | S | # | S | S | * | ∞ | # | S (ND) | ∞ | S (ND) | # | # |
| Claremont Meadows | GW-1024 | ∞ | S | # | S | ∞ | * | ^ Prob | # | * | # | # | # | # |
| Airport Business Park | GW-3003-B | ∞ | ∞ | ∞ | ∞ | ∞ | S | S | # | # | # | # | # | # |
| Airport Business Park | GW-3003-C | ∞ | S | ∞ | ∞ | S | S | S | # | # | # | # | # | # |

**Notes:** # Insufficient Data ^Increasing Trend *Decreasing Trend S Stable ∞ No Trend

The results of the Mann-Kendall statistical analysis are summarised in **Table 24** and software output is presented in **Appendix F – Mann Kendall Analysis (Water Quality)**. In conducting the statistical analysis, a minimum of four time series results is required for a statistically valid result. In cases where the analytical result is below the limit of reporting (LOR) half the LOR values has been included in the dataset to account for the fact that the analyte may be present. Where the whole dataset for an analyte is LOR the outcome is assessed as stable. Analytes in the trend analysis have been selected based on previous exceedances of trigger values or consistent detections and historical data (PLM, 2024).

Most of the trend analysis results were either no trend or stable and most of the stable results were where the whole data set was non-detect. Each of the major analytes are discussed in **Section 6.3.4.1** and trends at the precincts in **Section 6.3.4.2**.

#### 6.3.4.1 Analyte Trends

One of the major influences on metal concentrations is the relationship with pH whereas pH increases metal solubility decreases. The solubility coefficient for each metal is quite variable depending on the metal compound. In general, the following influences on metals are:

- Aluminium solubility increases with pH less than 6 and more than 8. The solubility also increases with increased temperature;
- Cadmium solubility decreases as pH increases, that is cadmium is more soluble in acidic conditions;
- Copper solubility generally decreases as pH increases, that is copper is more soluble in acidic conditions; and
- Zinc solubility like aluminium increases in both alkaline and acidic conditions.

**Aluminium**

The majority of aluminium trends were stable or revealed no trend. However, increasing trends were detected at St Marys in GW-1001_S and GW-1016.

At GW-1001_S aluminium concentrations have increased from 3,690 µg/L in December 2022 to 24,000 µg/L in September and November 2024 and then declined to 20,000 µg/L July 2025. Over this period pH has declined from 5.88 to 4.3 but was lowest in September and November 2024 at 3.9 suggesting aluminium concentrations increase as pH decreases. The potential reasons for the decline in pH is discussed further below.

At St Marys in SBT-GW-1016 the trend is increasing with 30 µg/L recorded in September 2022 and 330 µg/L recorded in July 2025. Over this period pH has declined from 5.6 to 4.5 once again suggesting the metal solubility and aluminium concentrations are linked to pH.

At Airport Terminal decreasing trends were detected in GW-3012A and GW-3012B while there was no trend in GW-3012C. Aluminium concentrations have been relatively low at this location. The decline aluminium concentrations in the shallow well may be attributed to decline in pH with aluminium concentrations decreasing as the pH approaches neutral conditions. The decreasing trend in the intermediate well is largely due to the concentrations being non-detect and the detection limits having declined over time. Similarly, the majority of results for aluminium in the deep monitoring well (GW-3012C) were non-detect but no trend was identified.

**Cadmium**

Cadmium trends were variable and classified as either stable, no trend, increasing or probably decreasing. In July 2025 across the various precincts, cadmium concentrations were typically low ranging from non-detect (<0.1 µg/L) up to an anomalous 2.2 µg/L at Orchard Hills (BH-SBT-1048R) in May 2023. Decreasing trends for cadmium were observed at six monitoring wells at Airport Terminal and St Marys. In these suites of analytical results, the majority of results were non-detect and the trends reflect reduced laboratory detection limits over time.

At St Marys a probably increasing trend in cadmium concentrations was detected in monitoring well GW-1017 where concentrations have increased from below LOR to 0.2 µg/L in September 2024 but in July 2025 was below the LOR. This trend is not considered significant due to the low concentrations detected.

**Copper**

Copper trends were varied with the majority being classified as either insufficient data, stable (non-detect) or no trend. At monitoring well GW-1002 copper concentrations gradually declined from 28 µg/L in September 2022 to 13 µg/L in November 2024. Similarly, at BH-A401 a decreasing trend was calculated with concentrations gradually declining from 3,240 µg/L in December 2022 to 98 µg/L in July 2025. These decreasing trends are not considered significant or caused by the PLM construction works.

**Zinc**

Zinc trends were varied with the majority being classified as either no trend or stable or no trend. Over all four decreasing trends and one increasing trend were detected.

At Orchard Hills (GW-1808) zinc concentrations declined from 478 µg/L in September 2023 to 1 µg/L in July 2025. The initial spike could be due to low rainfall conditions as rainfall from May to September 2023 was very low (cumulative 28.8 mm at Penrith Lakes over five months). This trend is considered significant but not related to the PLM construction works. At Bringelly (GW-4003) a probably decreasing trend was identified with zinc concentrations declining from 8 µg/L in September 2023 to 3 µg/L in July 2025. Due to the low concentrations detected this trend is not considered significant.

At St Marys GW1005_S zinc concentrations declined from 34 µg/L in November 2022 to 6 µg/L in July 2025. This is not considered significant due to the low concentrations detected over this period. At St Marys (GW-1005_S) zinc concentrations decreased from 34 µg/L in November 2023 to 6 µg/L in July 2025. At St Marys (GW-1017) zinc concentrations increased from 51 µg/L in October 2022 to 87 µg/L in July 2025. This trend is not considered significant due to the relatively low magnitude of increase. Over this period the pH was relatively stable ranging between 4.7 and 6.9.

The trends detected are not considered to be significant due to the relatively low concentrations detected. Variations in zinc concentrations are likely to be natural variations, potentially in response to rainfall and groundwater recharge and are not in response to PLM construction works.

**Total Nitrogen**

Where there was sufficient data to identify a trend, total nitrogen trends were assessed as either stable, no trend or decreasing over the monitoring period. Eight monitoring wells were identified as having decreasing trends for total nitrogen concentrations and one was identified as having an increasing trend.

At Airport Terminal monitoring wells GW-3012A/B/C (shallow, medium and deep respectively) are nested to track any downward leakage of contaminants. At GW-3012-C total nitrogen concentrations increased from 9,800 µg/L in November 2022 to 14,000 µg/L in July 2025. This location appears to be impacted by historic land uses, including poultry and piggery operations, and the elevated results could be attributed to impacted groundwater leaking from upper aquifers that are intersected by monitoring wells GW-3012-A and GW-3012-B. This is consistent with total nitrogen trends declining in GW-3012-A and GW-3012-B. Also, at Airport Terminal (GW-3022) total nitrogen concentrations declined from 3,200 µg/L in November 2022 to 1,800 µg/L in July 2025. This is likely due to non-agricultural land use changes surrounding the airport.

At Bradfield GW-4021 a large total nitrogen concentration (28,300 µg/L) was monitored in December 2022 and has steadily declined to 1,300 µg/L in July 2025. Similarly, at St Marys (GW-1001-S, GW-1002 and GW-1005-S) large declines in total nitrogen have been detected. The reason for these declining trends is unknown but could be due to nitrogen being liberated during bulk earthworks and/or increased rainfall and then declining, rainfall fluctuations or natural variability. Nutrient reduction in recent months could be due to waterproofing of the station boxes and associated stabilisation of surface areas.

**Total Phosphorous**

Only three trends were identified for total phosphorous with the majority of results being no trend or stable.

At Airport Terminal total phosphorus concentrations were monitored in nested well GW-3012A/B/C. In the upper aquifer (GW-3012A) total phosphorous concentrations have declined from 8,620 µg/L in November 2022 to 400 µg/L in July 2025. The reason for this decline is unclear but could be related to landscaping works and stabilisation of areas via hardstand at the airport. Historical land uses, such as poultry or piggery operations, may also have contributed to nutrient levels. Within the intermediate aquifer (GW-3012B) an increasing trend has been identified with total phosphorous concentrations increasing from 140 µg/L in December 2022 to 2,200 µg/L in July 2025. This increase could be due to phosphorous leakage from the upper aquifer monitored in GW-3012A. In contrast total nitrogen concentrations in the intermediate leakage decreased. This apparent discrepancy in nutrient movement could be related to leakage occurring at different rates due to analyte dispersion or adsorption. The trend for total phosphorous in the deeper aquifer (GW-3012C) is stable. These fluctuating concentrations are consistent with the local environment restabilising after historical landuses.

At Orchard Hills (GW-1808) total phosphorous concentrations increased from 260 µg/L in September 2023 to 500 µg/L in July 2025. It is noted that total phosphorous concentrations in the nearby well (GW-1807) have increased from 70 µg/L in May 2023 to 400 µg/L in July 2025, but the trend was calculated as stable. It is not clear why total phosphorous concentrations have increased but it is important to note that construction works to date, do not involve any activities that are known to introduce phosphorus into the subsurface environment or otherwise contribute to elevated phosphorus levels. The current project scope does not include the use, storage, or disposal of phosphorus containing materials, and there are no processes on site, such as fertiliser application, wastewater discharge, or chemical dosing that could directly or indirectly influence groundwater phosphorus concentrations.

**pH**

Where there was sufficient data to identify a trend, pH trends were typically assessed as either stable or no trend over the monitoring period. Eleven monitoring wells recorded a decreasing trend (becoming more acidic) at four precincts. These decreasing trends were monitored at Bradfield (GW-4021), Airport Terminal (GW-3022 and GW-3012B), Orchard Hills (GW-1042, GW-1063, GW-1806, GW-1807 and GW-1808) and St Marys (GW-1001_S, GW-1002, GW1005_S and GW-1021). These trends may be attributed to the initial influence of concrete used during the construction of station boxes increasing the alkalinity of the groundwater, and as the station boxes are completed and waterproofed pH conditions may now be returning to the natural acidic conditions of groundwater within the Bringelly Shale.

Decreased pH conditions are related to increased metal solubility. The potential ecological risk of increased metal solubility is considered negligible as metal values mostly remain within trigger level ranges including in the instances where increasing trends were show. There are three instances where metal triggers are exceeded for aluminium (2) and zinc as shown in **Table 19** and these locations are not located near any GDEs.

**TRH ($C_6$-$C_9$ and $C_{10}$-$C_{40}$)**

Where there was sufficient data to identify a trend, TRH ($C_6$-$C_9$ and $C_{10}$-$C_{40}$) trends for were typically assessed as either stable or no trend over the monitoring period. Concentrations for TRH ($C_6$-$C_9$) were typically below LOR. Decreasing trends for TRH ($C_{10}$-$C_{40}$) were detected at four monitoring wells. These declining trends were identified at Airport Terminal (GW-3012A), Bradfield (GW-4017) and St Marys (GW-1016 and GW-1017). In all cases the declining trends are due to relatively large concentrations being detected in 2022 or 2023 and have since declined to below LOR in July 2025. These impacts are not attributed to the PLM construction works.

**Phenol, toluene, tetrachloroethene and naphthalene**

Where there was sufficient data to identify a trend in the concentrations of these organics the trend was either stable or no trend. The stable trends were due to the organics being continually non-detect. Phenol has been identified as a contaminant of potential concern at St Marys (GW-1021) and was detected at 31 µg/L in September 2022. In July 2025 the phenol concentration was <50 µg/L. At this location phenol concentrations

have steadily declined and since April 2023 has been non-detect and is no longer considered an environmental risk.

Toluene has been identified as a contaminant of potential concern at St Marys (GW-1016). A decreasing trend was identified at this location, but this is due to decreasing LORs over time. In the next GME toluene at this location is to be analysed for low level phenolics so compliance with the trigger level can be assessed.

#### 6.3.4.2 Precinct Trends

**Airport Terminal**

At Airport Terminal groundwater quality was monitored in seven monitoring wells. GW-3022 is located at the north-eastern end of earthworks associated with the construction roads and car parks. GW-3012A/B/C are nested wells located at the western end of the station box.

At GW-3022 analyte trends where there was sufficient data since 2022 were either stable or no trend suggesting the nearby earth works have no adverse environmental influence on the local groundwater quality.

Within the nested GW-3012A monitoring wells most trends identified were either stable, no trend or a declining trend. In the shallow well there was a decrease identified in total phosphorous and total nitrogen concentrations which may be attributed to altered land use practices from agricultural to non-agricultural where poultry and piggery operations are no longer operating. Within the shallow (GW-3012A) and intermediate (GW-3012B) wells there was a decline in aluminium concentrations which could be attributed to pH conditions approaching neutral conditions where aluminium solubility is low. Declining trends in cadmium concentrations within the intermediate (GW-3012B) and deep (GW-3012C) wells are not considered significant as most results are non-detect and the decline in detection limits has contributed to the declining trends.

**Airport Portal Dive Structure (APDS)**

Groundwater monitoring at Airport Portal Dive Structure has been limited due to the lack of monitoring wells. In July 2025 replacement wells were installed. These were nested wells SBT-GW-3003A-R, SBT-GW-3003B-R and SBT-GW-3003C-R and SBT-GW-3401R. SBT-GW-3003A-R could not be sampled as it was dry (SWL depth more than 65.8 mAHD).

Aluminium concentrations were relatively high at SBT-GW-3003B-R (1,400 µg/L) and SBT-GW-3003C-R (820 µg/L) but are consistent with elevated concentrations across Western Sydney Airport (WSA). The salinity is relatively high at 26,000 µS/cm in SBT-GW-3003B/C-R and 21,700 µS/cm in SBT-GW-3401R which is also consistent with groundwater from the Bringelly Shale. The pH was neutral ranging from 7.1 to 7.5. Total nitrogen concentrations were relatively high ranging from, 1,100 µg/L to 5,500 µg/L. Total phosphorous ranged from 60 µg/L to 250 µg/L. The elevated nutrients suggest the groundwater could be influenced by previous agricultural practices and the application of fertilisers as has been surmised at other WSA precincts.

Within SBT-GW-3401 TRH has been detected with the following concentrations 30 µg/L ($C_6$-$C_9$), 80 µg/L ($C_{10}$-$C_{14}$) and 430 µg/L ($C_{15}$-$C_{28}$). It is unclear of the origin of this minor hydrocarbon contamination.

**Bradfield**

Groundwater quality monitoring at Bradfield was conducted in five monitoring wells (GW-4017, GW-4021, SBT-GW-4403R, SBT-GW-4803R and SBT-GW-4014R). Where there were sufficient data to identify a trend, the trend was either stable, no trend or declining trend. Declining trends were monitored in GW-4021 for total phosphorous, total nitrogen and pH. These trends could be due to nitrogen being liberated during bulk earthworks and/or fluctuating rainfall conditions and/or variable lithological conditions. Nutrient reduction in recent months may be attributed to waterproofing of the station boxes and associated stabilisation of surface areas. At GW-4021 pH has declined from December 2022 from a relatively elevated 8.02 to 6.9 in July 2025. The reason for this is unclear, and there may be impacts from the surrounding works being managed by the Bradfield Development Authority, however it is noted this monitoring well is located approximately 400m from the construction of the station box. Variable rainfall conditions throughout the monitoring period may have also influenced pH results. At Bradfield pH conditions are generally declining. This trend could be due the pH

being increased due to the concrete used to construct the station boxes and now that these structures are nearing completion the pH is rebounding and returning to the natural acidic conditions of groundwater within the Bringelly Shale.

**Orchard Hills**

Groundwater quality monitoring at Orchard Hills was conducted in seven monitoring wells (GW-1042, GW-1063, GW-1806, GW-1807, GW-1808, BH-315-R and GW-1048-R). Where there were sufficient data to identify a trend in these wells the trend was either stable, decreasing or no trend. In well GW-1808 a decreasing trend was identified for zinc and a decreasing trend for total phosphorous. The zinc concentration decline was not considered significant. The decrease in total phosphorous concentrations and improvement in water quality is unknown but could be due a change in land use, natural variability or stabilisation of the site due to the PLM construction works.

**St Marys**

Groundwater quality monitoring at St Marys was conducted in seven monitoring wells (GW-1001_S, GW-1002, GW-1005-S, GW-1016, GW-1021, BH-A401 and GW-1017). There were increasing and decreasing trends identified within analytes at St Marys, although the majority of trends were either stable or no trend.

At GW-1001_S increasing trends were observed for aluminium, zinc and a decreasing trend for pH. The increasing trend in the metal concentrations could be due to the decreasing trend in pH (5.9 in December 2022 to 4.3 in July 2025) with metal solubility increasing with increased acidity. The variation in aluminium concentrations is significant, increasing from 3,690 µg/L in December 2022, peaking at 24,000 µg/L in September and November 2024 and then declining to 20,000 µg/L in July 2025. Although the statistical trend is increasing the July 2025 result suggests the aluminium concentrations have peaked and are now in decline. The aluminium concentrations vary with pH, increasing as pH decrease.

At GW-1002 concentrations of copper and zinc have declined as has pH. These concentration variations are not considered significant as the variation range in each case is low with copper varying from 28 µg/L (September 2022) to 13 µg/L (July 2025) and zinc varying from 172 µg/L (September 2022) to 130 µg/L (July 2025). pH declines from 5.27 in November 2022 to 3.9 in July 2025 suggesting that pH is rebounding to natural acidic conditions although this monitoring well is located approximately 100 m north of the station box construction. The low recorded pH could be due high rainfall before sampling oxidising sulphide minerals within the Bringelly Shale, further lowering the pH.

At GW-1005-S the pH trend has declined. Located immediately south of the station box the decline in pH may be attributed to the rebound of the groundwater quality returning to the natural acidic pH conditions.

At GW-1016 an increasing trend was detected in aluminium and decreasing trends identified in cadmium, copper, total nitrogen and TRH ($C_{10}$-$C_{40}$). The decreases in cadmium and copper are not considered significant as they vary over a small range. The decrease in analytes monitored and consequent improvement in groundwater quality may be attributed to the waterproofing of the station boxes and associated stabilisation of surface areas. The decline in TRH ($C_{10}$-$C_{40}$) is also not considered significant as the majority of results are non-detect.

At GW-1021 an increase in cadmium concentrations and decrease in pH was detected. The decline in cadmium concentrations is not considered significant as the majority of results were non-detect. The decrease in pH may be attributed to the rebound of the groundwater quality returning to the natural acidic pH conditions.

**Bringelly**

Groundwater quality monitoring at Bringelly was conducted in five monitoring wells (GW-4003, GW-4005, GW-4800, GW-4801 and GW-4802). Where there were sufficient data to identify a trend, the trend was either stable or declining trend. A probably decreasing trend was detected in GW-4003 for zinc. Zinc concentrations monitored between July 2022, and July 2025 vary from 13 µg/L to 3 µg/L. Due to the low variation in zinc concentrations this trend is not considered significant.

**Claremont Meadows**

Groundwater quality monitoring at Claremont Meadows was conducted in three monitoring wells (GW-1805, GW-1024 and GW-1030). Where there were sufficient data to identify a trend, the trend was either stable or declining trend. At Claremont Meadows a declining trend in total nitrogen was identified in wells GW-1805 and GW-1024. A probably increasing trend was identified in GW-1024 for pH. Since December 2022 pH has varied from 6.3 to 7.6 and is considered within the realm of natural variation.

## 6.4 Quality Assurance and Quality Control (QA/QC) Discussion

To evaluate a dataset generated by an environmental investigation or assessment, the data quality indicators need to be defined to ensure that the data are of sufficient quantity and quality for the purpose of making a decision. ASC NEPM (2013) identifies five measures to be considered when reviewing the quality assurance and quality control from an investigation or assessment as below:

- Precision: A quantitative measure of the variability or reproducibility of data.
- Accuracy (bias): A quantitative measure of the closeness of reported data to the true value.
- Representativeness: The confidence (expressed qualitatively) that data is representative of each medium present at the site.
- Comparability: The confidence (expressed qualitatively) that data may be considered equivalent for each sampling and analytical event.
- Completeness: A measure of the amount of useable data (expressed as %) from a data collection activity.

The above five measures are known collectively by the acronym 'PARCC' and are comprised of both field and laboratory QA and QC processes to ensure that a resultant data set is suitable for making a decision.

Where detectable concentrations of an analyte were reported for the primary sample, the relative percentage difference (RPD) was calculated using the following formula:

$$RPD\% = \frac{|Ro - Rd|}{|(Ro + Rd)/2|} \times 100\%$$

where Ro is the original sample and Rd is the duplicate

The quantitative requirements have been outlined in **Section 6.4.1,** while the detailed review of the field and laboratory QA and QC is provided in **Section 6.4.2** and **Section 6.4.3**.

Groundwater parameters were monitored by using a calibrated YSI water quality meter. The calibration certificate provided by Active Environmental Solutions Australia is presented in **Appendix B – Monitored Field Parameters**.

### 6.4.1 Data Quality Indicators

The DQIs to demonstrate the PARCC acceptance criteria are summarised in **Table 25.**

**Table 25 Data Quality Indicators**

| Data Quality Indicator | Frequency | Data Quality Criteria |
|---|---|---|
| Blind replicate (intra-laboratory) | 1:20 or 5% | < 50% RPD |
| Split replicate (inter-laboratory) | 1:20 or 5% | < 50% RPD |
| BTEXN Trip Blank | 1 per laboratory batch | < LOR |
| BTEXN Trip Spike | 1 per laboratory batch | 70 – 130% recovery |

| Data Quality Indicator | Frequency | Data Quality Criteria |
|---|---|---|
| Equipment rinsate blanks | 1 per laboratory batch | < LOR |
| Field blanks | 1 per laboratory batch | < LOR |
| Laboratory surrogate spikes | 10% or laboratory discretion | 50 – 150% recovery |
| Laboratory matrix spikes | 10% or laboratory discretion | 70 – 130% recovery |
| Laboratory control spikes | 10% or laboratory discretion | 70 – 130% recovery |
| Laboratory duplicates (internal) | 10% or laboratory discretion | Results <10 times the PQL: No Limit<br>Results between 10-20 times the PQL: RPD must lie between 0-50%<br>Results >20 times the PQL: RPD must lie between 0-30% |
| Method blanks | Results between 10-20 times the PQL: RPD must lie between 0-50% | <LOR |

### 6.4.2 QA/QC Sampling Methodology

A review of the field and laboratory QA/QC data was completed by ADE for each sampling event and is presented in **Appendix H – QA/QC Analysis**. The details of the QA/QC samples collected from the three sampling events are summarised in **Table 26**. A duplicate sample (intra-laboratory) and triplicate (interlaboratory triplicate) was collected. Since 16 water samples were collected over the three days the 1:20 sampling criteria was satisfied.

Primary and triplicate samples were analysed at Envirolab and ALS laboratories respectively. The parent sample for the duplicate (BR_19.11) and triplicate (SR1_19.11) was MW-4017.

**Table 26 QA/QC parameters monitored**

| Date Sampled | Lab B Batch No | Primary sample | Duplicate | Triplicate | Rinsate Blank | Trip blank / Trip spike |
|---|---|---|---|---|---|---|
| 09 July 2025 | 386021 | 6 | 1 | 1 | 1 | - |
| 09 July 2025 | 389507 | - | - | - | - | 1 |
| 10 July 2025 | 386021 | 6 | - | - | 1 | - |
| 11 July 2025 | 386021 | 5 | 1 | 1 | 1 | - |
| 14 July 2025 | 386021 | 6 | - | - | 1 | |
| 14 July 2025 | 389507 | - | - | - | - | 1 |
| 15 July 2025 | 386021 | 2 | - | - | 1 | - |
| 29 July 2025 | 387359 | 8 | - | - | 1 | - |
| 30 July 2025 | 387359 | 4 | 1 | 1 | 1 | - |
| 30 July 2025 | 389507 | - | - | - | - | 1 |
| **Total** | | **37** | **3** | **3** | **7** | **3** |

Trip blanks and trip spikes prepared by Envirolab were included within three batch suites to monitor the loss of volatiles and potential cross contamination during transportation. Rinsate blanks were prepared in the field and included in seven sample suites using reagent water provided by the laboratory.

### 6.4.3 QA/QC Summary

ADE considers the sample collection, documentation, handling, storage and transportation procedures utilized in this GME at the site are of an acceptable standard. Despite the rinsate blanks detecting some of the analytes, the detections were generally low and just above the LOR and are considered not to have adversely impacted the integrity of the analytical results. The QA/QC review indicated that results were generally within the relevant acceptance criteria for the analyses conducted. A Data Quality Evaluation is provided in **Appendix H – QA/QC Analysis** along with calculated %RPD results for the duplicate and triplicate samples.

The analytical results provided by the laboratory are deemed reliable based on:

- The results of the field and laboratory QA/QC samples demonstrate an adequate level of precision and accuracy.
- Samples were analysed for a range of contaminants with all testing undertaken within recommended holding times.

It is assessed the full suite of analytical results represent an acceptable representation of the water quality and contaminants in groundwater across the site and it is considered reliable for the purposes of this investigation and making decisions.

Following a review of the laboratory QA/QC results provided in the Quality Control Reports for each batch number and a review of the standard operating protocols used in this investigation it is considered that the laboratory data quality objectives have been attained.

In summary ADE considers the concentrations of potential contaminants reported are representative of the groundwater conditions at the Site.

# 7 Construction Groundwater Inflow Volumes

## 7.1 Groundwater Inflows

Groundwater volume data for the monitoring period have been provided by Parklife. WTP influent volumes, and waste tracking records for groundwater removed from site as liquid waste for off-site disposal, have been used as surrogates to measure groundwater inflow volumes. Where groundwater is transferred, via the tunnel, from one site to another for treatment at a WTP, flow meter readings have been used so volumes can be allocated back to the particular worksite.

Some surface water derived from rainfall runoff over the excavation footprints and any water generated by construction and washdown activities, has been included in these recorded volumes. Separate volumes for groundwater and surface water have not been recorded; however, it is expected that surface water inflows would increase with higher monthly rainfall. Over the monitoring period from December 2024 to July 2025, monthly rainfall totals fluctuated with March 2025 the highest (117 mm) as shown in **Table 10**.

To minimise groundwater inflows, metro tunnels, cross passages and station boxes have been constructed as tanked structures. Tunnels and cross passages have been completed by the SBT contractor and have been handed over as final waterproofed structures to PLM. Station box construction is yet to be completed although waterproofing is complete at St Marys, Orchard Hills, Airport Portal Dive Structure (APDS), Airport Terminal (ATL) and Bradfield. Groundwater inflows into the station boxes and associated groundwater drawdown are likely to be experienced until the structure is hydrostatically tanked and dewatering is ceased, at which point groundwater levels are expected to rebound.

### 7.1.1 Wastewater treatment, reuse, disposal and reporting

The groundwater management strategy for each site is summarised in **Table 27** below and includes a description of wastewater treatment plant (WTP) discharges WTP effluent, reuse and disposal associated with each site. Detail on the groundwater inflow volumes for each site for the monitoring period December 2024 to July 2025 has been tabulated further in **Table 28** and **Table 29** respectively.

**Table 27 Summary of wastewater treatment, reuse, disposal and reporting**

| Water Treatment Plant | WTP Effluent Reuse / Disposal during reporting period |
|---|---|
| St Marys | All groundwater is discharged to Sydney Water asset under Trade Waste Agreement 53206 continues.<br>Samples at Trade Waste discharge point collected every 22 days.<br>Results provided directly to Sydney Water within 21 days of sampling event. Volumes are shown in **Table 28**. |
| Claremont Meadows | The site and WTP were handed to PLM on the 16 January 2025. All groundwater is discharged to Sydney Water asset under Trade Waste Agreement 53823.<br>Samples at Trade Waste discharge point are collected every 22 days.<br>Results are provided directly to Sydney Water within 21 days of a sampling event.<br>A portion of groundwater from Orchard Hills Station site is also accepted for treatment at the Claremont Meadows WTP. |
| Orchard Hills | The WTP previously used by the SBT contractor at Orchard Hills Excavation (OHE) north has not been operated by PLM and was decommissioned in May 2025. |

| Water Treatment Plant | WTP Effluent Reuse / Disposal during reporting period |
|---|---|
| | Groundwater from OHE is transferred, as required, via the tunnel to the Claremont Meadows WTP or disposed offsite as liquid waste. A small portion of groundwater from OHE Dive structure has been used on site for dust suppression as appropriate. |
| Airport Portal Dive Structure (CBP Airport Business Park Station Box Excavation) | Groundwater is treated through the WTP and water re-used on-Airport for dust suppression. A portion of groundwater has also been taken off-site for disposal. |
| Airport Terminal Station | WTP was handed over to PLM on 15 January 2025. Groundwater collected from the ATL Station Box is treated through the WTP for reuse. When required disposed offsite as liquid waste. |
| Bringelly | The site and WTP were handed over to PLM on 23 January 2025. The WTP at the Bringelly site has not been operated by PLM. Groundwater from the Bringelly site is transferred, as required, via the tunnel to the ATL WTP for treatment and reuse. |
| Bradfield | Groundwater from Bradfield is transferred, as required, via the tunnel to the ATL WTP for treatment and reuse. Water is collected for reuse for dust suppression and disposed offsite as liquid waste as required. |

The monthly average of groundwater inflows across all sites are presented in **Table 28** and **Table 29** respectively.

**Table 28 Groundwater influent to WTPs**

| Month | STM | CLM | OHE | APDS | ATL | BRG | BRD | Month Rainfall (BC) | Month Rainfall (PL) |
|---|---|---|---|---|---|---|---|---|---|
| Units | kL | kL | kL | kL | kL | kL | kL | mm | |
| Dec2024 | 1,495.4 | PLM not in possession | PLM not in possession | 2,028.6 | PLM not in possession | PLM not in possession | 1,272.6 | 45 | 38.2 |
| Jan2025 | 2,914.0 | PLM not in possession | 82.8 | 5,143.1 | PLM not in possession | PLM not in possession | 1,088.1 | 78 | 94.2 |
| Feb 2025 | 1,059.0 | 1,876.0 | 93.8 | 5,262.3 | 3,288.6 | 1,827.0 | 957.9 | 51 | 117.2 |
| Mar 2025 | 1,092.8 | 922.9 | 46.2 | 8,149.9 | 6,165.0 | 798.3 | 2,192.4 | 117 | 103.6 |
| Apr 2025 | 3,330.3 | 3,105.3 | 155.1 | 3,754.8 | 1,026.0 | 570.0 | 684.0 | 64 | 57.6 |
| May 2025 | 868.0 | 2,060.3 | 102.9 | 6,668.4 | 7,664.1 | 1,303.9 | 1,564.6 | 98 | 39.9 |
| Jun2025 | 1,317.6 | 1,324.5 | 66.6 | 3,198.9 | 2,304.6 | 1,280.4 | 1,538.7 | 1 | 44.5 |
| Jul 2025 | 1,482.1 | 1,646.8 | 82.2 | 6,246.8 | 5,954.2 | 1,364.9 | 1,637.7 | 80 | 37.9 |
| Total | 13,559.2 | 10,935.8 | 629.6 | 40,452.8 | 26,402.5 | 7,144.5 | 10,936.0 | 534 | 533.1 |
| Grand Total | | | | | **110,060.4** | | | | |

Note: (*) Rainfall measured at BoM Station 67108 located at Badgerys Creek AWS for APDS, ATL, BRG & BRD and at BoM Station 67113 located at Penrith Lakes for STM, CML & OHE)

**Table 29 Summary of groundwater to liquid waste disposal in this reporting period**

| | St Marys | CLM | OHE | APDS | ATL | Bringelly | Bradfield | Total |
|---|---|---|---|---|---|---|---|---|
| Volume kill | 22 | 84.5 | 238 | 319.6 | 1814 | 0 | 152 | 2630.08 |

### 7.1.2 Groundwater inflows at St Marys

Total inflows at St Marys for the monitoring period were 13,559.2 kill. Based on the monthly averages, the inflows at St Marys do not appear to correlate to rainfall, suggesting groundwater ingress may be elevated when compared to other sites. As reported in **Table 1** Works Activity Schedule, the St Marys station box is projected for completion in June 2026. It is anticipated groundwater inflows to the station box will continue

to decline once the structure is hydrostatically tanked and groundwater levels rebound. Wastewater at St Marys continues to be discharged to Sydney Water under a Trade Waste agreement.

### 7.1.3 Groundwater inflows at Claremont Meadows

Total inflows at Claremont Meadows for the monitoring period were 10,935.8 kL. Inflows to the WTP range from multiple sources including tunnel construction water, groundwater seepage, surface water from Claremont Meadows site and Orchard Hills groundwater. This summary does not include volumes transferred from Orchard Hills as this is accounted for in **Section 7.1.4.**

### 7.1.4 Groundwater inflows at OHE

PLM has not operated the WTP at OHE north and the WTP is now decommissioned. During the reporting period a portion of groundwater has been used on site for dust suppression as appropriate, with a total of 629.6 kL transferred to Claremont WTP and a total of 238 kL disposed offsite as liquid waste.

### 7.1.5 Groundwater inflows at APDS and ATL

Groundwater inflows and recorded over the monitoring period at the Airport Portal Dive Structure (APDS) and Airport Terminal (ATL)Aare presented in **Table 28**.

Total inflows for the monitoring period at both airport sites was 66,855.3 kL. Based on the monthly averages, the inflows appear to correlate with monthly rainfall, indicating most of the inflow to the WTP is surface water rather than groundwater.

Most of the inflow water was processed through the WTPs and then re-used on site for dust suppression with a total volume of 2,133.6 kL being disposed offsite as liquid waste. Offsite disposal is generally used when the capacity to treat and reuse is low (i.e. during rain events or not meeting criteria). It is anticipated groundwater inflows will continue to decline once the station box structures are hydrostatically tanked.

### 7.1.6 Groundwater inflows and outflows at Bringelly

Total inflows at Bringelly for the monitoring period were 7,144.5 kL. Inflows to the WTP range from multiple sources including tunnel construction water, groundwater seepage and surface water from the Bringelly site. No outflow was recorded from Bringelly during the monitoring period.

### 7.1.7 Groundwater inflows and outflows at Bradfield

Total inflows for the monitoring period were 10,936.0 kL. Inflow to the Bradfield station box appears to be increasing in sympathy with monthly rainfall with surface water inflows increasing with increased rainfall. Despite low rainfall in June 2025, the WTP inflow remained elevated. This is due to a high-water table coupled with the backlog of water to be processed from the previous months of high rainfall. Thus, it is considered that most of the inflow to the WTP is surface water rather than groundwater. At Bradfield wastewater is transferred to the ATL WTP for processing. and a total of 153 kL was discharged offsite as liquid waste. Groundwater inflows are anticipated to decline as the concrete works are completed, and the station box becomes a hydrostatically tanked structure.

## 7.2 Total Project Groundwater Take

The total estimated annual groundwater take for the project (combining on-airport and off-airport components) during construction is approximately 240 ML/year (Sydney Metro, 2023). The total groundwater take for the monitoring period has been estimated based on the combined inflows monitored at each site documented in the tables above. This volume combines groundwater taken off-site by the liquid waste contractor and influent volumes recorded from site WTP's for either onsite reuse such as dust suppression or offsite disposal via Sydney Water trade waste agreements. These volumes include a portion surface water from sources such as direct rainfall, washdown water and process water used within the excavations or tunnel which is not able to be collected separately from the groundwater and is therefore treated and managed as groundwater. Consequently, the volumes reported do include some surface water take and the total monthly volumes are considered a worst-case scenario for groundwater take.

The sum of the total water take for the project managed by PLM during the monitoring period is 110 ML. By assuming a worst-case scenario that all the water is groundwater this equates to a total of 110 ML for the eight-month reporting period. This compares to an estimated combined water take during construction of 240 ML/year indicating the water take during the monitoring period is less than 50% of the construction water take estimate for the project.

It is anticipated groundwater inflows will continue to decline once the station boxes become hydrostatically tanked structures.

# 8 Conclusions

Groundwater level and quality monitoring has been undertaken at the Western Sydney Airport during July 2025 to support the Stations, Systems, Trains, Operations and Maintenance (SSTOM) phase. The monitoring report broadly follows the format of previous monitoring reports (ADE, 2025 a/b) but includes the two additional precincts of Bringelly and Claremont Meadows. The groundwater monitoring program included:

- gauging monitoring wells;
- collection of groundwater samples for groundwater quality monitoring and laboratory analysis;
- monitoring of field parameters with a calibrated water quality meter;
- downloading dataloggers;
- downloading vibrating wire piezometers (VWPs);
- converting pore pressure to groundwater levels;
- converting voltages to electrical conductivity;
- preparing hydrographs;
- preparing electrical conductivity traces; and
- collation and review of the groundwater data collected to assess if there have been any adverse impacts to the aquifers and groundwater dependent ecosystems in the vicinity of Western Sydney Airport (WSA).

Groundwater monitoring has been undertaken at the following WSA precincts:

- St Marys;
- Claremont Meadows;
- Orchard Hills;
- Airport Terminal;
- Airport Business Park;
- Bringelly; and
- Bradfield.

The groundwater monitoring event (GME) and results outlined in this six-monthly report included the gauging and water quality sampling of 37 monitoring wells, downloading of 16 VWPs and downloading three dataloggers. At some VWPs there were multiple sensors at different depths.

## 8.1 Changes to the groundwater monitoring network

In July 2025 the following monitoring wells were constructed to replace damaged or destroyed monitoring points. In some cases, VWPs were replaced with monitoring wells but for consistency the nomenclature remains the same. Some replacement wells had instrumentation installed top monitor groundwater levels and electrical conductivity. The replacement wells were:

- Orchard Hills: SMGW-BH-A315-R [EC and level monitoring installed].
- Orchard Hills: SBT-GW-1048-R.
- Airport Business Park: SBT-GW-3003-A-R [EC and level monitoring installed].
- Airport Business Park: SBT-GW-3003-B-R [EC and level monitoring installed].
- Airport Business Park: SBT-GW-3003-C-R [EC and level monitoring installed].
- Airport Business Park: SBT-VWP-3401-R.
- Airport Terminal: SBT-GW-3006-R [EC and level monitoring installed].
- Bradfield: SBT-GW-4803-R.
- Bradfield: SBT-GW-4014-R.

- Bradfield: SBT-GW-4017-R.
- Bradfield: SBT-GW-4403-R.

Maintenance was carried out on the following monitoring wells to return them to the monitoring network:

- Orchard Hills: SBT-GW-1806.
- Claremont Meadows: SBT-GW-1024.
- Claremont Meadows: SBT-GW-1805.
- Bradfield: SBT-GW-4017.

## 8.2 Groundwater level trigger exceedances

Historical and recent groundwater level trends monitored near Airport Terminal at SBT-GW-4000 have been monitored at this location periodically since September 2023 before any Metro related construction works commenced. Since September 2023 there has been a steady decline in the groundwater level. The most recent reading collected by ADE on 9 July 2025 confirmed that groundwater levels have continued to decline, despite no groundwater-influencing construction activities being undertaken during this period, The groundwater decline is attributed to broader natural or regional hydrogeological influences and not the construction works.

The majority of groundwater level trigger points were compliant although there was one exception. At Orchard Hills SMGW-BH-A315R the monitored groundwater level of 34.93 mAHD fell below the SSTV of 36.9 mAHD during the monitoring period and hence is not compliant. It is expected that groundwater levels will rebound once the impacts of the above average rainfall are realised. Construction works at Orchard Hills are now complete with the station box walls finalised in August 2025 and the station box final tanked structure including waterproofing completed in September 2025. Thus, if the Metro construction at Orchard Hills was influencing groundwater levels at this location this would no longer be the case. It is considered no mitigation measures are required other than continuing groundwater monitoring.

At Claremont Meadows monitoring was discontinued at SBT-GW-1028 but nearby VWP SWD-TU100-20071-VWP07-A/B is used as a surrogate. The time series data shows the groundwater level was mainly below the red trigger level since February 2024 until July 2025. In early July 2025 the groundwater level was above the red trigger level of 24.48 mAHD and above the SSTV of 24.4 mAHD. The current groundwater level trend is an upward trend suggesting groundwater levels are rebounding. Groundwater levels are currently compliant at VWP07-A and millimetres below the red trigger level at VWP07-B.

At Bradfield SWD-TU-400-39565-VWP04-A/B [SBT-GW-4014] the red trigger levels were breached in September and August 2023 and continued to decline exceeding the red trigger level by 2.79 and 2.53m respectively. Unfortunately, the well head could not be accessed in November 2024 and July 2025.

At Bradfield SWD-TU-400-39532-VWP03 [SBT-GW-4014] the red trigger levels were breached between September 2023 and August 2024 (Figure D1) but rebounded shortly thereafter to above the green trigger level.

Bulk excavation activities have ceased in this area, and it is expected that groundwater levels are rebounding. No mitigation measures at Bradfield are recommended as once the construction activities and associated dewatering are completed, groundwater levels are expected to rebound to their background levels. Therefore, it is recommended that monitoring should continue to confirm if groundwater levels rebound now localised dewatering is complete.

The groundwater level data confirm there were no groundwater level trigger level exceedances and hence there is no impacts to GDE health as confirmed by the ecological investigations (AMBS, 2025).

## 8.3 Groundwater quality trigger exceedances

At the two monitoring wells monitoring time series electrical conductivity, adjacent to the GDEs at Orchard Hills (SBT-GW-1042 and SBT-GW-1063) there were no exceedances, and all monitoring data were compliant. It is noted that BH-A315, also at Orchard Hills, was replaced and continuous EC data will be available within the next GME report. The standalone sample collected during this GME was compliant in line with current trends.

Groundwater quality triggers were exceeded at six of the 37 locations monitored to assess groundwater quality during construction. One of these is at Orchard Hills (GW-1042), one is at Claremont Meadows (SBT-CM-1030) and four at St Marys (GW-1001_S, GW-1002, GW-1016 and GW-1021). Groundwater contamination is known to exist at the St Marys site (Tetra Tech, 2024a). With three exceptions as discussed below, these water quality exceedances were minor.

The most significant exceedance was at SBT-CM-1013 at Claremont Meadows. Aluminium concentrations were recorded at 20,000 µg/L exceeding the threshold of 7,500 µg/L. The increase in aluminium concentrations may be attributed to the decrease in pH and associated increase in metal solubility and/or increased average rainfall over the monitoring period. Consequently, no mitigation measures are recommended at this stage other than a continuation of monitoring. The next most significant was at GW-1001-S at St Marys where the aluminium concentration of 21,000 µg/L exceeded the threshold of 14,700 µg/L. Since November 2024 the aluminium concentration has declined from 24,000 µg/L as pH levels increase. No mitigation measures are recommended at this stage other than a continuation of monitoring as concentrations are declining towards the threshold value.

At St Marys (GW-1016) zinc concentrations were measured at 560 µg/L exceeding the threshold of 236 µg/L. This trend is also attributed to low pH conditions and increased metal solubility. It is recommended to continue monitoring to assess whether this trend continues.

Other exceedances were minor pH exceedances of 0.1 and 0.2 pH units at Orchard Hills (GW-1042) and St Marys (GW-1002) respectively.

Assessment of water quality is relevant for the project, as outlined in the NSW Aquifer Interference Policy (DPI, 2012). Table 1 of Minimal Impact Consideration for Aquifer Interference Activities for fractured rock water sources indicates the relevant consideration with respect to water quality consists of: “Any change in the groundwater quality should not lower the beneficial use category of the groundwater source beyond 40m from the activity.” Based on the results of this GME there has been no adverse change in groundwater quality conditions or the beneficial use of groundwater.

Groundwater quality exceedances at St Marys could be attributed to station box construction activities. These ongoing activities have the potential to impact groundwater quality. No mitigation measured are proposed however it is recommended that groundwater quality monitoring continues to monitor whether the groundwater quality rebounds as the station box construction nears completion.

In summary the exceedances recorded are minor and mainly attributed to increased metal solubility due to naturally low pH conditions and/or increased average rainfall over the monitoring period. The Metro construction works are not considered to have impacted groundwater quality.

## 8.4 Construction Groundwater Volumes

Groundwater inflows for each precinct over the monitoring period has been summarised monthly. Groundwater inflow volumes have been tracked through ‘influent to the water treatment plants and via volumes tracked for groundwater removed as liquid waste for off-site disposal. It is expected that inflows would increase with higher monthly rainfall.

To minimise groundwater inflows, metro tunnels, cross passages and station boxes have been constructed as tanked structures. Station box construction is yet to be completed although waterproofing is complete at St Marys, Orchard Hills, Airport Portal Dive Structure (APDS), Airport Terminal (ATL) and Bradfield. Groundwater inflows into the station boxes and associated groundwater drawdown are likely to be experienced until the structure is tanked at which point groundwater levels are expected to rebound. It is anticipated groundwater inflows will continue to decline once the station boxes become hydrostatically tanked structures.

The total estimated annual groundwater take for the project (combining on-airport and off-airport components) during construction is approximately 240 ML/year (Sydney Metro, 2023). The sum of the total water take for the project managed by PLM during the monitoring period is 110 ML. By assuming a worst-case scenario that all the water is groundwater this equates to a total of 110 ML for the eight-month reporting period. This compares to an estimated combined water take during construction of 240 ML/year indicating the water take during the monitoring period is less than 50% of the construction water take estimate for the project.

# 9 Recommendations

At Claremont Meadows (SBT-CM-1030) the trigger level for phenol is 31 µg/L and the laboratory result was <50 µg/L. It is possible the actual phenol concentration was less than the trigger value. It is recommended that in the next GME the samples are analysed for low level phenolics.

At Orchard Hills SMGW-BH-A315R the monitored EC of 20,000 µS/cm exceeded the SSTV of 3,700 µS/cm and is not compliant. However, this well is a replacement well and, although constructed as per the previous well, the 6m well screen intersects clay, sandy clay, siltstone and sandstone. It is recommended that this SSTV at this location is revised. It is recommended that monitoring is continued at this location, and an assessment of impacts will be undertaken after a larger dataset is obtained.

A number of monitoring points were unable to be accessed as they were either destroyed or inaccessible. These monitoring locations are summarised in **Table 30** with recommendations made for ongoing monitoring, increased monitoring or discontinuation of monitoring.

Instrumentation for continuous logging of salinity and groundwater levels in some of the replacement wells has been recommended in **Table 7**. This instrumentation should be purchased and installed as soon as possible.

**Table 30 Missing monitoring locations and recommendations**

| Precinct | Monitoring Point | Alternative name | Status | Nearby monitoring | Recommendation |
|---|---|---|---|---|---|
| Claremont Meadows | SWD-TU100-19992-VWP06-01/02/03 | SBT-VWP-1403 | Destroyed | SBT-VWP-1402 | Remove SBT-VWP-1403 from monitoring network and continue monitoring in SBT-VWP-1402. |
| Bradfield | SWD-TU400-39287-VWP01 | SBT-VWP-4003 | Replaced | | Monitoring for EC and groundwater levels to continue at the replaced SBT-VWP-4003-R. |
| | AEC-SN450-EW-VWP07 | | Not located, assumed destroyed | | AEC-SN450-EW-VWP07 was never located following handover from SBT. Remove from network. |
| | | SBT-GW-4010 | Not located | | Insufficient handover of information from previous contractor. SBT-GW-4010 not located at the coordinates provided. Recommend remove from the network with the remaining active GW wells considered sufficient for compliance monitoring. |
| | SBT-GW-4021 | | Active | | Groundwater levels were between amber and red and no rebound has been evident at this location. It is recommended that monitoring is increased to quarterly to assess the trend in more detail. |
| Airport Business Park | ABP-TD300-VWP01/04 | ABP-TD300 | Sensors no longer operational | SBT-GW-3401-R | Levels are still being monitored in VWP02/03. In previous monitoring the trends in all four sensors were the same so it is considered that monitoring in the remaining two sensors will suffice in understanding water level variations at this location. Recommend to continue monitoring. |
| | SWD-TU300-33565-VWP02 | SBT-VWP-3401 | Replaced | | Monitoring to continue in SBT-GW-3401-R. |
| | GW-3003A/B/C | | Replaced | | Levels in the monitoring wells are continuing in the nested wells, however the shallow well was dry and thus it could not be assessed if the well was compliant. The SWL in the deep well was below the red trigger level and hence non-compliant. Recommended to increase monitoring to three monthly to assess the trends more closely in these replacement wells. |
| St Marys | SWD-TU100-17275-VWP03A/B | SBT-GW-1005A | Destroyed | | No nearby wells. Construction ongoing to June 2026. There are no exceedances recorded at St Marys. Remove well from network and continue time series water level monitoring at three existing VWPs. |
| | SWD-TU-100-17720-VMP04 | SBT-VWP-1401 | Destroyed | | Data from SBT-VWP-1401 was specific for wall design during SBT construction stage. Recommend remove from the monitoring network. |

| Precinct | Monitoring Point | Alternative name | Status | Nearby monitoring | Recommendation |
|---|---|---|---|---|---|
| Orchard Hills | SWD-TU150-21965-VWP01-A | SBT-GW-1037 N | Destroyed | SBT-GW-1037 | Noted to be destroyed by SBT and not handed over to PLM (CPB Ghella, 2024). The geographic spread of existing remaining monitoring wells is considered sufficient to assess any potential impacts on groundwater particularly as construction work transitions to lower groundwater risk, less intrusive, works. |
| | SWD-TU150-21965-VWP01-B | SBT-GW-1037 S | Destroyed | SBT-GW-1042 | Noted to be destroyed by SBT and not handed over to PLM (CPB Ghella, 2024). Continue monitoring at nearby SBT-GW-1042. As above. |
| | SWD-TU150-22115-VWP03 | SBT-VWP-1405 | Destroyed | | Recommended to remove from network (ADE, 2025b). Purpose was to monitor asset wall design during SBT construction stage. |
| | SWD-TU150-22193-VWP05-A/B | SBT-GW-1043 | Could not be found. Suspected destroyed | | Recommended to remove from network (ADE, 2025b). As above. |
| | SMGW-BH-A315R | | Active | GDEs | Recommend installation of a datalogger to monitor time series groundwater levels. |
| Bringelly | SWD-TU351-37371-VWP04/05/06 | SBT-VWP-4400 | Destroyed | | Remove from network. It is considered there is sufficient groundwater level monitoring at GW-4003, GW-4005, GW-4800, GW-4801, GW-4802. Recommend time series logging can continue by installing a logger in GW-4800. |
| Bringelly and Airport Terminal | SBT-GW-4000 | | Active | | The purpose of this well is to monitor groundwater levels due to the underlying cross passages. Groundwater levels are below the red trigger and no rebound has been observed. It is recommended that monitoring increases to quarterly to assess if groundwater rebounding is occurring. |
| Airport Terminal | SWD-TU300-34893-VWP04-01/02/03/04 | ATL-SN350-VWP01/02/03/04 | Destroyed | SBT-BH-3006-R. | Was last sampled in last GME (Nov 2024). Monitoring is conducted in nearby SBT-BH-3006-R. Recommend remove from the network and continue monitoring in SBT-BH-3006-R. |
| | SWD-TU330-35209-VWP01/02 | SBT-VWP-3404<br>SBT-VWP-3405 | Destroyed | | Recommended to remove from network (ADE, 2025b). Monitoring applicable for SBT during temporary shaft construction where purpose of monitoring asset is wall design where drawdown is not the critical design case. |
| | SBT-GW-3006 | | Replaced | | Was destroyed and replaced with SBT-GW-3006-R and will be sampled next GME. |

| Precinct | Monitoring Point | Alternative name | Status | Nearby monitoring | Recommendation |
|---|---|---|---|---|---|
| North Tunnel – South Creek | SMGW-A105S | | Removed from network | | Recommended to remove from the monitoring network (Tetra Tech 2025a). Monitoring was specific to cross passage construction completed by the former contractor. |
| North Tunnel – South Creek | SMGW-BH-A107. | | Active | | Groundwater quality no longer required but groundwater level monitoring required (Tetra Tech, 2025a). Monitoring mistakenly missed during PLM GME 3. Will be included in GME 4. |
| North Tunnel – South Creek | SBT-GW-1804 | | Active | | Continue to monitor groundwater levels to assess the impacts of the cross passage construction completed by the former contractor. Groundwater quality monitoring not required. |
| On Airport | SMGW-BH-C321 | | Destroyed | SMGW-BH-C320 | Remove from the network and continue monitoring in nearby SMGW-BH-C320. Continued monitoring at SMGW-BH-C320 is considered sufficient due to its close proximity. |
| On Airport | SMGW-BH-C330 | | Destroyed | SMGW-BH-C320 | Remove from the network and continue monitoring in nearby SMGW-BH-C320. Continued monitoring at SMGW-BH-C320 is considered sufficient due to its close proximity. |

# 10 References


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# 11 Limitations and Disclaimer

This report has been prepared for the exclusive use of the client and is limited to the scope of the work agreed in the terms and conditions of contract (including assumptions, limitations and qualifications, circumstances, and constraints). ADE has relied upon the accuracy of information and data provided to it by the client and others.

ADE has used a degree of care and skill ordinarily exercised in similar investigations by reputable members of the environmental industry in Australia. No other warranty, expressed or implied, is made or intended. No one section or part of a section, of this report should be taken as giving an overall idea of this report. Each section must be read in conjunction with the whole of this report, including its appendixes and attachments. The report is an integral document and must be read in its entirety.

To the fullest extent permitted by law, ADE does not accept or assume responsibility to any third party (other than the client) for the investigative work, the report or the opinions given.

The scope of work conducted, and report herein may not meet the specific needs (of which ADE is not aware) of third parties. ADE cannot be held liable for third party reliance on this document. Any third party who relies upon this report does so at its own risk.

The subsurface environment can present substantial uncertainty due to it complex heterogeneity. The conclusions presented in this report are based on limited investigation of conditions at specific sampling locations chosen to be as representative as possible under the given circumstances. However, it is possible that this investigation may not have encountered all areas of contamination at the site due to the limited sampling and testing program undertaken.

The material subject to classification pertains only to the site and subject area outlined within the report and must be consistent with the waste description reported. If there are any unexpected finds that are not consistent with this classification, ADE must be notified immediately.

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ADE's professional opinions are based upon its professional judgement, experience, training, and results from analytical data. In some cases, further testing and analysis may be required, thus producing different results and/or opinions. ADE has limited its investigation to the scope agreed upon with its client.

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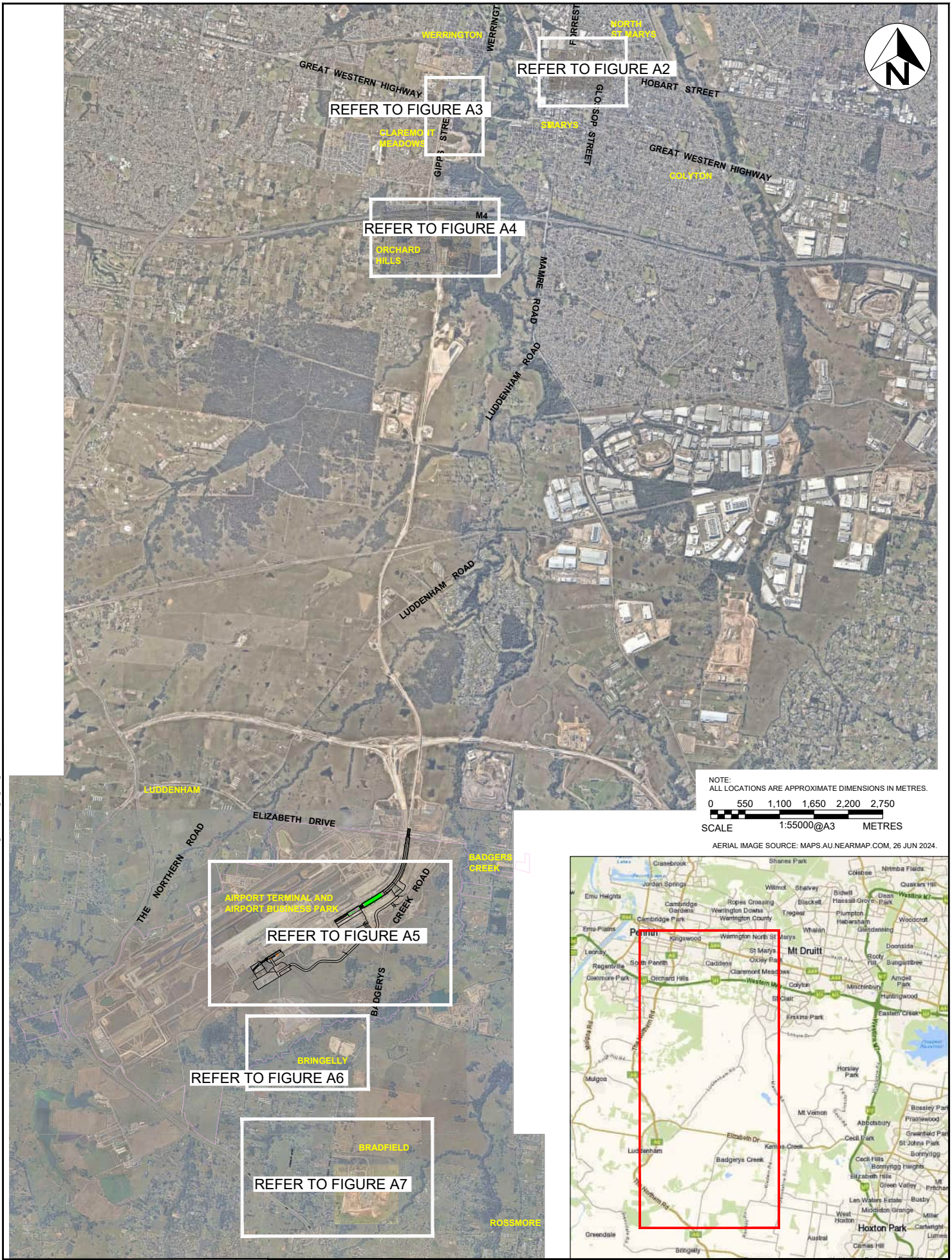
# Appendix A – Figures

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ALL LOCATIONS ARE APPROXIMATE DIMENSIONS IN METRES.

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| B | SAMPLE TYPE UPDATE | MC | GH | 01/11/24 |
| C | SAMPLE TYPE UPDATE | MC | GH | 01/04/25 |
| D | SAMPLE TYPE UPDATE | MC | GH | 02/09/25 |

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| approved | GH |
| date | 02/09/2025 |
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| original size | A3 |

client: PARKLIFE METRO JV

project: GROUND WATER MONITORING EVENT
WESTERN SYDNEY AIRPORT
BADGERYS CREEK, NSW

title: MONITORING LOCATION PLAN

project no: 22.0343.01 | figure no: FIGURE A1 | rev: D

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LEGEND

- EXISTING GROUND WATER MONITORING WELL
- VWP EXISTING PIEZOMETER
- VWP DESTROYED PIEZOMETER

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 26 JUN 2024.

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| | B | SAMPLE TYPE UPDATE | MC | GH | 01/11/24 |
| | C | SAMPLES UPDATE | MC | GH | 01/04/25 |
| | D | SAMPLES UPDATE | MC | GH | 02/09/25 |
| | E | SAMPLES UPDATE | MC | GH | 22/10/25 |
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ALL LOCATIONS ARE APPROXIMATE DIMENSIONS IN METRES.

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client: PARKLIFE METRO JV

project: GROUND WATER MONITORING EVENT
WESTERN SYDNEY AIRPORT
BADGERYS CREEK, NSW

title: MONITORING LOCATION PLAN - ST MARYS

project no: 22.0343.01 | figure no: FIGURE A2 | rev: E

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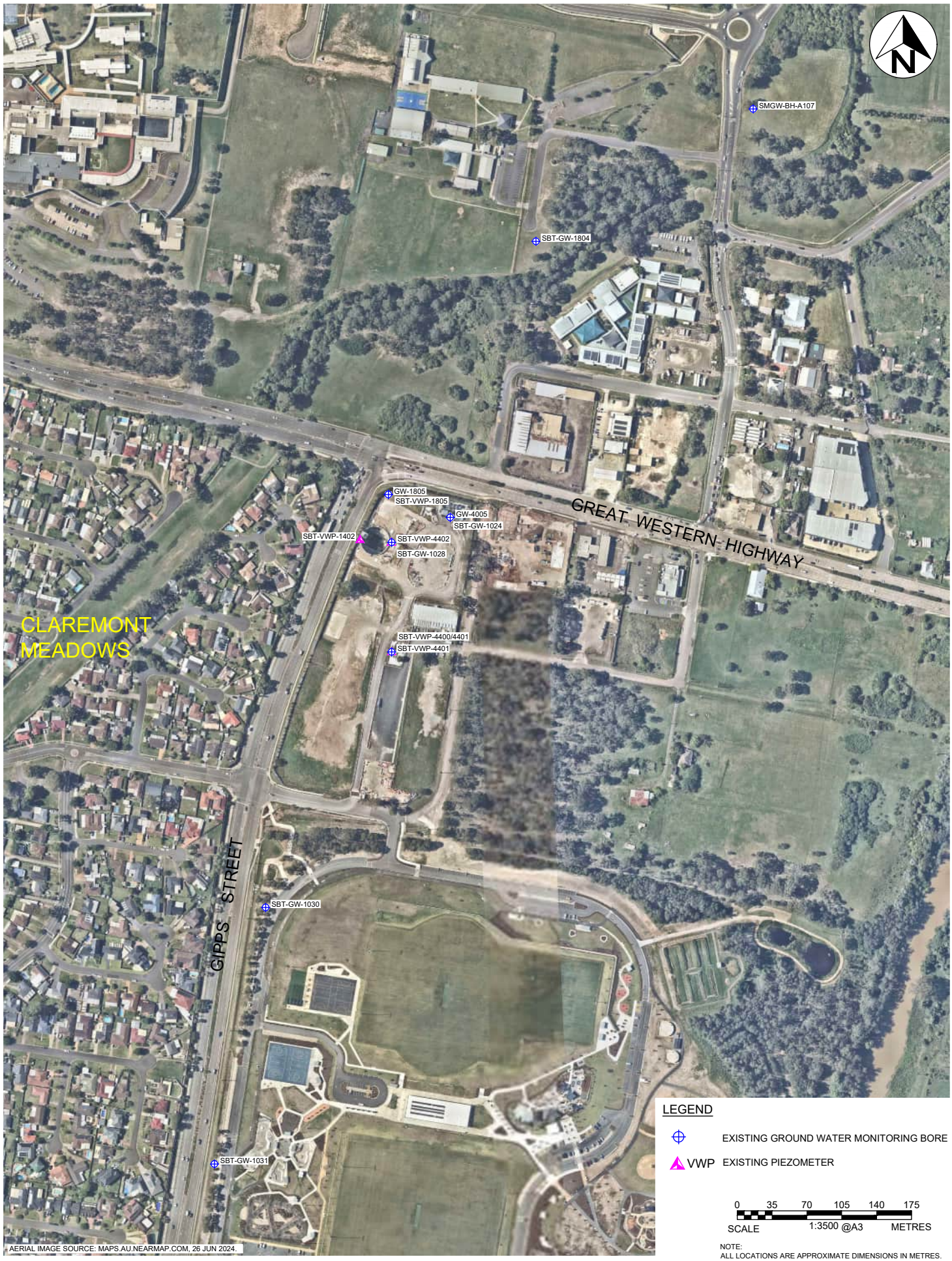


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NOTE:
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| D | FIRST ISSUE | MC | GH | 02/09/25 |

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client: PARKLIFE METRO JV

project: GROUND WATER MONITORING EVENT
WESTERN SYDNEY AIRPORT
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title: MONITORING LOCATION PLAN - CLAREMONT MEADOWS

project no: 22.0343.01 figure no: FIGURE A3 rev: D

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| | B | SAMPLE TYPE UPDATE | MC | GH | 01/11/24 |
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client: PARKLIFE METRO JV

project: GROUND WATER MONITORING EVENT
WESTERN SYDNEY AIRPORT
BADGERYS CREEK, NSW

title: MONITORING LOCATION PLAN - ORCHARD HILLS

project no: 22.0343.01 | figure no: FIGURE A4 | rev: D

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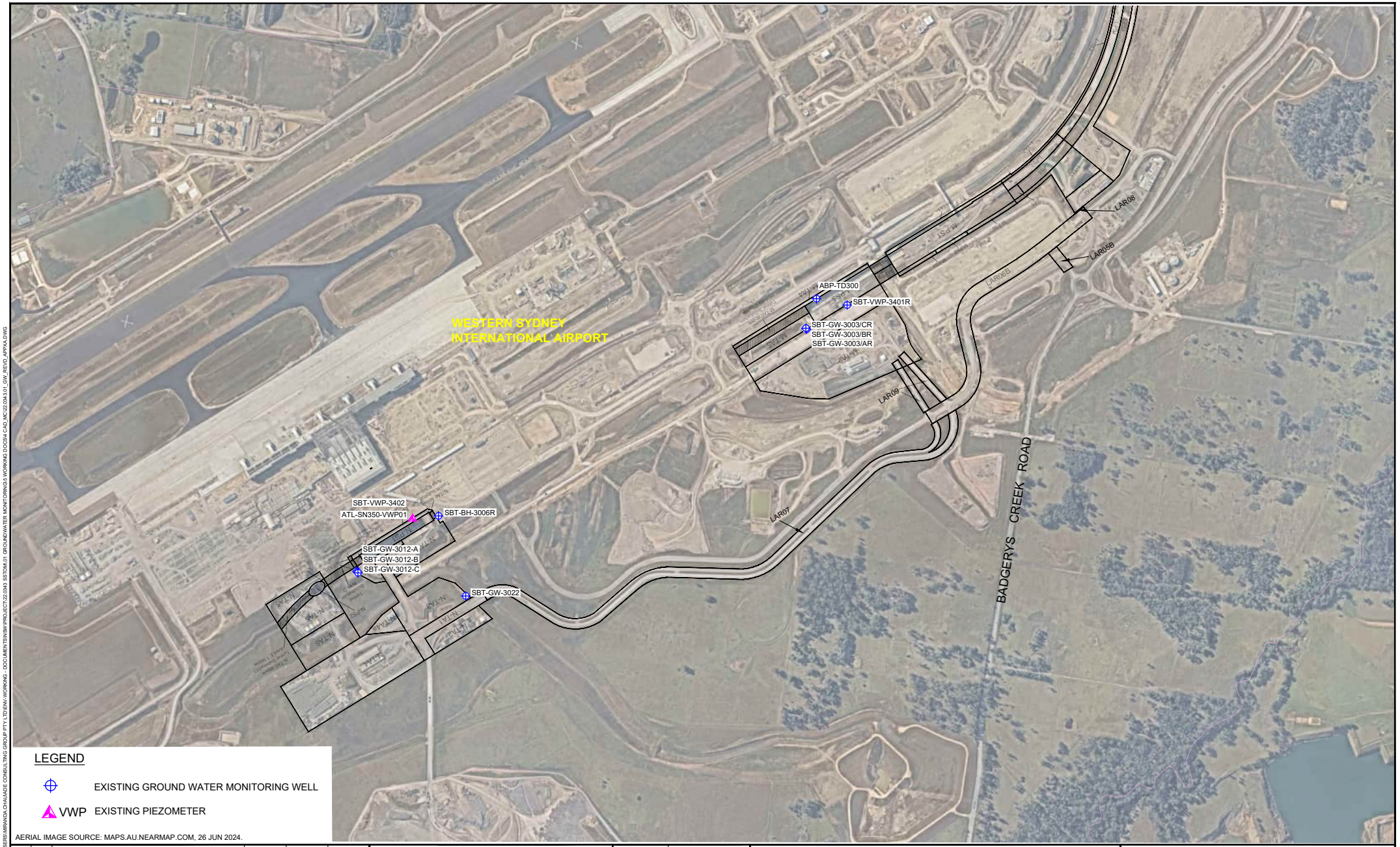
www.ADE.group | info@ade.group | 1300 976 922

PLOT DATE: 2/09/2025 5:16:28 PM DWG FILE: C:\USERS\MIRANDA.CHIA\ADE CONSULTING GROUP PTY LTD\ENV-WORKING - DOCUMENTS\NSW\PROJECT\22.0343 SSTOM.01 GROUNDWATER MONITORING\5 WORKING DOCS\04 CAD_MC\22.034.01 GW_REVD_APPXA.DWG




LEGEND

- EXISTING GROUND WATER MONITORING WELL
- VWP EXISTING PIEZOMETER

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 26 JUN 2024.

| revision | no. | description | drawn | approved | date |
|---|---|---|---|---|---|
| | A | FIRST ISSUE | MC | EG | 01/07/24 |
| | B | SAMPLE TYPE UPDATE | MC | GH | 01/11/24 |
| | C | SAMPLES UPDATE | MC | GH | 01/04/25 |
| | D | SAMPLES UPDATE | MC | GH | 02/09/25 |

0 100 200 300 400 500
SCALE 1:10000@A3 METRES

NOTE:
ALL LOCATIONS ARE APPROXIMATE DIMENSIONS IN METRES.

| | |
|---|---|
| drawn | MC |
| approved | GH |
| date | 02/09/2025 |
| scale | AS SHOWN |
| original size | A3 |

client: PARKLIFE METRO JV

project: GROUND WATER MONITORING EVENT
WESTERN SYDNEY AIRPORT
BADGERYS CREEK, NSW

title: MONITORING LOCATION PLAN -
AIRPORT TERMINAL AND AIRPORT BUSINESS PARK

project no: 22.0343.01 | figure no: FIGURE A5 | rev: D

ADE CONSULTING GROUP
Sydney Office
ADE Consulting Group Pty Ltd
Unit 6 / 7 Millennium Court, Silverwater, NSW 2128
www.ADE.group | info@ade.group | 1300 976 922

PLOT DATE: 2/09/2025 5:09:40 PM DWG FILE: C:\USERS\MIRANDA.CHIA\ADE CONSULTING GROUP PTY LTD\ENV-WORKING - DOCUMENTS\NSW\PROJECT\22.0343 SSTOM.01 GROUNDWATER MONITORING\5 WORKING DOCS\04 CAD_MC\22.034.3.01 GW_REVD_APPXA.DWG

LEGEND

- EXISTING GROUND WATER MONITORING BORE
- VWP EXISTING PIEZOMETER

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 26 JUN 2024.

| revision | no. | description | drawn | approved | date |
|---|---|---|---|---|---|
| | D | SAMPLES UPDATE | MC | GH | 02/09/25 |

0 50 100 150 200 250
SCALE 1:5000 @A3 METRES

NOTE:
ALL LOCATIONS ARE APPROXIMATE DIMENSIONS IN METRES.

| | |
|---|---|
| drawn | MC |
| approved | GH |
| date | 02/09/2025 |
| scale | AS SHOWN |
| original size | A3 |

client: PARKLIFE METRO JV

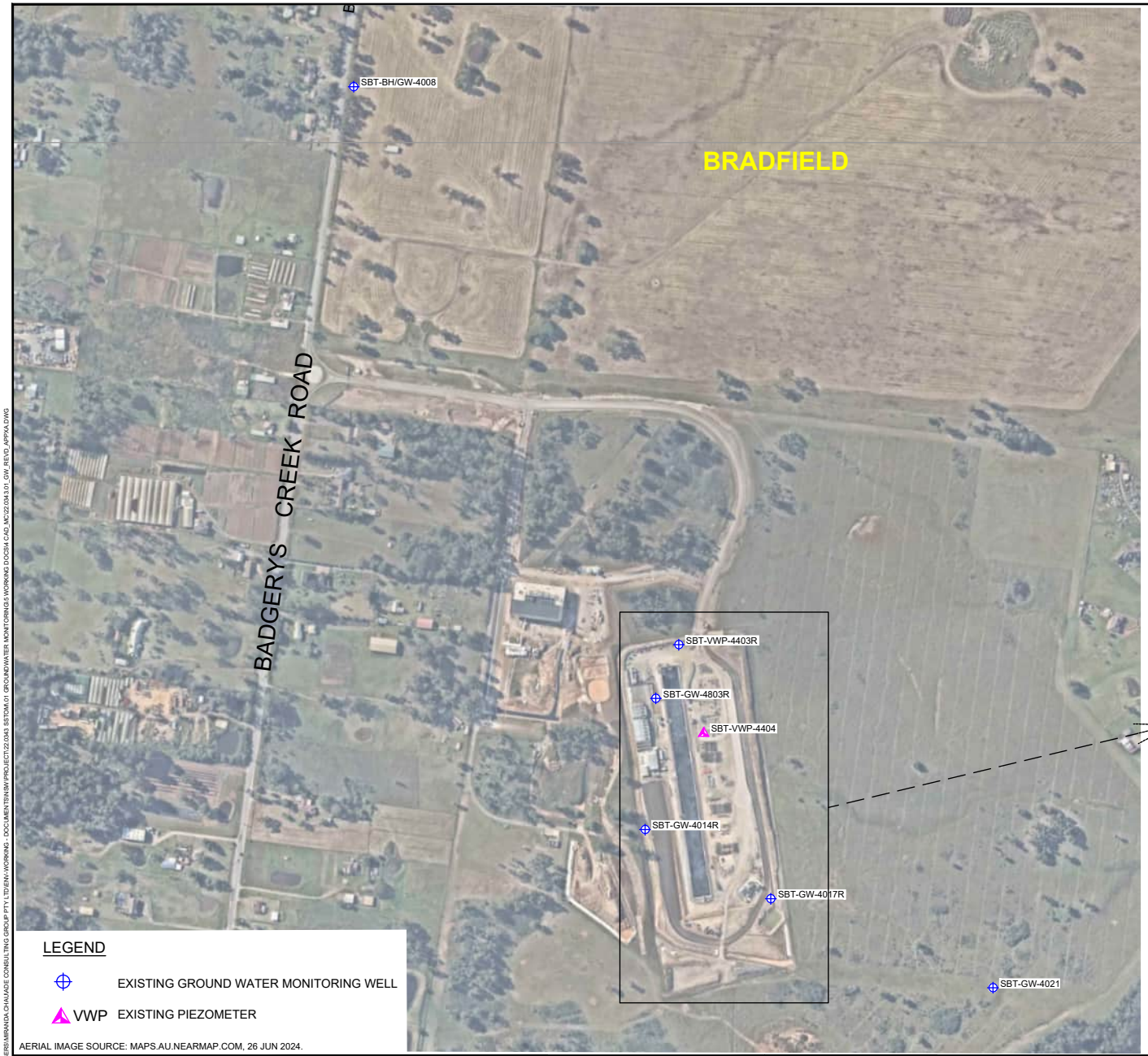
project: GROUND WATER MONITORING EVENT
WESTERN SYDNEY AIRPORT
BADGERYS CREEK, NSW

title: MONITORING LOCATION PLAN - BRINGELLY

project no: 22.0343.01 | figure no: FIGURE A6 | rev: D

ADE CONSULTING GROUP
Sydney Office
ADE Consulting Group Pty Ltd
Unit 6 / 7 Millennium Court, Silverwater, NSW 2128
www.ADE.group | info@ade.group | 1300 976 922

PLOT DATE: 1/10/2025 2:38:40 PM DWG FILE: C:\USERS\MRANDA.CHAU\ADE CONSULTING GROUP PTY. LTD\ENV-WORKING - DOCUMENTS\NSWPROJECT\22.0343 SST.OM.01 GROUNDWATER MONITORING\5 WORKING DOCS\4 CAD_MC\22.0343.01_GW_REVD_APPXA.DWG



LEGEND

EXISTING GROUND WATER MONITORING WELL

VWP EXISTING PIEZOMETER

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 26 JUN 2024.

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 02 DEC 2024.

| revision | no. | description | drawn | approved | date |
|---|---|---|---|---|---|
| | A | FIRST ISSUE | MC | EG | 01/07/24 |
| | B | SAMPLE TYPE UPDATE | MC | GH | 01/11/24 |
| | C | SAMPLES UPDATE | MC | GH | 01/04/25 |
| | D | SAMPLES UPDATE | MC | GH | 02/09/25 |

0 60 120 180 240 300

SCALE 1:6000 @A3 METRES

NOTE:
ALL LOCATIONS ARE APPROXIMATE DIMENSIONS IN METRES.

| | |
|---|---|
| drawn | MC |
| approved | GH |
| date | 02/09/2025 |
| scale | AS SHOWN |
| original size | A3 |

client: PARKLIFE METRO JV

project: GROUND WATER MONITORING EVENT
WESTERN SYDNEY AIRPORT
BADGERYS CREEK, NSW

title: MONITORING LOCATION PLAN - BRADFIELD

project no: 22.0343.01 | figure no: FIGURE A7 | rev: D

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PLOT DATE: 3/09/2025 1:52:18 PM DWG FILE: C:\USERS\MIRANDA.CHAU\ADE CONSULTING GROUP PTY LTD\ENV-WORKING - DOCUMENTS\NSW\PROJECT\22.0343 SSTOM.01 GROUNDWATER MONITORING\5 WORKING DOCS\04 CAD_MC\22.0343.01 GW_REV0_APPXA.DWG

# Appendix B – Monitored Field Parameters

- Field note results
- Table of results

Table B1 Monitored Field Parameters

| | | | Field Parameters | | | | |
|---|---|---|---|---|---|---|---|
| | | | Temperature | pH | Electrical Conductivity | Dissolved Oxygen | Redox Potential |
| | | | °C | pH units | µS/cm | mg/l | mV |
| **Field ID** | **Monitoring Zone** | Date | | | | | |
| **Bradfield** | **GW-4017** | **30.07.25** | **14.7** | **6.74** | **17406** | **1.2** | **5.5** |
| **Bradfield** | **GW-4021_A** | **14.07.25** | **17.1** | **6.9** | **3278** | **1.8** | **25** |
| **Bradfield** | **SBT-GW-4803** | **30.07.25** | **15.9** | **6.74** | **18675** | **1.6** | **61.2** |
| **Bradfield** | **BH-4014_S** | **29.07.25** | **17.5** | **7.15** | **8575** | **3.6** | **127.3** |
| **Bradfield** | **SBT-GW-4403** | **30.07.25** | **16.5** | **7.66** | **6853** | **3.8** | **38** |
| **Bradfield** | **GW-4008** | **14.07.25** | **-** | **-** | **-** | **-** | **-** |
| **Airport Terminal** | **GW-3012A** | **07.11.25** | **14.8** | **6.38** | **2187** | **5.7** | **188** |
| **Airport Terminal** | **GW-3012B** | **07.11.25** | **16.9** | **6.68** | **27625** | **2.9** | **145.8** |
| **Airport Terminal** | **GW-3012-C** | **07.11.25** | **18.9** | **6.78** | **27235** | **2.1** | **59.9** |
| **Airport Terminal** | **GW-3022** | **07.11.25** | **19.7** | **6.96** | **10158** | **2.4** | **122.3** |
| **Airport Terminal** | **SBT-BH-3006** | **30.07.25** | **14** | **9.33** | **367** | **8.9** | **8** |
| **Airport Terminal** | **SBT-BH-320** | **11.07.25** | **18** | **6.77** | **27309** | **2.1** | **24.5** |
| **Orchard Hills** | **GW-1042** | **10.07.25** | **18.9** | **4.31** | **15429** | **1.1** | **217.3** |
| **Orchard Hills** | **GW-1806** | **29.07.25** | **17.6** | **6.69** | **21571** | **1** | **90.9** |
| **Orchard Hills** | **GW-1807** | **10.07.25** | **17.6** | **6.69** | **21571** | **1** | **90.9** |
| **Orchard Hills** | **GW-1063** | **10.07.25** | **17.5** | **7.06** | **6239** | **1.8** | **-122.3** |
| **Orchard Hills** | **GW-1808** | **10.07.25** | **17.3** | **6.52** | **5244** | **1.4** | **-7.7** |
| **Orchard Hills** | **SMGW-BH-A315** | **29.07.25** | **18.9** | **4.56** | **23042** | **1.5** | **218.2** |
| **Orchard Hills** | **SBT-GW-1048** | **29.07.25** | **17.7** | **5.29** | **30391** | **4.7** | **144.3** |
| **St Marys** | **GW-1005_S** | **09.07.25** | **19.1** | **6.17** | **3173** | **4** | **156.7** |
| **St Marys** | **GW-1001_S** | **09.07.25** | **22.6** | **4.22** | **12544** | **3.6** | **160.6** |
| **St Marys** | **GW-1002** | **09.07.25** | **19.5** | **3.86** | **8710** | **3.6** | **196.7** |
| **St Marys** | **GW-1021** | **09.07.25** | **-** | **5.96** | **1929** | **0.9** | **179.1** |
| **St Marys** | **GW-1016** | **09.07.25** | **-** | **6.98** | **416.8** | **6.1** | **31.2** |
| **St Marys** | **BH-A401** | **15.7.25** | **19.5** | **6.27** | **2297** | **1.4** | **120** |
| **Claremont Meadows** | **SBT-GW-1805** | **29.07.25** | **15.9** | **7.06** | **1281** | **1.2** | **-34.6** |
| **Claremont Meadows** | **SBT-GW-1024** | **29.07.25** | **14.1** | **7.57** | **4035** | **2.3** | **186.3** |
| **Claremont Meadows** | **SBT-GW-1031** | **09.07.25** | **19.9** | **6.45** | **4039** | **2.6** | **243.8** |
| **Airport Business Park** | **SBT-GW-3401*** | **31.07.25** | **15.6** | **6.59** | **23200** | **3.5** | **192** |
| **Airport Business Park** | **ABP-SBT-GW-3003/A** | **29.07.25** | **-** | **-** | **-** | **-** | **-** |
| **Airport Business Park** | **ABP-SBT-GW-3003/B** | **29.07.25** | **18** | **6.99** | **27564** | **0.9** | **-125** |
| **Airport Business Park** | **ABP-SBT-GW-3003/C** | **29.07.25** | **17.8** | **6.65** | **14641** | **2.1** | **98.5** |
| **Bringelly** | **GW-4801** | **14.07.25** | **18.5** | **6.88** | **14219** | **20.9** | **19.4** |
| **Bringelly** | **GW-4003** | **14.07.25** | **18.6** | **6.84** | **17652** | **26.2** | **27.3** |
| **Bringelly** | **GW-4800** | **14.07.25** | **19.8** | **6.84** | **17248** | **27.7** | **29.9** |
| **Bringelly** | **GW-4005** | **14.07.25** | **21** | **6.64** | **27262** | **11.7** | **169.1** |
| **Bringelly** | **GW-4802** | **14.07.25** | **20.5** | **6.6** | **28257** | **30.3** | **51.2** |
| **Note: *Sampled by Coffey** | | | | | | | |

# Calibration & Service Report
# Water Quality Meter


**Company:** Active Environmental Solutions Hire
**Address:** Unit 16, 191 Parramatta Road AUBURN NSW 2144
**Phone:** 02 9716 5966 | **Fax**: 02 9716 5988
**Email:** service@aesoultions.com.au


**Manufacturer:** YSI
**Instrument/Model:** Professional Plus w/ Quatro Cable

**Serial #** 18C102248
**Cable Length:** 1m

| Item | Test | Pass | Comments |
|---|---|---|---|
| **Battery** | 2 x Alkaline C-cells | ✓ | Replaced, Voltage reading above 2.9V |
| | Battery Saver | ✓ | Automatically turns off after 60 minutes if not used |
| **Connections** | Condition | ✓ | Good, clean |
| **Cable** | Condition | ✓ | Clean, no tears |
| **Display** | Operation | ✓ | |
| **Firmware** | Version | ✓ | 4.0.0 |
| **Keypad** | Operational | ✓ | |
| **Display** | Screen | ✓ | |
| **Unit** | Condition, seals and O-rings | ✓ | |
| **Monitor housing** | Condition | ✓ | |
| **pH** | | | |
| Condition | | ✓ | Good, clean |
| pH millivolts for pH7 calibration range 0 mV ± 50 mV | | ✓ | |
| pH 4 mV range + 165 to + 180 from 7 buffer mV value | | ✓ | |
| pH slope | | ✓ | 55 to 60 mV/pH; ideal 59mV |
| Response time < 90 seconds | | ✓ | |
| Calibrated and conforms to manufacturer's specifications | | ✓ | pH |
| **ORP** | | | |
| Condition | | ✓ | Good, clean |
| Response time < 90 seconds | | ✓ | |
| within ± 80mv of reference Zobell Reading | | ✓ | |
| Calibrated and conforms to manufacturer's specifications | | ✓ | Variance range ± 20mV |
| **Conductivity** | | | |
| Condition | | ✓ | Good, clean |
| Temperature | | ✓ | °C |
| Conductivity cell constant 5.0 ± 1.0 in GLP file | | ✓ | |
| A clean sensor reads less than 3 uS/cm in dry air | | ✓ | |
| Calibrated and conforms to manufacturer's specifications | | ✓ | µs/cm |
| **Dissolved Oxygen** | | | |
| Condition | | ✓ | Good, clean |
| DO sensor in use | | ✓ | Polarographic |
| 1.25 mil PE membrane (yellow membrane): | | ✓ | Replaced |
| DO Sensor Value | | ✓ | (min 4.31 uA - max 8.00 uA) Avg 6.15 uA |
| Calibrated and conforms to manufacturer's specifications | | ✓ | % |

## Calibration Summary

**Calibration Date:** 24/06/2025
**Next Calibration Due:** 24/12/2025
**Frequency:** 180 Days
**Calibration Result:** Pass

# Calibration & Service Report
# Water Quality Meter

| Parameter | Calibration Point | As Found (Before Calibration) | | As Left (After Calibration) | | Units |
|---|---|---|---|---|---|---|
| | | Actual | Result | Actual | Result | |
| Temperature (Ref. check only) | 22.7 | 22.6 | Pass | 22.6 | Pass | °C |
| Barometer | 753.4 | 752..0 | Pass | 753.4 | Pass | mm Hg |
| pH4 | 4.00 | 4.1 | Pass | 4.0 | Pass | pH |
| pH7 | 7.00 | 7.2 | Pass | 7.0 | Pass | pH |
| Specific Conductivity | 2760 | 2746.0 | Pass | 2760.0 | Pass | µs/cm |
| ORP | 233.6@22.9°C | 244.1 | Pass | 233.6 | Pass | mV |
| Zero Dissolved Oxygen | 0.0 | 1.1 | Pass | 0.0 | Pass | % |
| 100% Dissolved Oxygen | 100.0 | 101.2 | Pass | 100.0 | Pass | % |

| Standard Used | | |
|---|---|---|
| **Parameter** | **Standards** | **Reference** |
| Temperature | Center 370 Thermometer | Room Temp. |
| pH | pH 4.00 | 440291 |
| pH | pH 7.00 | 440207 |
| Specific Conductivity | 2760 µs/cm at 25°C | 435734 |
| ORP | Zobell Solutions A & B | 434773 / 434774 |
| Zero Dissolved Oxygen | DO Powder (Sodium Sulfite Solution) | 379251 |
| 100% Dissolved Oxygen | 100% Air Saturation | Fresh Ambient Air |

**Calibrated By:** Jason Cheng

# Service Report
# Interface Meter

| | | | | | |
|---|---|---|---|---|---|
| **Company:** | ADE Consultant Group Pty Ltd | **Manufacturer:** | Solinst | **Serial #:** | 313062 |
| **Address:** | Unit 6<br>7 Millennium Court<br>Silverwater, NSW 2128 | **Instrument/Model:** | 122 Interface Meter | **Tape Length:** | 30m |
| **Contact:** | Michelle Ridley | | | **Asset#:** | IM1 |
| **Email:** | Michelle.Ridley@ADE.Group | **Phone:** | 1300 796 922 | **PO#:** | IP |

## Equipment Test

**Interface Meter**
Job No.
182112

| Item | Test | Pass | Comments |
|---|---|---|---|
| **Battery** | Voltage (1x 9v battery) | ✓ | Replaced |
| | Fuses | ✓ | |
| | Capacity | ✓ | |
| **Probe** | Decontaminated | ✓ | |
| | Condition | ✓ | |
| | Operation | ✓ | |
| **Connectors** | Condition | ✓ | |
| **Tape Check** | Condition | ✓ | |
| | Decontaminated | ✓ | |
| **Instrument Test** | At surface level | ✓ | Tap water and Citronella oil |
| **Buzzer** | Operation | ✓ | |

**Comments**

Cleaned tape, grounding cable and probe. (cracks on faceplate)
Replaced 9v alkaline battery.
Unit serviced and tested okay.

This is to certify that the above instrument has been serviced and is in good working order.

**Checked By:** Jerry Ji

**Check Date:** 06.06.2025 **Due for Check:** 06.12.2025

Hanna Instruments Pty Ltd
18 Fiveways Boulevard
Keysborough VIC 3173

Ph: (03) 9769 0666

Certificate #: HCC00532/2025

## CALIBRATION CERTIFICATE

| | | | |
|---|---|---|---|
| Meter part #: | HI9829 | Meter S/N: | B0047945 |
| pH sensor part #: | HI7609829-1 | pH sensor S/N: | I53319 |
| DO sensor # | HI7609829-2 | DO sensor S/N: | K68071 |
| EC/turbidity sensor # | HI7609829-4 | EC sensor S/N: | KA025501 |

Customer: Sydney Laboratory Services (ADE Group)
Contact : Krista Johnston

Calibration Date: 7/08/2025

| pH BUFFERS USED FOR CALIBRATION | | | CALIBRATION DATA | |
|---|---|---|---|---|
| Item Code | Buffer description | Buffer Lot Number & Expiry | Original pH value | Calibrated pH value |
| HI7004C | pH Buffer 4.01 | Lot 9535 Expiry 11/2028 | 4.07 | pH 4.01 |
| HI7007L | pH Buffer 7.01 | Lot 9507 Expiry 11/2028 | 7.06 | pH 7.01 |
| HI7010L | pH Buffer 10.01 | Lot 9751 Expiry 01/2026 | 9.93 | pH 10.01 |

| EC STANDARDS USED FOR CALIBRATION | | | CALIBRATION DATA | |
|---|---|---|---|---|
| Item Code | Standard description | Standard Lot Number & Expiry | Original EC value | Calibrated EC value |
| HI7039L | 5000 uS/cm | Lot 7414 Expiry 02/2027 | 5488 uS/cm | 5000 uS/cm |

| DO STANDARDS USED FOR CALIBRATION | | | CALIBRATION DATA | |
|---|---|---|---|---|
| Item Code | Standard description | Standard Lot Number & Expiry | Original DO value | Calibrated DO value |
| N/A | 100% DO | N/A | 94.90% | 100.00% |

| FNU STANDARDS USED FOR CALIBRATION | | | CALIBRATION DATA | |
|---|---|---|---|---|
| Item Code | Standard description | Standard Lot Number & Expiry | Original FNU value | Calibrated FNU value |
| HI9829-16 | 0 FNU | Lot 8721 Expiry 03/2026 | 0.1 FNU | 0.0 FNU |
| HI9829-17 | 20 FNU | Lot 9842 Expiry 08/2026 | 23.4 FNU | 20.0 FNU |
| HI9829-18 | 200 FNU | Lot 9845 Expiry 08/2026 | 211 FNU | 200.0 FNU |

| pH CALIBRATION RESULTS | |
|---|---|
| Offset | 6.9mV |
| Slope A (%) | 94% |
| Slope B (%) | 96% |

| EC CALIBRATION RESULTS | |
|---|---|
| EC Point | 5000 uS/cm |
| Cell | 4.683/cm |

| DO CALIBRATION RESULTS | |
|---|---|
| Point 1 | 100% |

| FNU CALIBRATION RESULTS | |
|---|---|
| Offset 1 | 0.0mV |
| Slope 1 | 120% |
| Offset 2 | -0.8mV |
| Slope 2 | 117% |

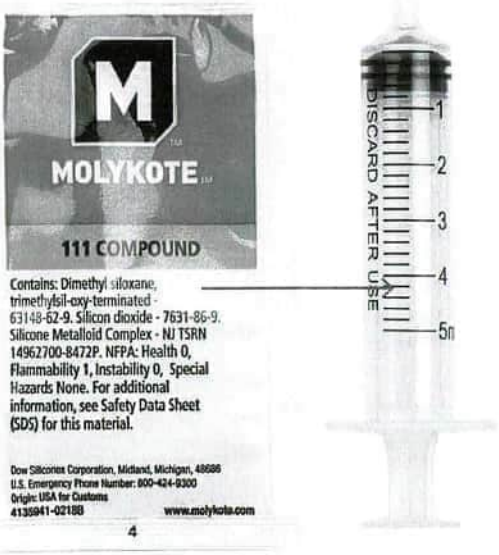
Comments or Remarks :

ATC (Automatic Temperature Compensation) to 25°C was applied during calibration
HANNA buffers and standards were used for calibration of the meter. HANNA buffers and standards are standardised with high precision meters calibrated to NIST references.

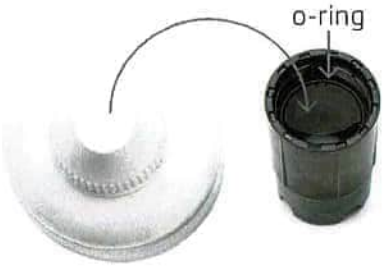
Attila
*Service Personnel*

## Cap filling and maintenance

Grease and syringe




HI7042 electrolyte filling solution for DO sensor




Fill DO screw cap membrane with HI7042 electrolyte filling solution up to o-ring. After filling, gently tap cap to ensure air bubbles are removed.

DO screw cap membrane

Manufacturer shipping cap

DO screw cap membrane

DO screw cap membrane removal tool

## New vs old sensor

New sensor

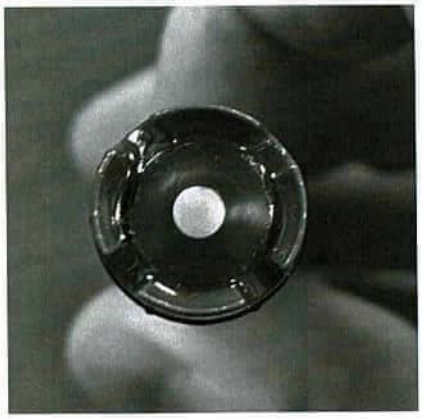
Old sensor

## O-ring placement

DO screw cap membrane

Insert o-ring inside inner cap ridge

## Proper DO screw cap membrane installation



DO screw cap membrane installed properly over sensor to ensure no air bubbles exist

## Graham Hawkes

**From:** [redacted]
**Sent:** Friday, 29 August 2025 12:13 PM
**To:** [redacted]
**Subject:** FW: Grab Sample at APDS
**Attachments:** SRN for ALS Workorder _ ES2523490 _ Your Reference_ SSTOM .eml; RESULTS & EDD for ALS Workorder _ ES2523494 _ Your Reference_ SSTOM .eml; RESULTS & EDD for ALS Workorder _ ES2523490 _ Your Reference_ SSTOM .eml; 20250731_115553.jpg

Hey [redacted] is this the bore coffey sampled that you are looking for correspondence?

**From:** [redacted]
**Sent:** Wednesday, 27 August 2025 10:30 AM
**To:** [redacted]
**Cc:** [redacted]
**Subject:** FW: Grab Sample at APDS

Hey,

Just want to double check this has been included in the report?

Thanks1

**From:** [redacted]
**Sent:** Friday, 8 August 2025 3:10 PM
**To:** [redacted]
**Cc:** [redacted]
**Subject:** Re: Grab Sample at APDS

CAUTION: This email originated from outside of the ADE. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi [redacted],

Apologies, I forgot to CC you in the original email with the COC.

Please take a look at the response below.

- Use dedicated and disposable nitrile gloves: gloves were used during the sampling
- Take the following levels of the well with a dip metre/ interphase probe:
  - End of well depth: 10m
  - Standing water level: 8.61 m
- Take water quality readings: See the attached photo
  - pH
  - EC
  - TDS
  - TSS: Included in lab results

    - DO
    - Temperature
    - Notes of colour/ cloudiness/ clarity/ odour/ sheen
        - **Colour:** Clear, no visible discolouration.
        - **Cloudiness/Turbidity:** High turbidity at 314 NTU, though no visible cloudiness observed in the field.
        - **Clarity:** Appears clear despite high turbidity reading.
        - **Odour:** None detected.
        - **Sheen:** No visible sheen observed.
- Sample for: see the attached email for results
    - pH
    - EC
    - TDS
    - TOC
    - Total metals (Al, Cu, Fe, Mn)
    - Major cations
    - Major anions
    - Nutrients
    - Dissolved metals (As, Cd, Cr, Cu, Pb, hg, Ni, Zn, Al, Fe, Mn
    - TPH

For rest of the information please see the attached emails for results and SRN/COC.

Let me know if you need anything else or have any questions.

Cheers,

[redacted] | Environmental Coordinator | WSPO - Western Sydney Project Office
[redacted]
Level 7, 175 Liverpool Street, Sydney, NSW, 2000

---

Parklife Metro D&C

---

I acknowledge the Traditional Owners and Custodians of the land on which I now live and work as the First People of this cour
Please consider our environment before printing this e-mail.

This message may contain information that is confidential and is being sent exclusively to the named Recipient. If you are not designated Recipient, you are prohibited from utilising, copying or divulging the information contained in this message.

---

**From:** [redacted]
**Sent:** Thursday, July 31, 2025 12:29 PM
**To:** [redacted]
**Cc:** [redacted]

[redacted]
**Subject:** Grab Sample at APDS

Hi Tristan,

As discussed on the phone can you please get Coffey to:

- Use dedicated and disposable nitrile gloves
- Take the following levels of the well with a dip metre/ interphase probe:
    - End of well depth
    - Standing water level
- Take water quality readings:
    - pH
    - EC
    - TDS
    - TSS
    - DO
    - Temperature
    - Notes of colour/ cloudiness/ clarity/ odour/ sheen
- Sample for:
    - pH
    - EC
    - TDS
    - TOC
    - Total metals (Al, Cu, Fe, Mn)
    - Major cations
    - Major anions
    - Nutrients
    - Dissolved metals (As, Cd, Cr, Cu, Pb, hg, Ni, Zn, Al, Fe, Mn
    - TPH
- Take photos of each of the above stages
- Send us notes and photos
- Place sample in pre chilled esky
- Include myself, Misha and Graham on the COC so we get the sample receipt notification and the lab results.

Thanks,

Kind Regards,

[redacted]
Environmental Consultant

ADECONSULTINGGROUP
SOLUTIONS THROUGH INNOVATION

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Silverwater NSW, 2128
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# Appendix C – Tabulated Analytical Results

| | | | | Metals | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Aluminium | Aluminium (filtered) | Arsenic (filtered) | Cadmium (filtered) | Calcium (filtered) | Chromium (III+VI) (filtered) | Cobalt | Copper (filtered) | Iron | Iron (filtered) | Lead (filtered) | Magnesium (filtered) | Manganese | Manganese (filtered) | Mercury (filtered) | Nickel (filtered) | Potassium (filtered) |
| | | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | ug/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| EQL | | | | 0.01 | 0.01 | 0.001 | 0.0001 | 0.5 | 0.001 | 0.001 | 0.001 | 0.01 | 0.01 | 1 | 0.5 | 0.005 | 0.005 | 0.00005 | 0.001 | 0.5 |
| ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023) | | | | 0.055 | 0.055 | | 0.0002 | | | | 0.0014 | | | 3.4 | | 1.9 | 1.9 | 0.0006 | 0.011 | |
| ANZECC 2000 MW 95% | | | | | | | 0.0055 | | | 0.001 | 0.0013 | | | 4.4 | | | | 0.0004 | 0.07 | |
| **Field ID** | **Date** | **Sample Type** | **Lab Report Number** | | | | | | | | | | | | | | | | | |
| **ABP-SBT-GW-3003/B** | **29 Jul 2025** | **Primary** | **387359** | 1.4 | <0.01 | 0.015 | <0.0001 | 240 | <0.001 | 0.034 | <0.001 | 5.6 | 0.88 | <1 | 630 | 1.4 | 1.1 | <0.00005 | 0.028 | 43 |
| **ABP-SBT-GW-3003/C** | **29 Jul 2025** | **Primary** | **387359** | 0.82 | 0.01 | 0.002 | <0.0001 | 320 | <0.001 | 0.019 | 0.001 | 2.5 | <0.01 | <1 | 910 | 0.5 | 0.36 | <0.00005 | 0.031 | 74 |
| **BH-4014_S** | **29 Jul 2025** | **Primary** | **387359** | 31 | <0.01 | 0.002 | <0.0001 | 200 | <0.001 | 0.052 | 0.002 | 66 | <0.01 | <1 | 490 | 2.9 | 1.9 | <0.00005 | 0.008 | 56 |
| **GA-A401** | **15 Jul 2025** | **Primary** | **386021** | 30 | <0.01 | <0.001 | <0.0001 | 8.8 | 0.001 | 0.014 | 0.098 | 33 | <0.01 | <1 | 18 | 0.084 | 0.028 | <0.00005 | 0.005 | 5.3 |
| **GW-1001_S** | **09 Jul 2025** | **Primary** | **386021** | 21 | 20 | 0.007 | 0.0013 | 28 | 0.003 | 0.68 | 0.003 | 3.8 | 1.6 | 24 | 770 | 2.7 | 3.4 | <0.00005 | 0.47 | 20 |
| **GW-1002** | **09 Jul 2025** | **Primary** | **386021** | 11 | 1.8 | <0.001 | <0.0001 | 0.6 | <0.001 | 0.092 | 0.013 | 13 | 0.1 | 5 | 150 | 0.038 | 0.044 | <0.00005 | 0.036 | 3 |
| **GW-1005-S** | **09 Jul 2025** | **Primary** | **386021** | 2.2 | <0.01 | <0.001 | <0.0001 | 92 | <0.001 | 0.022 | 0.002 | 2.2 | 0.18 | <1 | 300 | 0.39 | 0.16 | <0.00005 | 0.003 | 35 |
| **GW-1016** | **09 Jul 2025** | **Primary** | **386021** | 30 | 0.33 | 0.001 | 0.0003 | 86 | <0.001 | 0.1 | 0.087 | 35 | 0.07 | 23 | 710 | 0.51 | 0.42 | <0.00005 | 0.056 | 4 |
| **GW-1017** | **10 Jul 2025** | **Primary** | **386021** | 60 | 0.05 | 0.002 | 0.0002 | 19 | <0.001 | 0.34 | 0.009 | 140 | 18 | 3 | 570 | 8.7 | 14 | <0.00005 | 0.072 | 3 |
| **GW-1021** | **09 Jul 2025** | **Primary** | **386021** | 6.2 | <0.01 | 0.004 | <0.0001 | 24 | <0.001 | 0.012 | <0.001 | 23 | 2 | <1 | 14 | 0.11 | 0.078 | <0.00005 | 0.009 | 7.4 |
| **GW-1042** | **10 Jul 2025** | **Primary** | **386021** | 7.7 | 2.1 | 0.002 | 0.0002 | 4 | <0.001 | 0.14 | 0.015 | 10 | 0.36 | 7 | 290 | 0.12 | 0.21 | <0.00005 | 0.093 | 5 |
| **GW-1063** | **10 Jul 2025** | **Primary** | **386021** | 960 | <0.01 | 0.009 | <0.0001 | 59 | 0.001 | 1.3 | <0.001 | 1,500 | 2.2 | <1 | 160 | 11 | 0.9 | <0.00005 | 0.002 | 8.2 |
| **GW-1807** | **10 Jul 2025** | **Primary** | **386021** | 21 | <0.02 | <0.002 | <0.0002 | 240 | <0.002 | 0.033 | <0.002 | 35 | 2.3 | <2 | 840 | 0.83 | 0.99 | <0.00005 | 0.002 | 19 |
| **GW-1808** | **10 Jul 2025** | **Primary** | **386021** | 12 | 0.01 | 0.003 | <0.0001 | 19 | 0.001 | 0.24 | <0.001 | 41 | 25 | <1 | 260 | 0.45 | 1.1 | <0.00005 | 0.005 | 8.0 |
| **GW-3012A** | **10 Jul 2025** | **Primary** | **386021** | 16 | <0.01 | <0.001 | <0.0001 | 3 | <0.001 | 0.015 | 0.003 | 24 | <0.01 | <1 | 44 | 0.18 | 0.041 | <0.00005 | 0.008 | 13 |
| **GW-3012B** | **11 Jul 2025** | **Primary** | **386021** | 47 | <0.02 | <0.002 | <0.0002 | 180 | <0.002 | 0.055 | <0.002 | 120 | <0.02 | <2 | 1,000 | 3.1 | 0.21 | <0.00005 | 0.003 | 47 |
| **GW-3012C** | **11 Jul 2025** | **Primary** | **386021** | 22 | <0.02 | <0.002 | <0.0002 | 340 | <0.002 | 0.04 | <0.002 | 49 | 0.09 | <2 | 430 | 1.5 | 0.68 | <0.00005 | 0.007 | 68 |
| **GW-3022** | **11 Jul 2025** | **Primary** | **386021** | 17 | <0.01 | <0.001 | <0.0001 | 110 | 0.005 | 0.028 | 0.003 | 46 | 0.11 | <1 | 360 | 0.45 | 0.13 | <0.00005 | 0.007 | 30 |
| **GW-4008** | **11 Jul 2025** | **Primary** | **386021** | 4.2 | <0.01 | 0.012 | <0.0001 | 330 | <0.001 | 0.012 | <0.001 | 10 | 0.99 | <1 | 250 | 0.32 | 0.28 | <0.00005 | <0.001 | 62 |
| **GW-4021** | **14 Jul 2025** | **Primary** | **386021** | 47 | <0.01 | 0.001 | <0.0001 | 34 | <0.001 | 0.067 | <0.001 | 45 | 0.32 | <1 | 66 | 2.5 | 0.87 | <0.00005 | 0.001 | 5 |
| **SBT-BH-3006** | **30 Jul 2025** | **Primary** | **387359** | 21 | <0.01 | 0.005 | <0.0001 | 31 | 0.004 | 0.047 | <0.001 | 75 | <0.01 | <1 | 56 | 1.8 | <0.005 | <0.00005 | <0.001 | 35 |
| **SBT-GW-1024** | **29 Jul 2025** | **Primary** | **387359** | 1.4 | 0.01 | 0.002 | <0.0001 | 74 | 0.002 | 0.002 | <0.001 | 2 | 0.05 | <1 | 40 | 0.13 | 0.087 | <0.00005 | 0.003 | 19 |
| **SBT-GW-1030** | **09 Jul 2025** | **Primary** | **386021** | 20 | <0.01 | <0.001 | <0.0001 | 59 | <0.001 | 0.052 | 0.004 | 26 | 0.03 | <1 | 66 | 0.33 | 0.16 | <0.00005 | 0.009 | 8.1 |
| **SBT-GW-1048** | **29 Jul 2025** | **Primary** | **387359** | 1.6 | 0.27 | 0.003 | 0.0022 | 87 | 0.001 | 0.87 | 0.019 | 0.17 | <0.01 | 8 | 1,400 | 11 | 11 | <0.00005 | 0.46 | 14 |
| **SBT-GW-1805** | **29 Jul 2025** | **Primary** | **387359** | 27 | <0.01 | 0.002 | <0.0001 | 100 | <0.001 | 0.042 | <0.001 | 66 | 3.3 | <1 | 42 | 1.3 | 0.88 | <0.00005 | 0.003 | 10 |
| **SBT-GW-1806** | **29 Jul 2025** | **Primary** | **387359** | 0.72 | <0.01 | <0.001 | <0.0001 | 440 | 0.001 | 0.021 | <0.001 | 2 | 0.3 | <1 | 830 | 0.94 | 0.85 | <0.00005 | 0.009 | 34 |
| **SBT-GW-4003** | **14 Jul 2025** | **Primary** | **386021** | 6.6 | <0.01 | <0.001 | <0.0001 | 150 | <0.001 | 0.006 | 0.004 | 11 | 0.02 | <1 | 570 | 0.31 | 0.23 | <0.00005 | 0.006 | 26 |
| **SBT-GW-4005** | **14 Jul 2025** | **Primary** | **386021** | 5.4 | <0.01 | 0.001 | <0.0001 | 310 | <0.001 | 0.026 | 0.002 | 8 | <0.01 | <1 | 800 | 0.17 | 0.098 | <0.00005 | 0.033 | 50 |
| **SBT-GW-4017** | **30 Jul 2025** | **Primary** | **387359** | 100 | <0.01 | <0.001 | <0.0001 | 180 | <0.001 | 0.19 | <0.001 | 300 | 0.42 | <1 | 400 | 6.2 | 0.11 | <0.00005 | 0.003 | 40 |
| **SBT-GW-4403** | **30 Jul 2025** | **Primary** | **387359** | 13 | <0.01 | 0.032 | <0.0001 | 120 | <0.001 | 0.038 | 0.003 | 38 | <0.01 | <1 | 83 | 1.3 | 0.14 | <0.00005 | 0.01 | 30 |
| **SBT-GW-4800** | **14 Jul 2025** | **Primary** | **386021** | 20 | <0.01 | <0.001 | <0.0001 | 150 | <0.001 | 0.03 | 0.001 | 50 | 0.44 | <1 | 530 | 1.4 | 0.46 | <0.00005 | 0.005 | 28 |
| **SBT-GW-4801** | **14 Jul 2025** | **Primary** | **386021** | 8 | <0.01 | <0.001 | 0.0001 | 210 | <0.001 | 0.018 | 0.005 | 24 | <0.01 | <1 | 270 | 0.96 | 0.48 | <0.00005 | 0.015 | 26 |
| **SBT-GW-4802** | **14 Jul 2025** | **Primary** | **386021** | 25 | <0.02 | <0.002 | <0.0002 | 350 | <0.002 | 0.05 | 0.005 | 66 | <0.02 | <2 | 800 | 2.1 | 1 | <0.00005 | 0.018 | 48 |
| **SBT-GW-4803** | **30 Jul 2025** | **Primary** | **387359** | 41 | <0.01 | 0.002 | <0.0001 | 370 | <0.001 | 0.061 | 0.002 | 83 | <0.01 | <1 | 960 | 4.1 | 2.6 | <0.00005 | 0.016 | 45 |
| **SMGW-BH-A315** | **29 Jul 2025** | **Primary** | **387359** | 9.9 | 0.35 | 0.001 | 0.0001 | 18 | <0.001 | 0.29 | 0.008 | 23 | 2.9 | 2 | 610 | 1.2 | 0.83 | <0.00005 | 0.1 | 5.4 |
| **SBT-GW-3401** | **31 Jul 2025** | **Primary** | **ES2523490** | 0.17 | 0.17 | 0.011 | 0.0001 | 228 | <0.001 | 0.0462 | 0.018 | 46 | 5.36 | <1 | 615 | 0.954 | 0.955 | <0.00005 | 0.0696 | 40 |
| **SMGW-BH-C32** | **11 Jul 2025** | **Primary** | **386021** | 17 | <0.01 | <0.001 | <0.0001 | 240 | <0.001 | 0.023 | <0.001 | 31 | 0.83 | <1 | 740 | 1.6 | 1.5 | <0.00005 | 0.007 | 12 |
| **Statistics** | | | | | | | | | | | | | | | | | | | | |
| **Number of Results** | | | | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** |
| **Number of Detects** | | | | **37** | **11** | **20** | **7** | **36** | **9** | **36** | **21** | **37** | **24** | **7** | **36** | **36** | **35** | **0** | **34** | **36** |
| **Minimum Concentration** | | | | **0.72** | **0.01** | **0.001** | **0.0001** | **0.6** | **0.001** | **0.002** | **0.001** | **0.17** | **<0.01** | **<1** | **14** | **0.038** | **<0.005** | **<0.00005** | **0.001** | **3** |
| **Maximum Concentration** | | | | **960** | **20** | **0.032** | **0.0022** | **440** | **0.005** | **1.3** | **0.098** | **1,500** | **25** | **24** | **1,400** | **11** | **14** | **<0.00005** | **0.47** | **74** |
| **Average Concentration *** | | | | **46** | **0.7** | **0.0033** | **0.00017** | **145** | **0.00096** | **0.14** | **0.0083** | **84** | **1.7** | **2.5** | **457** | **2** | **1.3** | **0.000025** | **0.043** | **26** |

* A Non Detect Multiplier of 0.5 has been applied.

**Environmental Standards**

ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)

DoE, 2000, ANZECC 2000 MW 95%

| | | | | | Organic | TRH | | | | | | | PFAS | | | Perfluoroalkane Sulfonic Acids | | | Perfluoroalkane Carboxylic Acids |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Zinc (filtered) | Total Organic Carbon | C6-C10 Fraction (F1) | C6-C10 | >C10-C16 Fraction (F2) | >C10-C16 Fraction (F2 minus Naphthalene) | >C16-C34 Fraction (F3) | >C34-C40 Fraction (F4) | >C10-C40 Fraction (Sum) | Sum of PFHxS and PFOS | Sum of PFAS | Sum of PFAS (PFOS + PFOA) | Perfluorobutane sulfonic acid (PFBS) | Perfluorohexane sulfonic acid (PFHxS) | Perfluorooctane sulfonic acid (PFOS) | Perfluorooctanoic acid (PFOA) |
| | | | | mg/L | mg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L |
| EQL | | | | 0.001 | 1 | 10 | 10 | 50 | 50 | 100 | 100 | 50 | 0.0002 | 0.0002 | 0.0002 | 0.0004 | 0.0002 | 0.0002 | 0.0002 |
| ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023) | | | | 0.008 | | | | | | | | | | | | | | | |
| ANZECC 2000 MW 95% | | | | 0.015 | | | | | | | | | | | | | | | |
| **Field ID** | **Date** | **Sample Type** | **Lab Report Number** | | | | | | | | | | | | | | | | |
| **ABP-SBT-GW-3003/B** | **29 Jul 2025** | **Primary** | **387359** | <0.001 | 46 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **ABP-SBT-GW-3003/C** | **29 Jul 2025** | **Primary** | **387359** | 0.015 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **BH-4014_S** | **29 Jul 2025** | **Primary** | **387359** | 0.013 | 3 | - | - | - | - | - | - | - | <0.0002 | 0.0038 | <0.0002 | <0.0004 | <0.0002 | <0.0002 | <0.0002 |
| **GA-A401** | **15 Jul 2025** | **Primary** | **386021** | 0.16 | 7 | <10 | <10 | <50 | <50 | <100 | <100 | <50 | 0.018 | 0.057 | 0.031 | 0.018 | 0.0040 | 0.014 | 0.017 |
| **GW-1001_S** | **09 Jul 2025** | **Primary** | **386021** | 1.6 | 13 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1002** | **09 Jul 2025** | **Primary** | **386021** | 0.13 | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1005-S** | **09 Jul 2025** | **Primary** | **386021** | 0.006 | 15 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1016** | **09 Jul 2025** | **Primary** | **386021** | 0.56 | 5 | <10 | <10 | <50 | <50 | <100 | <100 | <50 | 0.0008 | 0.0057 | 0.002 | 0.0009 | <0.0002 | 0.0008 | 0.001 |
| **GW-1017** | **10 Jul 2025** | **Primary** | **386021** | 0.087 | 7 | <100 | <10 | <50 | <50 | <100 | <100 | <50 | 0.0009 | 0.0087 | 0.0037 | 0.001 | <0.0002 | 0.0009 | 0.0028 |
| **GW-1021** | **09 Jul 2025** | **Primary** | **386021** | 0.018 | 10 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1042** | **10 Jul 2025** | **Primary** | **386021** | 0.2 | 41 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1063** | **10 Jul 2025** | **Primary** | **386021** | <0.001 | 14 | <100 | <10 | <50 | <50 | <100 | <100 | <50 | 0.037 | 0.18 | 0.057 | 0.082 | 0.012 | 0.025 | 0.032 |
| **GW-1807** | **10 Jul 2025** | **Primary** | **386021** | 0.003 | 11 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1808** | **10 Jul 2025** | **Primary** | **386021** | <0.001 | 22 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-3012A** | **10 Jul 2025** | **Primary** | **386021** | 0.023 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-3012B** | **11 Jul 2025** | **Primary** | **386021** | 0.009 | 3 | <10 | - | <50 | - | <100 | <100 | <50 | - | - | - | - | - | - | - |
| **GW-3012C** | **11 Jul 2025** | **Primary** | **386021** | 0.012 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-3022** | **11 Jul 2025** | **Primary** | **386021** | 0.007 | 10 | <10 | - | <50 | - | <100 | <100 | <50 | - | - | - | - | - | - | - |
| **GW-4008** | **11 Jul 2025** | **Primary** | **386021** | 0.002 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-4021** | **14 Jul 2025** | **Primary** | **386021** | <0.001 | 9.9 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-BH-3006** | **30 Jul 2025** | **Primary** | **387359** | <0.001 | 5 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-1024** | **29 Jul 2025** | **Primary** | **387359** | 0.008 | 5 | 58 | 58 | <50 | <50 | <100 | <100 | <50 | 0.0032 | 0.029 | 0.0056 | 0.0065 | 0.0008 | 0.0024 | 0.0032 |
| **SBT-GW-1030** | **09 Jul 2025** | **Primary** | **386021** | 0.099 | 17 | - | - | - | - | - | - | - | 0.018 | 0.059 | 0.023 | 0.022 | 0.0098 | 0.0077 | 0.016 |
| **SBT-GW-1048** | **29 Jul 2025** | **Primary** | **387359** | 1 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-1805** | **29 Jul 2025** | **Primary** | **387359** | 0.001 | 7 | - | - | - | - | - | - | - | 0.014 | 0.045 | 0.013 | 0.0088 | 0.0037 | 0.010 | 0.0031 |
| **SBT-GW-1806** | **29 Jul 2025** | **Primary** | **387359** | 0.004 | 3 | <10 | <10 | <50 | <50 | <100 | <100 | <50 | - | - | - | - | - | - | - |
| **SBT-GW-4003** | **14 Jul 2025** | **Primary** | **386021** | 0.004 | 5 | <10 | <10 | <50 | <50 | <100 | <100 | <50 | <0.0002 | 0.001 | 0.0002 | <0.0004 | <0.0002 | <0.0002 | 0.0002 |
| **SBT-GW-4005** | **14 Jul 2025** | **Primary** | **386021** | 0.02 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-4017** | **30 Jul 2025** | **Primary** | **387359** | 0.002 | 2 | <10 | <10 | <50 | <50 | <100 | <100 | <50 | <0.0002 | 0.0046 | <0.0002 | <0.0004 | <0.0002 | <0.0002 | <0.0002 |
| **SBT-GW-4403** | **30 Jul 2025** | **Primary** | **387359** | 0.02 | 2 | <10 | <10 | <50 | <50 | <100 | <100 | <50 | - | - | - | - | - | - | - |
| **SBT-GW-4800** | **14 Jul 2025** | **Primary** | **386021** | 0.007 | 260 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-4801** | **14 Jul 2025** | **Primary** | **386021** | 0.008 | 19 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-4802** | **14 Jul 2025** | **Primary** | **386021** | 0.013 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-4803** | **30 Jul 2025** | **Primary** | **387359** | 0.023 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SMGW-BH-A315** | **29 Jul 2025** | **Primary** | **387359** | 0.19 | 3 | <10 | <10 | <50 | <50 | <100 | <100 | <50 | 0.0002 | 0.0002 | 0.0002 | <0.0004 | <0.0002 | 0.0002 | <0.0002 |
| **SBT-GW-3401** | **31 Jul 2025** | **Primary** | **ES2523490** | 0.051 | 15 | <20 | 30 | 390 | 390 | 160 | <100 | 550 | - | - | - | - | - | - | - |
| **SMGW-BH-C32** | **11 Jul 2025** | **Primary** | **386021** | 0.007 | 1 | <10 | <10 | <50 | <50 | <100 | <100 | <50 | <0.0002 | 0.0022 | <0.0002 | <0.0004 | <0.0002 | <0.0002 | <0.0002 |
| **Statistics** | | | | | | | | | | | | | | | | | | | |
| **Number of Results** | | | | **37** | **37** | **14** | **12** | **14** | **12** | **14** | **14** | **14** | **12** | **12** | **12** | **12** | **12** | **12** | **12** |
| **Number of Detects** | | | | **31** | **36** | **1** | **1** | **0** | **0** | **0** | **0** | **0** | **8** | **12** | **9** | **7** | **5** | **8** | **8** |
| **Minimum Concentration** | | | | **0.001** | **1** | **<10** | **<10** | **<50** | **<50** | **<100** | **<100** | **<50** | **0.0002** | **0.0002** | **0.0002** | **<0.0004** | **<0.0002** | **0.0002** | **0.0002** |
| **Maximum Concentration** | | | | **1.6** | **260** | **<100** | **58** | **<50** | **<50** | **<100** | **<100** | **<50** | **0.037** | **0.18** | **0.057** | **0.082** | **0.012** | **0.025** | **0.032** |
| **Average Concentration *** | | | | **0.12** | **17** | **16** | **9.8** | **25** | **25** | **50** | **50** | **25** | **0.0077** | **0.033** | **0.011** | **0.012** | **0.0026** | **0.0051** | **0.0063** |

* A Non Detect Multiplier of 0.5 has been applied.

**Environmental Standards**

ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)

DoE, 2000, ANZECC 2000 MW 95%

| | | | | Inorganics | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Hardness (filtered) | Electrical Conductivity (Non Compensated) | Alkalinity (Bicarbonate as CaCO3) | Alkalinity (Carbonate as CaCO3) | Alkalinity (Hydroxide) as CaCO3 | Alkalinity (total) as CaCO3 | Ammonia as N (filtered) | Chloride | Ionic Balance | Kjeldahl Nitrogen Total | Nitrate (as N) (filtered) | Nitrite (as N) (filtered) | Organic Nitrogen as N | Nitrogen (Total Oxidised) | Nitrogen (Total) | pH (Lab) | Total Phosphorus (Organic Phosphate) |
| | | | | mg/L | µS/cm | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | % | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | - | mg/L |
| EQL | | | | 3 | 1 | 5 | 5 | 5 | 5 | 0.005 | 1 | | 0.1 | 0.005 | 0.005 | 0.2 | 0.005 | 0.1 | | 0.05 |
| ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023) | | | | | | | | | | 0.9 | | | | | | | | | | |
| ANZECC 2000 MW 95% | | | | | | | | | | 0.91 | | | | | | | | | | |
| **Field ID** | **Date** | **Sample Type** | **Lab Report Number** | | | | | | | | | | | | | | | | | |
| **ABP-SBT-GW-3003/B** | **29 Jul 2025** | **Primary** | **387359** | 3,200 | 26,000 | 790 | <5 | <5 | 790 | 0.074 | 8,100 | 14 | 1.1 | 0.02 | 0.005 | 1 | 0.03 | 1.1 | 7.2 | 0.3 |
| **ABP-SBT-GW-3003/C** | **29 Jul 2025** | **Primary** | **387359** | 4,500 | 26,000 | 1,000 | <5 | <5 | 1,000 | 5.2 | 8,100 | 9.0 | 5.5 | 0.01 | 0.005 | 0.3 | 0.02 | 5.5 | 7.1 | 0.06 |
| **BH-4014_S** | **29 Jul 2025** | **Primary** | **387359** | 2,500 | 15,000 | 1,200 | <5 | <5 | 1,200 | 2.2 | 4,800 | -2.0 | 2.4 | 0.44 | 0.03 | <0.2 | 0.46 | 2.8 | 7.4 | 1.1 |
| **GA-A401** | **15 Jul 2025** | **Primary** | **386021** | 96 | 2,100 | 140 | <5 | <5 | 140 | 0.078 | 410 | 4.0 | 0.4 | 0.35 | 0.01 | 0.3 | 0.36 | 0.7 | 6.3 | 0.3 |
| **GW-1001_S** | **09 Jul 2025** | **Primary** | **386021** | 3,300 | 22,000 | <5 | <5 | <5 | <5 | 0.23 | 6,800 | 17 | 0.5 | 0.02 | <0.005 | 0.3 | 0.02 | 0.5 | 4.3 | 0.06 |
| **GW-1002** | **09 Jul 2025** | **Primary** | **386021** | 640 | 8,300 | <5 | <5 | <5 | <5 | 0.04 | 2,200 | 5.0 | 0.5 | 0.087 | <0.005 | 0.4 | 0.088 | 0.5 | 3.9 | 0.1 |
| **GW-1005-S** | **09 Jul 2025** | **Primary** | **386021** | 1,500 | 6,200 | 140 | <5 | <5 | 140 | 0.03 | 1,500 | 25 | 0.7 | 0.62 | <0.005 | 0.7 | 0.62 | 1.4 | 6.3 | 0.1 |
| **GW-1016** | **09 Jul 2025** | **Primary** | **386021** | 3,200 | 19,000 | 6 | <5 | <5 | 6 | 0.29 | 5,100 | 9.0 | 0.3 | 0.25 | <0.005 | <0.2 | 0.25 | 0.6 | 4.5 | 1.4 |
| **GW-1017** | **10 Jul 2025** | **Primary** | **386021** | 2,400 | 21,000 | 23 | <5 | <5 | 23 | 0.096 | 6,000 | 12 | 0.2 | 0.097 | <0.005 | <0.2 | 0.10 | 0.3 | 4.7 | 0.3 |
| **GW-1021** | **09 Jul 2025** | **Primary** | **386021** | 120 | 1,800 | <5 | <5 | <5 | <5 | 0.19 | 64 | 15 | 0.9 | 0.68 | <0.005 | 0.7 | 0.68 | 1.5 | 3.1 | 0.3 |
| **GW-1042** | **10 Jul 2025** | **Primary** | **386021** | 1,200 | 12,000 | 15 | <5 | <5 | 15 | 0.17 | 3,000 | 22 | 5.3 | 100 | 0.05 | 5.1 | 100 | 110 | 4.8 | 0.06 |
| **GW-1063** | **10 Jul 2025** | **Primary** | **386021** | 810 | 4,900 | 390 | <5 | <5 | 390 | 2.3 | 1,000 | 27 | 2.2 | 0.005 | <0.005 | <0.2 | 0.005 | 2.2 | 6.9 | 23 |
| **GW-1807** | **10 Jul 2025** | **Primary** | **386021** | 4,000 | 18,000 | 380 | <5 | <5 | 380 | 0.61 | 5,300 | 25 | 1.4 | 0.19 | <0.005 | 0.8 | 0.19 | 1.6 | 6.9 | 0.4 |
| **GW-1808** | **10 Jul 2025** | **Primary** | **386021** | 1,100 | 5,500 | 88 | <5 | <5 | 88 | 0.92 | 1,500 | 38 | 3.0 | 0.02 | <0.005 | 2.0 | 0.02 | 3.0 | 6.1 | 0.5 |
| **GW-3012A** | **10 Jul 2025** | **Primary** | **386021** | 190 | 3,900 | 230 | <5 | <5 | 230 | 0.02 | 760 | 3.0 | <0.1 | 5.9 | <0.005 | <0.2 | 5.9 | 6.0 | 6.3 | 0.4 |
| **GW-3012B** | **11 Jul 2025** | **Primary** | **386021** | 4,600 | 26,000 | 1,200 | <5 | <5 | 1,200 | 0.02 | 8,700 | -1.0 | 0.1 | 0.05 | <0.005 | <0.2 | 0.05 | 0.2 | 6.9 | 2.2 |
| **GW-3012C** | **11 Jul 2025** | **Primary** | **386021** | 2,600 | 22,000 | 520 | <5 | <5 | 520 | 4.1 | 7,200 | 6.0 | 4.9 | 9.2 | 0.01 | 0.7 | 9.2 | 14 | 7.0 | 0.85 |
| **GW-3022** | **11 Jul 2025** | **Primary** | **386021** | 1,800 | 7,100 | 280 | <5 | <5 | 280 | 0.078 | 1,500 | 41 | 0.2 | 1.5 | 0.02 | <0.2 | 1.6 | 1.8 | 6.8 | 0.73 |
| **GW-4008** | **11 Jul 2025** | **Primary** | **386021** | 1,800 | 22,000 | 310 | <5 | <5 | 310 | 9.2 | 6,200 | 10 | 9.4 | 0.01 | <0.005 | <0.2 | 0.02 | 9.4 | 7.1 | 0.4 |
| **GW-4021** | **14 Jul 2025** | **Primary** | **386021** | 360 | 3,700 | 230 | <5 | <5 | 230 | 1.3 | 780 | 19 | 1.3 | <0.005 | <0.005 | <0.2 | <0.005 | 1.3 | 6.9 | 0.5 |
| **SBT-BH-3006** | **30 Jul 2025** | **Primary** | **387359** | 310 | 6,200 | 300 | 160 | <5 | 460 | 1.7 | 1,600 | -2.0 | 2.5 | 0.007 | 0.005 | 0.8 | 0.01 | 2.5 | 9.4 | 1.5 |
| **SBT-GW-1024** | **29 Jul 2025** | **Primary** | **387359** | 350 | 3,700 | 210 | <5 | <5 | 210 | 0.052 | 780 | 5.0 | 0.5 | 0.052 | 0.02 | 0.5 | 0.076 | 0.6 | 7.6 | 0.09 |
| **SBT-GW-1030** | **09 Jul 2025** | **Primary** | **386021** | 420 | 3,900 | 180 | <5 | <5 | 180 | 0.090 | 200 | 49 | 0.6 | 0.47 | 0.008 | 0.5 | 0.47 | 1.1 | 6.6 | 0.61 |
| **SBT-GW-1048** | **29 Jul 2025** | **Primary** | **387359** | 6,100 | 32,000 | 45 | <5 | <5 | 45 | 0.37 | 11,000 | 10 | 0.4 | 0.089 | <0.005 | <0.2 | 0.094 | 0.5 | 5.6 | <0.05 |
| **SBT-GW-1805** | **29 Jul 2025** | **Primary** | **387359** | 430 | 2,300 | 230 | <5 | <5 | 230 | 0.27 | 580 | -8.0 | 0.5 | 0.055 | 0.007 | 0.2 | 0.061 | 0.5 | 7.1 | 1.0 |
| **SBT-GW-1806** | **29 Jul 2025** | **Primary** | **387359** | 4,500 | 27,000 | 480 | <5 | <5 | 480 | 2.5 | 9,700 | 5.0 | 2.6 | 0.20 | 0.072 | <0.2 | 0.28 | 2.9 | 7.3 | <0.05 |
| **SBT-GW-4003** | **14 Jul 2025** | **Primary** | **386021** | 2,700 | 18,000 | 960 | <5 | <5 | 960 | 1.2 | 4,900 | 4.0 | 1.2 | 0.93 | 0.01 | <0.2 | 0.95 | 2.2 | 7.0 | 0.2 |
| **SBT-GW-4005** | **14 Jul 2025** | **Primary** | **386021** | 4,100 | 26,000 | 910 | <5 | <5 | 910 | 1.1 | 7,400 | 8.0 | 2.0 | 2.9 | 0.006 | 0.8 | 2.9 | 4.9 | 7.1 | 0.2 |
| **SBT-GW-4017** | **30 Jul 2025** | **Primary** | **387359** | 2,100 | 16,000 | 1,100 | <5 | <5 | 1,100 | 1.2 | 5,100 | -1.0 | 3.2 | 0.02 | 0.006 | 2.0 | 0.03 | 3.2 | 7.3 | 4.9 |
| **SBT-GW-4403** | **30 Jul 2025** | **Primary** | **387359** | 640 | 8,300 | 480 | <5 | <5 | 480 | 2.9 | 2,000 | 11 | 3.0 | 0.057 | 0.03 | <0.2 | 0.091 | 3.1 | 7.8 | 0.74 |
| **SBT-GW-4800** | **14 Jul 2025** | **Primary** | **386021** | 2,600 | 17,000 | 1,300 | <5 | <5 | 1,300 | 0.44 | 3,700 | 12 | 0.4 | 0.05 | <0.005 | <0.2 | 0.05 | 0.5 | 7.4 | 0.62 |
| **SBT-GW-4801** | **14 Jul 2025** | **Primary** | **386021** | 1,600 | 14,000 | 600 | <5 | <5 | 600 | 0.57 | 3,300 | 5.0 | 1 | 0.20 | 0.008 | 0.4 | 0.21 | 1.2 | 7.1 | 0.4 |
| **SBT-GW-4802** | **14 Jul 2025** | **Primary** | **386021** | 4,100 | 27,000 | 790 | <5 | <5 | 790 | 1.1 | 8,400 | 5.0 | 1.5 | 11 | 0.057 | 0.5 | 11 | 12 | 7.0 | 1.0 |
| **SBT-GW-4803** | **30 Jul 2025** | **Primary** | **387359** | 4,900 | 19,000 | 1,100 | <5 | <5 | 1,100 | 0.43 | 6,600 | 5.0 | 0.5 | 0.04 | 0.02 | <0.2 | 0.059 | 0.6 | 7.1 | 1.4 |
| **SMGW-BH-A315** | **29 Jul 2025** | **Primary** | **387359** | 2,600 | 21,000 | 22 | <5 | <5 | 22 | 0.28 | 7,800 | 0 | 0.3 | 0.12 | 0.006 | <0.2 | 0.12 | 0.4 | 5.2 | 0.3 |
| **SBT-GW-3401** | **31 Jul 2025** | **Primary** | **ES2523490** | | 21700 | 720 | <1 | <1 | 720 | 0.94 | 6,810 | 0.98 | 2.0 | 0.03 | <0.01 | | | 2.0 | 7.49 | 0.25 |
| **SMGW-BH-C32** | **11 Jul 2025** | **Primary** | **386021** | 3,600 | 26,000 | 890 | <5 | <5 | 890 | 0.02 | 8,100 | 6.0 | <0.1 | 0.02 | <0.005 | <0.2 | 0.03 | <0.1 | 7.0 | 1.5 |
| **Statistics** | | | | | | | | | | | | | | | | | | | | |
| **Number of Results** | | | | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** | **37** |
| **Number of Detects** | | | | **36** | **36** | **33** | **1** | **0** | **33** | **36** | **36** | **36** | **34** | **35** | **20** | **19** | **35** | **35** | **36** | **34** |
| **Minimum Concentration** | | | | **96** | **1,800** | **<5** | **<5** | **<5** | **<5** | **0.02** | **64** | **-8** | **0.1** | **0.005** | **0.005** | **0.2** | **0.005** | **<0.1** | **3.1** | **<0.05** |
| **Maximum Concentration** | | | | **6,100** | **32,000** | **1,300** | **160** | **<5** | **1,300** | **9.2** | **11,000** | **49** | **9.4** | **100** | **0.072** | **5.1** | **100** | **110** | **9.4** | **23** |
| **Average Concentration *** | | | | **2,249** | **14,997** | **460** | **6.9** | **2.5** | **464** | **1.1** | **4,449** | **11** | **1.7** | **3.8** | **0.012** | **0.55** | **3.8** | **5.6** | **6.5** | **1.3** |

* A Non Detect Multiplier of 0.5 has been applied.

**Environmental Standards**

ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)

DoE, 2000, ANZECC 2000 MW 95%

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Phenols | TPH | | | | | (n:2) Fluorotelomer Sulfonic Acids | | BTEX | | | | | |
| | | | | Reactive Phosphorus as P (Orthophosphate as P) (filtered) | Sodium (filtered) | Sulphate | Total Dissolved Solids (Lab) | Phenolics Total | C6-C9 Fraction | C10-C14 Fraction | C15-C28 Fraction | C29-C36 Fraction | C10-C36 Fraction (Sum) | 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | Naphthalene (VOC) | Benzene | Toluene | Ethylbenzene | Xylene (m & p) |
| | | | | mg/L | mg/L | mg/L | mg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | µg/L | mg/L | µg/L | µg/L | µg/L | µg/L |
| EQL | | | | 0.005 | 0.5 | 1 | 5 | 50 | 10 | 50 | 100 | 100 | 50 | 0.0004 | 0.0004 | 0.001 | 1 | 1 | 1 | 2 |
| ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023) | | | | | | | | | | | | | | | | 0.016 | 950 | 180 | 80 | |
| ANZECC 2000 MW 95% | | | | | | | | | | | | | | | | 0.07 | 700 | | | |
| **Field ID** | **Date** | **Sample Type** | **Lab Report Number** | | | | | | | | | | | | | | | | | |
| **ABP-SBT-GW-3003/B** | **29 Jul 2025** | **Primary** | **387359** | 0.01 | 6,000 | <1 | 18,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **ABP-SBT-GW-3003/C** | **29 Jul 2025** | **Primary** | **387359** | 0.008 | 5,100 | 560 | 19,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **BH-4014_S** | **29 Jul 2025** | **Primary** | **387359** | 0.01 | 2,600 | 500 | 10,000 | - | - | - | - | - | - | 0.004 | <0.0004 | - | - | - | - | - |
| **GA-A401** | **15 Jul 2025** | **Primary** | **386021** | <0.005 | 350 | 83 | 1,400 | - | <10 | <50 | <100 | <100 | <50 | 0.004 | <0.0004 | <0.001 | <1 | <1 | <1 | <2 |
| **GW-1001_S** | **09 Jul 2025** | **Primary** | **386021** | 0.03 | 5,000 | 310 | 17,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1002** | **09 Jul 2025** | **Primary** | **386021** | 0.02 | 1,300 | 160 | 4,100 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1005-S** | **09 Jul 2025** | **Primary** | **386021** | 0.03 | 1,200 | 190 | 3,400 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1016** | **09 Jul 2025** | **Primary** | **386021** | 0.02 | 3,000 | 750 | 13,000 | - | <10 | <50 | <100 | <100 | <50 | 0.003 | <0.0004 | <0.001 | <1 | <1 | <1 | <2 |
| **GW-1017** | **10 Jul 2025** | **Primary** | **386021** | 0.02 | 4,200 | 590 | 14,000 | - | <100 | <50 | <100 | <100 | <50 | 0.004 | <0.0004 | <0.01 | <10 | <10 | <10 | <20 |
| **GW-1021** | **09 Jul 2025** | **Primary** | **386021** | 0.057 | 340 | 530 | 990 | <50 | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1042** | **10 Jul 2025** | **Primary** | **386021** | 0.02 | 2,600 | 160 | 7,500 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1063** | **10 Jul 2025** | **Primary** | **386021** | 0.32 | 1,200 | 150 | 2,700 | - | <100 | <50 | <100 | <100 | <50 | 0.026 | <0.0004 | <0.01 | <10 | <10 | <10 | <20 |
| **GW-1807** | **10 Jul 2025** | **Primary** | **386021** | 0.005 | 4,500 | 490 | 14,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-1808** | **10 Jul 2025** | **Primary** | **386021** | 0.007 | 1,800 | 98 | 3,100 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-3012A** | **10 Jul 2025** | **Primary** | **386021** | 0.009 | 640 | 210 | 2,200 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-3012B** | **11 Jul 2025** | **Primary** | **386021** | 0.02 | 4,600 | 1,600 | 19,000 | - | <10 | <50 | <100 | <100 | <50 | - | - | - | - | - | - | - |
| **GW-3012C** | **11 Jul 2025** | **Primary** | **386021** | 0.005 | 4,500 | 370 | 15,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-3022** | **11 Jul 2025** | **Primary** | **386021** | <0.005 | 2,400 | 550 | 4,600 | - | <10 | <50 | <100 | <100 | <50 | - | - | - | - | - | - | - |
| **GW-4008** | **11 Jul 2025** | **Primary** | **386021** | <0.005 | 4,300 | 130 | 15,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **GW-4021** | **14 Jul 2025** | **Primary** | **386021** | <0.005 | 800 | 91 | 2,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-BH-3006** | **30 Jul 2025** | **Primary** | **387359** | 0.05 | 1,100 | 170 | 3,600 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-1024** | **29 Jul 2025** | **Primary** | **387359** | 0.01 | 570 | 160 | 2,200 | - | 52 | <50 | <100 | <100 | <50 | 0.017 | <0.0004 | <0.001 | <1 | <1 | <1 | <2 |
| **SBT-GW-1030** | **09 Jul 2025** | **Primary** | **386021** | <0.005 | 600 | 130 | 2,400 | - | - | - | - | - | - | 0.004 | <0.0004 | - | - | - | - | - |
| **SBT-GW-1048** | **29 Jul 2025** | **Primary** | **387359** | 0.01 | 6,400 | 630 | 23,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-1805** | **29 Jul 2025** | **Primary** | **387359** | 0.006 | 260 | 130 | 1,400 | - | - | - | - | - | - | 0.019 | <0.0004 | - | - | - | - | - |
| **SBT-GW-1806** | **29 Jul 2025** | **Primary** | **387359** | 0.008 | 5,400 | 710 | 21,000 | - | <10 | <50 | <100 | <100 | <50 | - | - | <0.001 | <1 | 2 | <1 | <2 |
| **SBT-GW-4003** | **14 Jul 2025** | **Primary** | **386021** | 0.01 | 3,000 | 700 | 13,000 | - | <10 | <50 | <100 | <100 | <50 | 0.001 | <0.0004 | <0.001 | <1 | <1 | <1 | <2 |
| **SBT-GW-4005** | **14 Jul 2025** | **Primary** | **386021** | 0.01 | 4,900 | 1,200 | 19,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-4017** | **30 Jul 2025** | **Primary** | **387359** | <0.005 | 3,000 | 420 | 11,000 | - | <10 | <50 | <100 | <100 | <50 | 0.0046 | <0.0004 | <0.001 | <1 | <1 | <1 | <2 |
| **SBT-GW-4403** | **30 Jul 2025** | **Primary** | **387359** | 0.02 | 1,600 | 24 | 4,800 | - | <10 | <50 | <100 | <100 | <50 | - | - | <0.001 | <1 | <1 | <1 | <2 |
| **SBT-GW-4800** | **14 Jul 2025** | **Primary** | **386021** | 0.02 | 3,000 | 560 | 10,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-4801** | **14 Jul 2025** | **Primary** | **386021** | 0.005 | 2,400 | 810 | 8,200 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-4802** | **14 Jul 2025** | **Primary** | **386021** | 0.007 | 5,000 | 880 | 16,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SBT-GW-4803** | **30 Jul 2025** | **Primary** | **387359** | 0.01 | 2,900 | <1 | 15,000 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **SMGW-BH-A315** | **29 Jul 2025** | **Primary** | **387359** | 0.03 | 4,200 | 670 | 14,000 | - | <10 | <50 | <100 | <100 | <50 | <0.0004 | <0.0004 | <0.001 | <1 | <1 | <1 | <2 |
| **SBT-GW-3401** | **31 Jul 2025** | **Primary** | **ES2523490** | 0.01 | 3,690 | 1,030 | 13,300 | - | 30 | 80 | 430 | <50 | 510 | - | - | <0.005 | <1 | 21 | <2 | <2 |
| **SMGW-BH-C32** | **11 Jul 2025** | **Primary** | **386021** | 0.02 | 5,100 | 680 | 20,000 | - | <10 | <50 | <100 | <100 | <50 | 0.002 | <0.0004 | <0.001 | <1 | <1 | <1 | <2 |
| **Statistics** | | | | | | | | | | | | | | | | | | | | |
| **Number of Results** | | | | **37** | **37** | **37** | **37** | **1** | **13** | **14** | **14** | **14** | **14** | **12** | **12** | **12** | **12** | **12** | **12** | **12** |
| **Number of Detects** | | | | **30** | **36** | **34** | **36** | **0** | **1** | **0** | **0** | **0** | **0** | **11** | **0** | **0** | **0** | **1** | **0** | **0** |
| **Minimum Concentration** | | | | **0.005** | **260** | **<1** | **990** | **<50** | **<10** | **<50** | **<100** | **<100** | **<50** | **<0.0004** | **<0.0004** | **<0.001** | **<1** | **<1** | **<1** | **<2** |
| **Maximum Concentration** | | | | **0.32** | **6,400** | **1,600** | **23,000** | **<50** | **<100** | **<50** | **<100** | **<100** | **<50** | **0.026** | **<0.0004** | **<0.01** | **<10** | **<10** | **<10** | **<20** |
| **Average Concentration *** | | | | **0.023** | **2,941** | **428** | **10,294** | | **16** | **25** | **50** | **50** | **25** | **0.0074** | **0.0002** | **0.0013** | **1.3** | **1.5** | **1.3** | **2.6** |

* A Non Detect Multiplier of 0.5 has been applied.

**Environmental Standards**

ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)

DoE, 2000, ANZECC 2000 MW 95%

| | Xylene (o) |
|---|---|
| | µg/L |
| EQL | 1 |
| ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023) | 350 |
| ANZECC 2000 MW 95% | |

| Field ID | Date | Sample Type | Lab Report Number | |
|---|---|---|---|---|
| ABP-SBT-GW-3003/B | 29 Jul 2025 | Primary | 387359 | - |
| ABP-SBT-GW-3003/C | 29 Jul 2025 | Primary | 387359 | - |
| BH-4014_S | 29 Jul 2025 | Primary | 387359 | - |
| GA-A401 | 15 Jul 2025 | Primary | 386021 | <1 |
| GW-1001_S | 09 Jul 2025 | Primary | 386021 | - |
| GW-1002 | 09 Jul 2025 | Primary | 386021 | - |
| GW-1005-S | 09 Jul 2025 | Primary | 386021 | - |
| GW-1016 | 09 Jul 2025 | Primary | 386021 | <1 |
| GW-1017 | 10 Jul 2025 | Primary | 386021 | <10 |
| GW-1021 | 09 Jul 2025 | Primary | 386021 | - |
| GW-1042 | 10 Jul 2025 | Primary | 386021 | - |
| GW-1063 | 10 Jul 2025 | Primary | 386021 | <10 |
| GW-1807 | 10 Jul 2025 | Primary | 386021 | - |
| GW-1808 | 10 Jul 2025 | Primary | 386021 | - |
| GW-3012A | 10 Jul 2025 | Primary | 386021 | - |
| GW-3012B | 11 Jul 2025 | Primary | 386021 | - |
| GW-3012C | 11 Jul 2025 | Primary | 386021 | - |
| GW-3022 | 11 Jul 2025 | Primary | 386021 | - |
| GW-4008 | 11 Jul 2025 | Primary | 386021 | - |
| GW-4021 | 14 Jul 2025 | Primary | 386021 | - |
| SBT-BH-3006 | 30 Jul 2025 | Primary | 387359 | - |
| SBT-GW-1024 | 29 Jul 2025 | Primary | 387359 | <1 |
| SBT-GW-1030 | 09 Jul 2025 | Primary | 386021 | - |
| SBT-GW-1048 | 29 Jul 2025 | Primary | 387359 | - |
| SBT-GW-1805 | 29 Jul 2025 | Primary | 387359 | - |
| SBT-GW-1806 | 29 Jul 2025 | Primary | 387359 | <1 |
| SBT-GW-4003 | 14 Jul 2025 | Primary | 386021 | <1 |
| SBT-GW-4005 | 14 Jul 2025 | Primary | 386021 | - |
| SBT-GW-4017 | 30 Jul 2025 | Primary | 387359 | <1 |
| SBT-GW-4403 | 30 Jul 2025 | Primary | 387359 | <1 |
| SBT-GW-4800 | 14 Jul 2025 | Primary | 386021 | - |
| SBT-GW-4801 | 14 Jul 2025 | Primary | 386021 | - |
| SBT-GW-4802 | 14 Jul 2025 | Primary | 386021 | - |
| SBT-GW-4803 | 30 Jul 2025 | Primary | 387359 | - |
| SMGW-BH-A315 | 29 Jul 2025 | Primary | 387359 | <1 |
| SBT-GW-3401 | 31 Jul 2025 | Primary | ES2523490 | <2 |
| SMGW-BH-C32 | 11 Jul 2025 | Primary | 386021 | <1 |

**Statistics**

| | |
|---|---|
| **Number of Results** | **12** |
| **Number of Detects** | **0** |
| **Minimum Concentration** | **<1** |
| **Maximum Concentration** | **<10** |
| **Average Concentration *** | **1.3** |

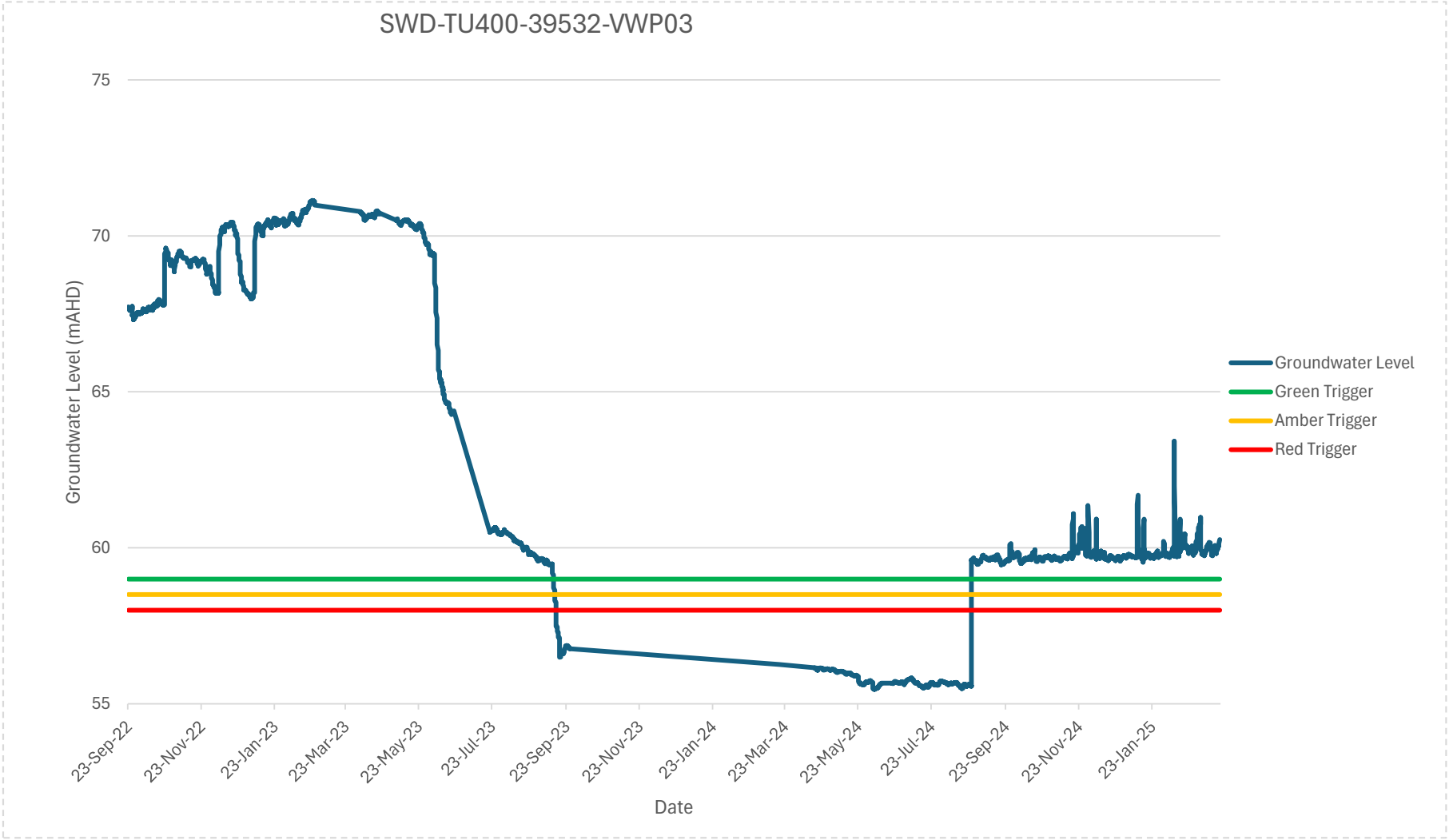
* A Non Detect Multiplier of 0.5 has been applied.

**Environmental Standards**

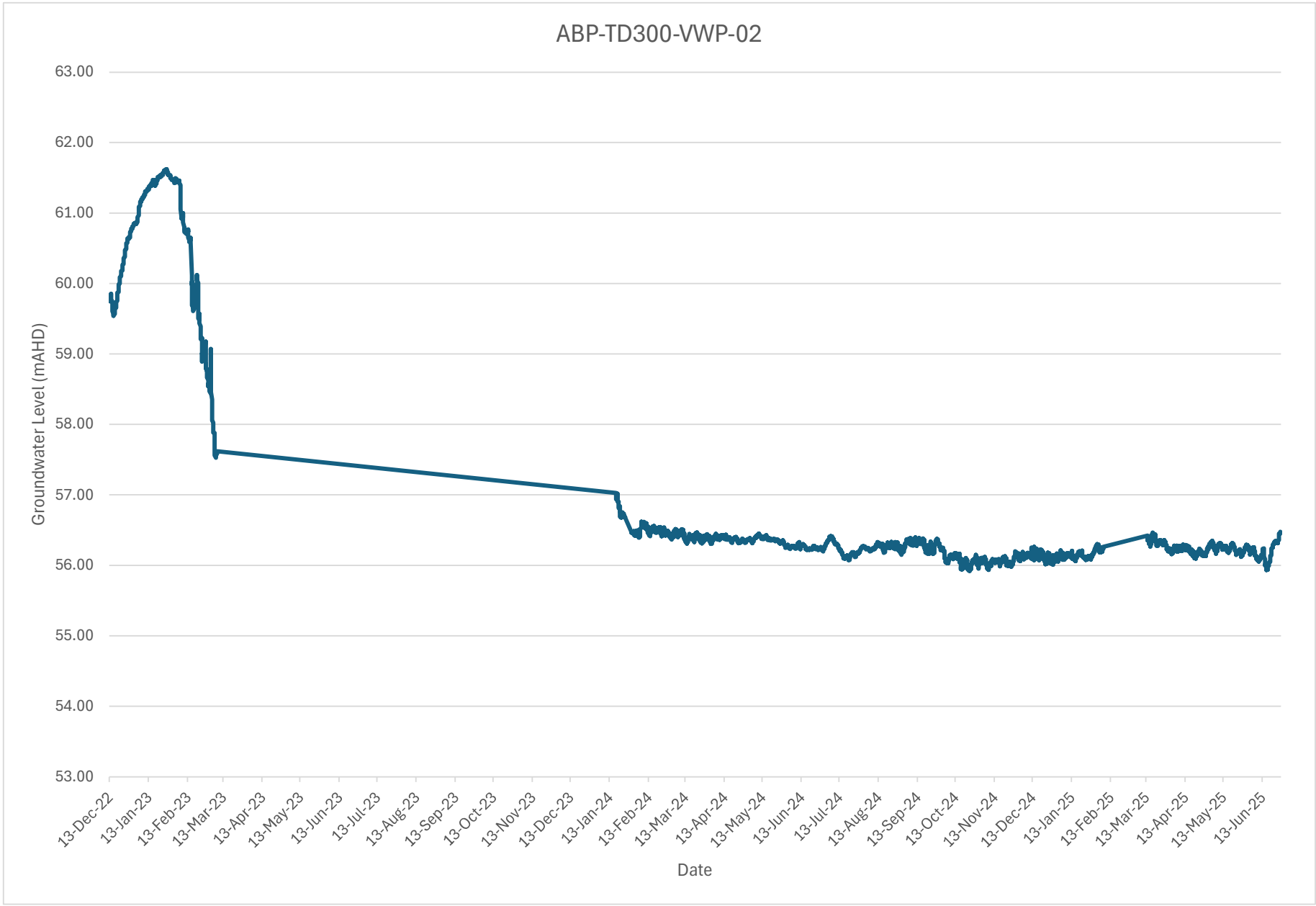
ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)

DoE, 2000, ANZECC 2000 MW 95%

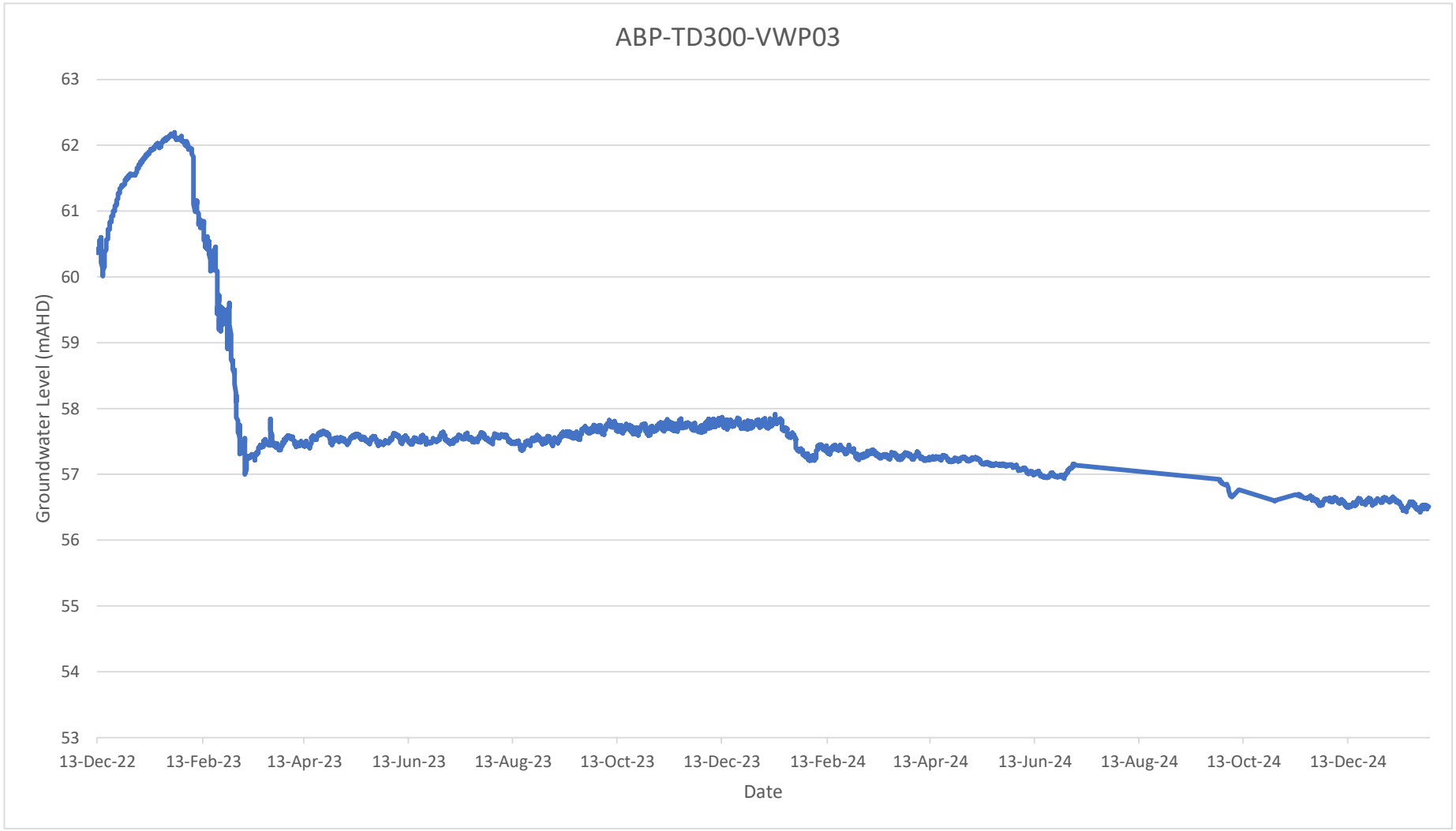
# Appendix D – VWP Hydrographs



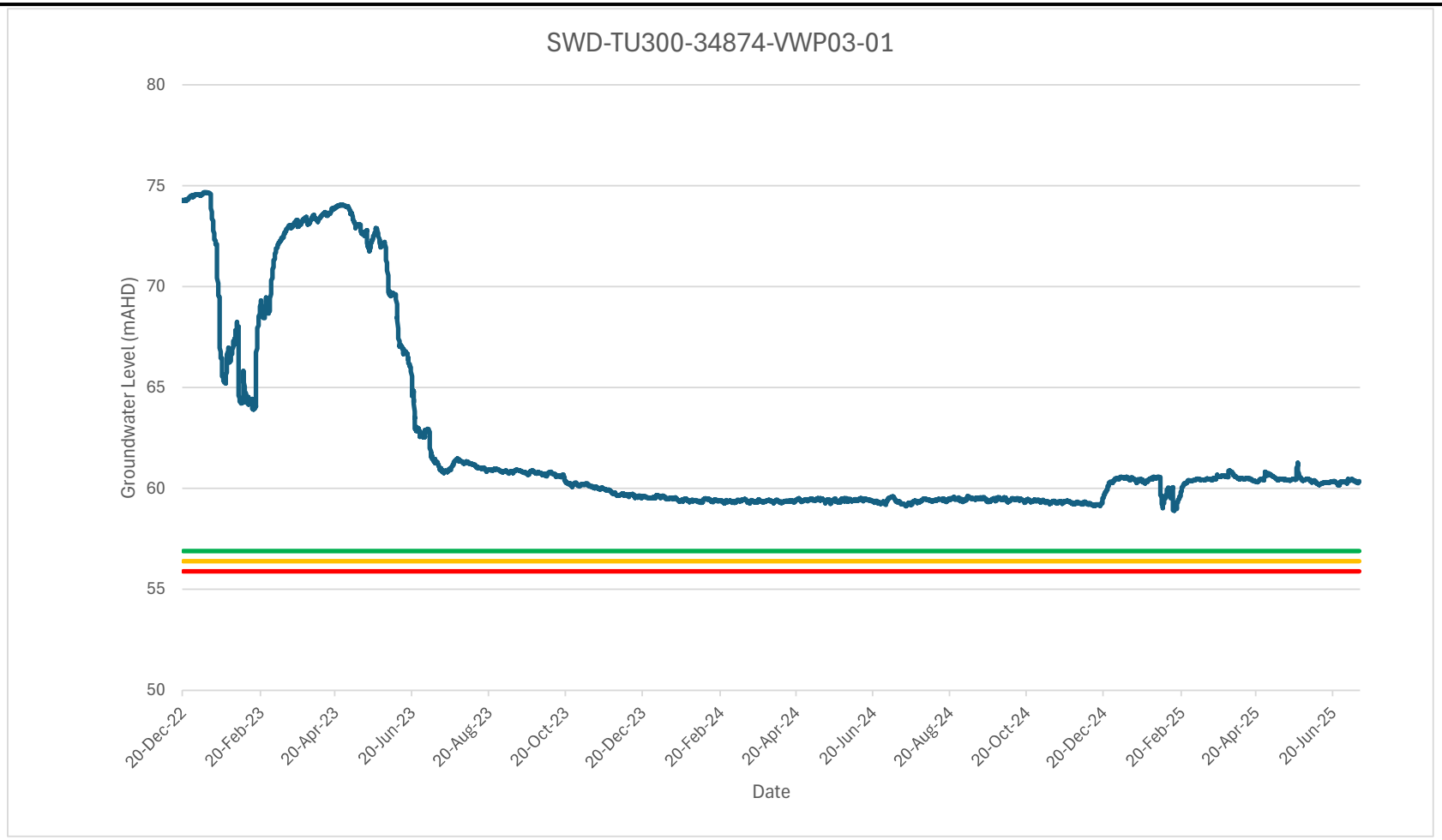

| | | | | | |
|---|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph SBT-VWP-4405 | Sensor ID | 60786 | Figure D1 |
| | Project: | Sydney Metro - Western Sydney Airport | Sensor Depths (mAHD) | 55.17 | |
| | Client: | Parklife Metro D&C | VWP Elevation (mAHD): | 73.8 | 22.0343.01 |
| | Location: | Bradfield | | | |



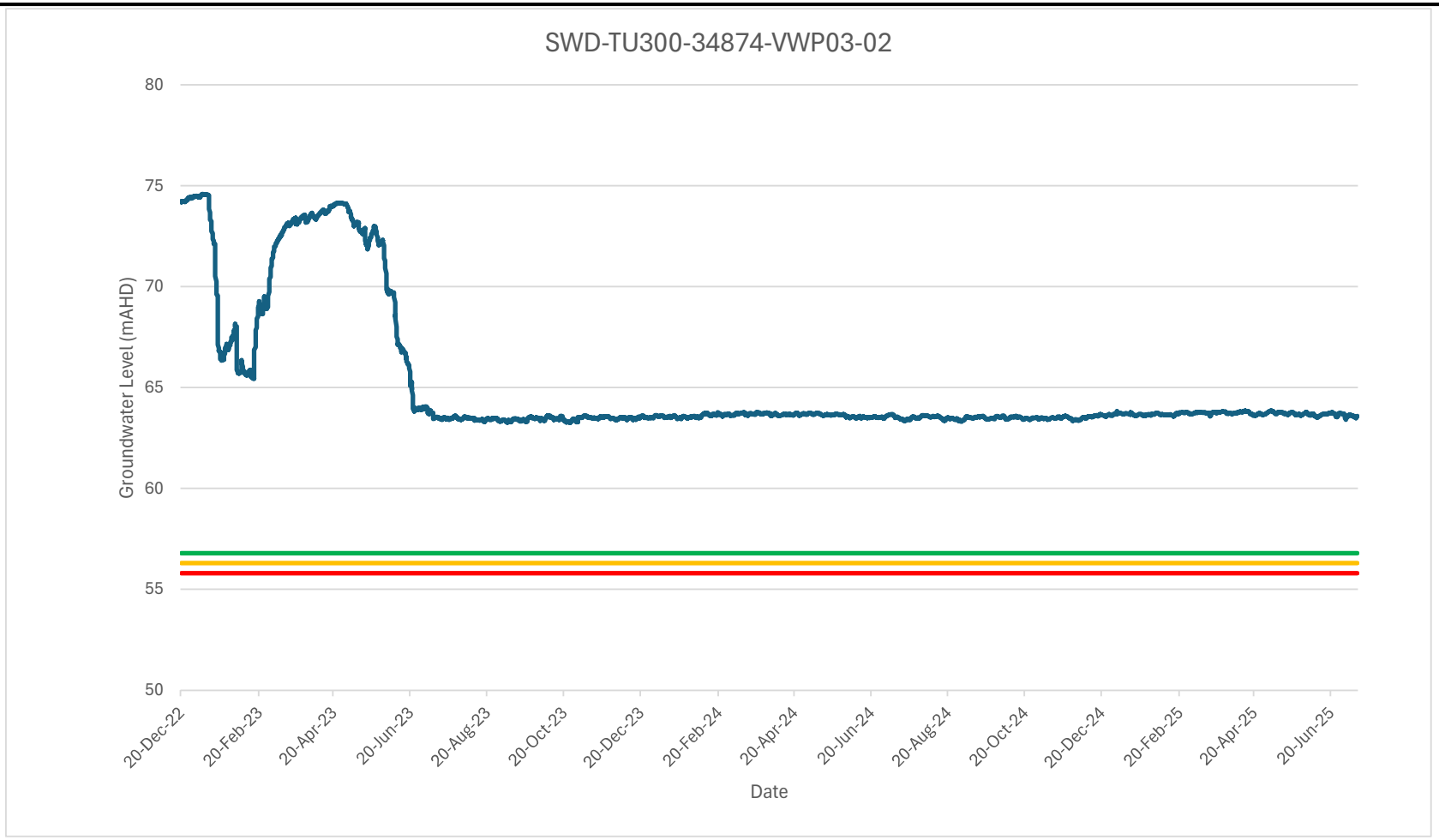

| | | | | |
|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph ABP-TD300 | Sensor ID 77655 | Figure D2 |
| | Project: | Sydney Metro - Western Sydney Airport | Sensor Depths (mAHD) 56.28 | |
| | Client: | Parklife Metro D&C | VWP Elevation (mAHD): 62.94 | 22.0343.01 |
| | Location: | Airport Business Park | | |



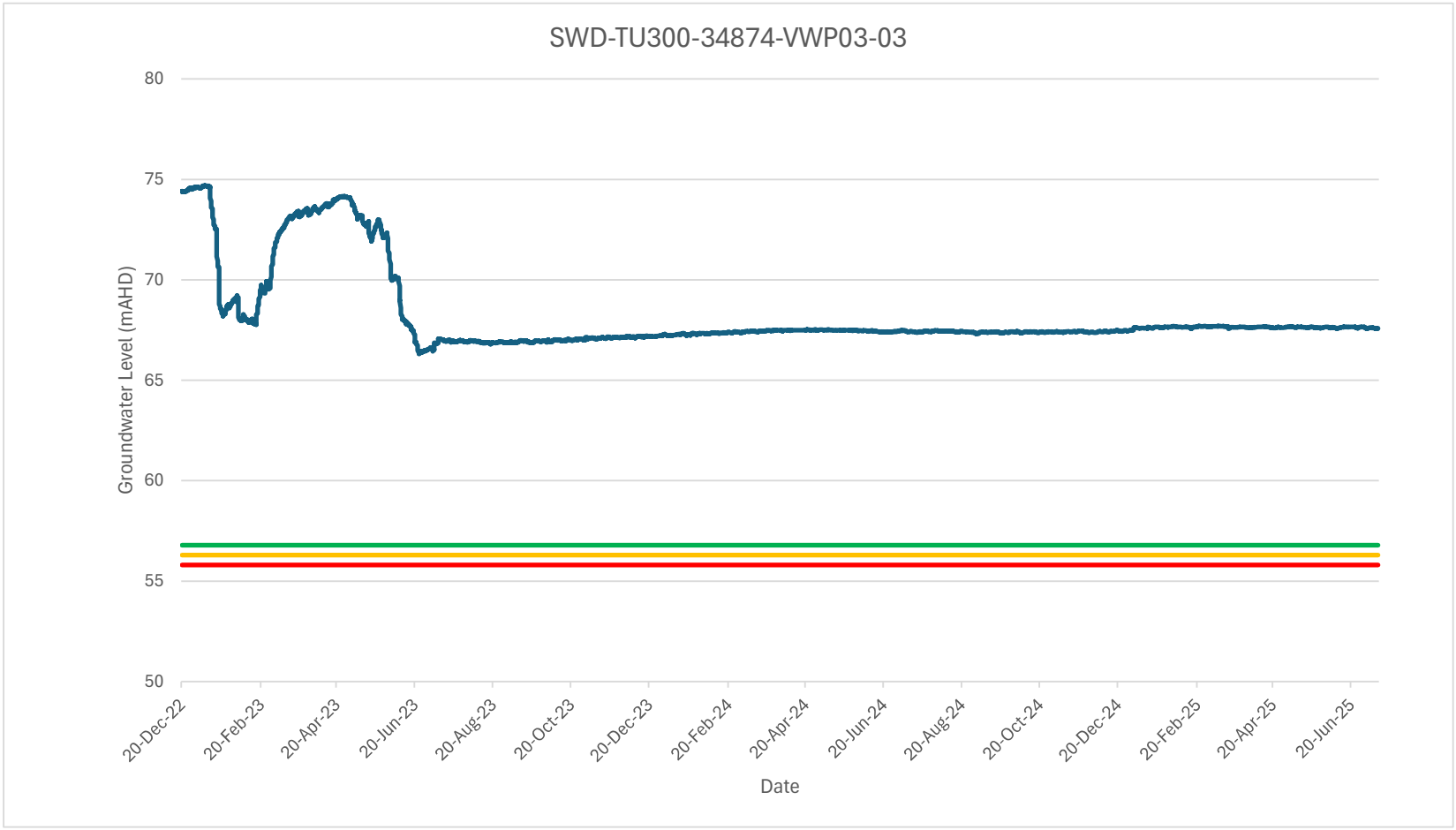

| | | | | |
|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph ABP-TD300 | Sensor ID 77622<br>Sensor Depths (mAHD) 56.3<br>VWP Elevation (mAHD): 62.94 | Figure D3 |
| | Project: | Sydney Metro - Western Sydney Airport | | |
| | Client: | Parklife Metro D&C | | 22.0343.01 |
| | Location: | Airport Terminal | | |



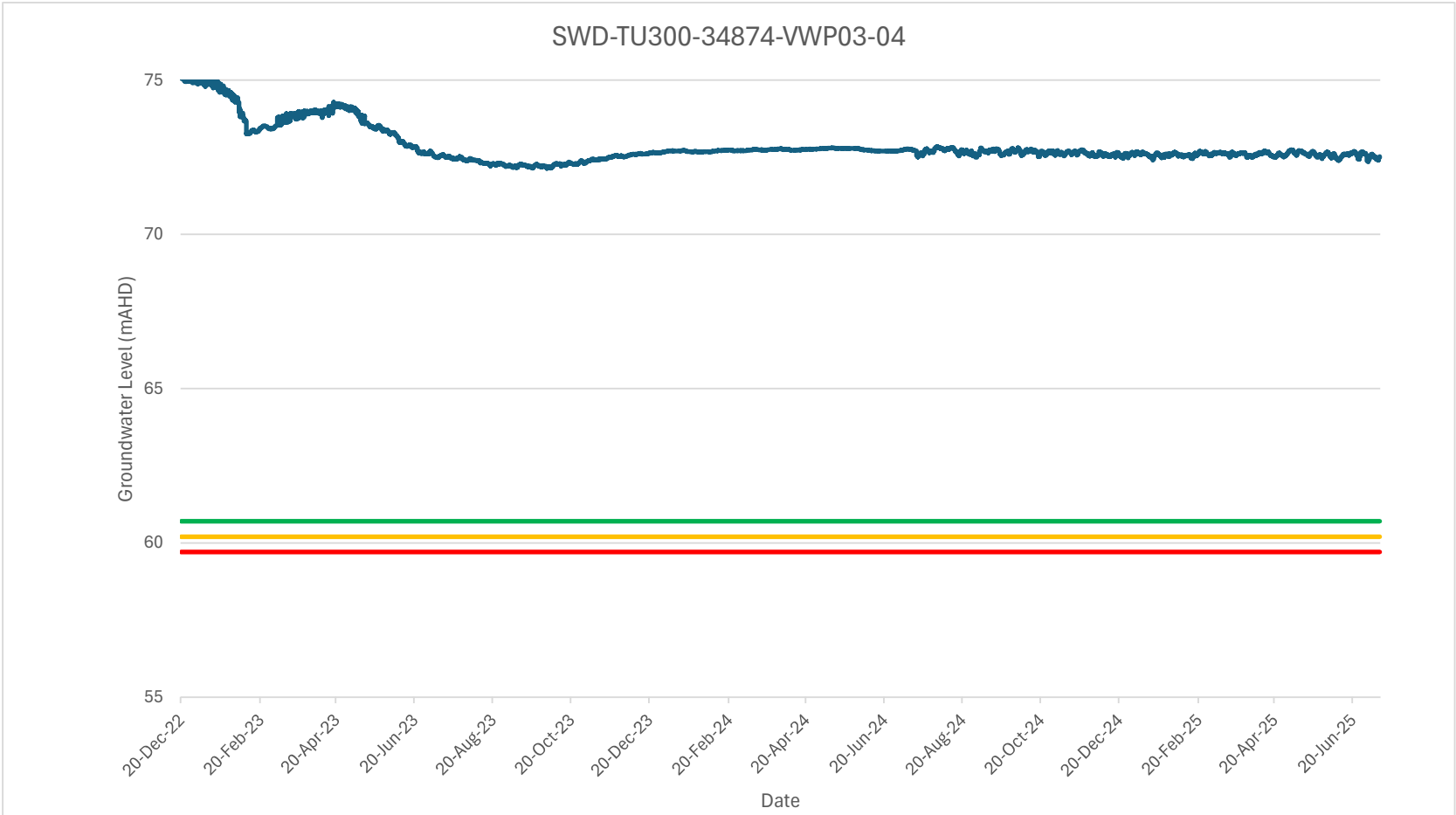

| | | | | |
|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph ATL-SN350-VWP01 | Sensor ID 54960 | Figure D4 |
| | Project: | Sydney Metro - Western Sydney Airport | Sensor Depths (mAHD) 60 | |
| | Client: | Parklife Metro D&C | VWP Elevation (mAHD): 84.6 | 22.0343.01 |
| | Location: | Airport Terminal | | |



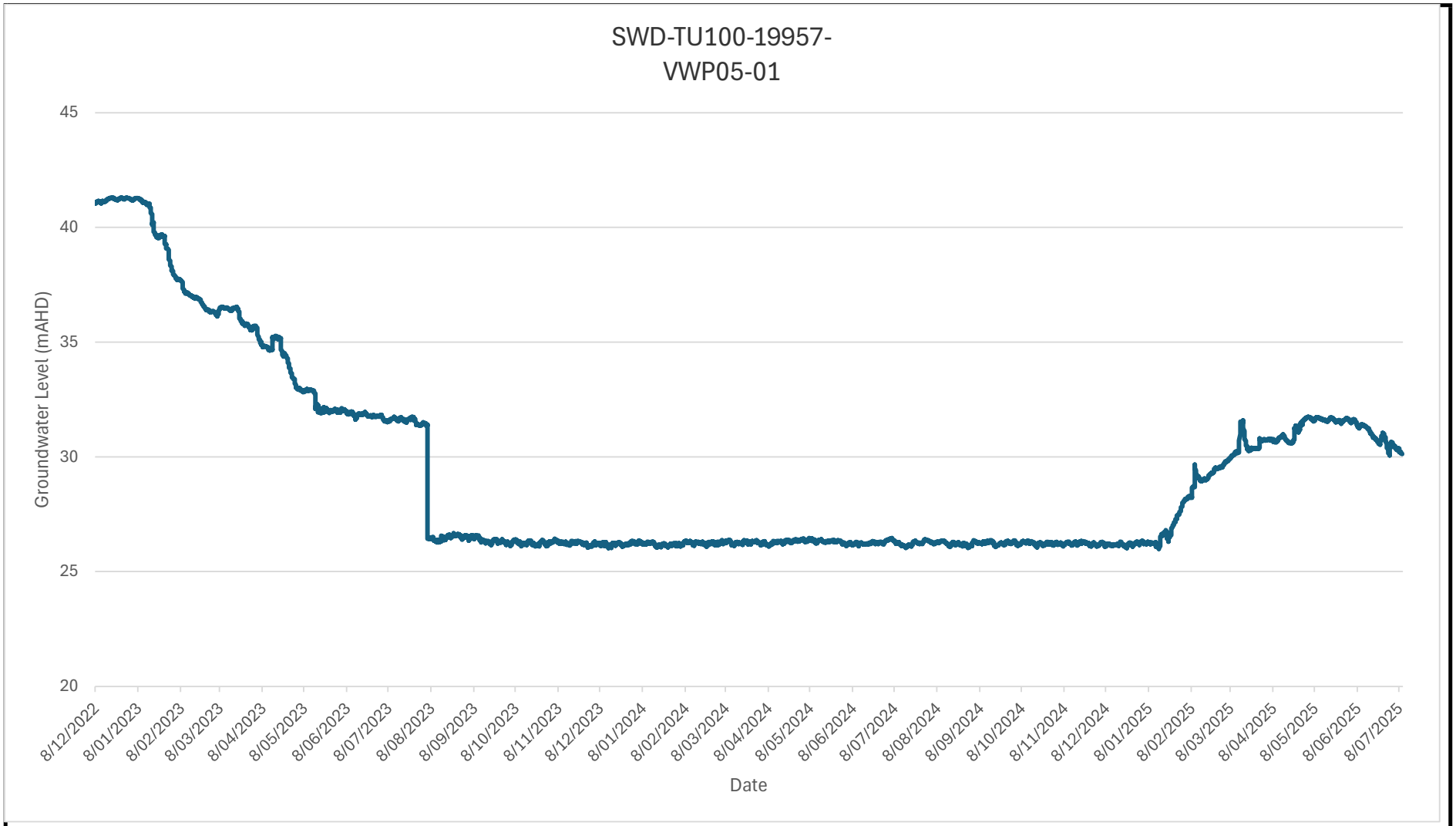

| | | | | | |
|---|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph ATL-SN350-VWP02 | Sensor ID | 54960 | Figure D5 |
| | Project: | Sydney Metro - Western Sydney Airport | Sensor Depths (mAHD) | 64 | |
| | Client: | Parklife Metro D&C | VWP Elevation (mAHD): | 84.6 | 22.0343.01 |
| | Location: | Airport Terminal | | | |



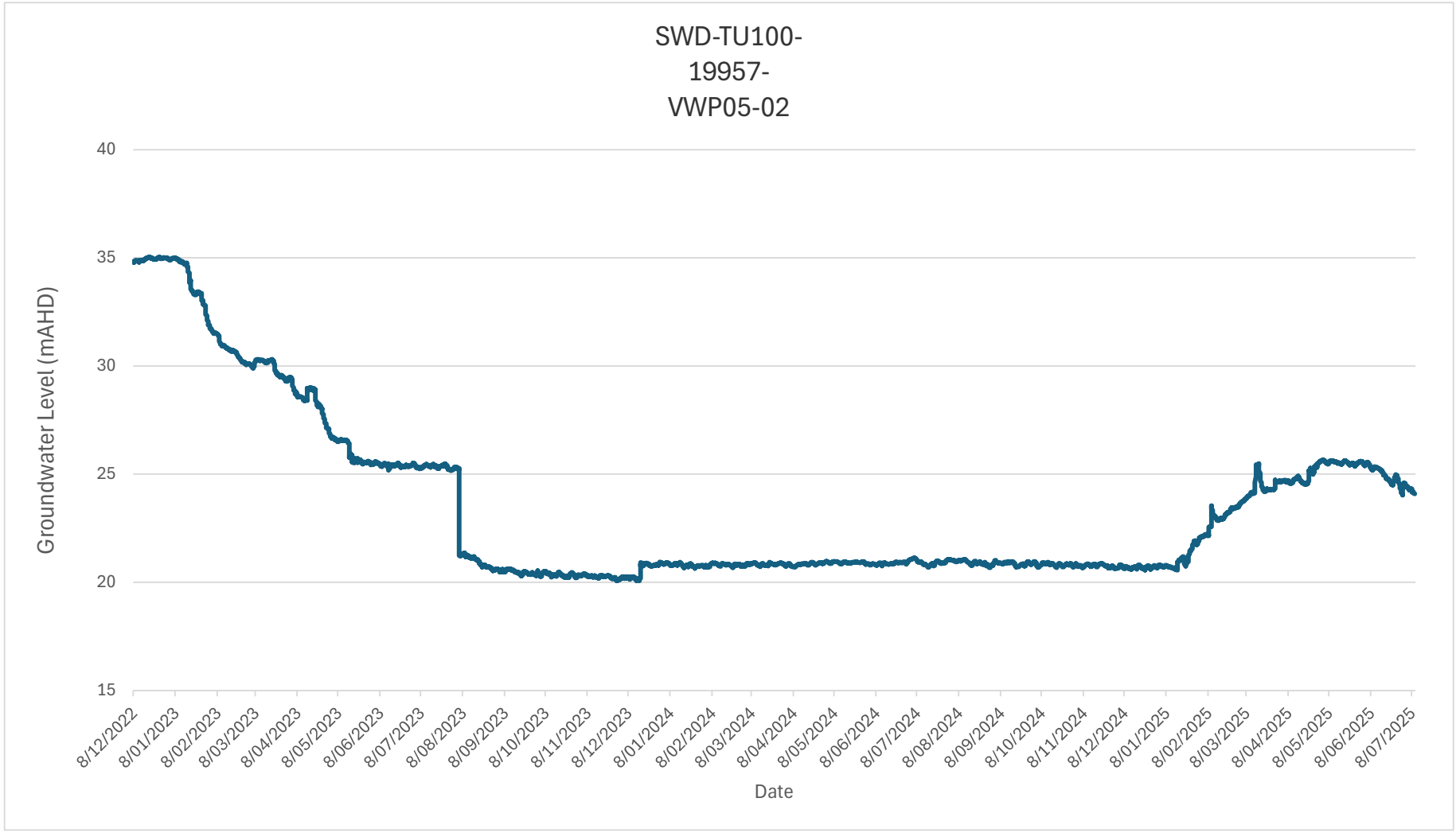

| | | | | |
|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph ATL-SN350-VWP03 | Sensor ID 54960 | Figure D6 |
| | Project: | Sydney Metro - Western Sydney Airport | Sensor Depths (mAHD) 68 | |
| | Client: | Parklife Metro D&C | VWP Elevation (mAHD): 84.6 | 22.0343.01 |
| | Location: | Airport Terminal | | |



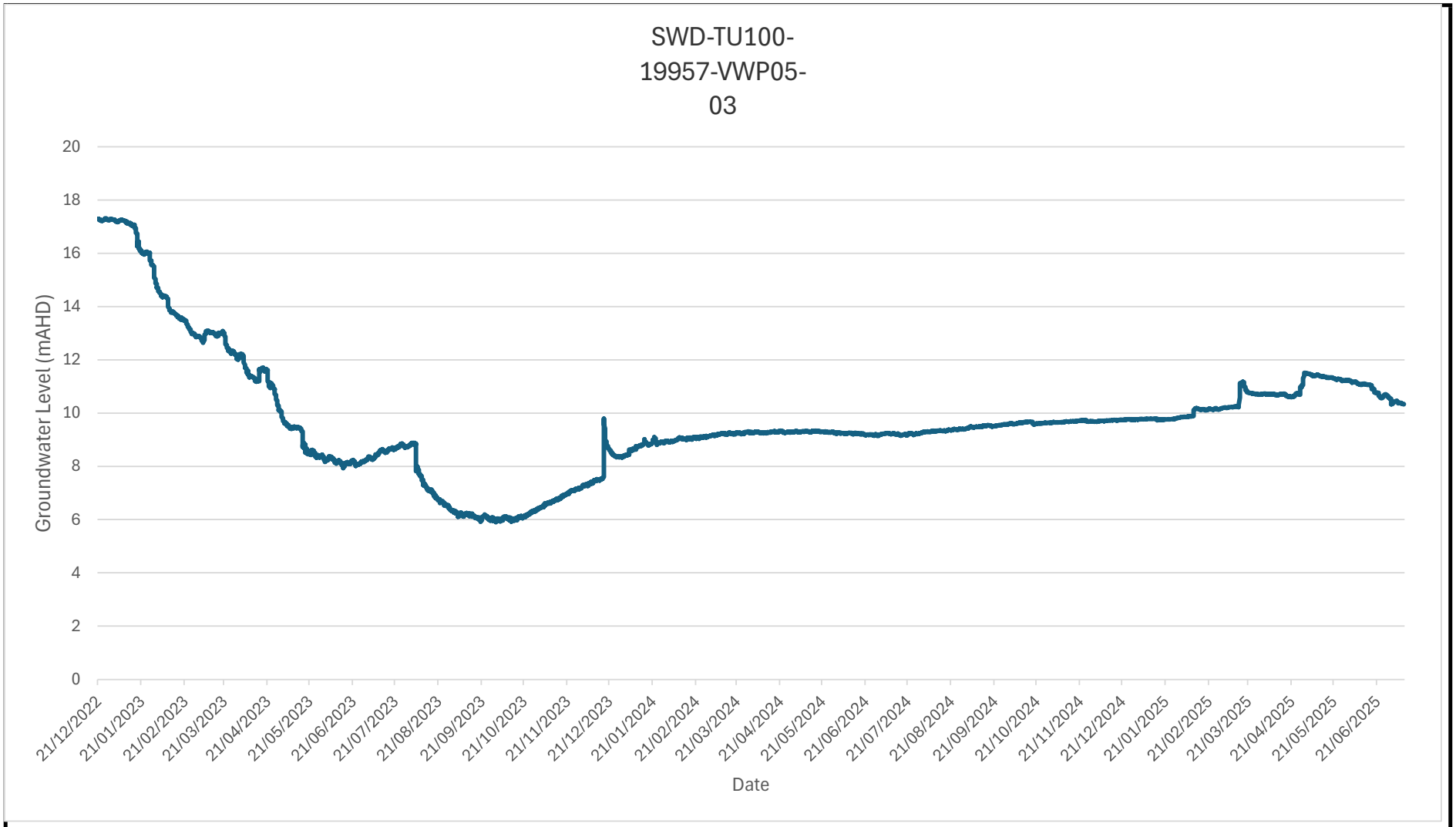

| | | | | |
|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph ATL-SN350-VWP04 | Sensor ID 54960 | Figure D7 |
| | Project: | Sydney Metro - Western Sydney Airport | Sensor Depths (mAHD) 73 | |
| | Client: | Parklife Metro D&C | VWP Elevation (mAHD): 84.6 | 22.0343.01 |
| | Location: | Airport Terminal | | |



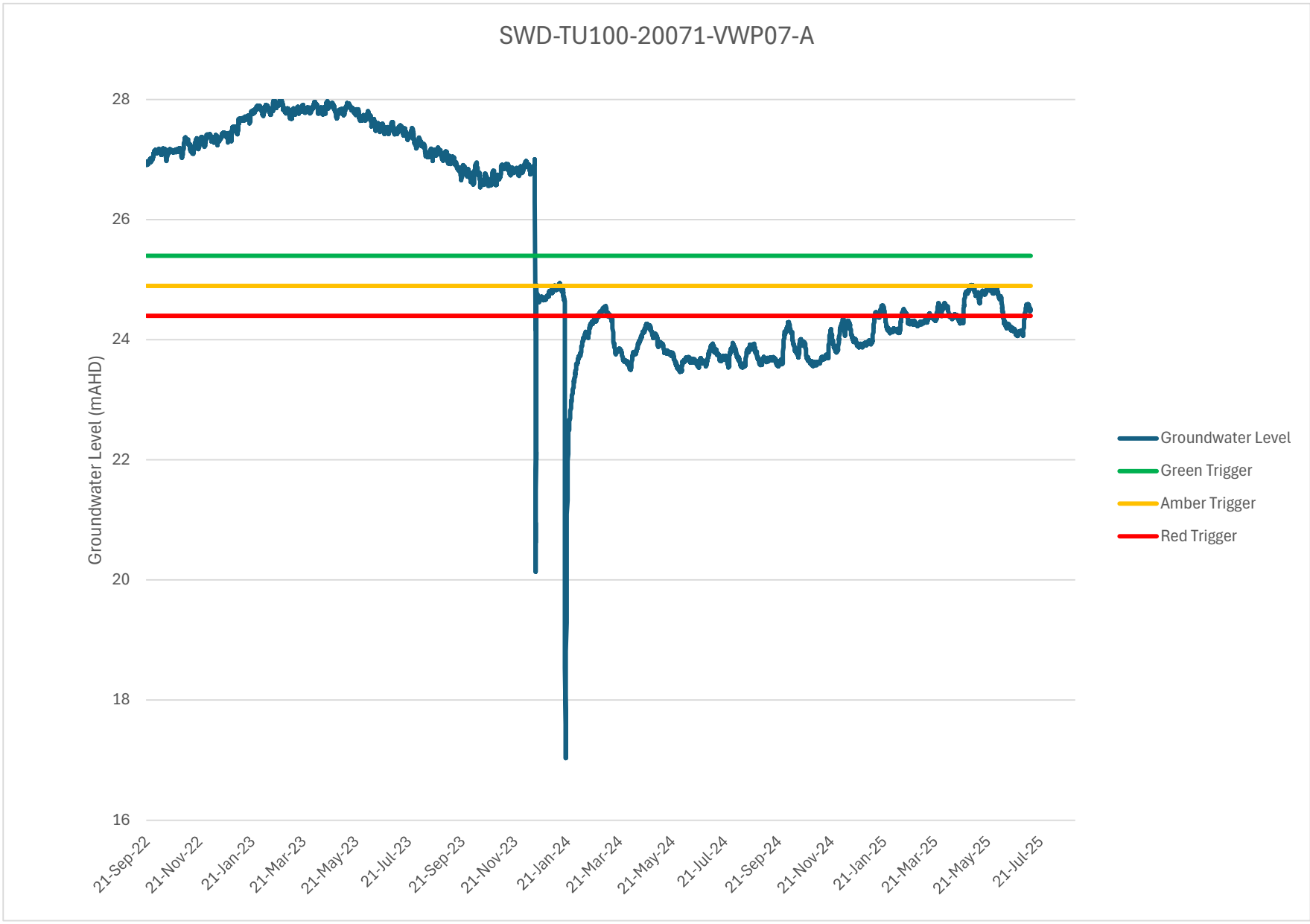

| | | | | | |
|---|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph CM-VWP 1402_01 | Sensor ID | 64166 | Figure D8 |
| | Project: | Sydney Metro - Claremont Meadows | Sensor Depths (mAHD) | 20.87 | |
| | Client: | Parklife Metro D&C | VWP Elevation (mAHD): | 26.87 | 22.0343.01 |
| | Location: | Claremont Meadows | | | |



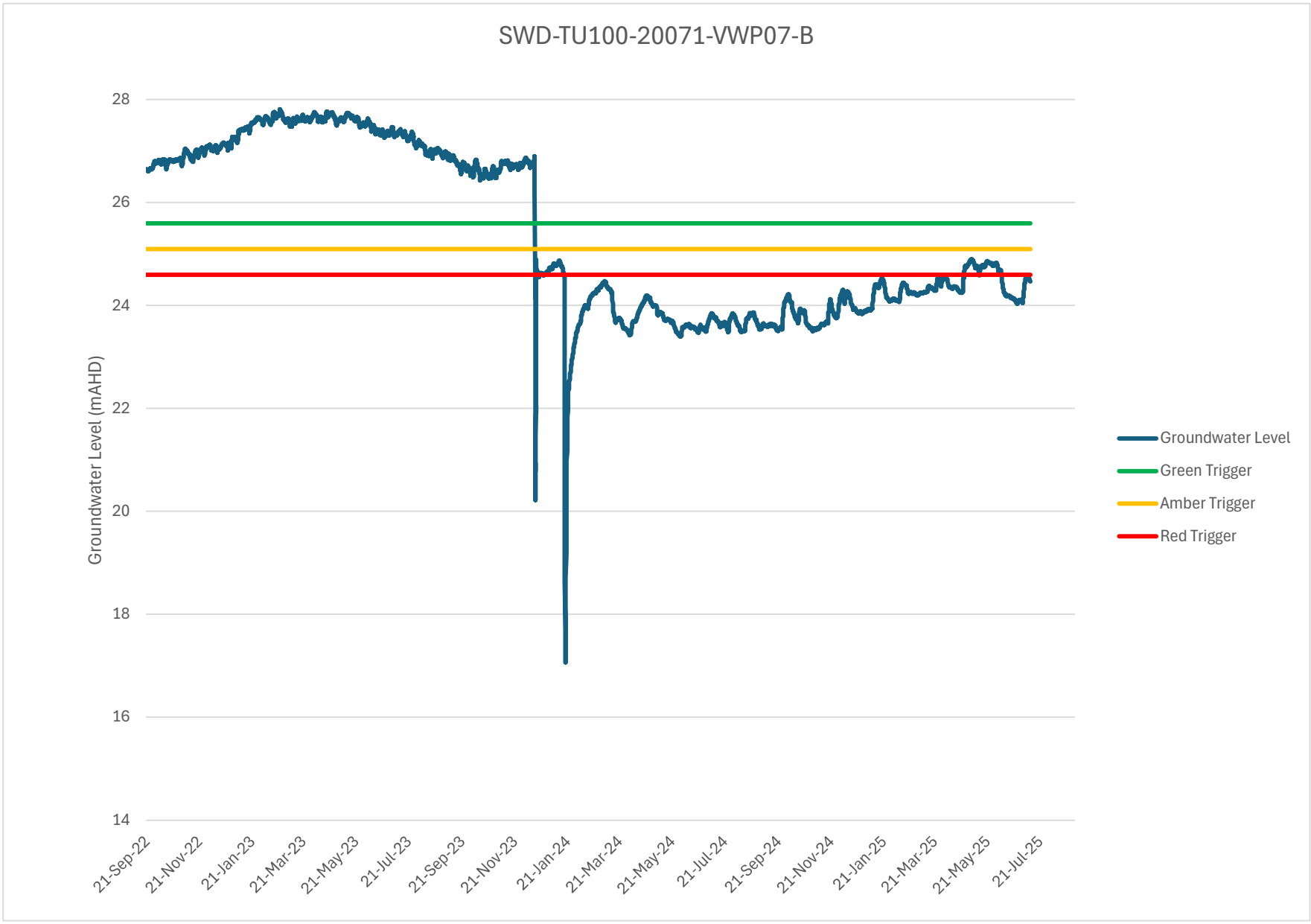

| | | | | | |
|---|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph CM-VWP 1402_02 | Sensor ID | 64166 | Figure D9 |
| | Project: | Sydney Metro - Claremont Meadows | Sensor Depths (mAHD) | 15.87 | |
| | Client: | Parklife Metro D&C | VWP Elevation (mAHD): | 26.87 | 22.0343.01 |
| | Location: | Claremont Meadows | | | |



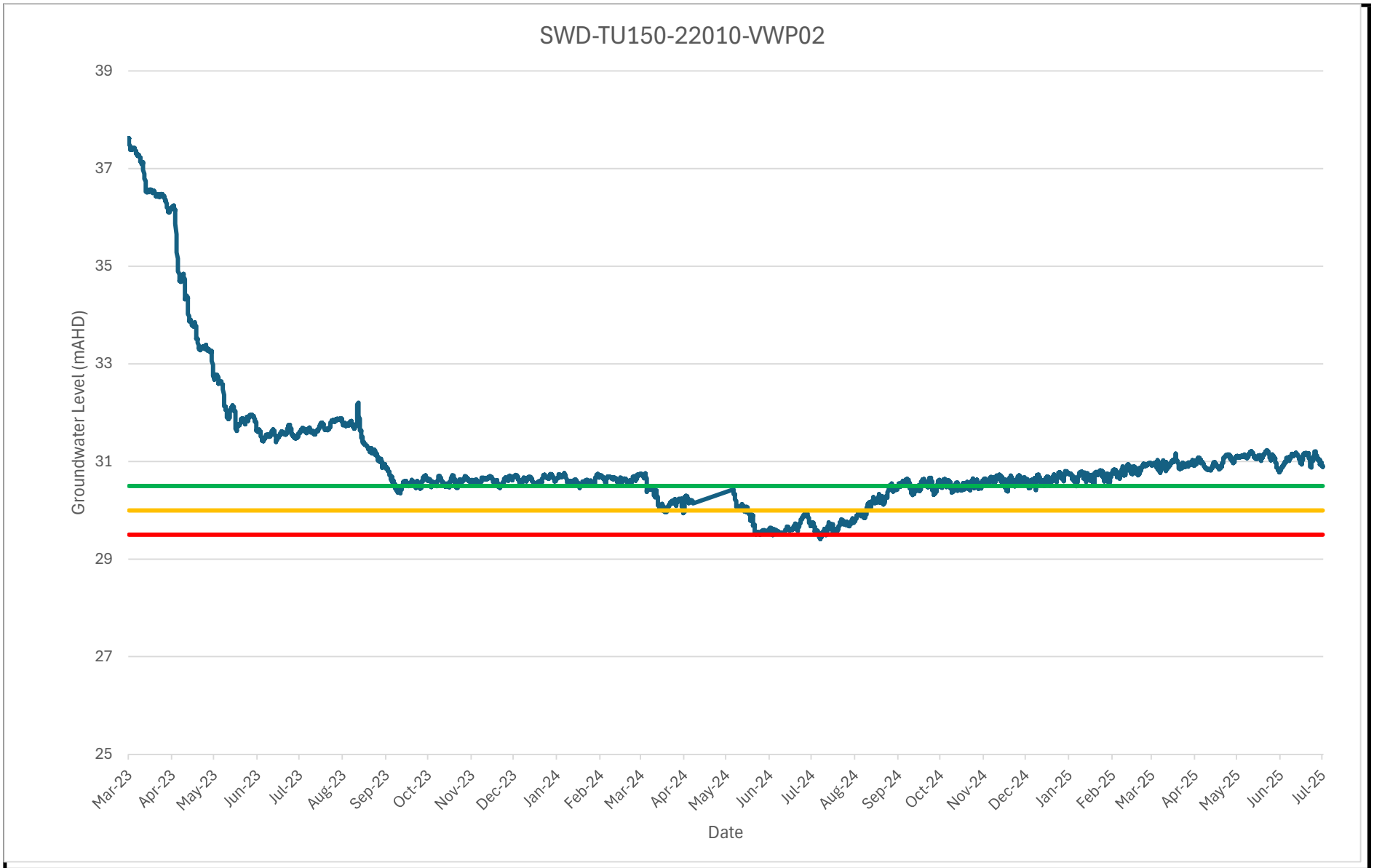

| | | | | | |
|---|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph CM-VWP 1402_03 | Sensor ID | 64166 | Figure D10 |
| | Project: | Sydney Metro - Claremont Meadows | Sensor Depths (mAHD) | 9.372 | |
| | Client: | Parklife Metro D&C | VWP Elevation (mAHD): | 26.87 | 22.0343.01 |
| | Location: | Claremont Meadows | | | |



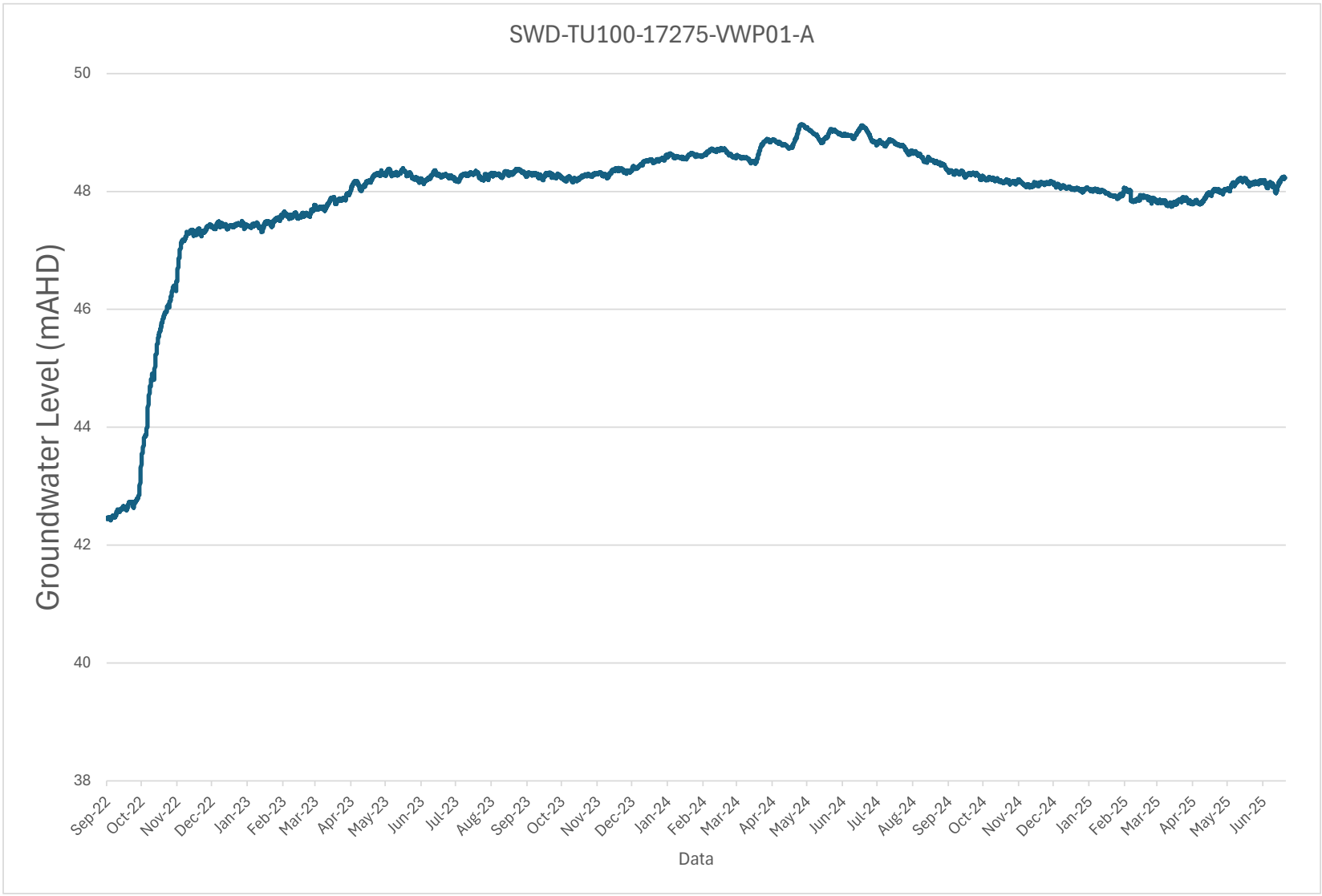

| | | | | | |
|---|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph SBT-VWP-1028 | Sensor ID | 69523 | Figure D11 |
| | Project: | Sydney Metro - Western Sydney Airport | Sensor Depths (mAHD) | 2.81 | |
| | Client: | Parklife Metro D&C | VWP Elevation (mAHD): | 30.813 | 22.0343.01 |
| | Location: | Claremont Meadows | | | |



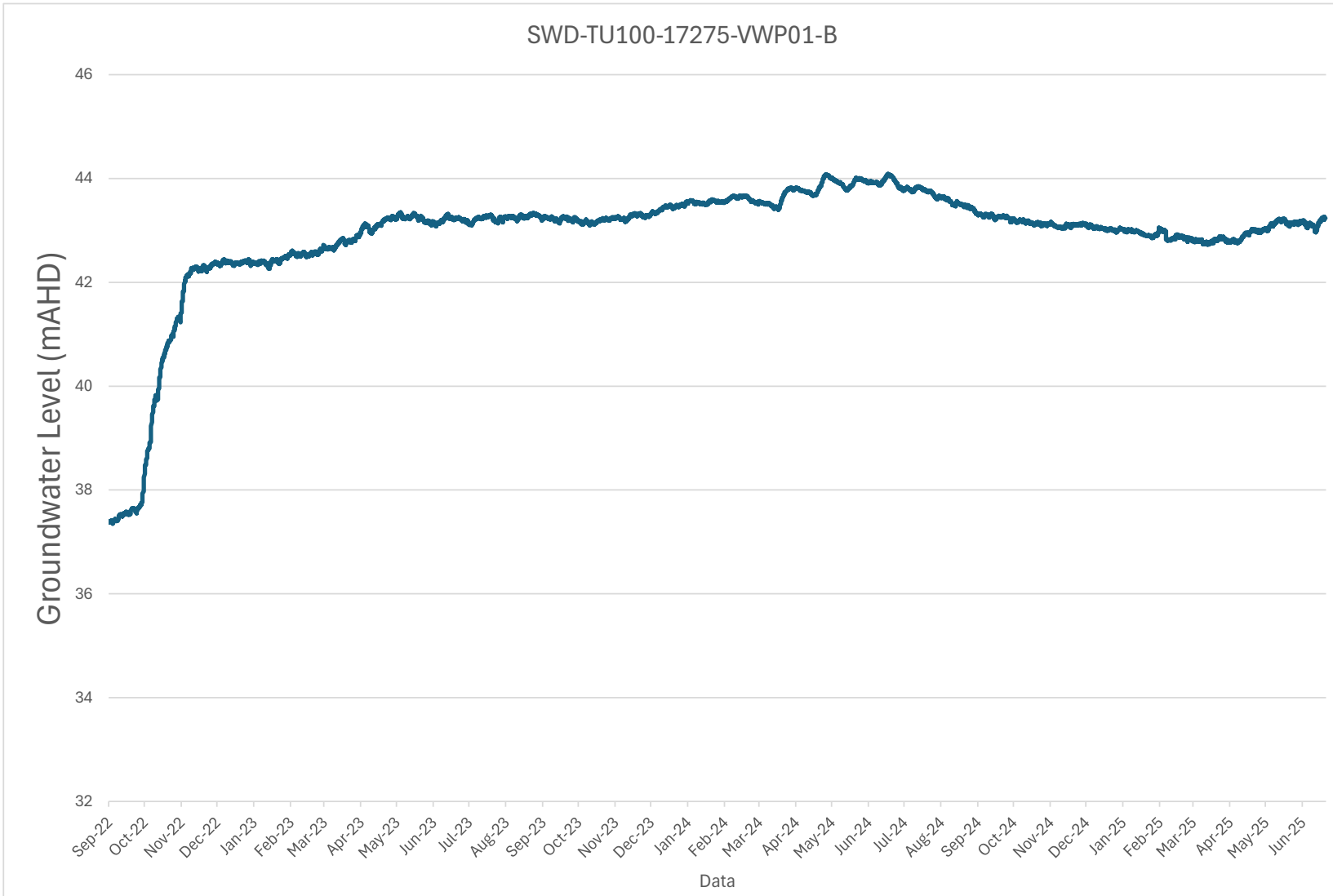

| | | | | |
|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph SBT-VWP-1028 | Sensor ID 73926<br>Sensor Depths (mAHD) 7.81<br>VWP Elevation (mAHD): 30.813 | Figure D12 |
| | Project: | Sydney Metro - Western Sydney Airport | | |
| | Client: | Parklife Metro D&C | | 22.0343.01 |
| | Location: | Claremont Meadows | | |



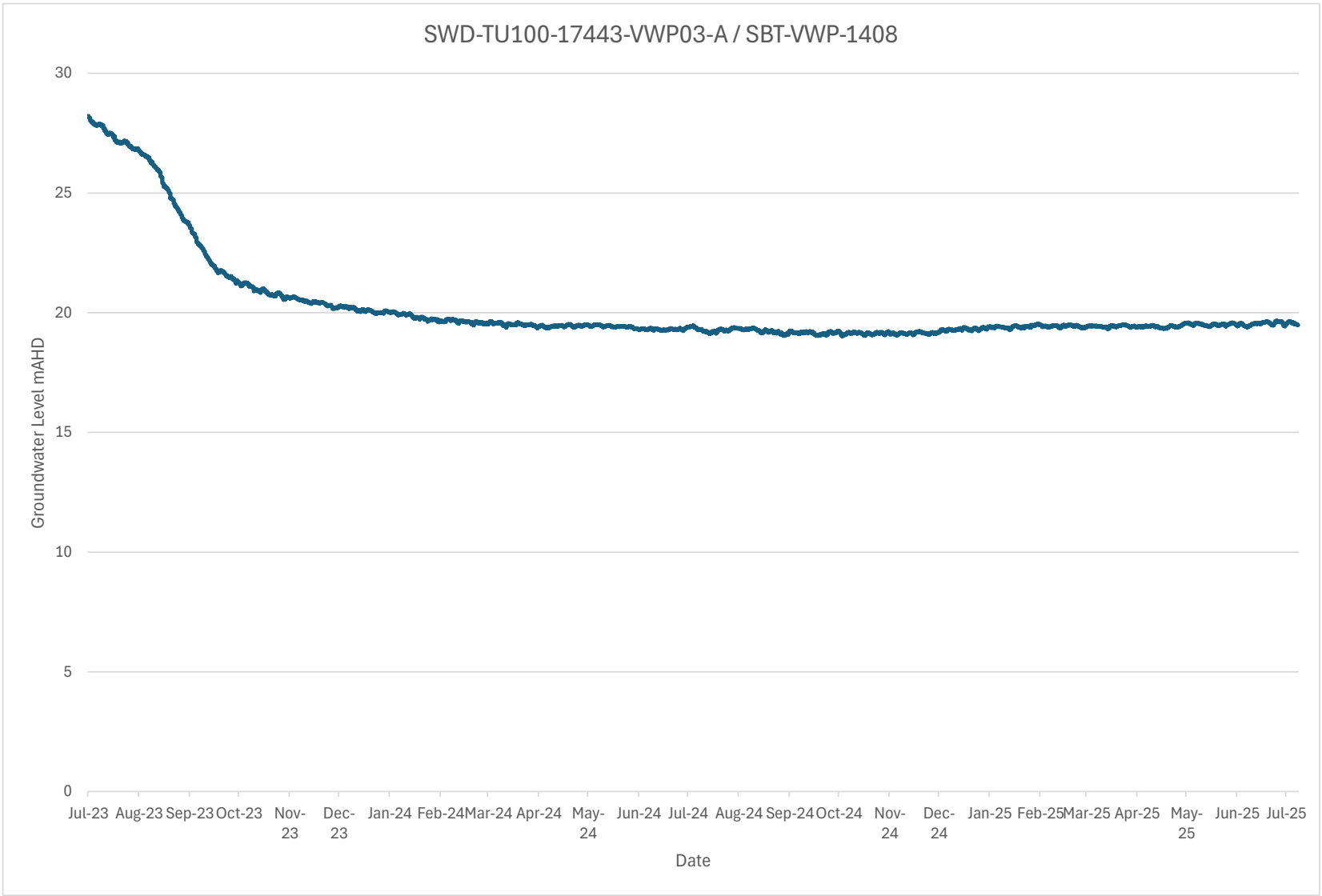

| | | | | |
|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph STB-VWP-1404 | Sensor ID 89034<br>Sensor Depths (mAHD) 22.81<br>VWP Elevation (mAHD): 40.28 | Figure D13 |
| | Project: | Sydney Metro - Western Sydney Airport | | |
| | Client: | Parklife Metro D&C | | 22.0343.01 |
| | Location: | Orchard Hills | | |




| | | | | |
|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph SWD-TU100-17275-VWP01-A | Sensor ID 56021 | Figure D14 |
| | Project: | Sydney Metro - Western Sydney Airport | Sensor Depths (mAHD) 20.155 | |
| | Client: | Parklife Metro D&C | VWP Elevation (mAHD): 37.671 | 22.0343.01 |
| | Location: | St Marys | | |

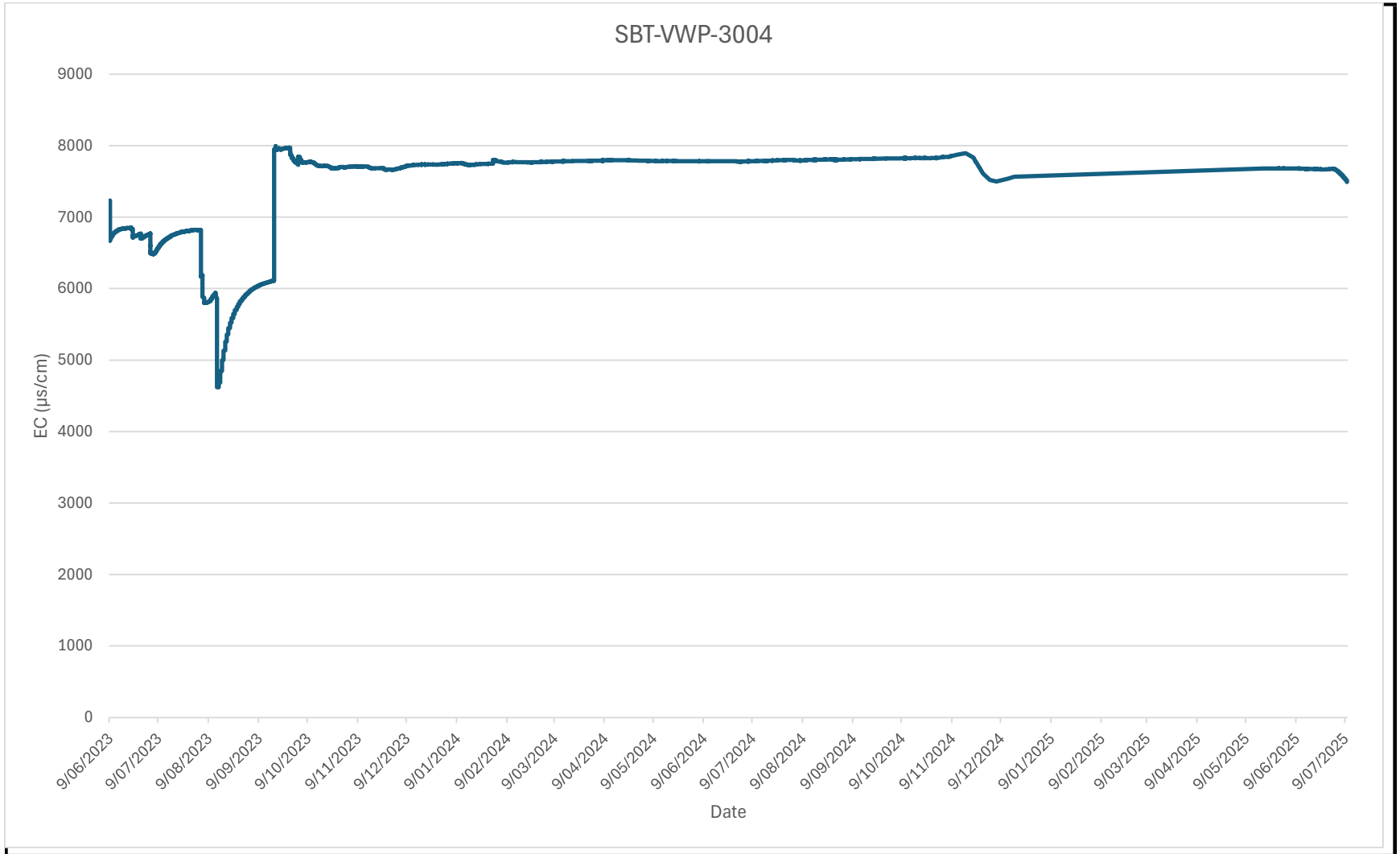



| | | | | |
|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph SWD-TU100-17275-VWP01-B | Sensor ID 56021<br>Sensor Depths (mAHD) 20.155<br>VWP Elevation (mAHD): 44.557 | Figure D15 |
| | Project: | Sydney Metro - Western Sydney Airport | | 22.0343.01 |
| | Client: | Parklife Metro D&C | | |
| | Location: | St Marys | | |

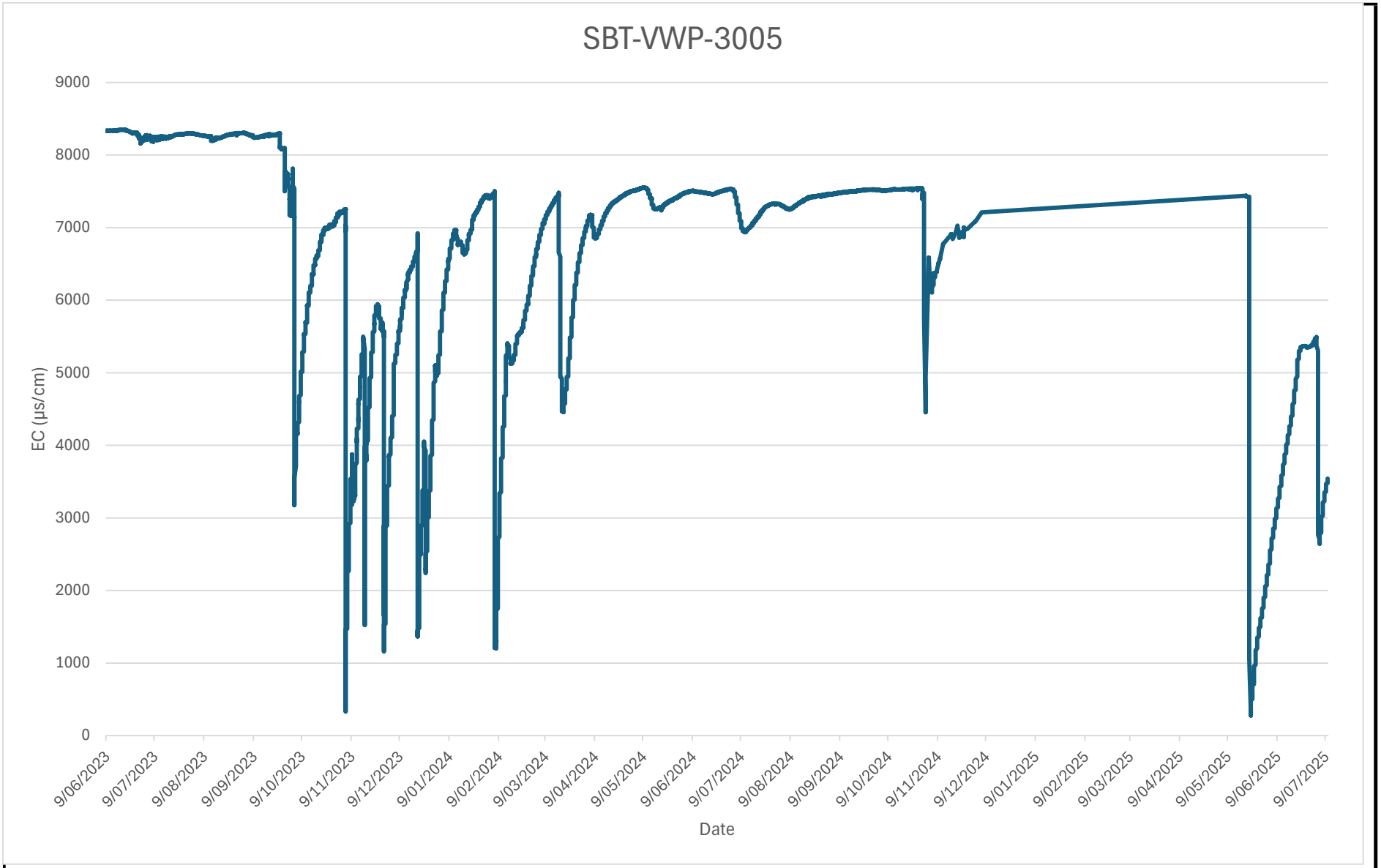



| | | | | |
|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph SBT-VWP-1408 | Sensor ID 55566<br>Sensor Depths (mAHD) 13.557<br>VWP Elevation (mAHD): 36.407 | Figure D16 |
| | Project: | Sydney Metro - Western Sydney Airport | | |
| | Client: | Parklife Metro D&C | | 22.0343.01 |
| | Location: | St Marys | | |

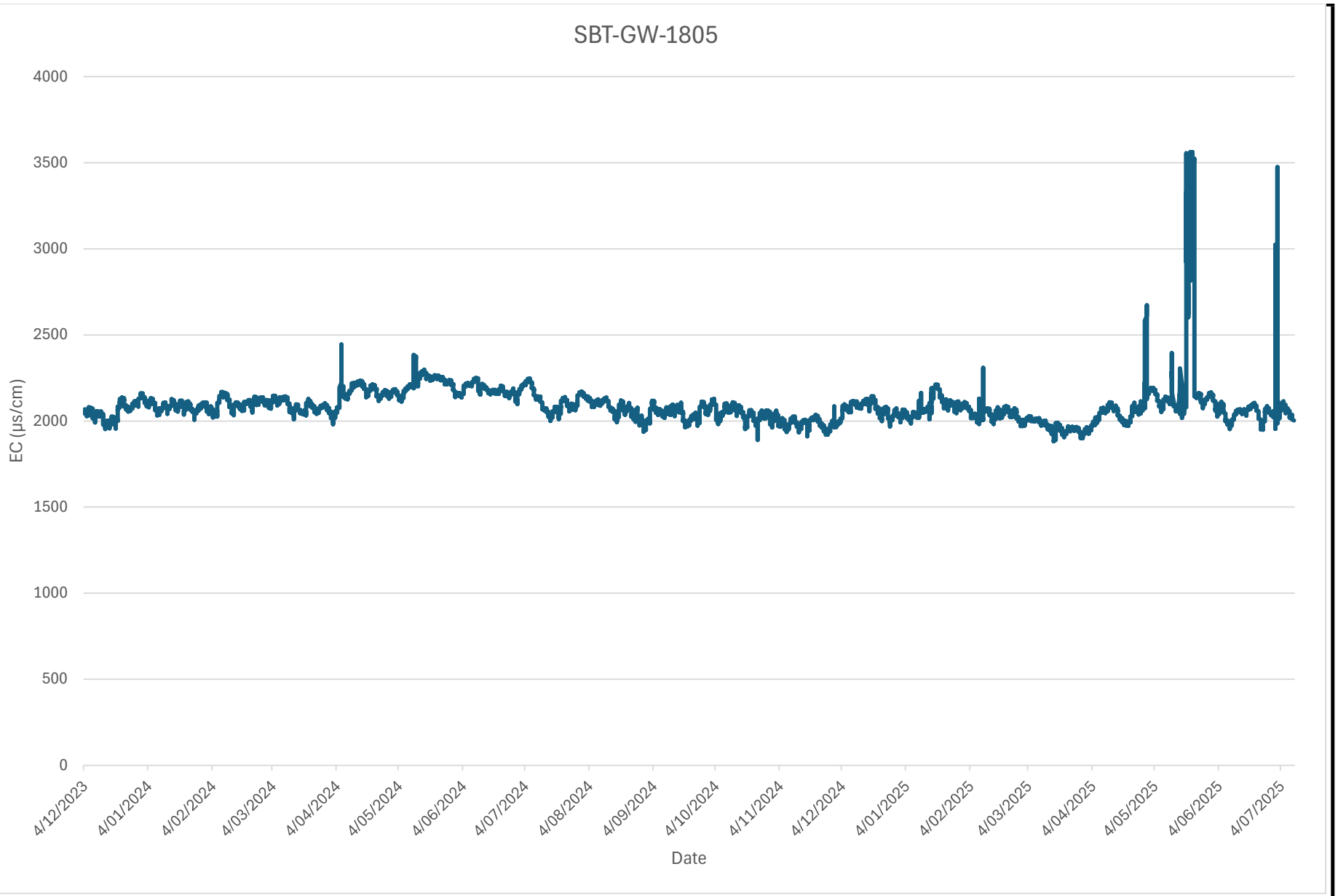
# Appendix E – GDE Hydrographs and EC Trends



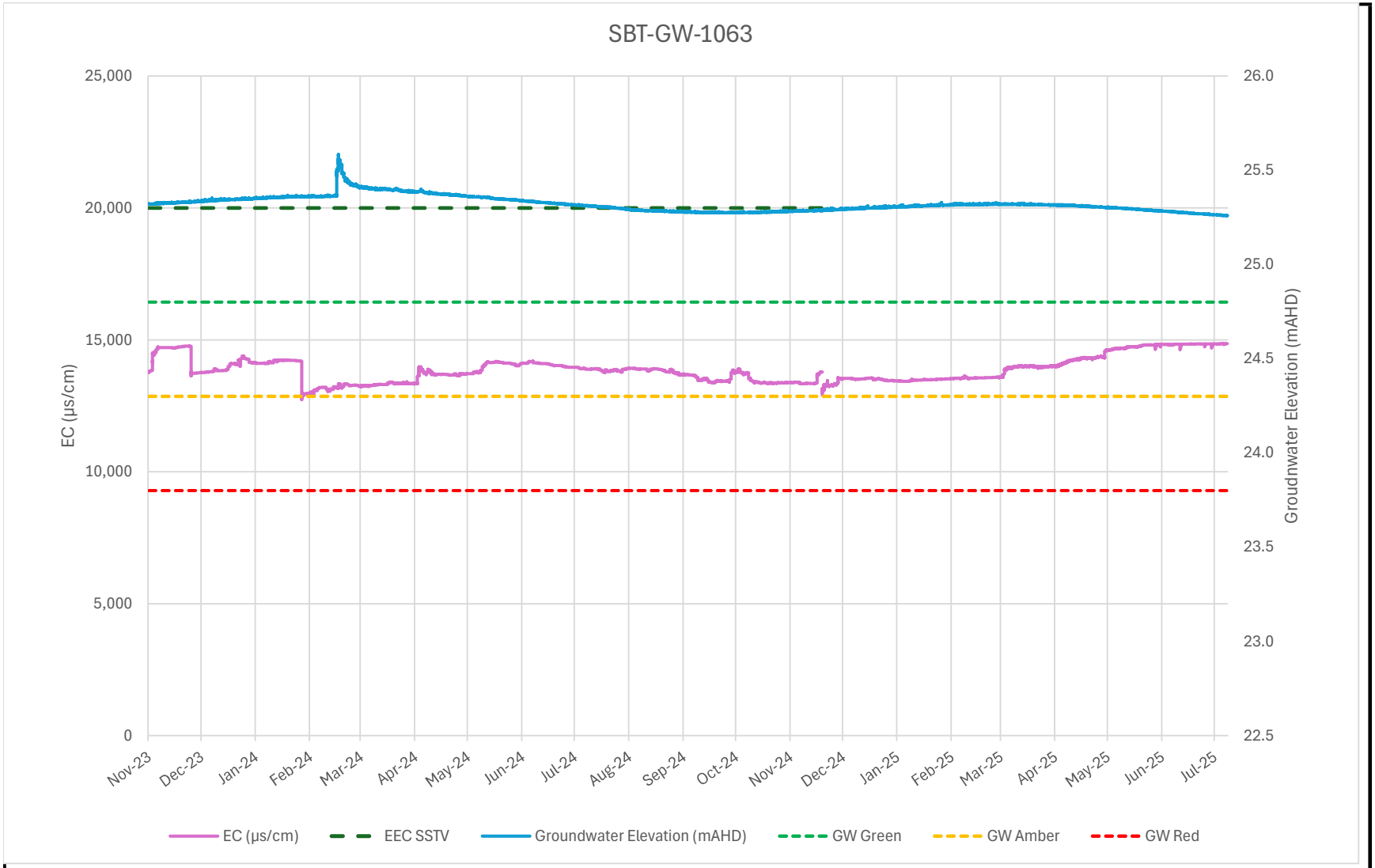

| | | | | | |
|---|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Electrical Conductivity at SBT-VWP-3004 | Sensor ID | 3004 | Figure E1 |
| | Project: | Sydney Metro - Western Sydney Airport | Screen interval | NA | |
| | Client: | Parklife Metro D&C | Screen interval | NA | 22.0343.01 |
| | Location: | Airport Business Park | Surface Elevation: | 67.378 mAHD | |



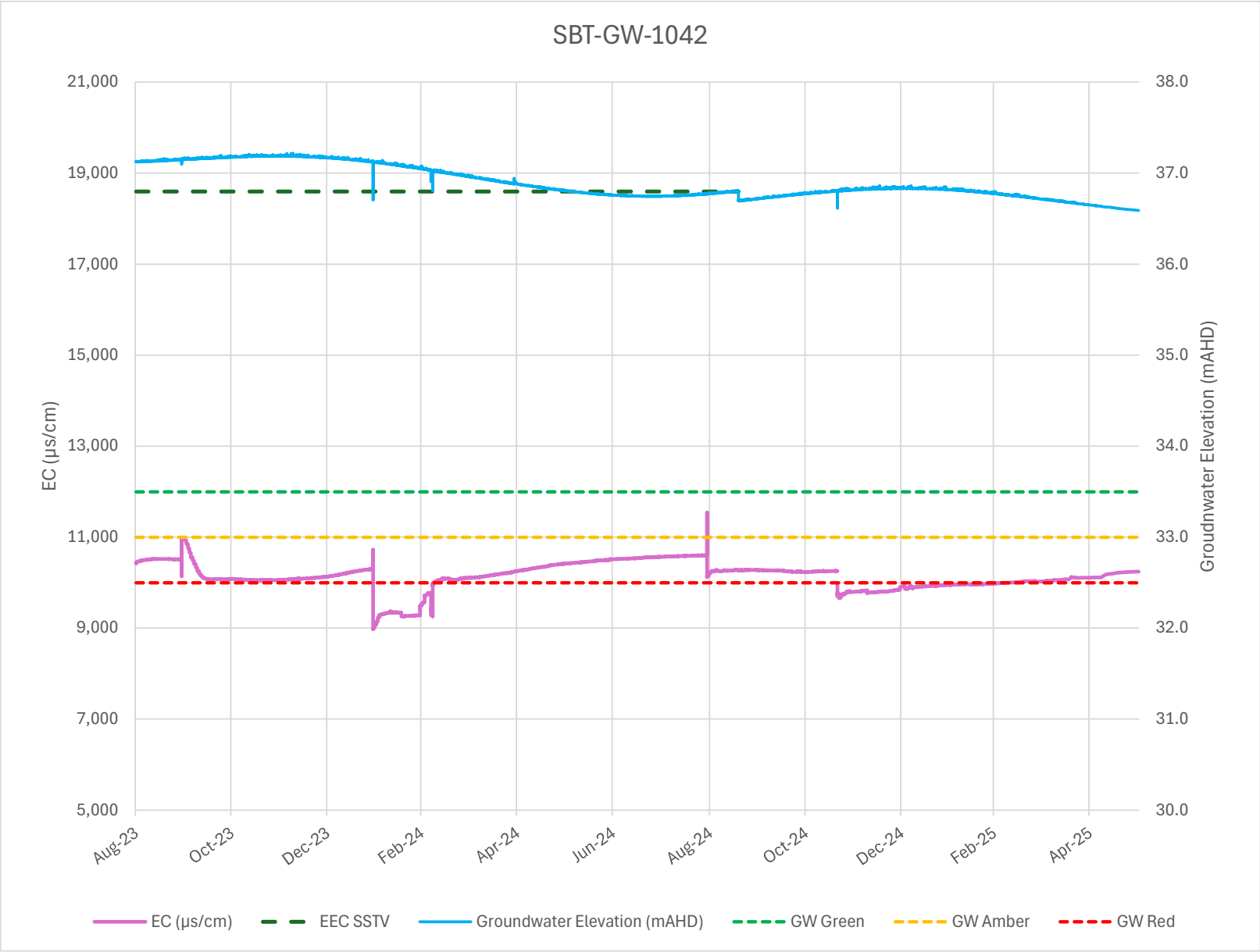

| | | | | | |
|---|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph/EC SBT-VWP-3004 | Sensor ID | 3004 | Figure E2 |
| | Project: | Sydney Metro - Western Sydney Airport | Screen interval | NA | |
| | Client: | Parklife Metro D&C | Screen interval | NA | 22.0343.01 |
| | Location: | Airport Business Park | Surface Elevation: | 67.378 mAHD | |




| | | | | | |
|---|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph/EC SBT-GW-1805 | Sensor ID | 1805 | Figure E3 |
| | Project: | Sydney Metro - Western Sydney Airport | | | |
| | Client: | Parklife Metro D&C | Screen interval | NA | 22.0343.01 |
| | Location: | Claremont Meadows | Surface Elevation: | 27.296 mAHD | |




| | | | | | |
|---|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph/EC SBT-GW-1063 | Sensor ID | 63339 | Figure E4 |
| | Project: | Sydney Metro - Western Sydney Airport | Screen interval | 20.6 - 29.6 mAHD | |
| | Client: | Parklife Metro D&C | Screen interval | 2 - 11 mbgl | 22.0343.01 |
| | Location: | Orchard Hills | Surface Elevation: | 31.558 mAHD | |



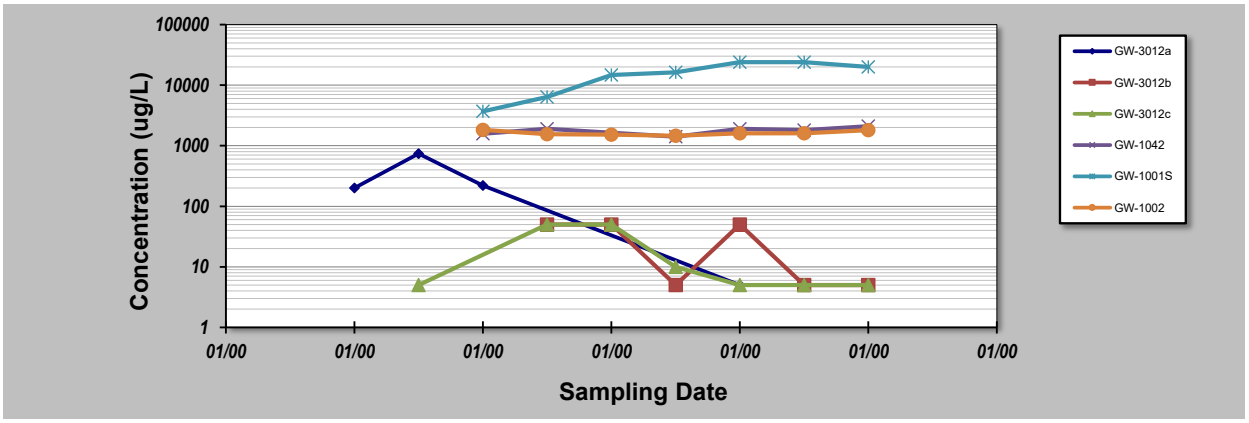

| | | | | |
|---|---|---|---|---|
| ADE CONSULTING GROUP | Title: | Hydrograph/EC SBT-GW-1042 | Sensor ID 62455<br>Screen interval 32.1 - 38.1 mAHD<br>Screen interval 2 - 8 mbgl<br>Surface Elevation: 39.08 mAHD | Figure E5 |
| | Project: | Sydney Metro - Western Sydney Airport | | |
| | Client: | Parklife Metro D&C | | 22.0343.01 |
| | Location: | Orchard Hills | | |

# Appendix F – Mann Kendall Analysis (Water Quality)

# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Al dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-3022 | GW-3012a | GW-3012b | GW-3012c | GW-1042 | GW-1001S | GW-1002 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | AL DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 02 Sep 2022 | | 5 | | | | | |
| 2 | 06 Sep 2022 | | 200 | | | | | |
| 3 | 16 Sep 2022 | | 740 | 5 | 5 | | | |
| 4 | 22 Nov 2022 | 5 | 220 | | | 1,580 | 3690 | 1,830 |
| 5 | 12 Dec 2022 | 50 | | 50 | 50 | 1,900 | 6380 | 1,550 |
| 6 | 17 Jan 2023 | 50 | 220 | 50 | 50 | | 14700 | 1,520 |
| 7 | 09 Oct 2023 | | | 5 | 10 | 1,410 | 16300 | 1,460 |
| 8 | 04 Sep 2024 | | 5 | 50 | 5 | 1,900 | 24000 | 1,600 |
| 9 | 20 Nov 2024 | 5 | 5 | 5 | 5 | 1800 | 24000 | 1600 |
| 10 | 13 Mar 2025 | 20 | 5 | 5 | 5 | 2100 | 20000 | 1800 |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.87 | 1.46 | 0.90 | 1.16 | 0.14 | 0.52 | 0.09 |
| Mann-Kendall Statistic (S): | | 0 | -15 | -13 | -8 | 6 | 16 | 2 |
| Confidence Factor: | | 40.8% | 99.9% | 99.2% | 84.5% | 81.5% | 99.0% | 55.7% |
| Concentration Trend: | | Stable | Decreasing | Decreasing | No Trend | No Trend | Increasing | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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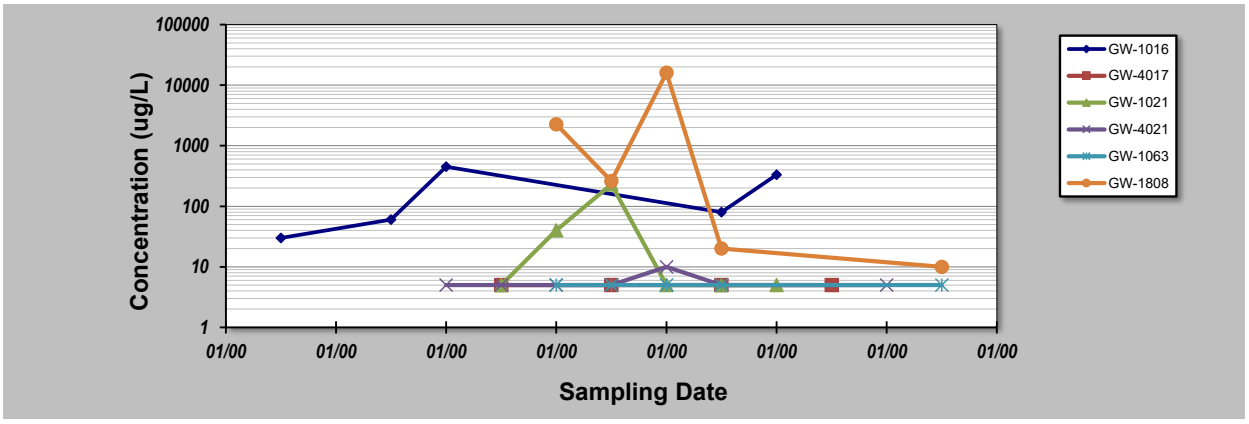
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Al - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1005 | GW-1016 | GW-4017 | GW-1021 | GW-4021 | GW-1063 | GW-1808 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | AL - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 02 Sep 2022 | | 30 | | | | | |
| 2 | 06 Sep 2022 | | 5 | | | | | |
| 3 | 16 Sep 2022 | | 60 | | | | | |
| 4 | 22 Nov 2022 | 5 | 450 | | | 5 | | |
| 5 | 12 Dec 2022 | 30 | 5 | 5 | 5 | 5 | | |
| 6 | 17 Jan 2023 | 5 | 5 | | 40 | 5 | 5 | 2,260 |
| 7 | 09 Oct 2023 | 40 | 60 | 5 | 230 | 5 | 5 | 260 |
| 8 | 04 Sep 2024 | 10 | 90 | 5 | 5 | 10 | 5 | 16,000 |
| 9 | 20 Nov 2024 | 10 | 80 | 5 | 5 | 5 | 5 | 20 |
| 10 | 09 Jul 2025 | 5 | 330 | | 5 | | | |
| 11 | 30 Jul 2025 | | | 5 | | | | |
| 12 | 14 Jul 2025 | | | | | 5 | | |
| 13 | 10 Jul 2025 | | | | | | 5 | 10 |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.94 | 0.99 | 0.00 | 1.86 | 0.33 | 0.00 | 1.87 |
| Mann-Kendall Statistic (S): | | -1 | 14 | 0 | -3 | 2 | 0 | -6 |
| Confidence Factor: | | 50.0% | 100.0% | 37.5% | 64.0% | 55.7% | 40.8% | 88.3% |
| Concentration Trend: | | Stable | Increasing | Stable | No Trend | No Trend | Stable | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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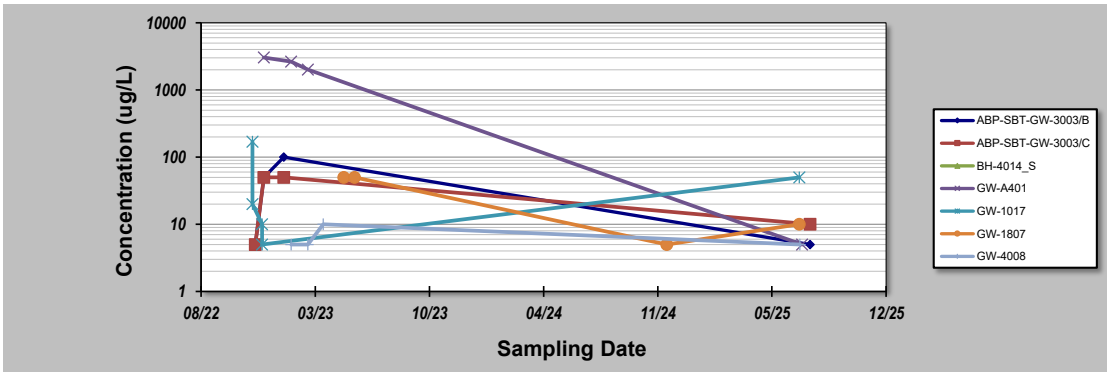
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Al - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | ABP-SBT-GW-3003 | ABP-SBT-GW-3003 | BH-4014_S | GW-A401 | GW-1017 | GW-1807 | GW-4008 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | AL - DISSOLVED CONCENTRATION (ug/L) | | | | | |
| 1 | 30 Nov 2022 | 5 | 5 | | | | |
| 2 | 15 Dec 2022 | 50 | 50 | | | | |
| 3 | 19 Jan 2023 | 100 | 50 | | | | |
| 4 | 29 Jul 2025 | 5 | 10 | | | | |
| 5 | 30 Nov 2022 | | | | | | |
| 6 | 15 Dec 2022 | | | | | | |
| 7 | 19 Jan 2023 | | | | | | |
| 8 | 29 Jul 2025 | | | 5 | | | |
| 9 | 15 Dec 2022 | | | | 3040 | | |
| 10 | 01 Feb 2023 | | | | 2650 | | |
| 11 | 02 Mar 2023 | | | | 2010 | | |
| 12 | 15 Jul 2025 | | | | 5 | | |
| 13 | 21 Oct 2022 | | | | | | |
| 14 | 21 Oct 2022 | | | | | | |
| 15 | 28 Oct 2022 | | | | | | |
| 16 | 28 Oct 2022 | | | | | | |
| 17 | 25 Nov 2022 | | | | | 170 | |
| 18 | 25 Nov 2022 | | | | | 20 | |
| 19 | 12 Dec 2022 | | | | | 10 | |
| 20 | 12 Dec 2022 | | | | | 5 | |
| 21 | 10 Jul 2025 | | | | | 50 | |
| 22 | 04 May 2023 | | | | | | 50 |
| 23 | 23 May 2023 | | | | | | 50 |
| 24 | 20 Nov 2024 | | | | | | 5 |
| 25 | 10 Jul 2025 | | | | | | 10 |
| 26 | 28 Oct 2022 | | | | | | |
| 27 | 01 Feb 2023 | | | | | | 5 |
| 28 | 02 Mar 2023 | | | | | | 5 |
| 29 | 29 Mar 2023 | | | | | | 10 |
| 30 | 11 Jul 2025 | | | | | | 5 |
| 31 | | | | | | | |
| 32 | | | | | | | |
| 33 | | | | | | | |
| 34 | | | | | | | |
| 35 | | | | | | | |
| Coefficient of Variation: | | 1.13 | 0.86 | | 0.70 | 1.35 | 0.86 | 0.40 |
| Mann-Kendall Statistic (S): | | 1 | 1 | | -6 | -4 | -3 | 1 |
| Confidence Factor: | | 50.0% | 50.0% | | 95.8% | 75.8% | 72.9% | 50.0% |
| Concentration Trend: | | No Trend | No Trend | | Decreasing | No Trend | Stable | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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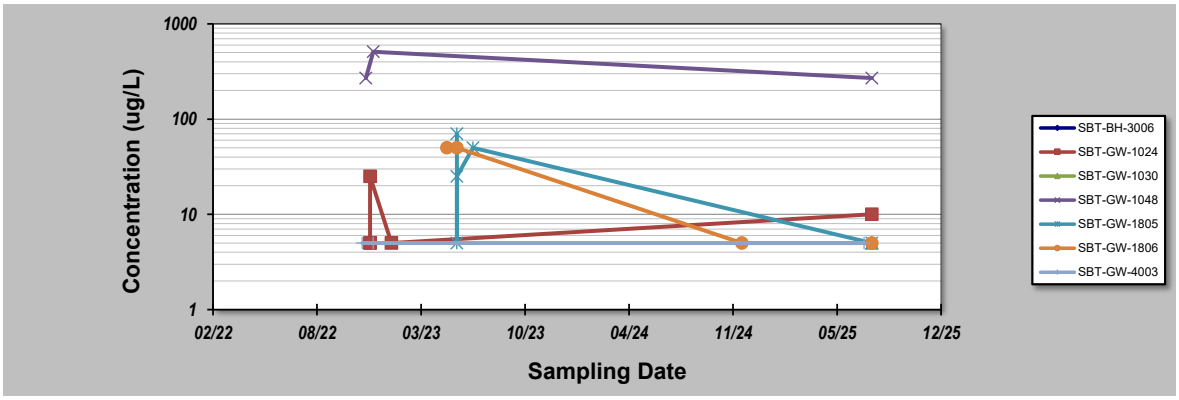
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Al - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | SBT-BH-3006 | SBT-GW-1024 | SBT-GW-1030 | SBT-GW-1048 | SBT-GW-1805 | SBT-GW-1806 | SBT-GW-4003 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | AL - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 30 Jul 2025 | 5 | | | | | | |
| 2 | 07 Dec 2022 | | 5 | | | | | |
| 3 | 07 Dec 2022 | | 5 | | | | | |
| 4 | 07 Dec 2022 | | 25 | | | | | |
| 5 | 07 Dec 2022 | | | | | | | |
| 6 | 07 Dec 2022 | | | | | | | |
| 7 | 17 Jan 2023 | | 5 | | | | | |
| 8 | 29 Jul 2025 | | 10 | | | | | |
| 9 | 29 Jul 2025 | | | 5 | | | | |
| 10 | 29 Nov 2022 | | | | 270 | | | |
| 11 | 13 Dec 2022 | | | | 510 | | | |
| 12 | 29 Jul 2025 | | | | 270 | | | |
| 13 | 23 May 2023 | | | | | 70 | | |
| 14 | 23 May 2023 | | | | | 5 | | |
| 15 | 23 May 2023 | | | | | 25 | | |
| 16 | 23 Jun 2023 | | | | | 50 | | |
| 17 | 29 Jul 2025 | | | | | 5 | | |
| 18 | 04 May 2023 | | | | | | 50 | |
| 19 | 23 May 2023 | | | | | | 50 | |
| 20 | 23 May 2023 | | | | | | | |
| 21 | 21 Nov 2024 | | | | | | 5 | |
| 22 | 29 Jul 2025 | | | | | | 5 | |
| 23 | 25 Jul 2022 | | | | | | | |
| 24 | 25 Jul 2022 | | | | | | | |
| 25 | 22 Nov 2022 | | | | | | | 5 |
| 26 | 13 Dec 2022 | | | | | | | 5 |
| 27 | 14 Jul 2025 | | | | | | | 5 |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| Coefficient of Variation: | | | 0.87 | | 0.40 | 0.92 | 0.94 | 0.00 |
| Mann-Kendall Statistic (S): | | | 3 | | 0 | -3 | -4 | 0 |
| Confidence Factor: | | | 67.5% | | | 67.5% | 83.3% | |
| Concentration Trend: | | | No Trend | | | Stable | Stable | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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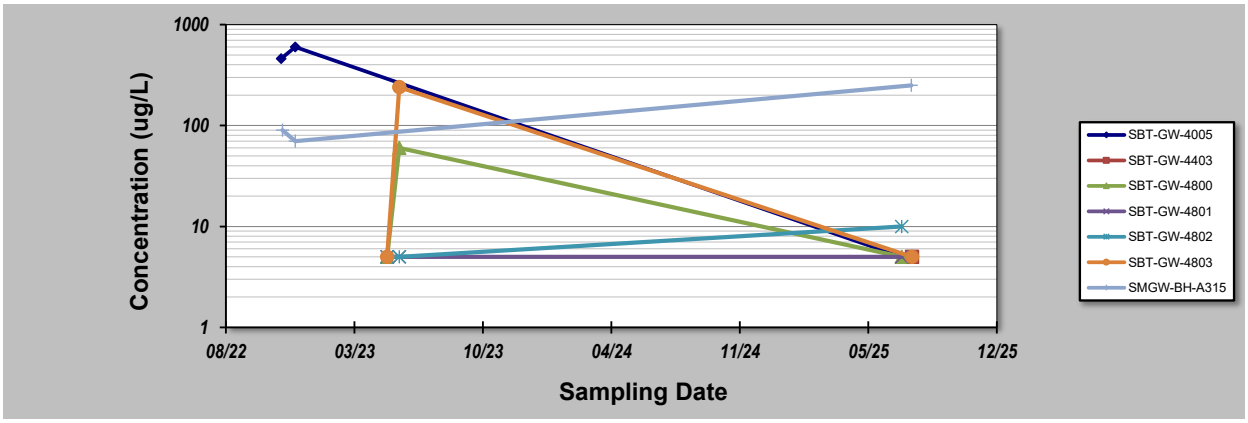
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Al - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | SBT-GW-4005 | SBT-GW-4403 | SBT-GW-4800 | SBT-GW-4801 | SBT-GW-4802 | SBT-GW-4803 | SMGW-BH-A315 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | AL - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 21 Nov 2022 | 460 | | | | | | |
| 2 | 13 Dec 2022 | 600 | | | | | | |
| 3 | 14 Jul 2025 | 5 | | | | | | |
| 4 | 30 Jul 2025 | | 5 | | | | | |
| 5 | 05 May 2023 | | | 5 | | | | |
| 6 | 24 May 2023 | | | 60 | | | | |
| 7 | 14 Jul 2025 | | | 5 | | | | |
| 8 | 05 May 2023 | | | | 5 | | | |
| 9 | 24 May 2023 | | | | 5 | | | |
| 10 | 14 Jul 2025 | | | | 5 | | | |
| 11 | 05 May 2023 | | | | | 5 | | |
| 12 | 24 May 2023 | | | | | 5 | | |
| 13 | 14 Jul 2025 | | | | | 10 | | |
| 14 | 05 May 2023 | | | | | | 5 | |
| 15 | 24 May 2023 | | | | | | 240 | |
| 16 | 30 Jul 2025 | | | | | | 5 | |
| 17 | 23 Nov 2022 | | | | | | | 90 |
| 18 | 13 Dec 2022 | | | | | | | 70 |
| 19 | 29 Jul 2025 | | | | | | | 250 |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.88 | | 1.36 | 0.00 | 0.43 | 1.63 | 0.72 |
| Mann-Kendall Statistic (S): | | -1 | | 0 | 0 | 2 | 0 | 1 |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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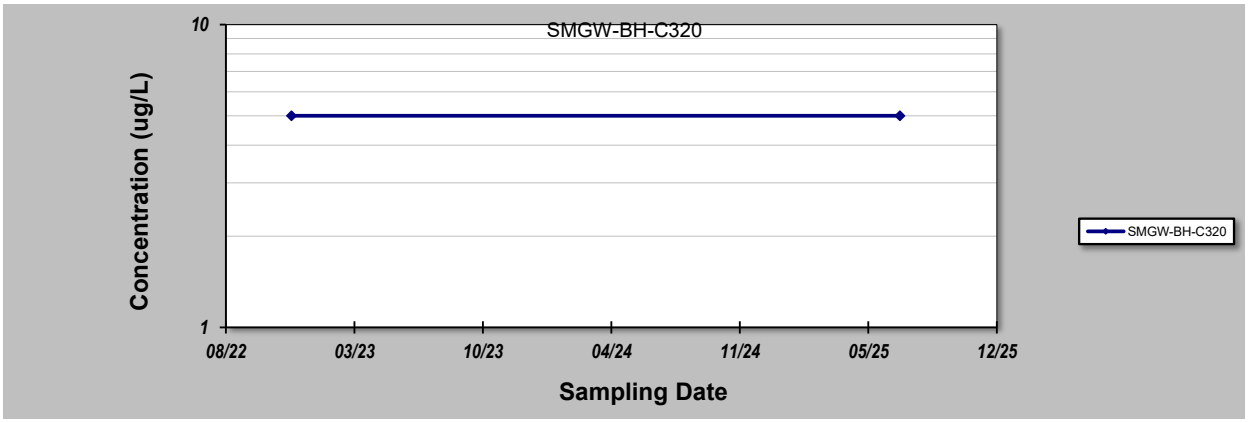
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Al - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |
| Sampling Point ID: | SMGW-BH-C320 | | |

| Sampling Event | Sampling Date | AL - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 07 Dec 2022 | 5 | | | | | | |
| 2 | 11 Jul 2025 | 5 | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.00 | | | | | | |
| Mann-Kendall Statistic (S): | | 0 | | | | | | |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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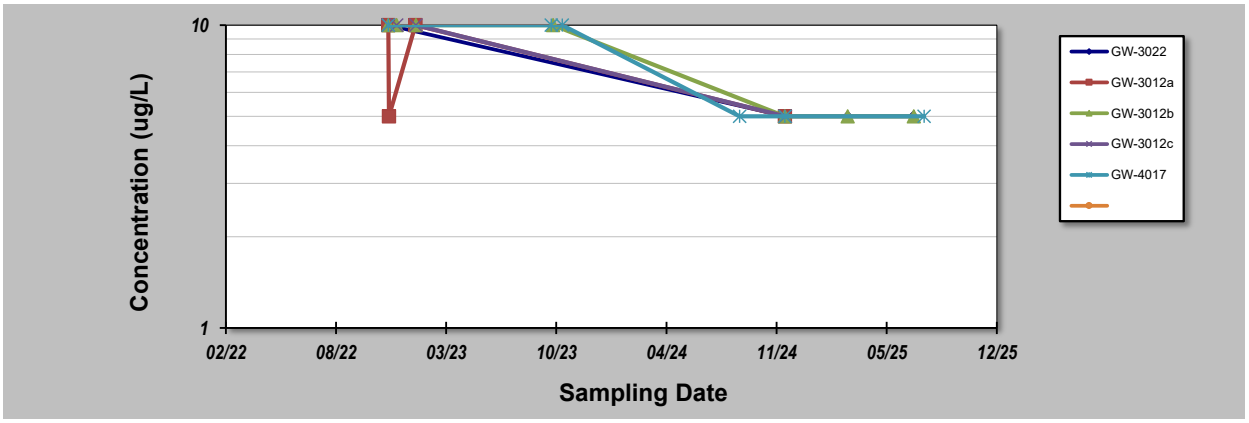
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 14-Jan-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C6 - C9 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-3022 | GW-3012a | GW-3012b | GW-3012c | GW-4017 | | GW-1042 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TPH C6 - C9 CONCENTRATION (ug/L) | | | | | | |
| 1 | 28 Jul 2022 | | | | | | | |
| 2 | 04 Aug 2022 | | | | | | | 10 |
| 3 | 15 Sep 2022 | | | | | | | |
| 4 | 23 Nov 2022 | | | | | | | 10 |
| 5 | 30 Nov 2022 | 10 | 10 | 10 | 10 | 10 | | |
| 6 | 01 Dec 2022 | | 5 | | | 10 | | |
| 7 | 13 Dec 2022 | | | | | | | 10 |
| 8 | 15 Dec 2022 | 10 | | 10 | 10 | | | |
| 9 | 18 Jan 2023 | | 10 | | | | | |
| 10 | 19 Jan 2023 | 10 | | 10 | 10 | | | |
| 11 | 22 Sep 2023 | | | | | 10 | | |
| 12 | 25 Sep 2023 | | | 10 | | | | |
| 13 | 12 Oct 2023 | | | | | 10 | | |
| 14 | 28 Aug 2024 | | | | | | | 10 |
| 15 | 29 Aug 2024 | | | | | 5 | | |
| 16 | 19 Nov 2024 | | 5 | 5 | | 5 | | |
| 17 | 20 Nov 2024 | 5 | | | 5 | | | |
| 18 | 13 Mar 2025 | 5 | | 5 | | | | |
| 19 | 10 Jul 2025 | 5 | | | | | | |
| 20 | 11 Jul 2025 | | | 5 | | | | |
| 21 | 30 Jul 2025 | | | | | 5 | | |
| 22 | | | | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| Coefficient of Variation: | | 0.40 | 0.38 | 0.34 | 0.29 | 0.37 | | 0.00 |
| Mann-Kendall Statistic (S): | | -7 | -2 | -12 | -3 | -13 | | 0 |
| Confidence Factor: | | 100.0% | 62.5% | 94.9% | 72.9% | 99.2% | | 37.5% |
| Concentration Trend: | | Decreasing | Stable | Prob. Decreasing | Stable | Decreasing | | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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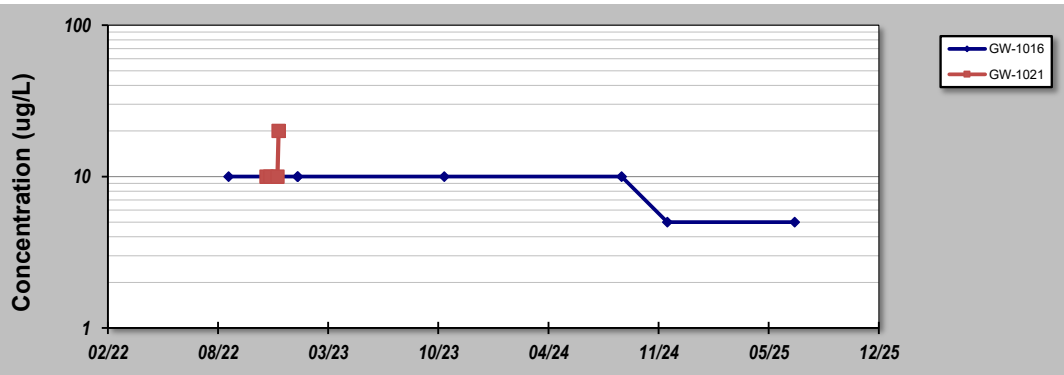
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C6-C9 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1016 | GW-1021 | | | | | |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TPH C6-C9 CONCENTRATION (ug/L) | | | | | | |
| 1 | 28 Jul 2022 | | | | | | | |
| 2 | 04 Aug 2022 | | | | | | | |
| 3 | 15 Sep 2022 | 10 | | | | | | |
| 4 | 23 Nov 2022 | 10 | 10.0 | | | | | |
| 5 | 30 Nov 2022 | | 10.0 | | | | | |
| 6 | 01 Dec 2022 | | | | | | | |
| 7 | 13 Dec 2022 | | 10.0 | | | | | |
| 8 | 15 Dec 2022 | | 20.0 | | | | | |
| 9 | 18 Jan 2023 | 10 | | | | | | |
| 10 | 19 Jan 2023 | 10 | | | | | | |
| 11 | 20 Sep 2023 | | | | | | | |
| 12 | 22 Sep 2023 | | | | | | | |
| 13 | 25 Sep 2023 | | | | | | | |
| 14 | 29 Sep 2023 | | | | | | | |
| 15 | 12 Oct 2023 | 10 | | | | | | |
| 16 | 28 Aug 2024 | | | | | | | |
| 17 | 29 Aug 2024 | 10 | | | | | | |
| 18 | 19 Nov 2024 | | | | | | | |
| 19 | 20 Nov 2024 | 5 | | | | | | |
| 20 | 09 Jul 2025 | 5 | | | | | | |
| 21 | | | | | | | | |
| 22 | | | | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| Coefficient of Variation: | | 0.26 | 0.40 | | | | | |
| Mann-Kendall Statistic (S): | | -12 | 3 | | | | | |
| Confidence Factor: | | 91.1% | 72.9% | | | | | |
| Concentration Trend: | | Prob. Decreasing | No Trend | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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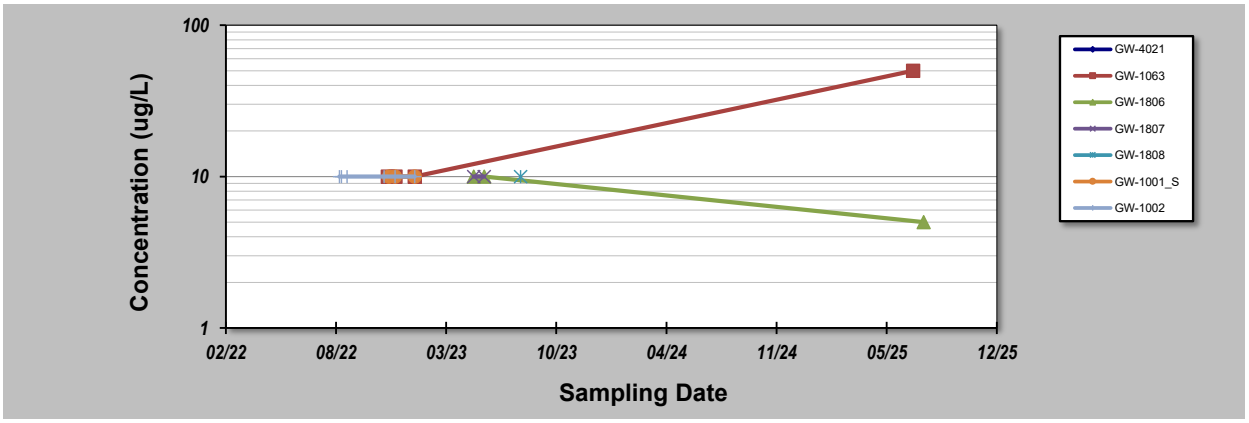
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C6-C9 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-4021 | GW-1063 | GW-1806 | GW-1807 | GW-1808 | GW-1001_S | GW-1002 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TPH C6-C9 CONCENTRATION (ug/L) | | | | | | |
| 1 | 29 Nov 2022 | | 10 | | | | | |
| 2 | 13 Dec 2022 | | 10 | | | | | |
| 3 | 17 Jan 2023 | | 10 | | | | | |
| 4 | 21 Nov 2024 | | | | | | | |
| 5 | 10 Jul 2025 | | 50 | | | | | |
| 6 | 04 May 2023 | | | 10 | | | | |
| 7 | 23 May 2023 | | | 10 | | | | |
| 8 | 23 May 2023 | | | | | | | |
| 9 | 21 Nov 2024 | | | | | | | |
| 10 | 29 Jul 2025 | | | 5 | | | | |
| 11 | 04 May 2023 | | | | 10 | | | |
| 12 | 23 May 2023 | | | | 10 | | | |
| 13 | 20 Nov 2024 | | | | | | | |
| 14 | 10 Jul 2025 | | | | | | | |
| 15 | 28 Jul 2023 | | | | | 10 | | |
| 16 | 01 Dec 2022 | | | | | | 10 | |
| 17 | 12 Dec 2022 | | | | | | 10 | |
| 18 | 17 Jan 2023 | | | | | | 10.0 | |
| 19 | 02 Sep 2022 | | | | | | | 10 |
| 20 | 06 Sep 2022 | | | | | | | 10 |
| 21 | 16 Sep 2022 | | | | | | | 10 |
| 22 | 22 Nov 2022 | | | | | | | 10 |
| 23 | 12 Dec 2022 | | | | | | | 10 |
| 24 | 17 Jan 2023 | | | | | | | 10 |
| 25 | | | | | | | | |
| Coefficient of Variation: | | | 1.00 | 0.35 | 0.00 | | 0.00 | 0.00 |
| Mann-Kendall Statistic (S): | | | 3 | -2 | 0 | | 0 | 0 |
| Confidence Factor: | | | 72.9% | | | | | 39.3% |
| Concentration Trend: | | | No Trend | | | | | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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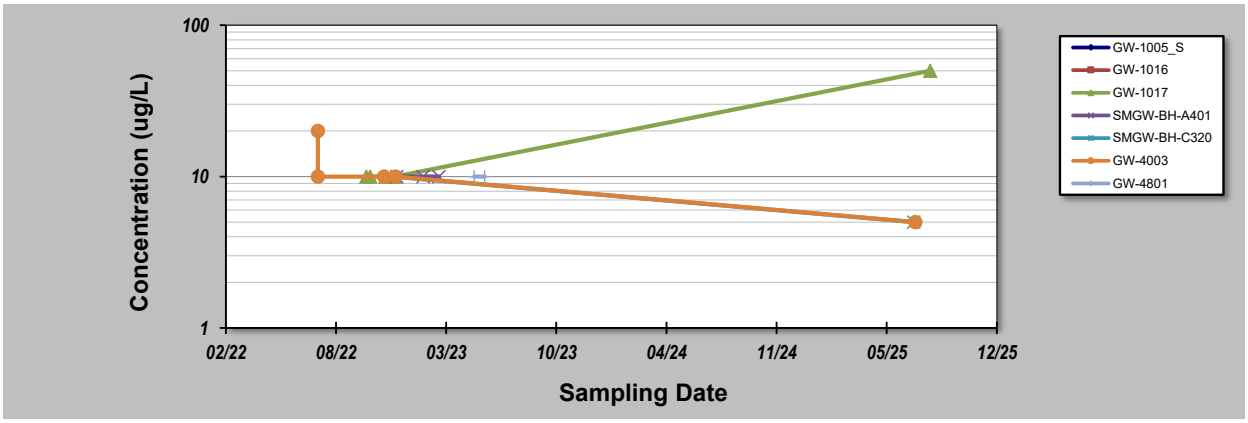
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C6-C9 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1005_S | GW-1016 | GW-1017 | SMGW-BH-A401 | SMGW-BH-C320 | GW-4003 | GW-4801 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TPH C6-C9 CONCENTRATION (ug/L) | | | | | | |
| 1 | 25 Nov 2022 | 10 | | | | | | |
| 2 | 12 Dec 2022 | 10 | | | | | | |
| 3 | 17 Jan 2023 | 10 | | | | | | |
| 4 | 21 Oct 2022 | | 10 | 10.00 | | | | |
| 5 | 28 Oct 2022 | | | 10 | | | | |
| 6 | 25 Nov 2022 | | | 10 | | | | |
| 7 | 12 Dec 2022 | | | 10 | | | | |
| 8 | 10 Aug 2025 | | | 50 | | | | |
| 9 | 15 Dec 2022 | | | | 10 | | | |
| 10 | 01 Feb 2023 | | | | 10 | | | |
| 11 | 02 Mar 2023 | | | | 10 | | | |
| 12 | 07 Dec 2022 | | | | | 10.0 | | |
| 13 | 11 Jul 2025 | | | | | 5.0 | | |
| 14 | 25 Jul 2022 | | | | | | 20 | |
| 15 | 25 Jul 2022 | | | | | | 10 | |
| 16 | 22 Nov 2022 | | | | | | 10 | |
| 17 | 13 Dec 2022 | | | | | | 10 | |
| 18 | 14 Jul 2025 | | | | | | 5.0 | |
| 19 | 05 May 2023 | | | | | | | 10.0 |
| 20 | 24 May 2023 | | | | | | | 10.0 |
| 21 | | | | | | | | |
| 22 | | | | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| Coefficient of Variation: | | 0.00 | | 0.99 | 0.00 | 0.47 | 0.50 | 0.00 |
| Mann-Kendall Statistic (S): | | 2 | | 4 | 0 | -1 | -7 | 0 |
| Confidence Factor: | | | | 75.8% | | | 92.1% | |
| Concentration Trend: | | | | No Trend | | | Prob. Decreasing | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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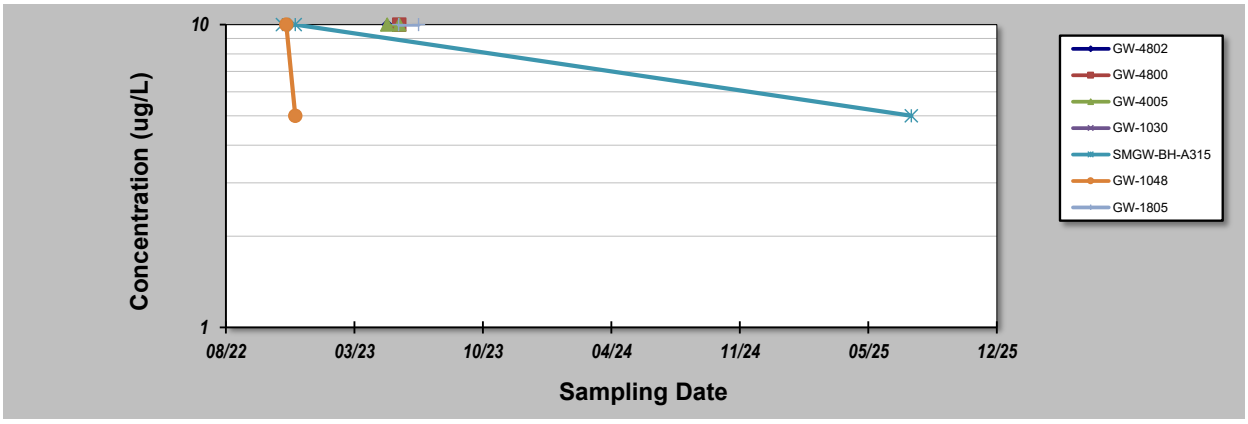
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C6-C9 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-4802 | GW-4800 | GW-4005 | GW-1030 | SMGW-BH-A315 | GW-1048 | GW-1805 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TPH C6-C9 CONCENTRATION (ug/L) | | | | | | |
| 1 | 05 May 2023 | 10 | 10 | 10.00 | | | | |
| 2 | 24 May 2023 | 10 | 10 | 10.00 | | | | |
| 3 | 23 Nov 2022 | | | | | 10 | | |
| 4 | 13 Dec 2022 | | | | | 10 | | |
| 5 | 29 Jul 2025 | | | | | 5 | | |
| 6 | 29 Nov 2022 | | | | | | 10 | |
| 7 | 13 Dec 2022 | | | | | | 5 | |
| 8 | 23 May 2023 | | | | | | | 10.0 |
| 9 | 23 Jun 2023 | | | | | | | 10.0 |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.00 | | 0.00 | | 0.35 | 0.47 | 0.00 |
| Mann-Kendall Statistic (S): | | 0 | | 0 | | -2 | -1 | 0 |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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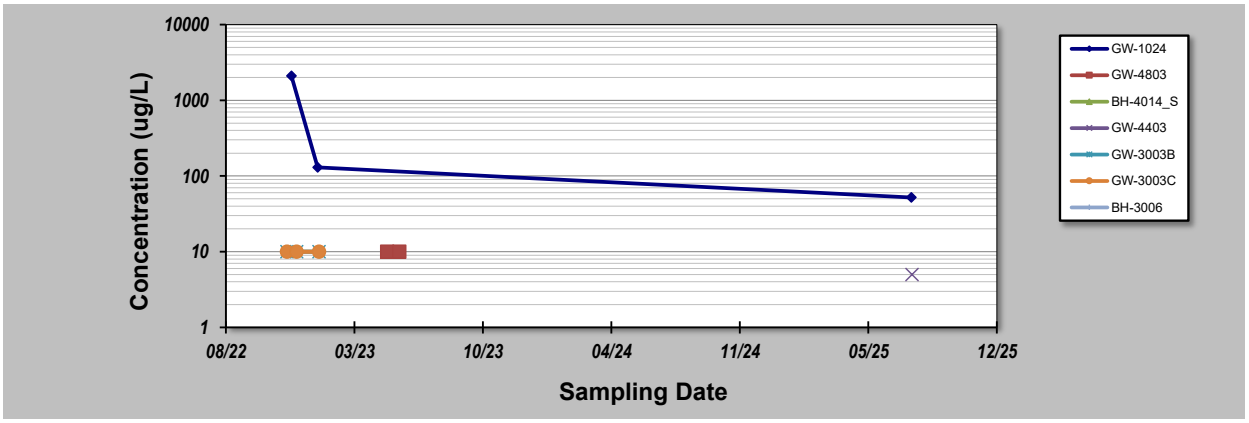
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C6-C9 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1024 | GW-4803 | BH-4014_S | GW-4403 | GW-3003B | GW-3003C | BH-3006 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TPH C6-C9 CONCENTRATION (ug/L) | | | | | | |
| 1 | 07 Dec 2022 | 2100.0 | | | | | | |
| 2 | 17 Jan 2023 | 130 | | | | | | |
| 3 | 29 Jul 2025 | 52 | | | | | | |
| 4 | 05 May 2023 | | 10.0 | | | | | |
| 5 | 24 May 2023 | | 10 | | | | | |
| 6 | 30 Jul 2025 | | | | 5 | | | |
| 7 | 30 Nov 2022 | | | | | 10.0 | 10 | |
| 8 | 15 Dec 2022 | | | | | 10.0 | 10 | |
| 9 | 19 Jan 2023 | | | | | 10.0 | 10 | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 1.53 | 0.00 | | | 0.00 | 0.00 | |
| Mann-Kendall Statistic (S): | | -3 | 0 | | | 0 | 0 | |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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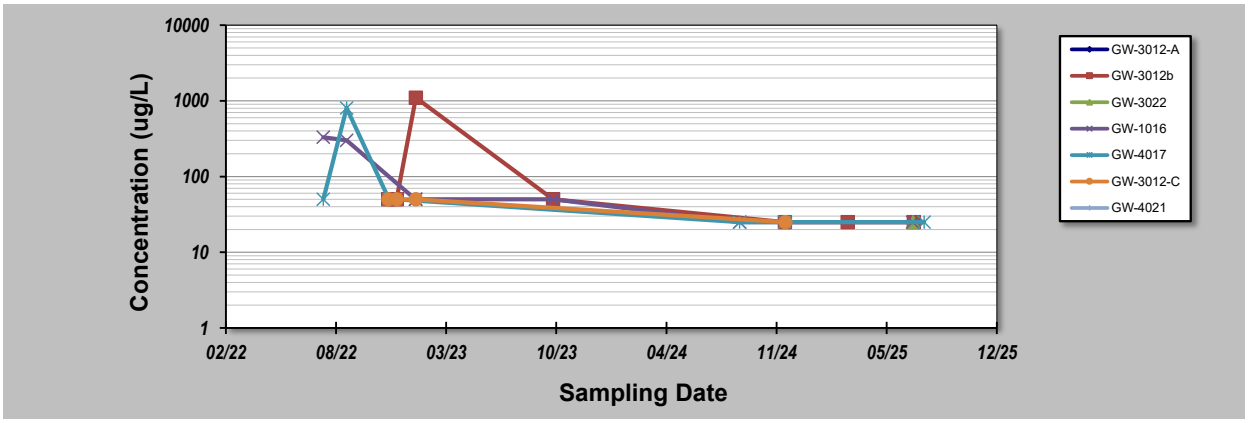
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C10-C40 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-3012-A | GW-3012b | GW-3022 | GW-1016 | GW-4017 | GW-3012-C | GW-4021 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TPH C10-C40 CONCENTRATION (ug/L) | | | | | | |
| 1 | 28 Jul 2022 | | | | | | | |
| 2 | 04 Aug 2022 | | | | 330 | 50 | | |
| 3 | 15 Sep 2022 | | | | 300 | 805 | | |
| 4 | 30 Nov 2022 | | 50 | | | | | |
| 5 | 01 Dec 2022 | | | | | 50 | | |
| 6 | 13 Dec 2022 | | | | | 50 | | |
| 7 | 15 Dec 2022 | | 50 | | | | | |
| 8 | 18 Jan 2023 | | | | 50 | | | |
| 9 | 19 Jan 2023 | | 1100 | | 50 | | | |
| 10 | 25 Sep 2023 | | 50 | | 50 | | | |
| 11 | 29 Aug 2024 | | | | 25 | 25 | | |
| 12 | 19 Nov 2024 | | 25 | | 25 | 25 | | |
| 13 | 13 Mar 2025 | | 25 | | | | | |
| 14 | 11 Jul 2025 | | 25 | | | | | |
| 15 | 10 Jul 2025 | | | 25 | | | | |
| 16 | 09 Jul 2025 | | | | 25 | | | |
| 17 | 30 Jul 2025 | | | | | 25 | | |
| 18 | 30 Nov 2022 | | | | | | 50 | |
| 19 | 15 Dec 2022 | | | | | | 50 | |
| 20 | 19 Jan 2023 | | | | | | 50 | |
| 21 | 20 Nov 2024 | | | | | | 25 | |
| 22 | | | | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| Coefficient of Variation: | | 2.12 | | 1.21 | 1.97 | 0.29 | | |
| Mann-Kendall Statistic (S): | | -11 | | -22 | -13 | -3 | | |
| Confidence Factor: | | 93.2% | | 99.8% | 96.5% | 72.9% | | |
| Concentration Trend: | | Prob. Decreasing | | Decreasing | Decreasing | Stable | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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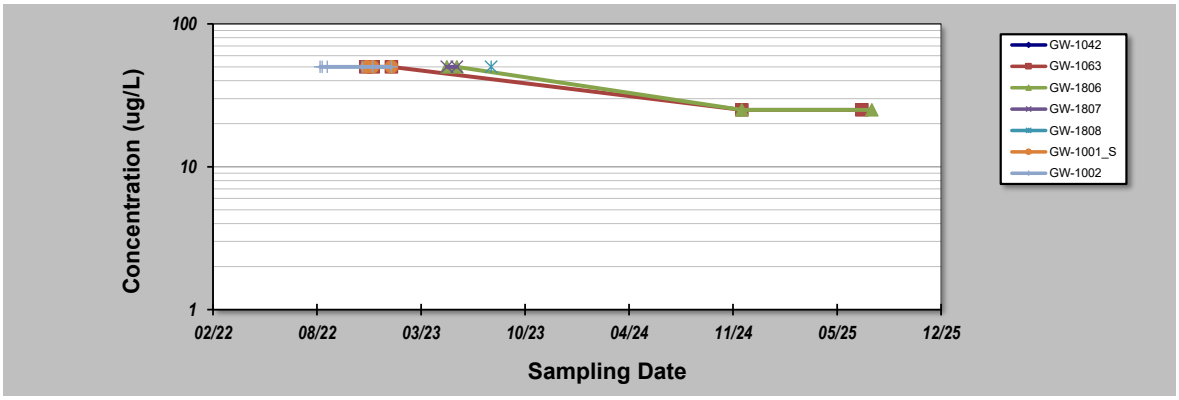
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C10-C40 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1042 | GW-1063 | GW-1806 | GW-1807 | GW-1808 | GW-1001_S | GW-1002 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TPH C10-C40 CONCENTRATION (ug/L) | | | | | | |
| 1 | 10 Jul 2025 | | | | | | | |
| 2 | 29 Jul 2025 | | | | | | | |
| 3 | 04 May 2023 | | | | 50 | | | |
| 4 | 23 May 2023 | | | | 50 | | | |
| 5 | 28 Jul 2023 | | | | | 50 | | |
| 6 | 04 Aug 2022 | 50 | | | | | | |
| 7 | 23 Nov 2022 | 50 | | | | | | |
| 8 | 29 Aug 2024 | 70 | | | | | | |
| 9 | 29 Nov 2022 | | 50 | | | | | |
| 10 | 13 Dec 2022 | | 50 | | | | | |
| 11 | 17 Jan 2023 | | 50 | | | | | |
| 12 | 21 Nov 2024 | | 25 | | | | | |
| 13 | 10 Jul 2025 | | 25 | | | | | |
| 14 | 04 May 2023 | | | 50 | | | | |
| 15 | 23 May 2023 | | | 50 | | | | |
| 16 | 21 Nov 2024 | | | 25 | | | | |
| 17 | 29 Jul 2025 | | | 25 | | | | |
| 18 | 01 Dec 2022 | | | | | | 50 | |
| 19 | 12 Dec 2022 | | | | | | 50 | |
| 20 | 17 Jan 2023 | | | | | | 50 | |
| 21 | 02 Sep 2022 | | | | | | | 50 |
| 22 | 06 Sep 2022 | | | | | | | 50 |
| 23 | 16 Sep 2022 | | | | | | | 50 |
| 24 | 22 Nov 2022 | | | | | | | 50 |
| 25 | 12 Dec 2022 | | | | | | | 50 |
| 26 | 17 Jan 2023 | | | | | | | 50 |
| 27 | | | | | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| Coefficient of Variation: | | 0.34 | 0.38 | 0.00 | | 0.00 | 0.00 |
| Mann-Kendall Statistic (S): | | -6 | -4 | 0 | | 0 | 0 |
| Confidence Factor: | | 88.3% | 83.3% | | | | 39.3% |
| Concentration Trend: | | Stable | Stable | | | | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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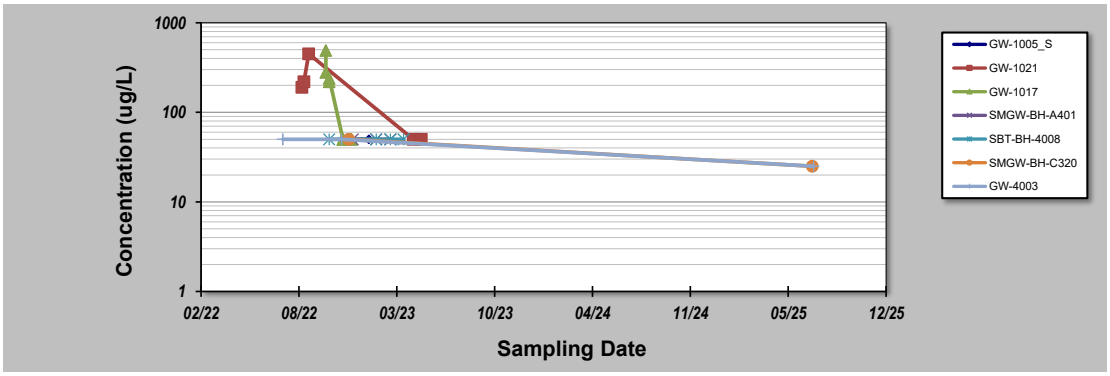
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C10-C40 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1005_S | GW-1021 | GW-1017 | SMGW-BH-A401 | SBT-BH-4008 | SMGW-BH-C320 | GW-4003 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TPH C10-C40 CONCENTRATION (ug/L) | | | | | | |
| 1 | 25 Nov 2022 | 50 | | | | | | |
| 2 | 12 Dec 2022 | 50 | | | | | | |
| 3 | 17 Jan 2023 | 50 | | | | | | |
| 4 | 02 Sep 2022 | | 190 | | | | | |
| 5 | 06 Sep 2022 | | 220 | | | | | |
| 6 | 16 Sep 2022 | | 450 | | | | | |
| 7 | 18 Apr 2023 | | 50 | | | | | |
| 8 | 04 May 2023 | | 50 | | | | | |
| 9 | 21 Oct 2022 | | | 490 | | | | |
| 10 | 21 Oct 2022 | | | 280 | | | | |
| 11 | 28 Oct 2022 | | | 220 | | | | |
| 12 | 28 Oct 2022 | | | 240 | | | | |
| 13 | 25 Nov 2022 | | | 50 | | | | |
| 14 | 25 Nov 2022 | | | 50 | | | | |
| 15 | 12 Dec 2022 | | | 50 | | | | |
| 16 | 12 Dec 2022 | | | 50 | | | | |
| 17 | 10 Jul 2025 | | | 25 | | | | |
| 18 | 15 Dec 2022 | | | | 50 | | | |
| 19 | 01 Feb 2023 | | | | 50 | | | |
| 20 | 02 Mar 2023 | | | | 50 | | | |
| 21 | 28 Oct 2022 | | | | | 50 | | |
| 22 | 01 Feb 2023 | | | | | 50 | | |
| 23 | 02 Mar 2023 | | | | | 50 | | |
| 24 | 29 Mar 2023 | | | | | 50 | | |
| 25 | 07 Dec 2022 | | | | | | 50 | |
| 26 | 11 Jul 2025 | | | | | | 25 | |
| 27 | 25 Jul 2022 | | | | | | | 50 |
| 28 | 25 Jul 2022 | | | | | | | 50 |
| 29 | 22 Nov 2022 | | | | | | | 50 |
| 30 | 14 Jul 2025 | | | | | | | 25 |
| 31 | | | | | | | | |
| 32 | | | | | | | | |
| 33 | | | | | | | | |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| Coefficient of Variation: | | 0.00 | 0.85 | 0.89 | 0.00 | 0.00 | 0.47 | 0.29 |
| Mann-Kendall Statistic (S): | | 0 | -3 | -12 | 0 | 0 | -1 | -3 |
| Confidence Factor: | | | 67.5% | 91.1% | | 37.5% | | 72.9% |
| Concentration Trend: | | | Stable | Prob. Decreasing | | Stable | | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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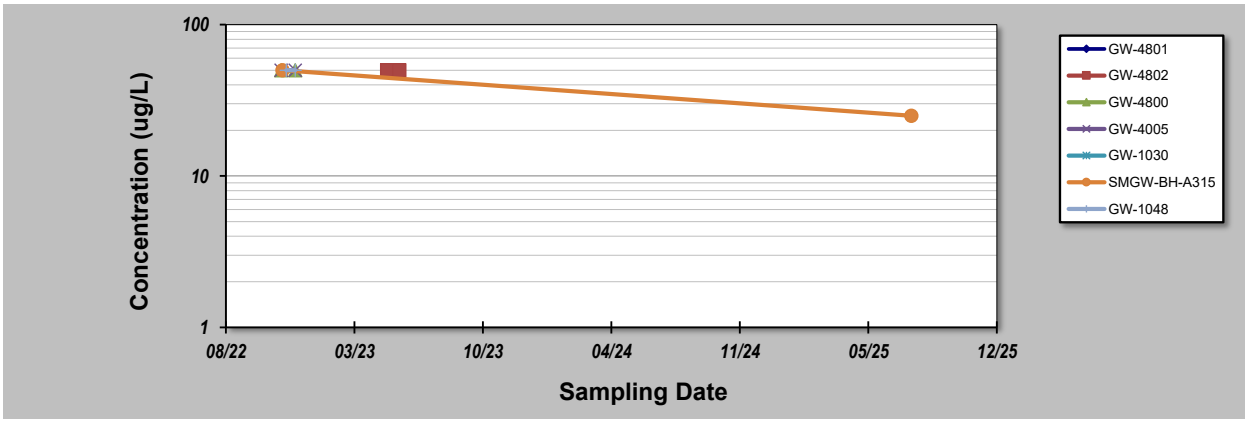
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C10-C40 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-4801 | GW-4802 | GW-4800 | GW-4005 | GW-1030 | SMGW-BH-A315 | GW-1048 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TPH C10-C40 CONCENTRATION (ug/L) | | | | | | |
| 1 | 05 May 2023 | 50 | | | | | | |
| 2 | 24 May 2023 | 50 | | | | | | |
| 3 | 05 May 2023 | | 50 | | | | | |
| 4 | 24 May 2023 | | 50 | | | | | |
| 5 | 21 Nov 2022 | | | 50 | | | | |
| 6 | 13 Dec 2022 | | | 50 | | | | |
| 7 | 21 Nov 2022 | | | | 50 | | | |
| 8 | 13 Dec 2022 | | | | 50 | | | |
| 9 | 23 Nov 2022 | | | | | | 50 | |
| 10 | 29 Jul 2025 | | | | | | 25 | |
| 11 | 29 Nov 2022 | | | | | | | 50 |
| 12 | 13 Dec 2022 | | | | | | | 50 |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.00 | 0.00 | 0.00 | 0.00 | | 0.47 | 0.00 |
| Mann-Kendall Statistic (S): | | 0 | 0 | 0 | 0 | | -1 | 0 |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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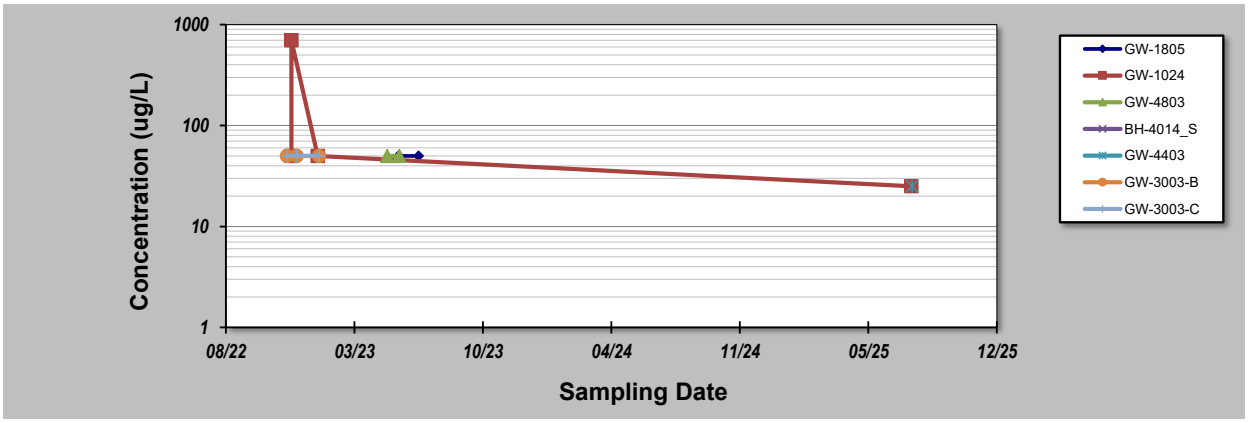
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C10-C40 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1805 | GW-1024 | GW-4803 | BH-4014_S | GW-4403 | GW-3003-B | GW-3003-C |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TPH C10-C40 CONCENTRATION (ug/L) | | | | | | |
| 1 | 23 May 2023 | 50 | | | | | | |
| 2 | 23 May 2023 | 50 | | | | | | |
| 3 | 23 May 2023 | 50 | | | | | | |
| 4 | 23 Jun 2023 | 50 | | | | | | |
| 5 | 07 Dec 2022 | | 50 | | | | | |
| 6 | 07 Dec 2022 | | 50 | | | | | |
| 7 | 07 Dec 2022 | | 700 | | | | | |
| 8 | 17 Jan 2023 | | 50 | | | | | |
| 9 | 29 Jul 2025 | | 25 | | | | | |
| 10 | 05 May 2023 | | | 50 | | | | |
| 11 | 24 May 2023 | | | 50 | | | | |
| 12 | 30 Jul 2025 | | | | | 25 | | |
| 13 | 30 Nov 2022 | | | | | | 50 | |
| 14 | 15 Dec 2022 | | | | | | 50 | |
| 15 | 19 Jan 2023 | | | | | | 50 | |
| 16 | 30 Nov 2022 | | | | | | | 50 |
| 17 | 15 Dec 2022 | | | | | | | 50 |
| 18 | 19 Jan 2023 | | | | | | | 50 |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.00 | 1.60 | 0.00 | | | 0.00 | 0.00 |
| Mann-Kendall Statistic (S): | | 0 | -7 | 0 | | | 0 | 0 |
| Confidence Factor: | | 37.5% | 100.0% | | | | | |
| Concentration Trend: | | Stable | Decreasing | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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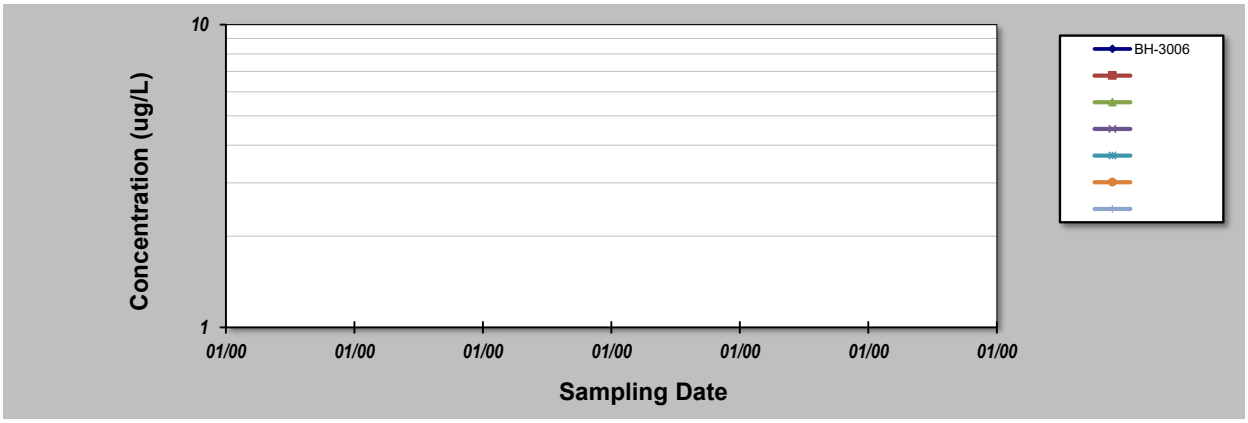
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | TPH C10-C40 |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

Sampling Point ID: BH-3006

| Sampling Event | Sampling Date | TPH C10-C40 CONCENTRATION (ug/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | | | | | | | |
| Mann-Kendall Statistic (S): | | | | | | | | |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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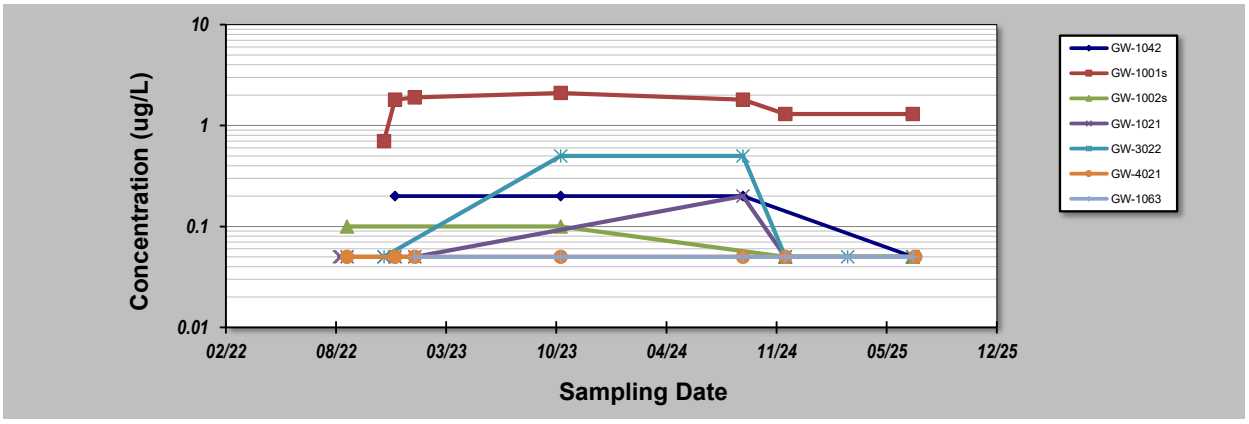
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cd - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1042 | GW-1001s | GW-1002s | GW-1021 | GW-3022 | GW-4021 | GW-1063 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | CD - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 02 Sep 2022 | | | 0.05 | 0.05 | | | |
| 2 | 06 Sep 2022 | | | 0.05 | 0.05 | | | |
| 3 | 16 Sep 2022 | | | 0.10 | 0.05 | | 0.05 | |
| 4 | 22 Nov 2022 | 0.1 | 0.70 | 0.05 | 0.05 | 0.05 | | |
| 5 | 12 Dec 2022 | 0.20 | 1.80 | 0.05 | 0.05 | | 0.05 | |
| 6 | 17 Jan 2023 | 0.2 | 1.90 | 0.05 | 0.05 | | 0.05 | 0.05 |
| 7 | 09 Oct 2023 | 0.20 | 2.10 | 0.10 | 0.05 | 1 | 0.05 | 0.05 |
| 8 | 04 Sep 2024 | 0.20 | 1.80 | 0.05 | 0.20 | 1 | 0.05 | 0.05 |
| 9 | 20 Nov 2024 | 0.2 | 1.30 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| 10 | 13 Mar 2025 | | | | | 0.05 | | |
| 11 | 14 Jul 2025 | | | | | | 0.05 | |
| 12 | 09 Jul 2025 | | 1.3 | 0.05 | 0.05 | | | |
| 13 | 10 Jul 2025 | 0.05 | | | | 0.05 | | 0.05 |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.46 | 0.31 | 0.38 | 0.75 | 1.16 | 0.00 | 0.00 |
| Mann-Kendall Statistic (S): | | -5 | -1 | -18 | 7 | -4 | 0 | 0 |
| Confidence Factor: | | 89.6% | 50.0% | 100.0% | 72.8% | 70.3% | 37.9% | 40.8% |
| Concentration Trend: | | Stable | Stable | Decreasing | No Trend | No Trend | Stable | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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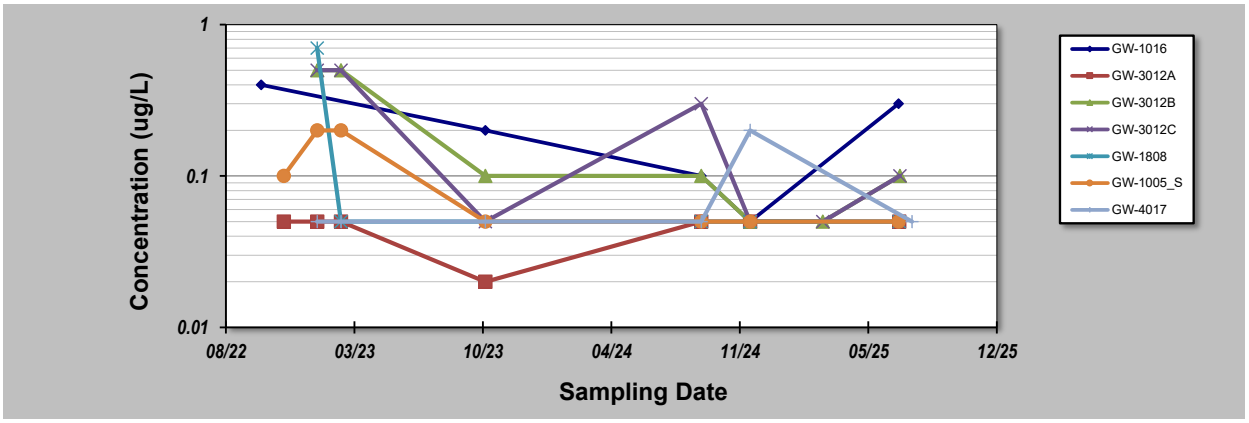
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cd - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1016 | GW-3012A | GW-3012B | GW-3012C | GW-1808 | GW-1005_S | GW-4017 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | CD - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 21 Oct 2022 | 0.40 | | | | | | |
| 2 | 28 Oct 2022 | 0.05 | | | | | | |
| 3 | 25 Nov 2022 | | 0.05 | .05 | .05 | | 0.1 | |
| 4 | 16 Jan 2023 | 0.05 | 0.05 | 0.5 | 0.5 | 0.7 | 0.2 | 0.05 |
| 5 | 22 Feb 2023 | 0.05 | 0.05 | 0.5 | 0.5 | 0.05 | 0.2 | 0.05 |
| 6 | 05 Oct 2023 | 0.20 | 0.02 | 0.1 | 0.05 | | 0.05 | 0.05 |
| 7 | 05 Sep 2024 | 0.10 | 0.05 | 0.1 | 0.3 | 0.05 | 0.05 | 0.05 |
| 8 | 20 Nov 2024 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.2 |
| 9 | 13 Mar 2025 | | | 0.05 | 0.05 | | | |
| 10 | 09 Jul 2025 | 0.30 | | | | | 0.05 | |
| 11 | 10 Jul 2025 | | 0.05 | | | 0.05 | | |
| 12 | 11 Jul 2025 | | | 0.1 | 0.1 | | | |
| 13 | 30 Jul 2025 | | | | | | | 0.05 |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.68 | 0.25 | 1.03 | 0.95 | 1.61 | 0.71 | 0.82 |
| Mann-Kendall Statistic (S): | | -13 | 0 | -19 | -16 | -4 | -10 | 3 |
| Confidence Factor: | | 100.0% | 37.9% | 99.9% | 99.0% | 75.8% | 90.7% | 64.0% |
| Concentration Trend: | | Decreasing | Stable | Decreasing | Decreasing | No Trend | Prob. Decreasing | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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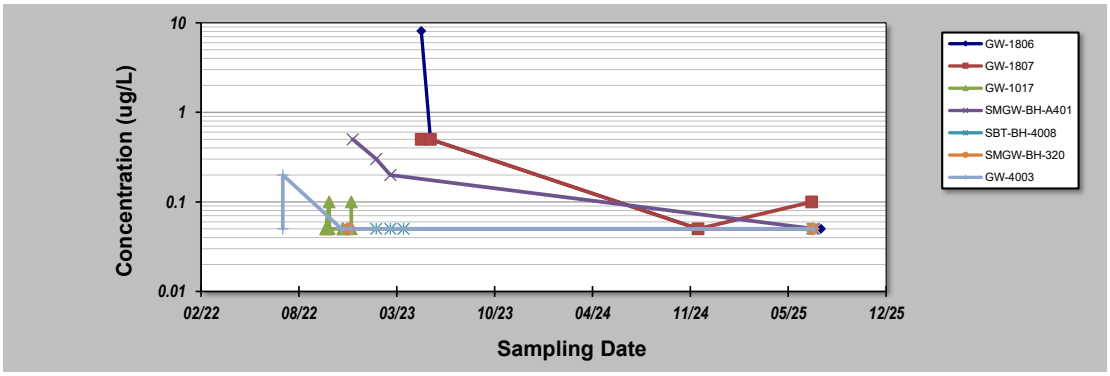
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cd - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1806 | GW-1807 | GW-1017 | SMGW-BH-A401 | SBT-BH-4008 | SMGW-BH-320 | GW-4003 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | CD - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 04 May 2023 | 8.10 | | | | | | |
| 2 | 23 May 2023 | 0.50 | | | | | | |
| 3 | 21 Nov 2024 | 0.05 | | | | | | |
| 4 | 29 Jul 2025 | 0.05 | | | | | | |
| 5 | 04 May 2023 | | 0.50 | | | | | |
| 6 | 23 May 2023 | | 0.50 | | | | | |
| 7 | 20 Nov 2024 | | 0.05 | | | | | |
| 8 | 10 Jul 2025 | | 0.10 | | | | | |
| 9 | 21 Oct 2022 | | | 0.05 | | | | |
| 10 | 21 Oct 2022 | | | 0.05 | | | | |
| 11 | 28 Oct 2022 | | | 0.10 | | | | |
| 12 | 28 Oct 2022 | | | 0.05 | | | | |
| 13 | 25 Nov 2022 | | | 0.05 | | | | |
| 14 | 25 Nov 2022 | | | 0.05 | | | | |
| 15 | 12 Dec 2022 | | | 0.05 | | | | |
| 16 | 12 Dec 2022 | | | 0.10 | | | | |
| 17 | 10 Jul 2025 | | | 0.2 | | | | |
| 18 | 15 Dec 2022 | | | | 0.50 | | | |
| 19 | 01 Feb 2023 | | | | 0.30 | | | |
| 20 | 02 Mar 2023 | | | | 0.20 | | | |
| 21 | 15 Jul 2025 | | | | 0.05 | | | |
| 22 | 28 Oct 2022 | | | | | | | |
| 23 | 01 Feb 2023 | | | | | 0.05 | | |
| 24 | 02 Mar 2023 | | | | | 0.05 | | |
| 25 | 29 Mar 2023 | | | | | 0.05 | | |
| 26 | 11 Jul 2025 | | | | | 0.05 | | |
| 27 | 07 Dec 2022 | | | | | | 0.05 | |
| 28 | 11 Jul 2025 | | | | | | 0.05 | |
| 29 | 25 Jul 2022 | | | | | | | 0.05 |
| 30 | 25 Jul 2022 | | | | | | | 0.2 |
| 31 | 22 Nov 2022 | | | | | | | 0.05 |
| 32 | 13 Dec 2022 | | | | | | | 0.05 |
| 33 | 14 Jul 2025 | | | | | | | 0.05 |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| Coefficient of Variation: | | 1.82 | 0.86 | 0.37 | 0.72 | 0.00 | 0.00 | 0.84 |
| Mann-Kendall Statistic (S): | | -5 | -3 | 12 | -6 | 0 | 0 | -2 |
| Confidence Factor: | | 89.6% | 72.9% | 91.1% | 95.8% | 37.5% | | 59.2% |
| Concentration Trend: | | No Trend | Stable | Prob. Increasing | Decreasing | Stable | | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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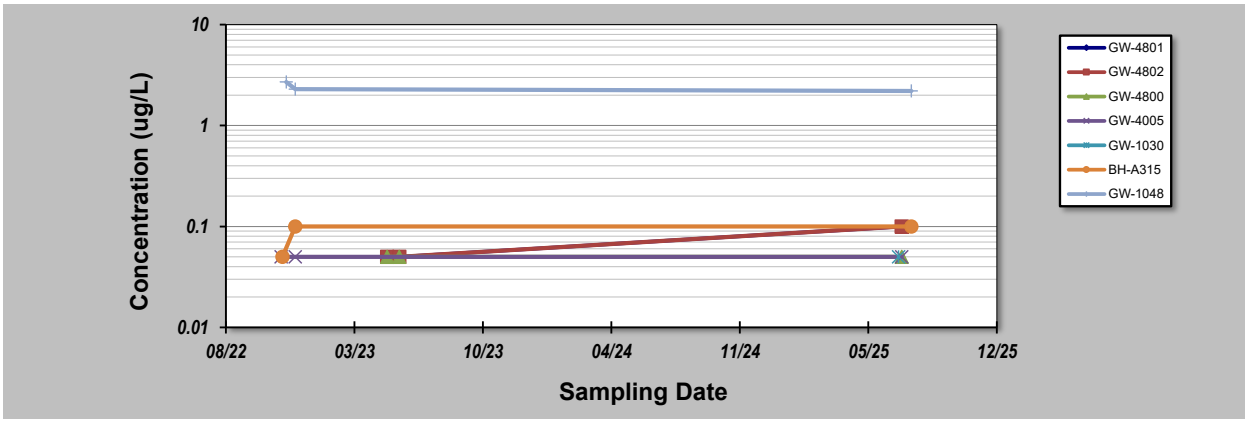
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cd - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-4801 | GW-4802 | GW-4800 | GW-4005 | GW-1030 | BH-A315 | GW-1048 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | CD - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 05 May 2023 | 0.05 | 0.05 | 0.05 | | | | |
| 2 | 24 May 2023 | 0.05 | 0.05 | 0.05 | | | | |
| 3 | 14 Jul 2025 | 0.10 | 0.1 | 0.05 | | | | |
| 4 | 21 Nov 2022 | | | | 0.05 | | | |
| 5 | 13 Dec 2022 | | | | 0.05 | | | |
| 6 | 14 Jul 2025 | | | | 0.05 | | | |
| 7 | 09 Jul 2025 | | | | | 0.05 | | |
| 8 | 23 Nov 2022 | | | | | | 0.05 | |
| 9 | 13 Dec 2022 | | | | | | 0.10 | |
| 10 | 29 Jul 2025 | | | | | | 0.10 | |
| 11 | 29 Nov 2022 | | | | | | | 2.70 |
| 12 | 13 Dec 2022 | | | | | | | 2.30 |
| 13 | 29 Jul 2025 | | | | | | | 2.20 |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.43 | 0.43 | 0.00 | 0.00 | | 0.35 | 0.11 |
| Mann-Kendall Statistic (S): | | 2 | 2 | 0 | 0 | | 2 | -3 |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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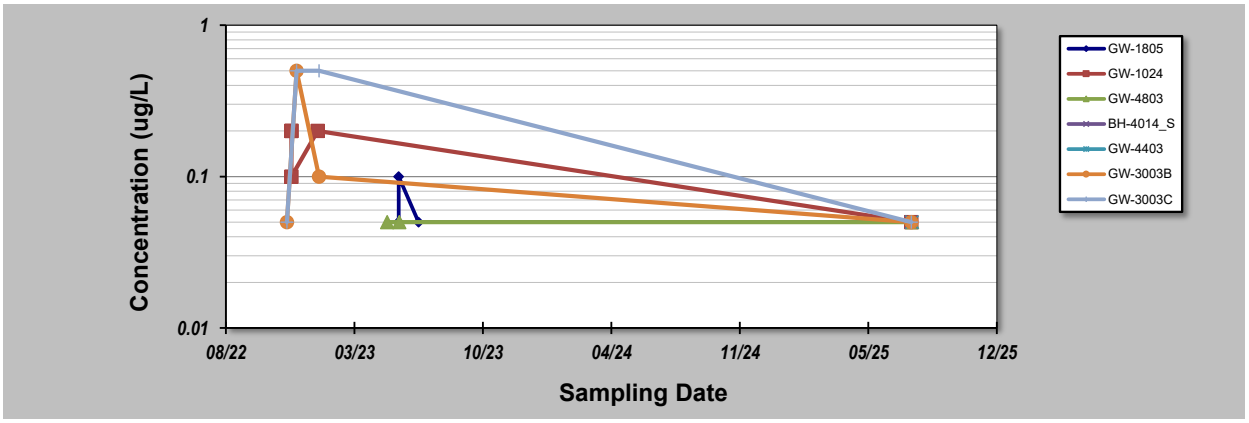
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cd - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | | GW-1805 | GW-1024 | GW-4803 | BH-4014_S | GW-4403 | GW-3003B | GW-3003C |
|---|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | CD - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 23 May 2023 | 0.05 | | | | | | |
| 2 | 23 May 2023 | 0.05 | | | | | | |
| 3 | 23 May 2023 | 0.10 | | | | | | |
| 4 | 23 Jun 2023 | 0.05 | | | | | | |
| 5 | 29 Jul 2025 | 0.05 | | | | | | |
| 6 | 07 Dec 2022 | | 0.20 | | | | | |
| 7 | 07 Dec 2022 | | 0.20 | | | | | |
| 8 | 07 Dec 2022 | | 0.10 | | | | | |
| 9 | 07 Dec 2022 | | | | | | | |
| 10 | 07 Dec 2022 | | | | | | | |
| 11 | 17 Jan 2023 | | 0.20 | | | | | |
| 12 | 29 Jul 2025 | | 0.05 | | | | | |
| 13 | 05 May 2023 | | | 0.05 | | | | |
| 14 | 24 May 2023 | | | 0.05 | | | | |
| 15 | 30 Jul 2025 | | | 0.05 | | 0.05 | | |
| 16 | 29 Jul 2025 | | | | 0.05 | | | |
| 17 | 30 Nov 2022 | | | | | | 0.05 | 0.05 |
| 18 | 15 Dec 2022 | | | | | | 0.50 | 0.50 |
| 19 | 19 Jan 2023 | | | | | | 0.10 | 0.50 |
| 20 | 29 Jul 2025 | | | | | | 0.05 | 0.05 |
| 21 | | | | | | | | |
| 22 | | | | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| Coefficient of Variation: | | 0.37 | 0.47 | 0.00 | | | 1.25 | 0.94 |
| Mann-Kendall Statistic (S): | | 0 | -5 | 0 | | | -1 | 0 |
| Confidence Factor: | | 40.8% | 82.1% | | | | 50.0% | 37.5% |
| Concentration Trend: | | Stable | Stable | | | | No Trend | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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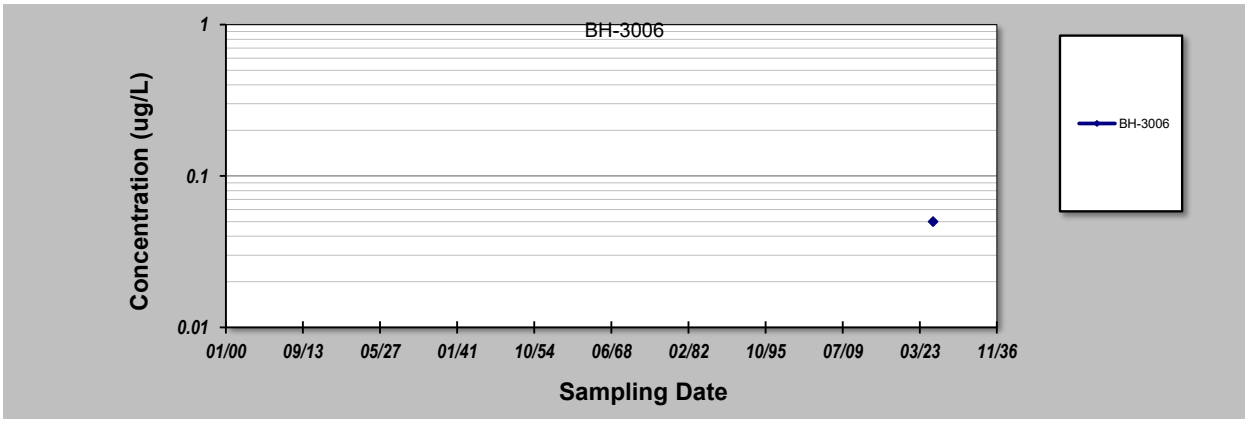
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cd - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

Sampling Point ID: BH-3006

| Sampling Event | Sampling Date | CD - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 30 Jul 2025 | 0.05 | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | | | | | | | |
| Mann-Kendall Statistic (S): | | | | | | | | |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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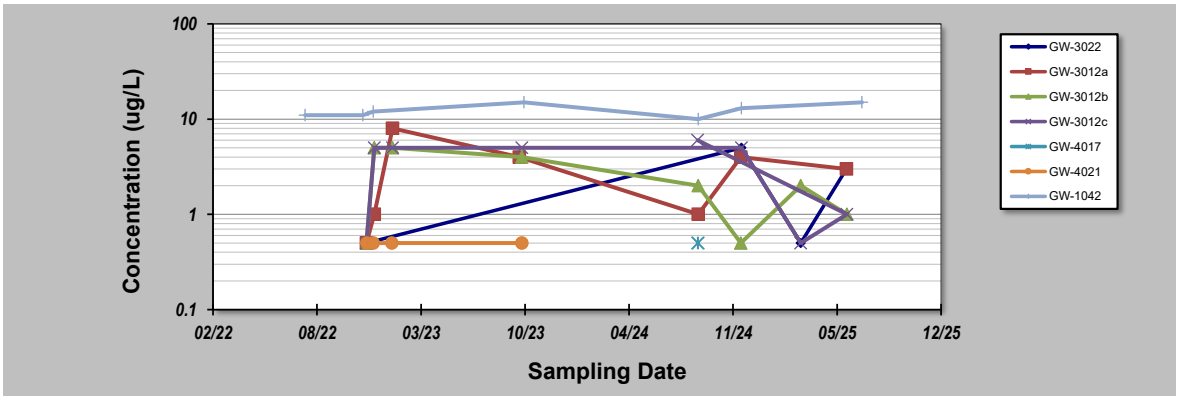
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cu - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-3022 | GW-3012a | GW-3012b | GW-3012c | GW-4017 | GW-4021 | GW-1042 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | CU - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 04 Aug 2022 | | | | | | | |
| 2 | 15 Sep 2022 | | | | | | | |
| 3 | 23 Nov 2022 | | | | | | | |
| 4 | 30 Nov 2022 | 0.5 | 0.5 | 0.5 | 0.5 | | | |
| 5 | 01 Dec 2022 | | | | | | 0.5 | |
| 6 | 13 Dec 2022 | | | | | | 0.5 | |
| 7 | 15 Dec 2022 | 5 | 1 | 5 | 5 | | | |
| 8 | 18 Jan 2023 | | | | | | 0.5 | |
| 9 | 19 Jan 2023 | 5 | 8 | 5 | 5 | | | |
| 10 | 20 Sep 2023 | | 4 | | | | | |
| 11 | 25 Sep 2023 | | | 4 | 5 | | 0.5 | |
| 12 | 29 Sep 2023 | | | | | | | |
| 13 | 29 Aug 2024 | | 1 | 2 | | 0.5 | | |
| 14 | 19 Nov 2024 | | 4 | 0.50 | | | | |
| 15 | 20 Nov 2024 | 5 | | | 5.0 | | | |
| 16 | 14 Mar 2025 | 0.5 | | 2 | 0.5 | | | |
| 17 | 10 Jun 2025 | 3.0 | 3 | | | | | |
| 18 | 11 Jun 2025 | | | 1 | 1.0 | | | |
| 19 | 28 Aug 2024 | | | | 6.0 | 0.5 | | |
| 20 | 14 Jun 2025 | | | | | | | |
| 21 | 04 Aug 2022 | | | | | | | 11 |
| 22 | 23 Nov 2022 | | | | | | | 11 |
| 23 | 13 Dec 2022 | | | | | | | 12 |
| 24 | 29 Sep 2023 | | | | | | | 15 |
| 25 | 29 Aug 2024 | | | | | | | 10 |
| 26 | 20 Nov 2024 | | | | | | | 13 |
| 27 | 10 Jul 2025 | | | | | | | 15 |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| Coefficient of Variation: | | 0.97 | 0.85 | 0.76 | 0.68 | 0.00 | 0.00 | 0.16 |
| Mann-Kendall Statistic (S): | | -3 | 5 | -9 | 5 | 0 | 0 | 9 |
| Confidence Factor: | | 72.9% | 71.9% | 83.2% | 68.3% | | 37.5% | 88.1% |
| Concentration Trend: | | Stable | No Trend | Stable | No Trend | | Stable | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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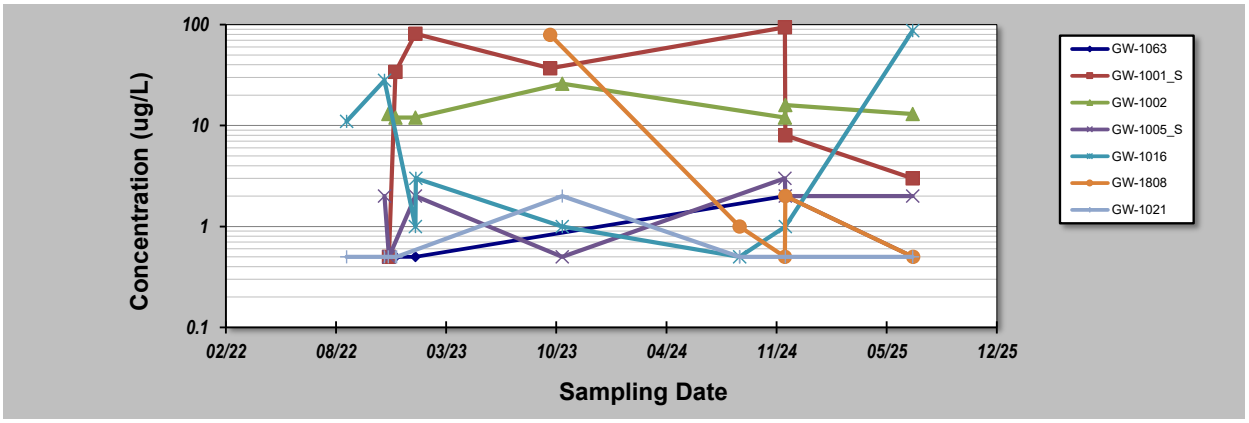
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cu - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1063 | GW-1001_S | GW-1002 | GW-1005_S | GW-1016 | GW-1808 | GW-1021 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | CU - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 04 Aug 2022 | | | 28 | | | | |
| 2 | 15 Sep 2022 | | | 15 | | 11.00 | | 0.50 |
| 3 | 23 Nov 2022 | | | 29 | 2.00 | 28.00 | | 0.50 |
| 4 | 30 Nov 2022 | 0.50 | | 13.00 | | | | 0.50 |
| 5 | 01 Dec 2022 | | 0.50 | | 0.50 | | | |
| 6 | 13 Dec 2022 | 0.50 | 34.00 | 12.00 | | | | 0.50 |
| 7 | 15 Dec 2022 | | | | | | | 0.50 |
| 8 | 18 Jan 2023 | 0.50 | 81.00 | 12.00 | 2.00 | 1.00 | | |
| 9 | 19 Jan 2023 | | | | | 3.00 | | |
| 10 | 20 Sep 2023 | | 37.00 | | | | 79.00 | |
| 11 | 12 Oct 2023 | | | 26.00 | 0.50 | 1.00 | | 2.00 |
| 12 | 29 Aug 2024 | | | | | 0.50 | 1.00 | 0.50 |
| 13 | 19 Nov 2024 | | 94.00 | 12.00 | 3.00 | | 0.50 | |
| 14 | 20 Nov 2024 | 2.00 | 8.00 | 16.00 | 2.00 | 1.00 | 2.00 | 0.50 |
| 15 | 10 Jul 2025 | 0.50 | | | | | 0.50 | |
| 16 | 09 Jul 2025 | | 3.00 | 13.00 | 2.00 | 87.00 | | 0.50 |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.84 | 1.02 | 0.34 | 0.53 | 1.81 | 2.10 | 0.75 |
| Mann-Kendall Statistic (S): | | 2 | 1 | -17 | 4 | -5 | -5 | 2 |
| Confidence Factor: | | 59.2% | 50.0% | 99.5% | 66.7% | 68.3% | 82.1% | 54.0% |
| Concentration Trend: | | No Trend | No Trend | Decreasing | No Trend | No Trend | No Trend | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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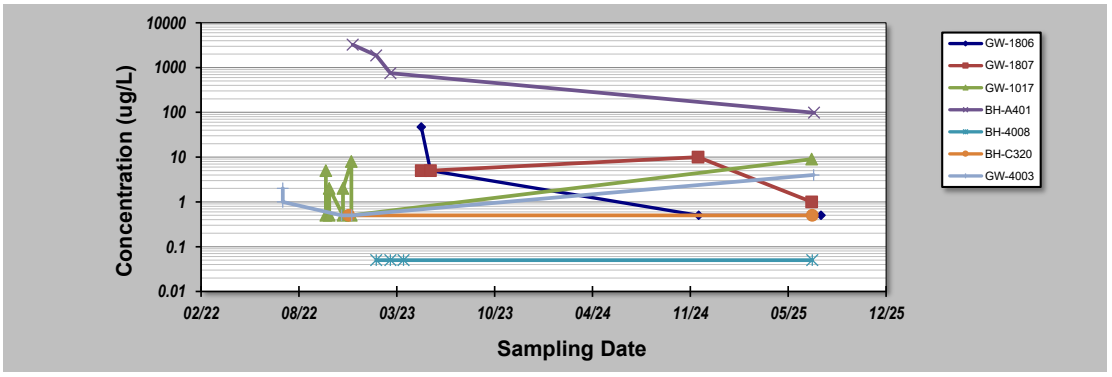
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cu - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1806 | GW-1807 | GW-1017 | BH-A401 | BH-4008 | BH-C320 | GW-4003 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | CU - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 04 May 2023 | 47.00 | | | | | | |
| 2 | 23 May 2023 | 5.00 | | | | | | |
| 3 | 23 May 2023 | | | | | | | |
| 4 | 21 Nov 2024 | 0.50 | | | | | | |
| 5 | 29 Jul 2025 | 0.50 | | | | | | |
| 6 | 04 May 2023 | | 5.00 | | | | | |
| 7 | 23 May 2023 | | 5.00 | | | | | |
| 8 | 20 Nov 2024 | | 10.00 | | | | | |
| 9 | 10 Jul 2025 | | 1.00 | | | | | |
| 10 | 21 Oct 2022 | | | 5.00 | | | | |
| 11 | 21 Oct 2022 | | | 0.50 | | | | |
| 12 | 28 Oct 2022 | | | 0.50 | | | | |
| 13 | 28 Oct 2022 | | | 2.00 | | | | |
| 14 | 25 Nov 2022 | | | 0.50 | | | | |
| 15 | 25 Nov 2022 | | | 2.00 | | | | |
| 16 | 12 Dec 2022 | | | 8.00 | | | | |
| 17 | 12 Dec 2022 | | | 0.50 | | | | |
| 18 | 10 Jul 2025 | | | 9.00 | | | | |
| 19 | 15 Dec 2022 | | | | 3240.00 | | | |
| 20 | 01 Feb 2023 | | | | 1860.00 | | | |
| 21 | 02 Mar 2023 | | | | 752.00 | | | |
| 22 | 15 Jul 2025 | | | | 98.00 | | | |
| 23 | 28 Oct 2022 | | | | | | | |
| 24 | 01 Feb 2023 | | | | | 0.05 | | |
| 25 | 02 Mar 2023 | | | | | 0.05 | | |
| 26 | 29 Mar 2023 | | | | | 0.05 | | |
| 27 | 11 Jul 2025 | | | | | 0.05 | 0.5 | |
| 28 | 07 Dec 2022 | | | | | | 0.5 | |
| 29 | 25 Jul 2022 | | | | | | | 2 |
| 30 | 25 Jul 2022 | | | | | | | 1 |
| 31 | 22 Nov 2022 | | | | | | | 0.5 |
| 32 | 13 Dec 2022 | | | | | | | 0.5 |
| 33 | 14 Jul 2025 | | | | | | | 4 |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| Coefficient of Variation: | | 1.71 | 0.70 | 1.09 | 0.93 | 0.00 | 0.00 | 0.92 |
| Mann-Kendall Statistic (S): | | -5 | -1 | 9 | -6 | 0 | 0 | -1 |
| Confidence Factor: | | 89.6% | 50.0% | 79.2% | 95.8% | 37.5% | | 50.0% |
| Concentration Trend: | | No Trend | Stable | No Trend | Decreasing | Stable | | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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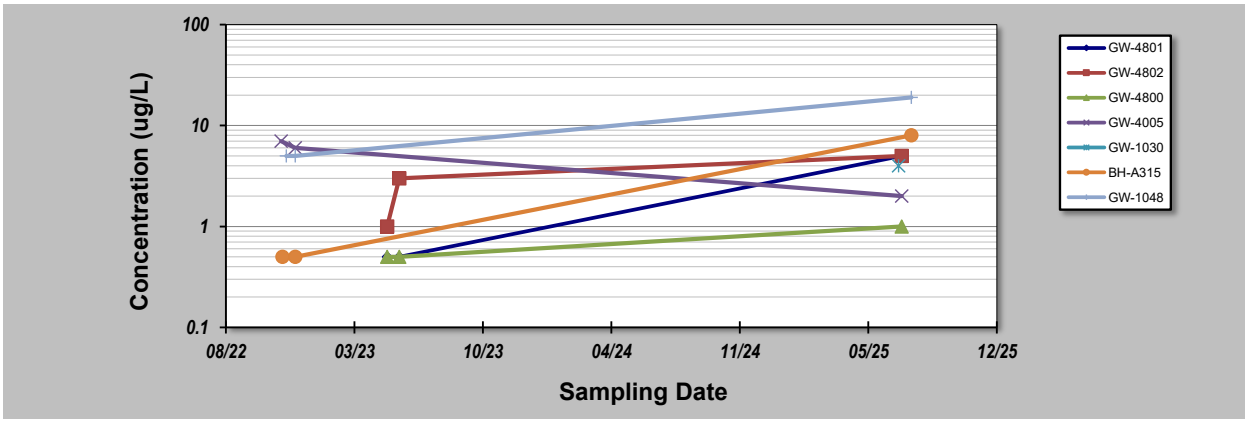
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cu - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-4801 | GW-4802 | GW-4800 | GW-4005 | GW-1030 | BH-A315 | GW-1048 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | CU - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 05 May 2023 | 0.50 | 1.00 | 0.50 | | | | |
| 2 | 24 May 2023 | 0.50 | 3.00 | 0.50 | | | | |
| 3 | 14 Jul 2025 | 5.00 | 5.00 | 1.00 | | | | |
| 4 | 21 Nov 2022 | | | | 7.00 | | | |
| 5 | 13 Dec 2022 | | | | 6.00 | | | |
| 6 | 14 Jul 2025 | | | | 2.00 | | | |
| 7 | 09 Jul 2025 | | | | | 4.00 | | |
| 8 | 23 Nov 2022 | | | | | | 0.50 | |
| 9 | 13 Dec 2022 | | | | | | 0.50 | |
| 10 | 29 Jul 2025 | | | | | | 8.00 | |
| 11 | 29 Nov 2022 | | | | | | | 5.00 |
| 12 | 13 Dec 2022 | | | | | | | 5.00 |
| 13 | 29 Jul 2025 | | | | | | | 19.00 |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 1.30 | 0.67 | 0.43 | 0.53 | | 1.44 | 0.84 |
| Mann-Kendall Statistic (S): | | 2 | 3 | 2 | -3 | | 2 | 2 |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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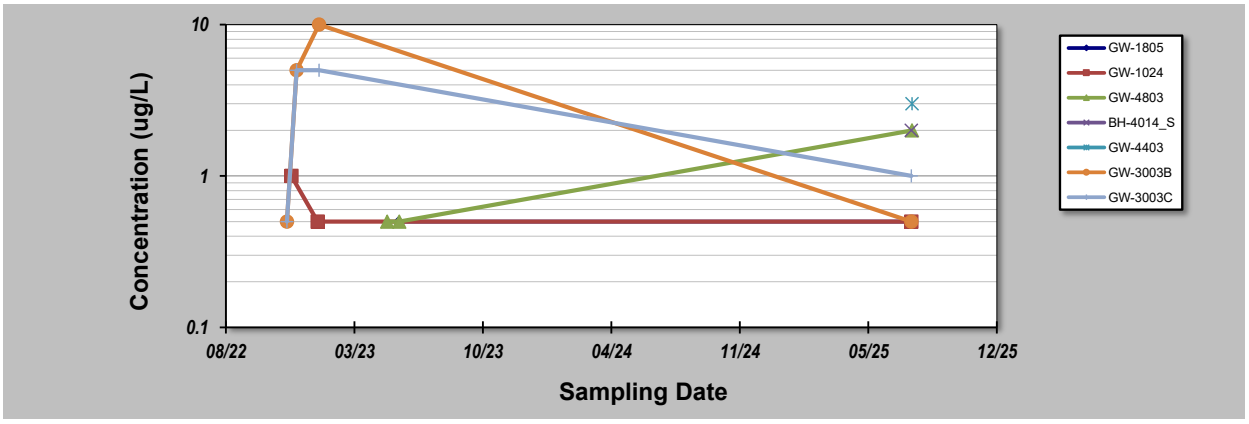
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cu - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1805 | GW-1024 | GW-4803 | BH-4014_S | GW-4403 | GW-3003B | GW-3003C |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | CU - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 23 May 2023 | 0.50 | | | | | | |
| 2 | 29 Jul 2025 | 0.50 | | | | | | |
| 3 | 07 Dec 2022 | | 1.00 | | | | | |
| 4 | 17 Jan 2023 | | 0.50 | | | | | |
| 5 | 29 Jul 2025 | | 0.50 | | | | | |
| 6 | 05 May 2023 | | | 0.50 | | | | |
| 7 | 24 May 2023 | | | 0.50 | | | | |
| 8 | 30 Jul 2025 | | | 2.00 | | 3.00 | | |
| 9 | 29 Jul 2025 | | | | 2.00 | | | |
| 10 | 30 Nov 2022 | | | | | | 0.50 | 0.50 |
| 11 | 15 Dec 2022 | | | | | | 5.00 | 5.00 |
| 12 | 19 Jan 2023 | | | | | | 10.00 | 5.00 |
| 13 | 29 Jul 2025 | | | | | | 0.50 | 1.00 |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.00 | 0.43 | 0.87 | | | 1.13 | 0.86 |
| Mann-Kendall Statistic (S): | | 0 | -2 | 2 | | | 1 | 1 |
| Confidence Factor: | | | | | | | 50.0% | 50.0% |
| Concentration Trend: | | | | | | | No Trend | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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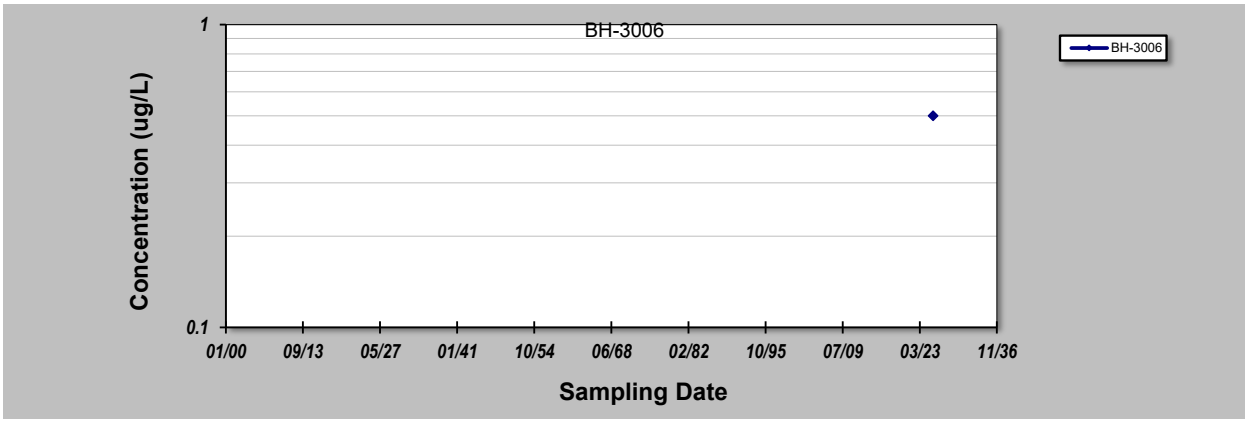
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Cu - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

Sampling Point ID: BH-3006

| Sampling Event | Sampling Date | CU - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 30 Jul 2025 | 0.50 | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | | | | | | | |
| Mann-Kendall Statistic (S): | | | | | | | | |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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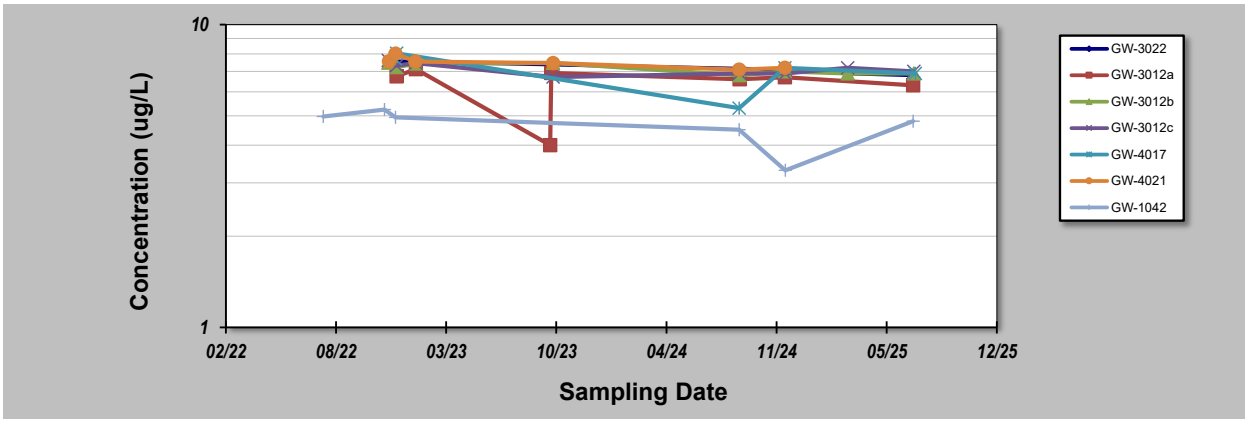
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 14-Jan-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | pH |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-3022 | GW-3012a | GW-3012b | GW-3012c | GW-4017 | GW-4021 | GW-1042 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | PH CONCENTRATION | | | | | | |
| 1 | 04 Aug 2022 | | | | | | | 5.0 |
| 2 | 23 Nov 2022 | | | | | | | 5.2 |
| 3 | 30 Nov 2022 | 7.6 | | 7.5 | 7.6 | | | |
| 4 | 01 Dec 2022 | | | | | | 7.6 | |
| 5 | 13 Dec 2022 | | | | | 7.7 | 8.0 | 4.9 |
| 6 | 15 Dec 2022 | 7.41 | 6.8 | 7.2 | 7.3 | 8.0 | | |
| 7 | 18 Jan 2023 | | | | | | 7.6 | |
| 8 | 19 Jan 2023 | 7.55 | 7.1 | 7.4 | 7.5 | | | |
| 9 | 20 Sep 2023 | | 4.0 | | | | | |
| 10 | 22 Sep 2023 | | 6.9 | | | | | |
| 11 | 25 Sep 2023 | | | 7.5 | 6.7 | | 7.5 | |
| 12 | 28 Aug 2024 | | | | | 5.3 | 7.1 | 4.5 |
| 13 | 29 Aug 2024 | | 6.6 | 6.8 | 6.9 | | | |
| 14 | 19 Nov 2024 | | 6.7 | 7.0 | | 7.2 | 7.2 | |
| 15 | 20 Nov 2024 | 7.1 | | | 6.9 | | | 3.3 |
| 16 | 13 Mar 2025 | 6.9 | | 6.9 | 7.2 | | | |
| 17 | 10 Jul 2025 | 6.8 | 6.3 | | | | | 4.8 |
| 18 | 11 Jul 2025 | | | 6.9 | 7.0 | | | |
| 19 | 14 Jul 2025 | | | | | 6.9 | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.05 | 0.17 | 0.04 | 0.04 | 0.15 | 0.04 | 0.15 |
| Mann-Kendall Statistic (S): | | -9 | -7 | -15 | -9 | -4 | -11 | -9 |
| Confidence Factor: | | 100.0% | 80.9% | 95.8% | 83.2% | 75.8% | 97.2% | 93.2% |
| Concentration Trend: | | Decreasing | Stable | Decreasing | Stable | Stable | Decreasing | Prob. Decreasing |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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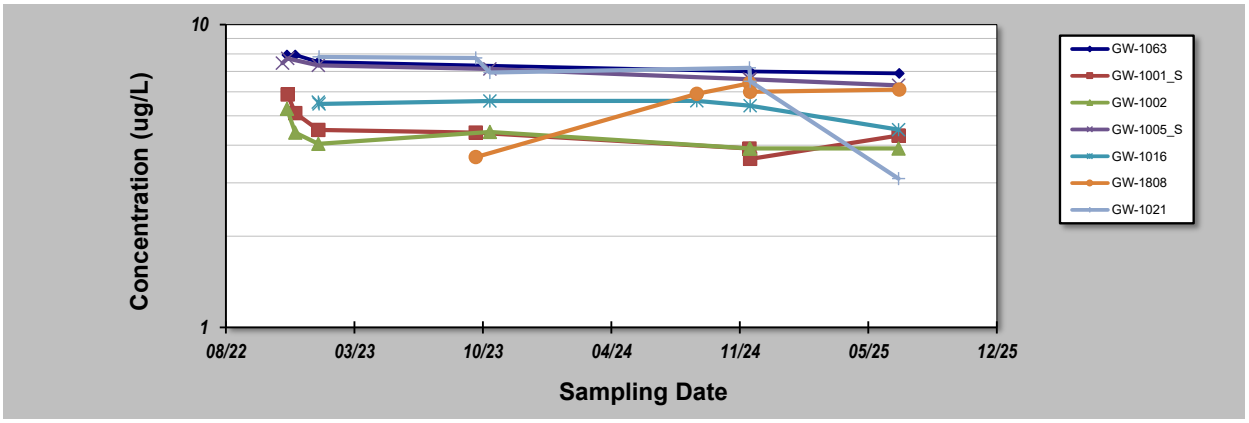
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | pH |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1063 | GW-1001_S | GW-1002 | GW-1005_S | GW-1016 | GW-1808 | GW-1021 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | PH CONCENTRATION | | | | | | |
| 1 | 23 Nov 2022 | | | | 7.5 | | | |
| 2 | 30 Nov 2022 | 7.9 | | 5.3 | | | | |
| 3 | 01 Dec 2022 | | 5.9 | | 7.7 | | | |
| 4 | 13 Dec 2022 | 7.9 | 5.1 | 4.4 | | | | |
| 5 | 18 Jan 2023 | 7.5 | 4.5 | 4.0 | 7.3 | 5.6 | | |
| 6 | 19 Jan 2023 | | | | | 5.5 | | 7.8 |
| 7 | 20 Sep 2023 | | 4.4 | | | | 3.7 | 7.8 |
| 8 | 15 Dec 2022 | | | | | | | |
| 9 | 12 Oct 2023 | | | 4.4 | 7.1 | 5.6 | | 7.0 |
| 10 | 29 Aug 2024 | | | | | 5.6 | 5.9 | |
| 11 | 19 Nov 2024 | | 3.9 | 3.9 | 6.6 | | 6.4 | 7.2 |
| 12 | 20 Nov 2024 | 7.0 | 3.6 | 3.9 | 6.6 | 5.4 | 6.0 | 6.5 |
| 13 | 10 Jul 2025 | 6.9 | | | | | 6.1 | |
| 14 | 09 Jul 2025 | | 4.3 | 3.9 | 6.3 | 4.5 | | 3.1 |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.07 | 0.17 | 0.12 | 0.08 | 0.08 | 0.20 | 0.27 |
| Mann-Kendall Statistic (S): | | -8 | -17 | -14 | -18 | -5 | 6 | -13 |
| Confidence Factor: | | 95.8% | 99.5% | 97.5% | 99.7% | 76.5% | 88.3% | 99.2% |
| Concentration Trend: | | Decreasing | Decreasing | Decreasing | Decreasing | Stable | No Trend | Decreasing |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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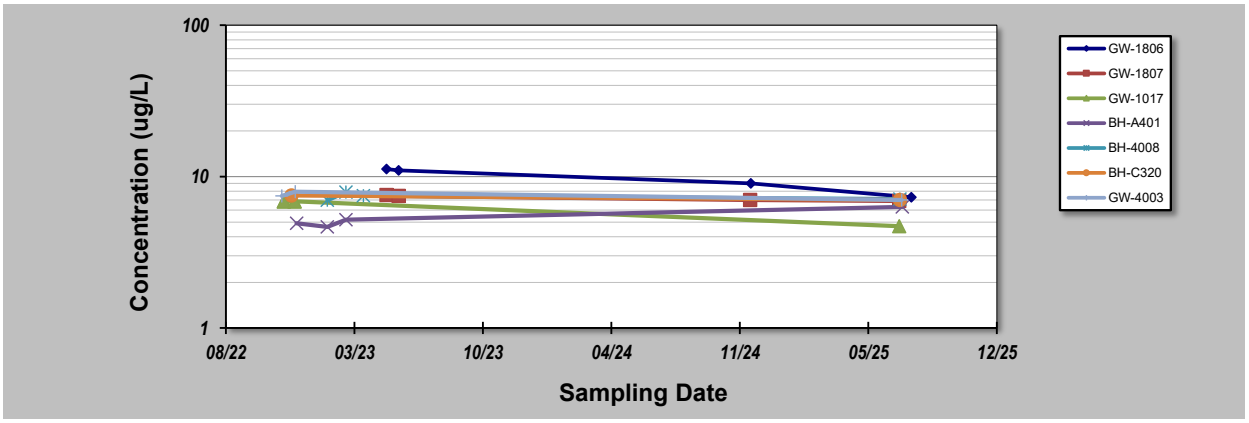
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | pH |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1806 | GW-1807 | GW-1017 | BH-A401 | BH-4008 | BH-C320 | GW-4003 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | PH CONCENTRATION | | | | | | |
| 1 | 04 May 2023 | 11.2 | 7.5 | | | | | |
| 2 | 23 May 2023 | 11.0 | 7.5 | | | | | |
| 3 | 21 Nov 2024 | 9.0 | | | | | | |
| 4 | 29 Jul 2025 | 7.3 | | | | | | |
| 5 | 20 Nov 2024 | | 7.0 | | | | | |
| 6 | 10 Jul 2025 | | 6.9 | | | | | |
| 7 | 25 Nov 2022 | | | 6.8 | | | | |
| 8 | 25 Nov 2022 | | | 6.9 | | | | |
| 9 | 12 Dec 2022 | | | 6.9 | | | | |
| 10 | 12 Dec 2022 | | | 6.9 | | | | |
| 11 | 10 Jul 2025 | | | 4.7 | | | | |
| 12 | 15 Dec 2022 | | | | 4.9 | | | |
| 13 | 01 Feb 2023 | | | | 4.7 | | | |
| 14 | 02 Mar 2023 | | | | 5.2 | | | |
| 15 | 15 Jul 2025 | | | | 6.3 | | | |
| 16 | 01 Feb 2023 | | | | | 7.0 | | |
| 17 | 02 Mar 2023 | | | | | 7.9 | | |
| 18 | 29 Mar 2023 | | | | | 7.5 | | |
| 19 | 11 Jul 2025 | | | | | 7.1 | | |
| 20 | 07 Dec 2022 | | | | | | 7.5 | |
| 21 | 11 Jul 2025 | | | | | | 7.0 | |
| 22 | 22 Nov 2022 | | | | | | | 7.44 |
| 23 | 13 Dec 2022 | | | | | | | 7.94 |
| 24 | 14 Jul 2025 | | | | | | | 7 |
| 25 | | | | | | | | |
| Coefficient of Variation: | | 0.19 | 0.04 | 0.15 | 0.14 | 0.06 | 0.05 | 0.06 |
| Mann-Kendall Statistic (S): | | -6 | -6 | -2 | 4 | 0 | -1 | -1 |
| Confidence Factor: | | 95.8% | 95.8% | 59.2% | 83.3% | 37.5% | | |
| Concentration Trend: | | Decreasing | Decreasing | Stable | No Trend | Stable | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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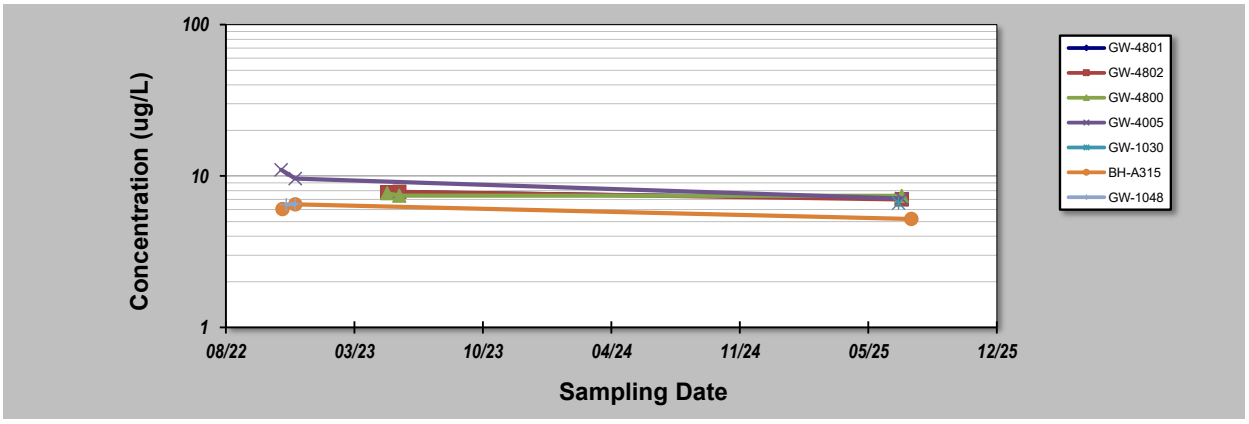
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | pH |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-4801 | GW-4802 | GW-4800 | GW-4005 | GW-1030 | BH-A315 | GW-1048 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | PH CONCENTRATION | | | | | | |
| 1 | 05 May 2023 | 7.7 | 7.8 | 7.7 | | | | |
| 2 | 24 May 2023 | 7.8 | 7.9 | 7.4 | | | | |
| 3 | 14 Jul 2025 | 7.1 | 7.0 | 7.4 | | | | |
| 4 | 21 Nov 2022 | | | | 11.0 | | | |
| 5 | 13 Dec 2022 | | | | 9.6 | | | |
| 6 | 14 Jul 2025 | | | | 7.1 | | | |
| 7 | 09 Jul 2025 | | | | | 6.6 | | |
| 8 | 23 Nov 2022 | | | | | | 6.0 | |
| 9 | 13 Dec 2022 | | | | | | 6.5 | |
| 10 | 29 Jul 2025 | | | | | | 5.2 | |
| 11 | 29 Nov 2022 | | | | | | | 6.5 |
| 12 | 13 Dec 2022 | | | | | | | 6.5 |
| 13 | 29 Jul 2025 | | | | | | | 5.6 |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.05 | 0.06 | 0.02 | 0.21 | | 0.11 | 0.01 |
| Mann-Kendall Statistic (S): | | -1 | -1 | -3 | -3 | | -1 | 3 |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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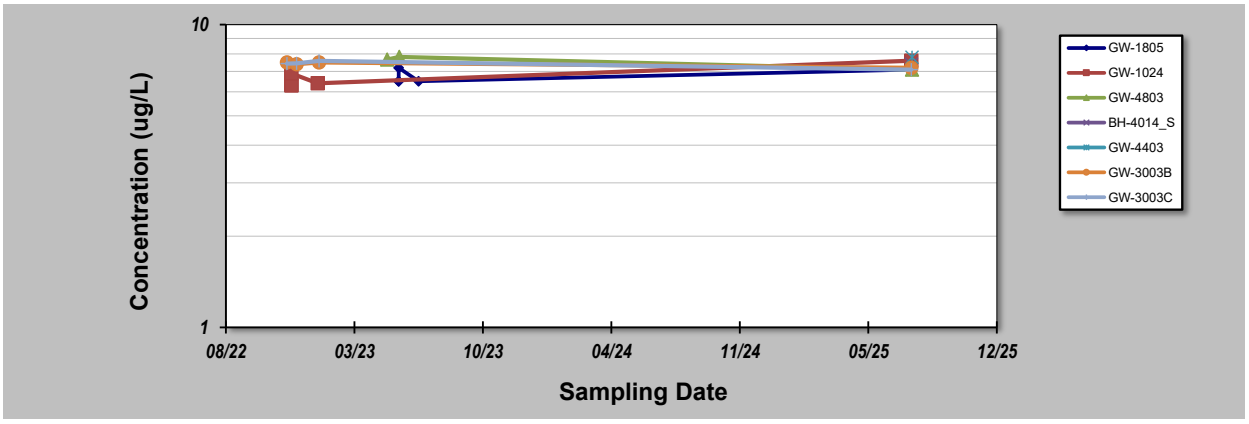
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | pH |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1805 | GW-1024 | GW-4803 | BH-4014_S | GW-4403 | GW-3003B | GW-3003C |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | PH CONCENTRATION | | | | | | |
| 1 | 23 May 2023 | 6.5 | | | | | | |
| 2 | 23 May 2023 | 6.5 | | | | | | |
| 3 | 23 May 2023 | 7.2 | | | | | | |
| 4 | 23 Jun 2023 | 6.5 | | | | | | |
| 5 | 29 Jul 2025 | 7.1 | | | | | | |
| 6 | 07 Dec 2022 | | 6.3 | | | | | |
| 7 | 07 Dec 2022 | | 6.3 | | | | | |
| 8 | 07 Dec 2022 | | 6.9 | | | | | |
| 9 | 17 Jan 2023 | | 6.4 | | | | | |
| 10 | 29 Jul 2025 | | 7.6 | | | | | |
| 11 | 05 May 2023 | | | 7.7 | | | | |
| 12 | 24 May 2023 | | | 7.8 | | | | |
| 13 | 30 Jul 2025 | | | 7.1 | | 7.8 | | |
| 14 | 29 Jul 2025 | | | | 7.4 | | | |
| 15 | 30 Nov 2022 | | | | | | 7.5 | 7.4 |
| 16 | 15 Dec 2022 | | | | | | 7.4 | 7.5 |
| 17 | 19 Jan 2023 | | | | | | 7.5 | 7.6 |
| 18 | 29 Jul 2025 | | | | | | 7.2 | 7.1 |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.05 | 0.08 | 0.05 | | | 0.02 | 0.03 |
| Mann-Kendall Statistic (S): | | 3 | 7 | -1 | | | -3 | 0 |
| Confidence Factor: | | 67.5% | 92.1% | | | | 72.9% | 37.5% |
| Concentration Trend: | | No Trend | Prob. Increasing | | | | Stable | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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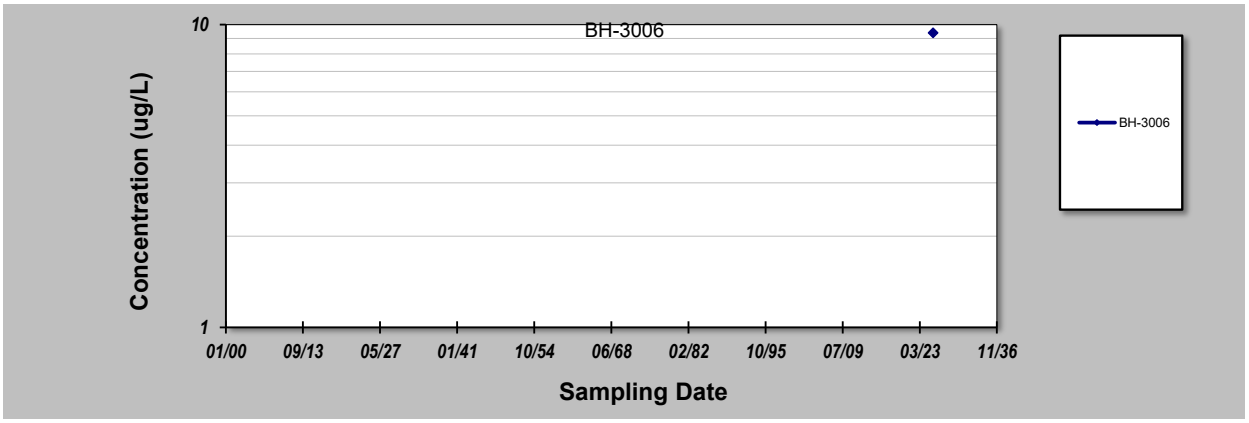
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | pH |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

Sampling Point ID: BH-3006

| Sampling Event | Sampling Date | PH CONCENTRATION | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 30 Jul 2025 | 9.4 | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | | | | | | | |
| Mann-Kendall Statistic (S): | | | | | | | | |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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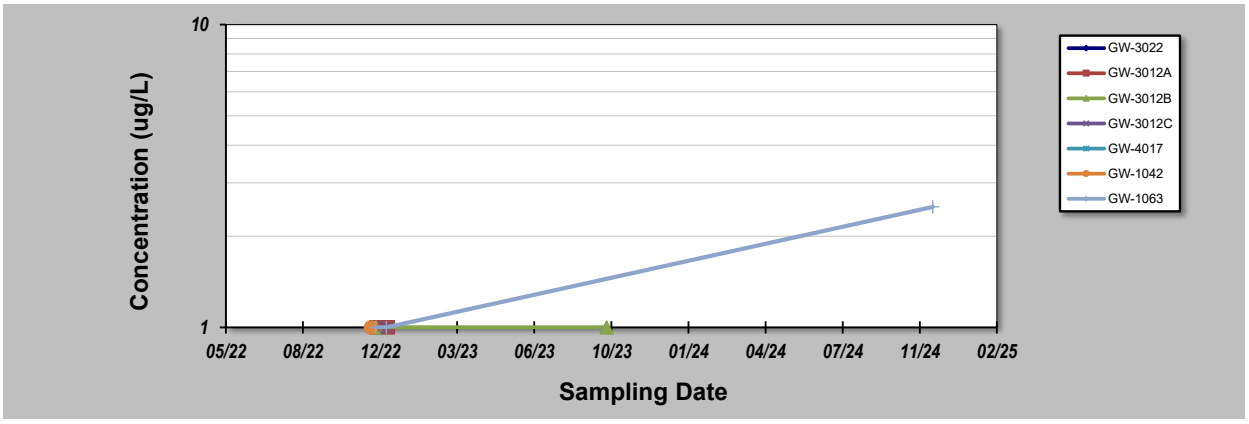
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 14-Jan-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Phenol |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-3022 | GW-3012A | GW-3012B | GW-3012C | GW-4017 | GW-1042 | GW-1063 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | PHENOL CONCENTRATION (ug/L) | | | | | | |
| 1 | 30 Nov 2022 | 1 | | | | | | |
| 2 | 30 Nov 2022 | | 1 | | | | | |
| 3 | 15 Dec 2022 | | 1 | | 1 | | | |
| 4 | 30 Nov 2022 | | | 1 | 1 | | | |
| 5 | 25 Sep 2023 | | | 1 | | | | |
| 6 | 02 Aug 2022 | | | | | 1 | | |
| 7 | 04 Aug 2022 | | | | | | 1 | |
| 8 | 23 Nov 2022 | | | | | | 1 | |
| 9 | 29 Nov 2022 | | | | | | | 1 |
| 10 | 13 Dec 2022 | | | | | | | 1 |
| 11 | 21 Nov 2024 | | | | | | | 2.5 |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.00 | 0.00 | 0.00 | | | 0.58 |
| Mann-Kendall Statistic (S): | | 0 | 0 | 0 | | | 2 |
| Confidence Factor: | | | | | | | |
| Concentration Trend: | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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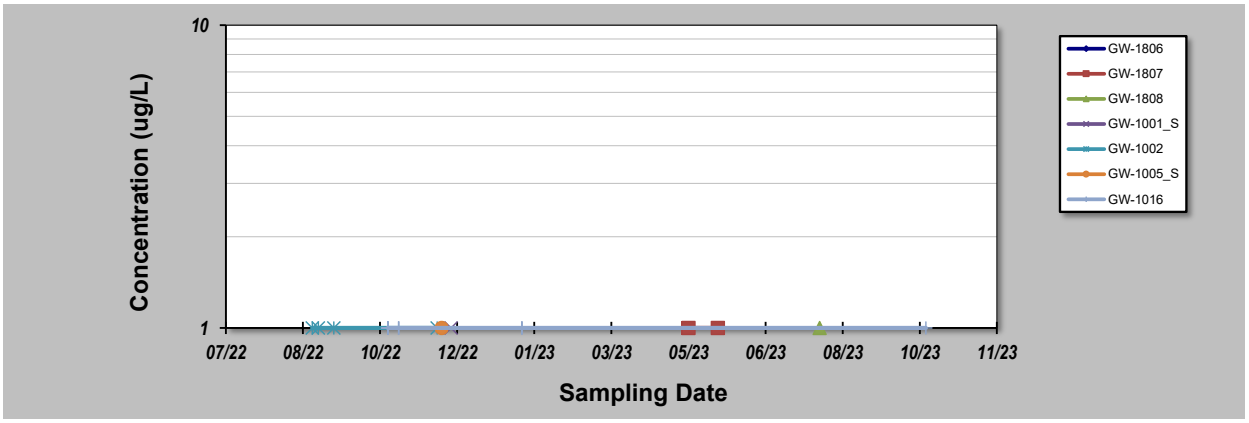
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 14-Jan-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Phenol |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1806 | GW-1807 | GW-1808 | GW-1001_S | GW-1002 | GW-1005_S | GW-1016 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | PHENOL CONCENTRATION (ug/L) | | | | | | |
| 1 | 04 May 2023 | 1 | 1 | | | | | |
| 2 | 23 May 2023 | 1 | 1 | | | | | |
| 3 | 28 Jul 2023 | | | 1 | | | | |
| 4 | 01 Dec 2022 | | | | 1 | | | |
| 5 | 02 Sep 2022 | | | | | 1 | | |
| 6 | 06 Sep 2022 | | | | | 1 | | |
| 7 | 16 Sep 2022 | | | | | 1 | | |
| 8 | 22 Nov 2022 | | | | | 1 | | |
| 9 | 25 Nov 2022 | | | | | | 1 | |
| 10 | 21 Oct 2022 | | | | | | | 1 |
| 11 | 21 Oct 2022 | | | | | | | 1 |
| 12 | 21 Oct 2022 | | | | | | | 1 |
| 13 | 21 Oct 2022 | | | | | | | 1 |
| 14 | 21 Oct 2022 | | | | | | | 1 |
| 15 | 21 Oct 2022 | | | | | | | 1 |
| 16 | 28 Oct 2022 | | | | | | | 1 |
| 17 | 28 Oct 2022 | | | | | | | 1 |
| 18 | 28 Oct 2022 | | | | | | | 1 |
| 19 | 16 Jan 2023 | | | | | | | 1 |
| 20 | 16 Jan 2023 | | | | | | | 1 |
| 21 | 16 Jan 2023 | | | | | | | 1 |
| 22 | 05 Oct 2023 | | | | | | | 1 |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| Coefficient of Variation: | | 0.00 | 0.00 | | | 0.00 | | 0.00 |
| Mann-Kendall Statistic (S): | | 0 | 0 | | | 0 | | 0 |
| Confidence Factor: | | | | | | 37.5% | | 47.6% |
| Concentration Trend: | | | | | | Stable | | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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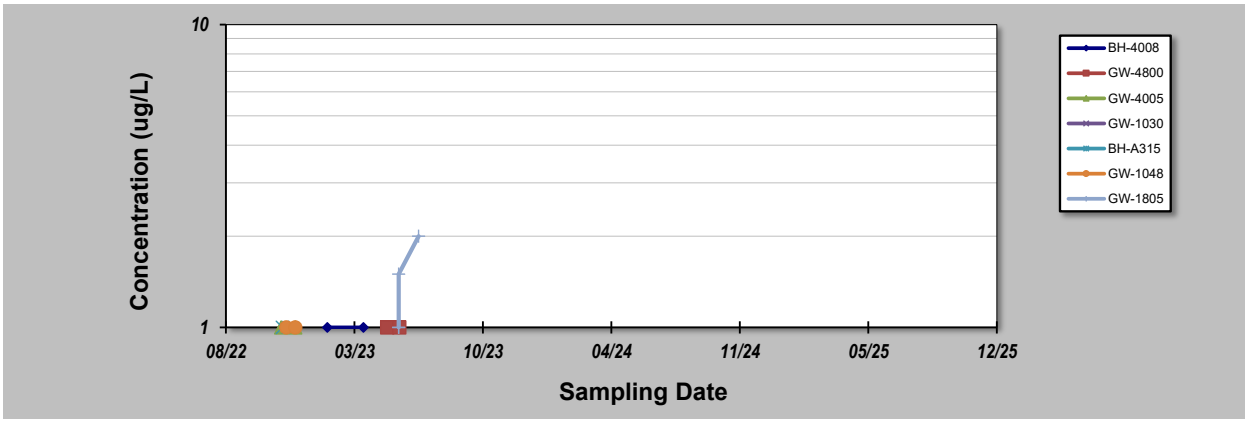
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 14-Jan-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Phenol |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | BH-4008 | GW-4800 | GW-4005 | GW-1030 | BH-A315 | GW-1048 | GW-1805 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | PHENOL CONCENTRATION (ug/L) | | | | | | |
| 1 | 01 Feb 2023 | 1 | | | | | | |
| 2 | 29 Mar 2023 | 1 | | | | | | |
| 3 | 05 May 2023 | | 1 | | | | | |
| 4 | 24 May 2023 | | 1 | | | | | |
| 5 | 21 Nov 2022 | | | 1 | | | | |
| 6 | 13 Dec 2022 | | | 1 | | | | |
| 7 | 09 Jul 2025 | | | | | | | |
| 8 | 23 Nov 2022 | | | | | 1 | | |
| 9 | 29 Nov 2022 | | | | | | 1 | |
| 10 | 13 Dec 2022 | | | | | | 1 | |
| 11 | 23 May 2023 | | | | | | | 1 |
| 12 | 23 May 2023 | | | | | | | 1 |
| 13 | 23 May 2023 | | | | | | | 1.5 |
| 14 | 23 Jun 2023 | | | | | | | 2 |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.00 | 0.00 | 0.00 | | | 0.00 | 0.35 |
| Mann-Kendall Statistic (S): | | 0 | 0 | 0 | | | 0 | 5 |
| Confidence Factor: | | | | | | | | 89.6% |
| Concentration Trend: | | | | | | | | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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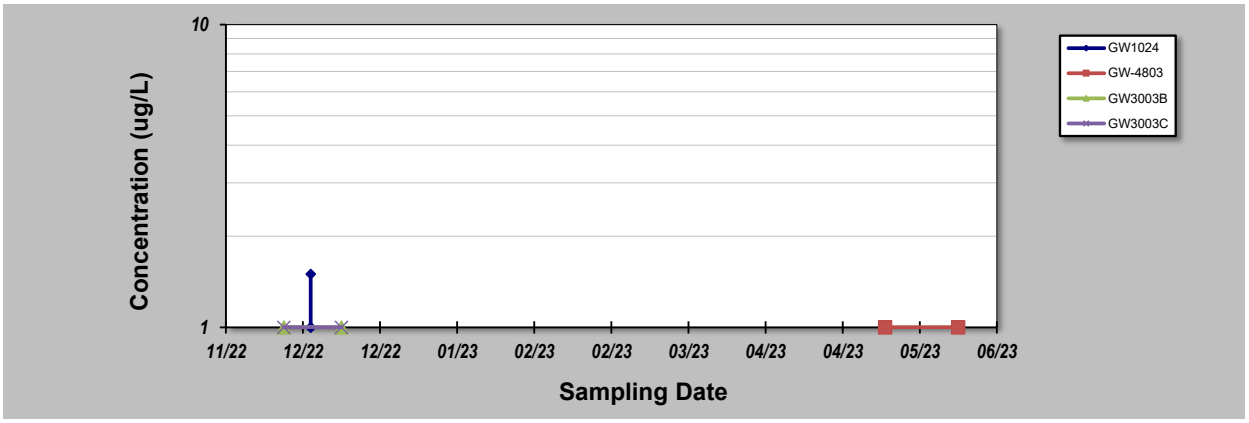
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 14-Jan-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Phenol |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW1024 | GW-4803 | GW3003B | GW3003C | | | |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | PHENOL CONCENTRATION (ug/L) | | | | | | |
| 1 | 07 Dec 2022 | 1 | | | | | | |
| 2 | 07 Dec 2022 | 1 | | | | | | |
| 3 | 07 Dec 2022 | 1.5 | | | | | | |
| 4 | 05 May 2023 | | 1 | | | | | |
| 5 | 24 May 2023 | | 1 | | | | | |
| 6 | 30 Nov 2022 | | | 1 | 1 | | | |
| 7 | 15 Dec 2022 | | | 1 | 1 | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.25 | 0.00 | 0.00 | 0.00 | | | |
| Mann-Kendall Statistic (S): | | 2 | 0 | 0 | 0 | | | |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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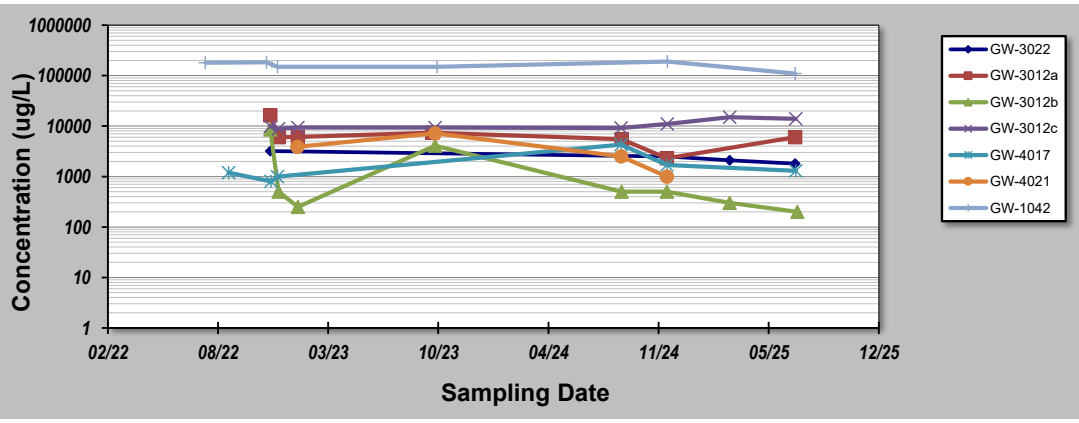
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Nitrogen |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-3022 | GW-3012a | GW-3012b | GW-3012c | GW-4017 | GW-4021 | GW-1042 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOTAL NITROGEN CONCENTRATION (ug/L) | | | | | | |
| 1 | 04 Aug 2022 | | | | | | | 180000 |
| 2 | 15 Sep 2022 | | | | | 1200 | | |
| 3 | 23 Nov 2022 | | | | | | | 183000 |
| 4 | 30 Nov 2022 | 3200 | 16200 | 8500 | 9800 | | | |
| 5 | 01 Dec 2022 | | | | | 800 | 1000 | |
| 6 | 13 Dec 2022 | | | | | 1000 | 28300 | 150000 |
| 7 | 15 Dec 2022 | 1900 | 6000 | 500 | 8900 | | | |
| 8 | 18 Jan 2023 | | | | | | 3900 | |
| 9 | 19 Jan 2023 | 3100 | 6100 | 250 | 9400 | | | |
| 10 | 20 Sep 2023 | | 7400 | | | | | |
| 11 | 25 Sep 2023 | | | 4100 | 9400 | | 7200 | |
| 12 | 29 Sep 2023 | | | | | | | 150000 |
| 13 | 28 Aug 2024 | | | | 9200 | 4300 | 2500 | |
| 14 | 29 Aug 2024 | | 5500 | 500 | | | | |
| 15 | 19 Nov 2024 | | 2300 | 500 | | 1700 | 1000 | |
| 16 | 20 Nov 2024 | 2500 | | | 11000 | | | 190000 |
| 17 | 13 Mar 2025 | 2100 | | 300 | 15000 | | | |
| 18 | 10 Jul 2025 | 1800 | 6000 | | | | | 110000 |
| 19 | 14 Jul 2025 | | | 200 | | | | |
| 20 | 11 Jul 2025 | | | | 14000 | 1300 | | |
| 21 | | | | | | | | |
| 22 | | | | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| Coefficient of Variation: | | 0.25 | 0.61 | 1.61 | 0.22 | 0.76 | 0.73 | 0.19 |
| Mann-Kendall Statistic (S): | | -9 | -10 | -15 | 13 | 5 | -11 | -4 |
| Confidence Factor: | | 100.0% | 90.7% | 95.8% | 92.9% | 76.5% | 100.0% | 70.3% |
| Concentration Trend: | | Decreasing | Prob. Decreasing | Decreasing | Prob. Increasing | No Trend | Decreasing | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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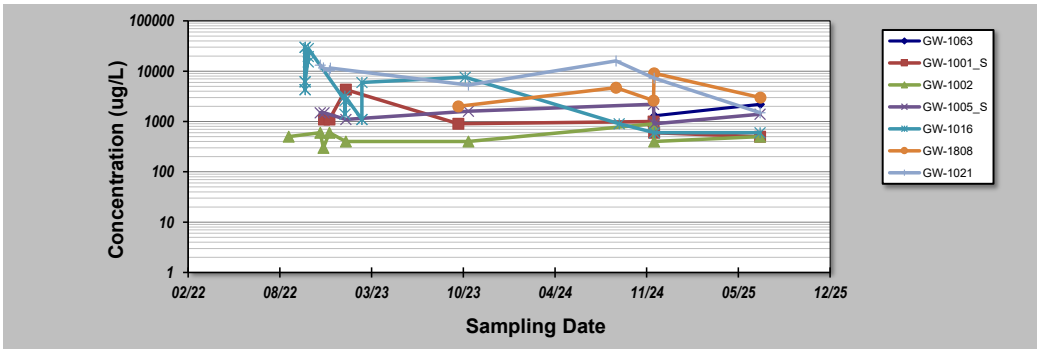
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Nitrogen |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1063 | GW-1001_S | GW-1002 | GW-1005_S | GW-1016 | GW-1808 | GW-1021 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOTAL NITROGEN CONCENTRATION (ug/L) | | | | | | |
| 1 | 15 Sep 2022 | | | 500 | | | | |
| 2 | 23 Nov 2022 | | | 600 | 1500 | | | 13200 |
| 3 | 30 Nov 2022 | | | 300 | | | | 11600 |
| 4 | 01 Dec 2022 | | 1100 | | 1500 | | | |
| 5 | 13 Dec 2022 | | 1100 | 600 | | | | 10200 |
| 6 | 15 Dec 2022 | | | | | | | 11500 |
| 7 | 18 Jan 2023 | | 4300 | 400 | 1100 | | | |
| 8 | 19 Jan 2023 | | | | | | | |
| 9 | 20 Sep 2023 | | 900 | | | | 2000 | |
| 10 | 12 Oct 2023 | | | 400 | 1600 | | | 5300 |
| 11 | 29 Aug 2024 | | | | | | 4700 | 16000 |
| 12 | 19 Nov 2024 | | 1000 | 900 | 2200 | | 2600 | |
| 13 | 20 Nov 2024 | | 600 | 400 | 900 | | 9100 | 7300 |
| 14 | 21 Nov 2024 | 1300 | | | | | | |
| 15 | 10 Jul 2025 | 2200 | | | | | 3000 | |
| 16 | 09 Jul 2025 | | 500 | 500 | 1400 | | | 1500 |
| 17 | 21 Oct 2022 | | | | | 4300 | | |
| 18 | 21 Oct 2022 | | | | | 29800 | | |
| 19 | 21 Oct 2022 | | | | | 6200 | | |
| 20 | 21 Oct 2022 | | | | | 4300 | | |
| 21 | 21 Oct 2022 | | | | | 29800 | | |
| 22 | 21 Oct 2022 | | | | | 6200 | | |
| 23 | 28 Oct 2022 | | | | | 19600 | | |
| 24 | 28 Oct 2022 | | | | | 15300 | | |
| 25 | 28 Oct 2022 | | | | | 28300 | | |
| 26 | 16 Jan 2023 | | | | | 2600 | | |
| 27 | 16 Jan 2023 | | | | | 1400 | | |
| 28 | 16 Jan 2023 | | | | | 3200 | | |
| 29 | 22 Feb 2023 | | | | | 1100 | | |
| 30 | 22 Feb 2023 | | | | | 1100 | | |
| 31 | 22 Feb 2023 | | | | | 6000 | | |
| 32 | 05 Oct 2023 | | | | | 7600 | | |
| 33 | 05 Sep 2024 | | | | | 900 | | |
| 34 | 21 Nov 2024 | | | | | 600 | | |
| 35 | 09 Jul 2025 | | | | | 600 | | |
| 36 | | | | | | | | |
| 37 | | | | | | | | |
| 38 | | | | | | | | |
| 39 | | | | | | | | |
| 40 | | | | | | | | |
| Coefficient of Variation: | | 0.36 | 0.97 | 0.35 | 0.28 | 1.16 | 0.67 | 0.49 |
| Mann-Kendall Statistic (S): | | 1 | -14 | 1 | -2 | -86 | 4 | -14 |
| Confidence Factor: | | | 97.5% | 50.0% | 55.7% | 99.9% | 75.8% | 94.6% |
| Concentration Trend: | | | Decreasing | No Trend | Stable | Decreasing | No Trend | Prob. Decreasing |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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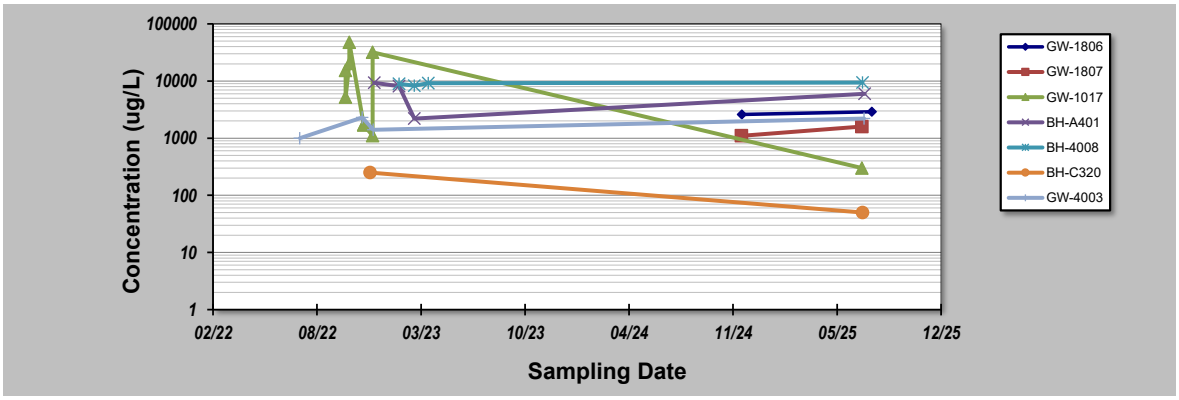
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Nitrogen |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1806 | GW-1807 | GW-1017 | BH-A401 | BH-4008 | BH-C320 | GW-4003 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOTAL NITROGEN CONCENTRATION (ug/L) | | | | | | |
| 1 | 21 Nov 2024 | 2600 | | | | | | |
| 2 | 29 Jul 2025 | 2900 | | | | | | |
| 3 | 20 Nov 2024 | | 1100 | | | | | |
| 4 | 10 Jul 2025 | | 1600 | | | | | |
| 5 | 21 Oct 2022 | | | 15300 | | | | |
| 6 | 21 Oct 2022 | | | 5200 | | | | |
| 7 | 28 Oct 2022 | | | 20200 | | | | |
| 8 | 28 Oct 2022 | | | 47400 | | | | |
| 9 | 25 Nov 2022 | | | 1700 | | | | |
| 10 | 25 Nov 2022 | | | 1700 | | | | |
| 11 | 12 Dec 2022 | | | 1100 | | | | |
| 12 | 12 Dec 2022 | | | 31800 | | | | |
| 13 | 10 Jul 2025 | | | 300 | | | | |
| 14 | 15 Dec 2022 | | | | 9300 | | | |
| 15 | 01 Feb 2023 | | | | 8100 | | | |
| 16 | 02 Mar 2023 | | | | 2200 | | | |
| 17 | 15 Jul 2025 | | | | 6000 | | | |
| 18 | 01 Feb 2023 | | | | | 8900 | | |
| 19 | 02 Mar 2023 | | | | | 8300 | | |
| 20 | 29 Mar 2023 | | | | | 9200 | | |
| 21 | 11 Jul 2025 | | | | | 9400 | | |
| 22 | 07 Dec 2022 | | | | | | 250 | |
| 23 | 11 Jul 2025 | | | | | | 50 | |
| 24 | 25 Jul 2022 | | | | | | | 1000 |
| 25 | 22 Nov 2022 | | | | | | | 2300 |
| 26 | 13 Dec 2022 | | | | | | | 1400 |
| 27 | 14 Jul 2025 | | | | | | | 2200 |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| Coefficient of Variation: | | 0.08 | 0.26 | 1.20 | 0.49 | 0.68 | 0.94 | 0.36 |
| Mann-Kendall Statistic (S): | | 1 | 1 | -13 | -4 | -23 | -1 | 2 |
| Confidence Factor: | | | | 89.0% | 83.3% | 99.1% | | 62.5% |
| Concentration Trend: | | | | No Trend | Stable | Decreasing | | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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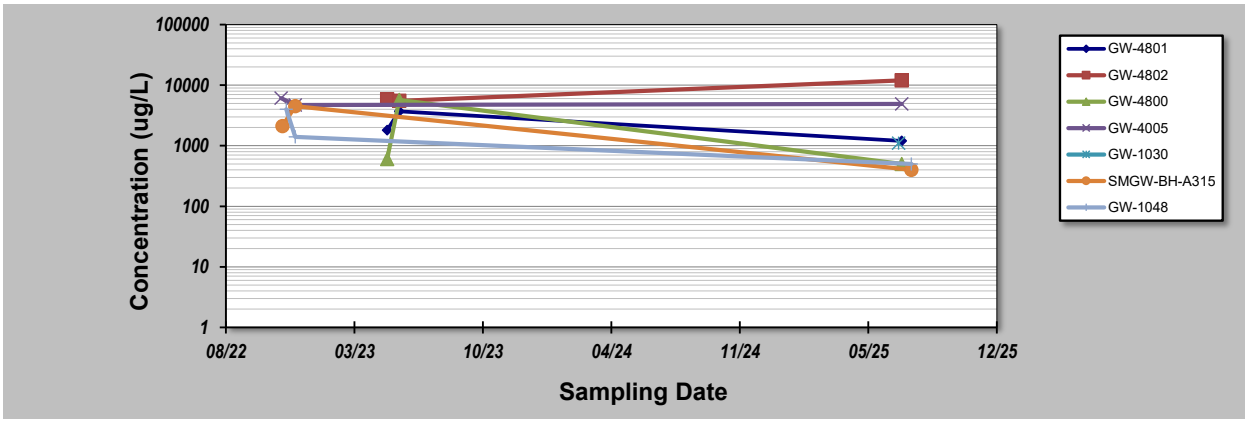
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Nitrogen |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-4801 | GW-4802 | GW-4800 | GW-4005 | GW-1030 | SMGW-BH-A315 | GW-1048 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOTAL NITROGEN CONCENTRATION (ug/L) | | | | | | |
| 1 | 05 May 2023 | 1800 | 5800 | 600 | | | | |
| 2 | 24 May 2023 | 3700 | 5500 | 5700 | | | | |
| 3 | 14 Jul 2025 | 1200 | 12000 | 500 | | | | |
| 4 | 21 Nov 2022 | | | | 6100 | | | |
| 5 | 13 Dec 2022 | | | | 4700 | | | |
| 6 | 14 Jul 2025 | | | | 4900 | | | |
| 7 | 09 Jul 2025 | | | | | 1100 | | |
| 8 | 23 Nov 2022 | | | | | | 2100 | |
| 9 | 13 Dec 2022 | | | | | | 4500 | |
| 10 | 29 Jul 2025 | | | | | | 400 | |
| 11 | 29 Nov 2022 | | | | | | | 4000 |
| 12 | 13 Dec 2022 | | | | | | | 1400 |
| 13 | 29 Jul 2025 | | | | | | | 500 |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.58 | 0.47 | 1.31 | 0.14 | 1.12 | 0.88 | 0.92 |
| Mann-Kendall Statistic (S): | | -1 | 1 | -1 | -1 | -8 | -1 | -3 |
| Confidence Factor: | | | | | | 89.8% | | |
| Concentration Trend: | | | | | | No Trend | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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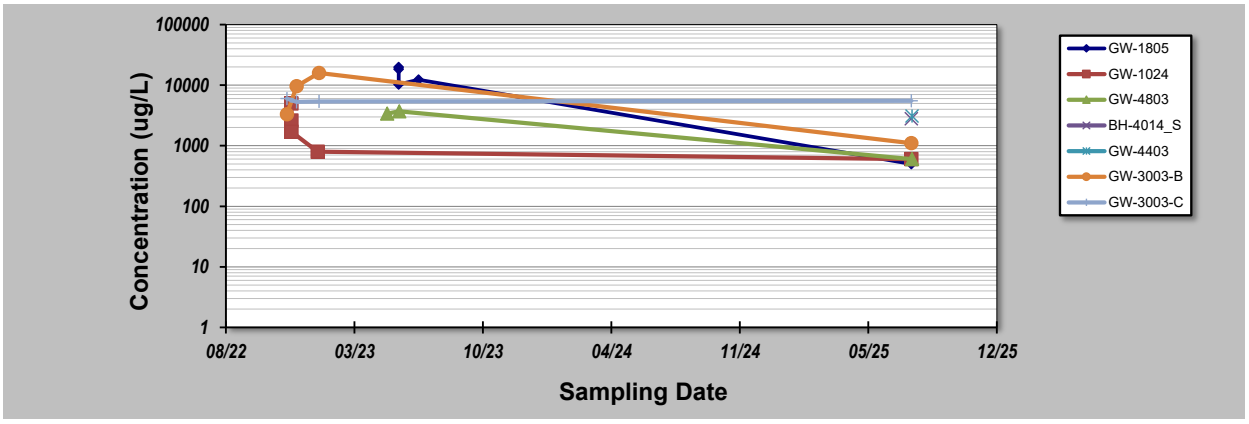
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Nitrogen |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1805 | GW-1024 | GW-4803 | BH-4014_S | GW-4403 | GW-3003-B | GW-3003-C |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOTAL NITROGEN CONCENTRATION (ug/L) | | | | | | |
| 1 | 23 May 2023 | 19900 | | | | | | |
| 2 | 23 May 2023 | 18400 | | | | | | |
| 3 | 23 May 2023 | 10300 | | | | | | |
| 4 | 23 Jun 2023 | 12300 | | | | | | |
| 5 | 29 Jul 2025 | 500 | | | | | | |
| 6 | 07 Dec 2022 | | 5000 | | | | | |
| 7 | 07 Dec 2022 | | 2600 | | | | | |
| 8 | 07 Dec 2022 | | 1700 | | | | | |
| 9 | 17 Jan 2023 | | 800 | | | | | |
| 10 | 29 Jul 2025 | | 600 | | | | | |
| 11 | 05 May 2023 | | | 3400 | | | | |
| 12 | 24 May 2023 | | | 3700 | | | | |
| 13 | 30 Jul 2025 | | | 600 | | 3100 | | |
| 14 | 29 Jul 2025 | | | | 2800 | | | |
| 15 | 30 Nov 2022 | | | | | | 3300 | 6000 |
| 16 | 15 Dec 2022 | | | | | | 9600 | 5300 |
| 17 | 19 Jan 2023 | | | | | | 15900 | 5400 |
| 18 | 29 Jul 2025 | | | | | | 1100 | 5500 |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.63 | 0.83 | 0.67 | | 0.97 | 0.89 | 0.06 |
| Mann-Kendall Statistic (S): | | -8 | -10 | -1 | | -8 | 0 | 0 |
| Confidence Factor: | | 95.8% | 99.2% | | | 89.8% | 37.5% | 37.5% |
| Concentration Trend: | | Decreasing | Decreasing | | | Stable | Stable | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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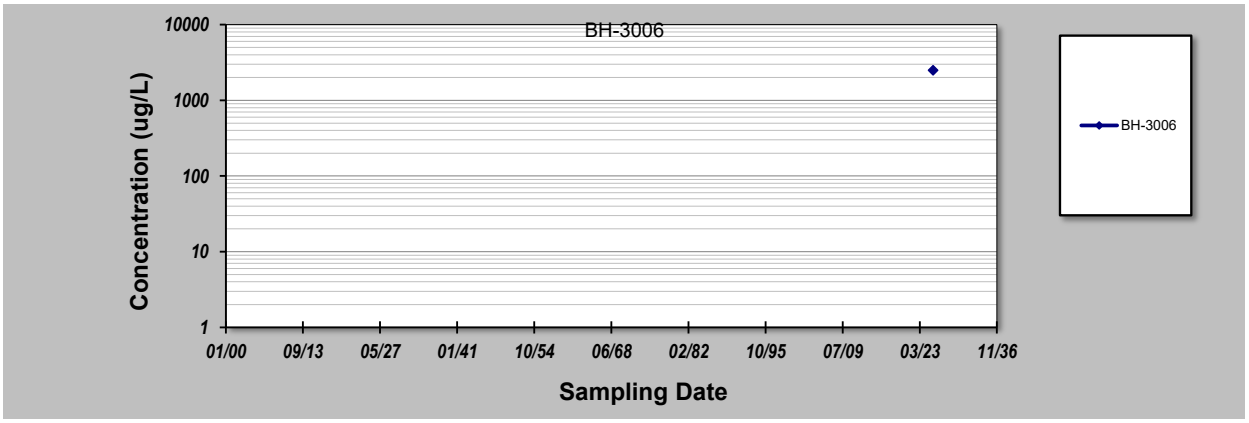
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Nitrogen |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

Sampling Point ID: BH-3006

| Sampling Event | Sampling Date | TOTAL NITROGEN CONCENTRATION (ug/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 30 Jul 2025 | 2500 | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | | | | | 1.08 | | |
| Mann-Kendall Statistic (S): | | | | | | -7 | | |
| Confidence Factor: | | | | | | 92.1% | | |
| Concentration Trend: | | | | | | Prob. Decreasing | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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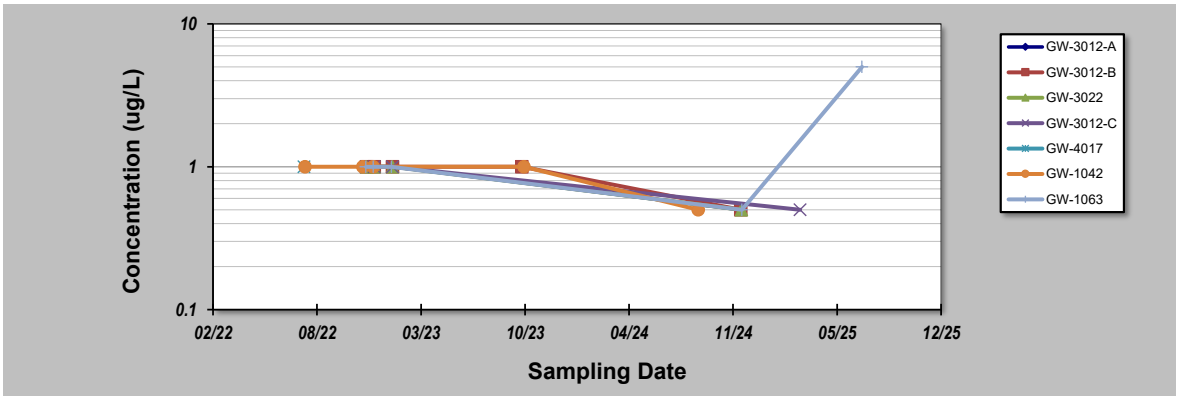
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Toluene |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-3012-A | GW-3012-B | GW-3022 | GW-3012-C | GW-4017 | GW-1042 | GW-1063 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOLUENE CONCENTRATION (ug/L) | | | | | | |
| 1 | 30 Nov 2022 | 1 | | | | | | |
| 2 | 15 Dec 2022 | 1 | | | | | | |
| 3 | 19 Jan 2023 | 1 | | | | | | |
| 4 | 19 Nov 2024 | 0.5 | | | | | | |
| 5 | 30 Nov 2022 | | 1 | | | | | |
| 6 | 15 Dec 2022 | | 1 | | | | | |
| 7 | 19 Jan 2023 | | 1 | | | | | |
| 8 | 25 Sep 2023 | | 1 | | | | | |
| 9 | 19 Nov 2024 | | 0.5 | | | | | |
| 10 | 30 Nov 2022 | | | 1 | | | | |
| 11 | 15 Dec 2022 | | | 1 | | | | |
| 12 | 19 Jan 2023 | | | 1 | | | | |
| 13 | 20 Nov 2024 | | | 0.5 | | | | |
| 14 | 30 Nov 2022 | | | | 1 | | | |
| 15 | 15 Dec 2022 | | | | 1 | | | |
| 16 | 19 Jan 2023 | | | | 1 | | | |
| 17 | 13 Mar 2025 | | | | 0.5 | | | |
| 18 | 02 Aug 2022 | | | | | 1 | | |
| 19 | 04 Aug 2022 | | | | | | 1 | |
| 20 | 23 Nov 2022 | | | | | | 1 | |
| 21 | 13 Dec 2022 | | | | | | 1 | |
| 22 | 29 Sep 2023 | | | | | | 1 | |
| 23 | 29 Aug 2024 | | | | | | 0.5 | |
| 24 | 29 Nov 2022 | | | | | | | 1 |
| 25 | 13 Dec 2022 | | | | | | | 1 |
| 26 | 17 Jan 2023 | | | | | | | 1 |
| 27 | 21 Nov 2024 | | | | | | | 0.5 |
| 28 | 10 Jul 2025 | | | | | | | 5 |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| Coefficient of Variation: | | | 0.25 | 0.29 | 0.29 | | 0.25 | 1.09 |
| Mann-Kendall Statistic (S): | | | -4 | -3 | -3 | | -4 | 1 |
| Confidence Factor: | | | 75.8% | 72.9% | 72.9% | | 75.8% | 50.0% |
| Concentration Trend: | | | Stable | Stable | Stable | | Stable | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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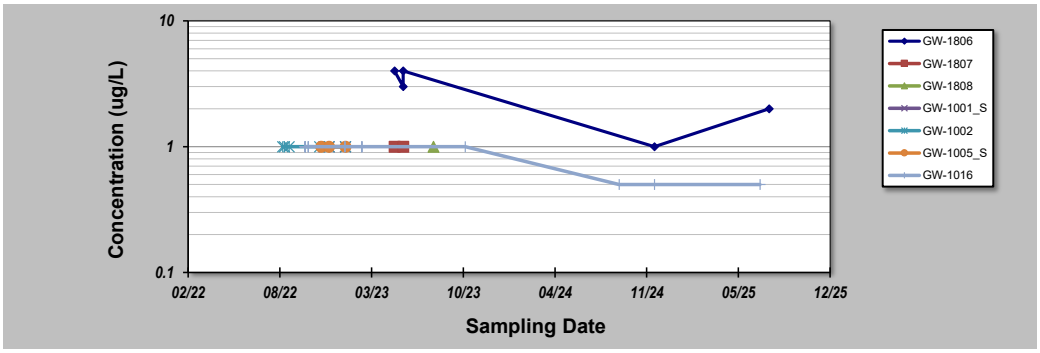
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Toluene |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1806 | GW-1807 | GW-1808 | GW-1001_S | GW-1002 | GW-1005_S | GW-1016 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOLUENE CONCENTRATION (ug/L) | | | | | | |
| 1 | 04 May 2023 | 4 | 1 | | | | | |
| 2 | 23 May 2023 | 3 | 1 | | | | | |
| 3 | 23 May 2023 | 4 | | | | | | |
| 4 | 21 Nov 2024 | 1 | | | | | | |
| 5 | 29 Jul 2025 | 2 | | | | | | |
| 6 | 28 Jul 2023 | | | 1 | | | | |
| 7 | 01 Dec 2022 | | | | 1 | | | |
| 8 | 12 Dec 2022 | | | | 1 | | | |
| 9 | 17 Jan 2023 | | | | 1 | | | |
| 10 | 02 Sep 2022 | | | | | 1 | | |
| 11 | 06 Sep 2022 | | | | | 1 | | |
| 12 | 16 Sep 2022 | | | | | 1 | | |
| 13 | 22 Nov 2022 | | | | | 1 | | |
| 14 | 12 Dec 2022 | | | | | 1 | | |
| 15 | 17 Jan 2023 | | | | | 1 | | |
| 16 | 25 Nov 2022 | | | | | | 1 | |
| 17 | 12 Dec 2022 | | | | | | 1 | |
| 18 | 17 Jan 2023 | | | | | | 1 | |
| 19 | 21 Oct 2022 | | | | | | | 1 |
| 20 | 21 Oct 2022 | | | | | | | 1 |
| 21 | 21 Oct 2022 | | | | | | | 1 |
| 22 | 21 Oct 2022 | | | | | | | 1 |
| 23 | 21 Oct 2022 | | | | | | | 1 |
| 24 | 21 Oct 2022 | | | | | | | 1 |
| 25 | 28 Oct 2022 | | | | | | | 1 |
| 26 | 28 Oct 2022 | | | | | | | 1 |
| 27 | 28 Oct 2022 | | | | | | | 1 |
| 28 | 16 Jan 2023 | | | | | | | 1 |
| 29 | 16 Jan 2023 | | | | | | | 1 |
| 30 | 16 Jan 2023 | | | | | | | 1 |
| 31 | 22 Feb 2023 | | | | | | | 1 |
| 32 | 22 Feb 2023 | | | | | | | 1 |
| 33 | 22 Feb 2023 | | | | | | | 1 |
| 34 | 05 Oct 2023 | | | | | | | 1 |
| 35 | 05 Sep 2024 | | | | | | | 0.5 |
| 36 | 21 Nov 2024 | | | | | | | 0.5 |
| 37 | 09 Jul 2025 | | | | | | | 0.5 |
| 38 | | | | | | | | |
| 39 | | | | | | | | |
| 40 | | | | | | | | |
| Coefficient of Variation: | | 0.47 | 0.00 | | 0.00 | 0.00 | 0.00 | 0.20 |
| Mann-Kendall Statistic (S): | | 1 | 0 | | 0 | 0 | 0 | -48 |
| Confidence Factor: | | | | | | | 39.3% | 95.0% |
| Concentration Trend: | | | | | | | Stable | Prob. Decreasing |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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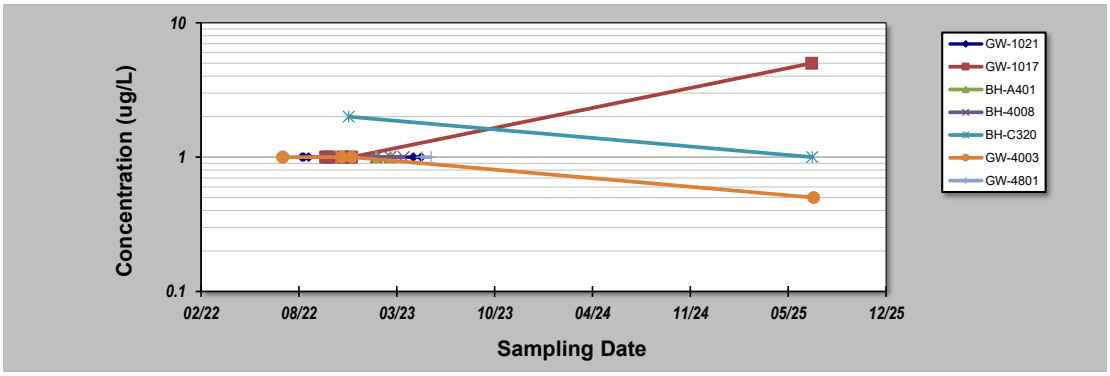
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Toluene |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1021 | GW-1017 | BH-A401 | BH-4008 | BH-C320 | GW-4003 | GW-4801 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOLUENE CONCENTRATION (ug/L) | | | | | | |
| 1 | 02 Sep 2022 | 1 | | | | | | |
| 2 | 06 Sep 2022 | 1 | | | | | | |
| 3 | 16 Sep 2022 | 1 | | | | | | |
| 4 | 18 Apr 2023 | 1 | | | | | | |
| 5 | 04 May 2023 | 1 | | | | | | |
| 6 | 21 Oct 2022 | | 1 | | | | | |
| 7 | 21 Oct 2022 | | 1 | | | | | |
| 8 | 28 Oct 2022 | | 1 | | | | | |
| 9 | 28 Oct 2022 | | 1 | | | | | |
| 10 | 25 Nov 2022 | | 1 | | | | | |
| 11 | 25 Nov 2022 | | 1 | | | | | |
| 12 | 12 Dec 2022 | | 1 | | | | | |
| 13 | 12 Dec 2022 | | 1 | | | | | |
| 14 | 10 Jul 2025 | | 5 | | | | | |
| 15 | 01 Feb 2023 | | | 1 | | | | |
| 16 | 02 Mar 2023 | | | 1 | | | | |
| 17 | 28 Oct 2022 | | | | 1 | | | |
| 18 | 01 Feb 2023 | | | | 1 | | | |
| 19 | 02 Mar 2023 | | | | 1 | | | |
| 20 | 29 Mar 2023 | | | | 1 | | | |
| 21 | 07 Dec 2022 | | | | | 2 | | |
| 22 | 11 Jul 2025 | | | | | 1 | | |
| 23 | 25 Jul 2022 | | | | | | 1 | |
| 24 | 25 Jul 2022 | | | | | | 1 | |
| 25 | 22 Nov 2022 | | | | | | 1 | |
| 26 | 13 Dec 2022 | | | | | | 1 | |
| 27 | 14 Jul 2025 | | | | | | 0.5 | |
| 28 | 05 May 2023 | | | | | | | 1 |
| 29 | 24 May 2023 | | | | | | | 1 |
| 30 | | | | | | | | |
| 31 | | | | | | | | |
| 32 | | | | | | | | |
| 33 | | | | | | | | |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| Coefficient of Variation: | | 0.00 | 0.92 | 0.00 | 0.00 | 0.47 | 0.25 | 0.00 |
| Mann-Kendall Statistic (S): | | 0 | 8 | 0 | 0 | -1 | -4 | 0 |
| Confidence Factor: | | | 76.2% | | 37.5% | | 75.8% | |
| Concentration Trend: | | | No Trend | | Stable | | Stable | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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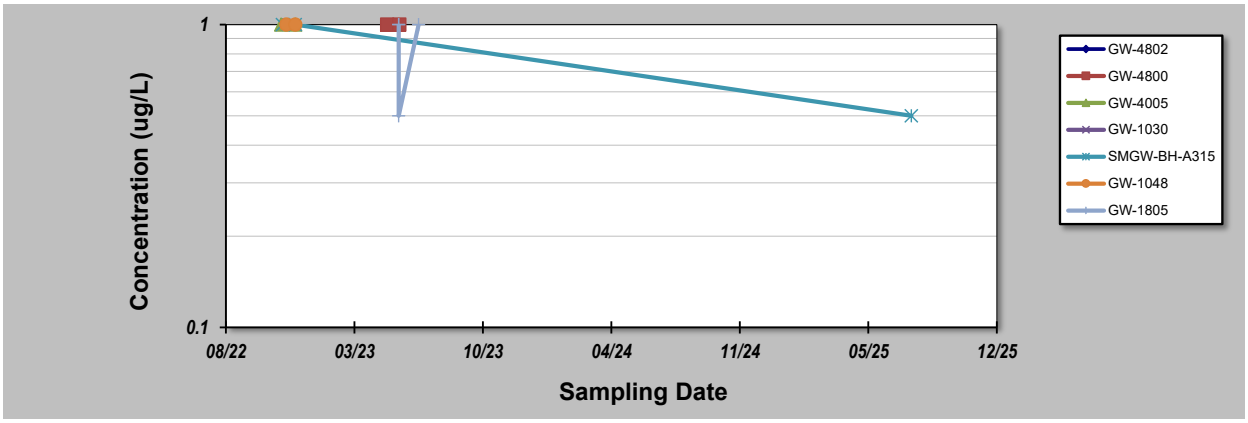
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Toluene |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-4802 | GW-4800 | GW-4005 | GW-1030 | SMGW-BH-A315 | GW-1048 | GW-1805 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOLUENE CONCENTRATION (ug/L) | | | | | | |
| 1 | 05 May 2023 | 1 | | | | | | |
| 2 | 24 May 2023 | 1 | | | | | | |
| 3 | 05 May 2023 | | 1 | | | | | |
| 4 | 24 May 2023 | | 1 | | | | | |
| 5 | 21 Nov 2022 | | | 1 | | | | |
| 6 | 13 Dec 2022 | | | 1 | | | | |
| 7 | 23 Nov 2022 | | | | | 1 | | |
| 8 | 13 Dec 2022 | | | | | 1 | | |
| 9 | 29 Jul 2025 | | | | | 0.5 | | |
| 10 | 29 Nov 2022 | | | | | | 1 | |
| 11 | 13 Dec 2022 | | | | | | 1 | |
| 12 | 23 May 2023 | | | | | | | 1 |
| 13 | 23 May 2023 | | | | | | | 1 |
| 14 | 23 May 2023 | | | | | | | 0.5 |
| 15 | 23 Jun 2023 | | | | | | | 1 |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | | 0.00 | 0.00 | | 0.35 | 0.00 | 0.29 |
| Mann-Kendall Statistic (S): | | | 0 | 0 | | -2 | 0 | -1 |
| Confidence Factor: | | | | | | | | 50.0% |
| Concentration Trend: | | | | | | | | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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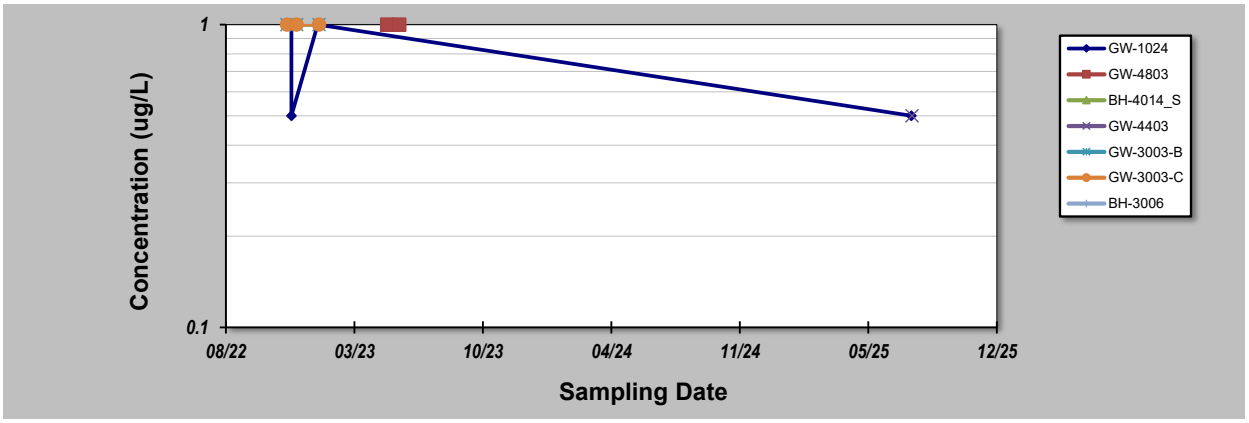
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Toluene |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1024 | GW-4803 | BH-4014_S | GW-4403 | GW-3003-B | GW-3003-C | BH-3006 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOLUENE CONCENTRATION (ug/L) | | | | | | |
| 1 | 07 Dec 2022 | 1 | | | | | | |
| 2 | 07 Dec 2022 | 1 | | | | | | |
| 3 | 07 Dec 2022 | 0.5 | | | | | | |
| 4 | 17 Jan 2023 | 1 | | | | | | |
| 5 | 29 Jul 2025 | 0.5 | | | | | | |
| 6 | 05 May 2023 | | 1 | | | | | |
| 7 | 24 May 2023 | | 1 | | | | | |
| 8 | 30 Jul 2025 | | | | 0.5 | | | |
| 9 | 30 Nov 2022 | | | | | 1 | | |
| 10 | 15 Dec 2022 | | | | | 1 | | |
| 11 | 19 Jan 2023 | | | | | 1 | | |
| 12 | 30 Nov 2022 | | | | | | 1 | |
| 13 | 15 Dec 2022 | | | | | | 1 | |
| 14 | 19 Jan 2023 | | | | | | 1 | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.47 | 0.00 | | | 0.00 | 0.00 | |
| Mann-Kendall Statistic (S): | | -1 | 0 | | | 0 | 0 | |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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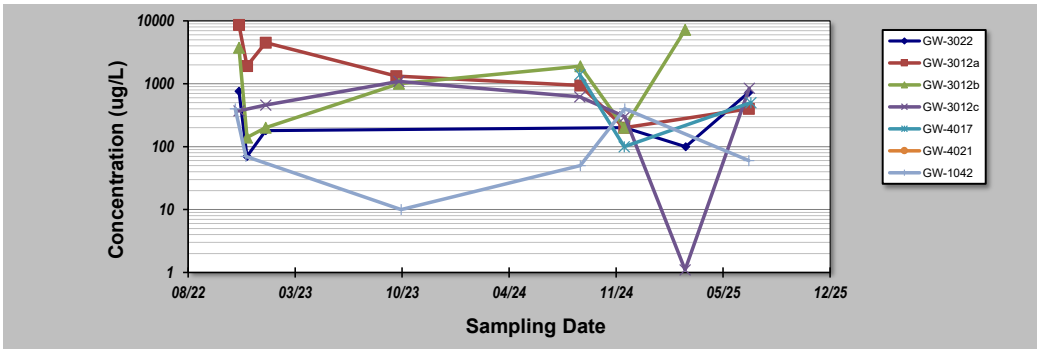
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Phosphorus |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-3022 | GW-3012a | GW-3012b | GW-3012c | GW-4017 | GW-4021 | GW-1042 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOTAL PHOSPHORUS CONCENTRATION (ug/L) | | | | | | |
| 1 | 30 Nov 2022 | 760 | | | | | | |
| 2 | 15 Dec 2022 | 70 | | | | | | |
| 3 | 19 Jan 2023 | 180 | | | | | | |
| 4 | 20 Nov 2024 | 200 | | | | | | |
| 5 | 14 Mar 2025 | 100 | | | | | | |
| 6 | 10 Jul 2025 | 730 | | | | | | |
| 7 | 30 Nov 2022 | | 8620 | | | | | |
| 8 | 15 Dec 2022 | | 1910 | | | | | |
| 9 | 19 Jan 2023 | | 4520 | | | | | |
| 10 | 20 Sep 2023 | | 1320 | | | | | |
| 11 | 29 Aug 2024 | | 940 | | | | | |
| 12 | 19 Nov 2024 | | 200 | | | | | |
| 13 | 10 Jul 2025 | | 400 | | | | | |
| 14 | 30 Nov 2022 | | | 3740 | | | | |
| 15 | 15 Dec 2022 | | | 140 | | | | |
| 16 | 19 Jan 2023 | | | 200 | | | | |
| 17 | 25 Sep 2023 | | | 1000 | | | | |
| 18 | 29 Aug 2024 | | | 1900 | | | | |
| 19 | 19 Nov 2024 | | | 200 | | | | |
| 20 | 13 Mar 2025 | | | 7200 | | | | |
| 21 | 11 Jul 2025 | | | 2,200 | | | | |
| 22 | 30 Nov 2022 | | | | 370 | | | |
| 23 | 15 Dec 2022 | | | | 50 | | | |
| 24 | 19 Jan 2023 | | | | 460 | | | |
| 25 | 25 Sep 2023 | | | | 1090 | | | |
| 26 | 28 Aug 2024 | | | | 620 | | | |
| 27 | 20 Nov 2024 | | | | 300 | | | |
| 28 | 13 Mar 2025 | | | | 1 | | | |
| 29 | 11 Jul 2025 | | | | 850 | | | |
| 30 | 28 Aug 2024 | | | | | 1400 | | |
| 31 | 19 Nov 2024 | | | | | 100 | | |
| 32 | 14 Jul 2025 | | | | | 500 | | |
| 33 | 23 Nov 2022 | | | | | | | 400 |
| 34 | 13 Dec 2022 | | | | | | | 70 |
| 35 | 29 Sep 2023 | | | | | | | 10 |
| 36 | 29 Aug 2024 | | | | | | | 50 |
| 37 | 20 Nov 2024 | | | | | | | 400 |
| 38 | 10 Jul 2025 | | | | | | | 60 |
| 39 | | | | | | | | |
| 40 | | | | | | | | |
| Coefficient of Variation: | | 0.93 | 1.19 | 1.27 | 0.69 | 1.00 | | 1.11 |
| Mann-Kendall Statistic (S): | | 1 | -17 | 13 | -6 | -1 | | -2 |
| Confidence Factor: | | 50.0% | 99.5% | 96.5% | 76.4% | | | 57.0% |
| Concentration Trend: | | No Trend | Decreasing | Increasing | Stable | | | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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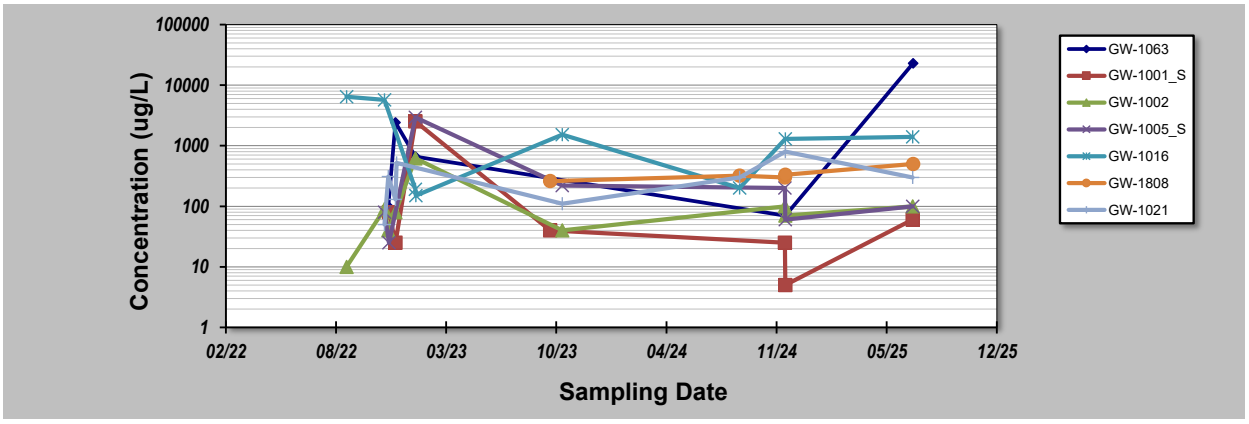
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Phosphorus |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1063 | GW-1001_S | GW-1002 | GW-1005_S | GW-1016 | GW-1808 | GW-1021 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOTAL PHOSPHORUS CONCENTRATION (ug/L) | | | | | | |
| 1 | 15 Sep 2022 | | | 10 | | 6440 | | |
| 2 | 23 Nov 2022 | | | 90 | 80 | 5710 | | 50 |
| 3 | 30 Nov 2022 | 100 | | 40 | | | | 310 |
| 4 | 01 Dec 2022 | | 80.0 | | 25 | | | |
| 5 | 13 Dec 2022 | 2410 | 25 | 80 | | | | 130 |
| 6 | 15 Dec 2022 | | | | | | | 520 |
| 7 | 18 Jan 2023 | 660 | 2520 | 620 | 2940 | 190 | | |
| 8 | 19 Jan 2023 | | | | | 150 | | |
| 9 | 20 Sep 2023 | | 40 | | | | 260 | |
| 10 | 12 Oct 2023 | | | 40 | 220 | 1530 | | 110 |
| 11 | 29 Aug 2024 | | | | | 200 | 320 | 300 |
| 12 | 19 Nov 2024 | | 25 | 100 | 200 | | 300 | |
| 13 | 20 Nov 2024 | 70 | 5 | 70 | 60 | 1300 | 330 | 800 |
| 14 | 10 Jul 2025 | 23000 | | | | | 500 | |
| 15 | 09 Jul 2025 | | 60 | 100 | 100 | 1400 | | 300 |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 1.90 | 2.38 | 1.46 | 2.07 | 1.19 | 0.27 | 0.78 |
| Mann-Kendall Statistic (S): | | 2 | -6 | 12 | -1 | -6 | 8 | 9 |
| Confidence Factor: | | 59.2% | 76.4% | 87.0% | 50.0% | 72.6% | 95.8% | 83.2% |
| Concentration Trend: | | No Trend | No Trend | No Trend | No Trend | No Trend | Increasing | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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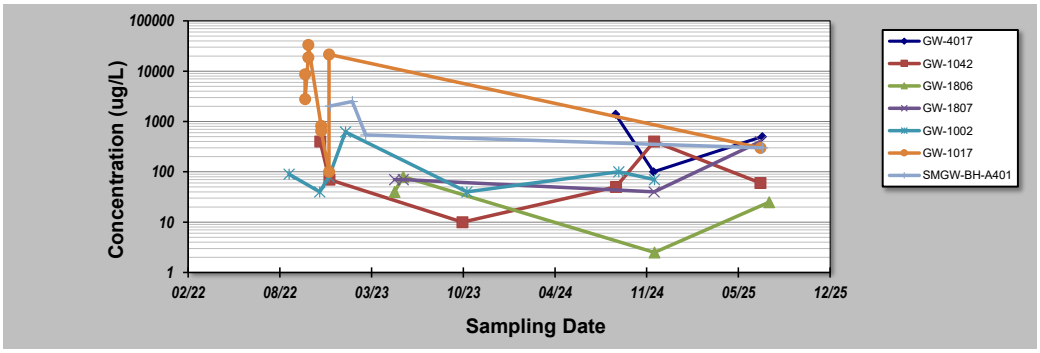
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Phosphorus |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-4017 | GW-1042 | GW-1806 | GW-1807 | GW-1002 | GW-1017 | SMGW-BH-A401 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOTAL PHOSPHORUS CONCENTRATION (ug/L) | | | | | | |
| 1 | 28 Aug 2024 | 1400 | | | | | | |
| 2 | 19 Nov 2024 | 100 | | | | | | |
| 3 | 14 Jul 2025 | 500 | | | | | | |
| 4 | 23 Nov 2022 | | 400 | | | | | |
| 5 | 13 Dec 2022 | | 70 | | | | | |
| 6 | 29 Sep 2023 | | 10 | | | | | |
| 7 | 29 Aug 2024 | | 50 | | | | | |
| 8 | 20 Nov 2024 | | 400 | | | | | |
| 9 | 10 Jul 2025 | | 60 | | | | | |
| 10 | 04 May 2023 | | | 40 | | | | |
| 11 | 23 May 2023 | | | 80 | | | | |
| 12 | 21 Nov 2024 | | | 2.5 | | | | |
| 13 | 29 Jul 2025 | | | 25 | | | | |
| 14 | 04 May 2023 | | | | 70 | | | |
| 15 | 23 May 2023 | | | | 70 | | | |
| 16 | 20 Nov 2024 | | | | 40 | | | |
| 17 | 10 Jul 2025 | | | | 400 | | | |
| 18 | 06 Sep 2022 | | | | | 10 | | |
| 19 | 16 Sep 2022 | | | | | 90 | | |
| 20 | 22 Nov 2022 | | | | | 40 | | |
| 21 | 12 Dec 2022 | | | | | 80 | | |
| 22 | 17 Jan 2023 | | | | | 620 | | |
| 23 | 09 Oct 2023 | | | | | 40 | | |
| 24 | 04 Sep 2024 | | | | | 100 | | |
| 25 | 21 Nov 2024 | | | | | 70 | | |
| 26 | 21 Oct 2022 | | | | | | 8740 | |
| 27 | 21 Oct 2022 | | | | | | 2800 | |
| 28 | 28 Oct 2022 | | | | | | 18800 | |
| 29 | 28 Oct 2022 | | | | | | 33200 | |
| 30 | 25 Nov 2022 | | | | | | 820 | |
| 31 | 25 Nov 2022 | | | | | | 650 | |
| 32 | 12 Dec 2022 | | | | | | 100 | |
| 33 | 12 Dec 2022 | | | | | | 21600 | |
| 34 | 10 Jul 2025 | | | | | | 300 | |
| 35 | 15 Dec 2022 | | | | | | | 2040 |
| 36 | 01 Feb 2023 | | | | | | | 2500 |
| 37 | 02 Mar 2023 | | | | | | | 540 |
| 38 | 15 Jul 2025 | | | | | | | 300 |
| 39 | | | | | | | | |
| 40 | | | | | | | | |
| Coefficient of Variation: | | 1.00 | 1.11 | 0.88 | 1.18 | 1.41 | 1.25 | 0.81 |
| Mann-Kendall Statistic (S): | | -1 | -2 | -2 | 1 | -7 | -12 | -4 |
| Confidence Factor: | | | 57.0% | 62.5% | 50.0% | 80.9% | 87.0% | 83.3% |
| Concentration Trend: | | | No Trend | Stable | No Trend | No Trend | No Trend | Stable |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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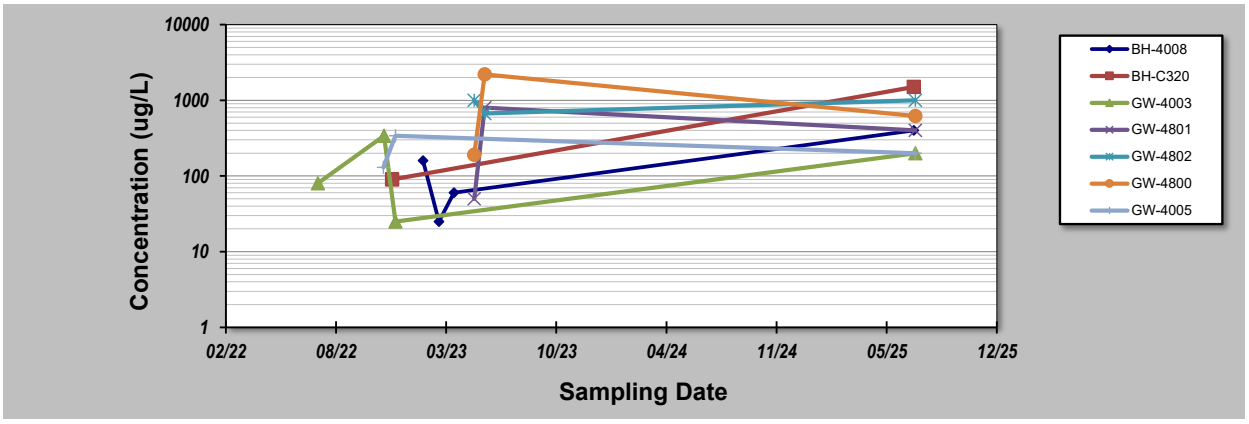
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Phosphorus |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | BH-4008 | BH-C320 | GW-4003 | GW-4801 | GW-4802 | GW-4800 | GW-4005 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOTAL PHOSPHORUS CONCENTRATION (ug/L) | | | | | | |
| 1 | 01 Feb 2023 | 160 | | | | | | |
| 2 | 02 Mar 2023 | 25 | | | | | | |
| 3 | 29 Mar 2023 | 60 | | | | | | |
| 4 | 11 Jul 2025 | 400 | | | | | | |
| 5 | 07 Dec 2022 | | 90 | | | | | |
| 6 | 11 Jul 2025 | | 1500 | | | | | |
| 7 | 25 Jul 2022 | | | 80 | | | | |
| 8 | 22 Nov 2022 | | | 340 | | | | |
| 9 | 13 Dec 2022 | | | 25 | | | | |
| 10 | 14 Jul 2025 | | | 200 | | | | |
| 11 | 05 May 2023 | | | | 50 | 1000 | 190 | |
| 12 | 24 May 2023 | | | | 800 | 670.0 | 2200 | |
| 13 | 14 Jul 2025 | | | | 400 | 1000 | 620 | |
| 14 | 21 Nov 2022 | | | | | | | 130.0 |
| 15 | 13 Dec 2022 | | | | | | | 340 |
| 16 | 14 Jul 2025 | | | | | | | 200.0 |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 1.05 | 1.25 | 0.87 | 0.90 | 0.21 | 1.05 | 0.48 |
| Mann-Kendall Statistic (S): | | 2 | 1 | 0 | 1 | 0 | 1 | 1 |
| Confidence Factor: | | 62.5% | | 37.5% | | | | |
| Concentration Trend: | | No Trend | | Stable | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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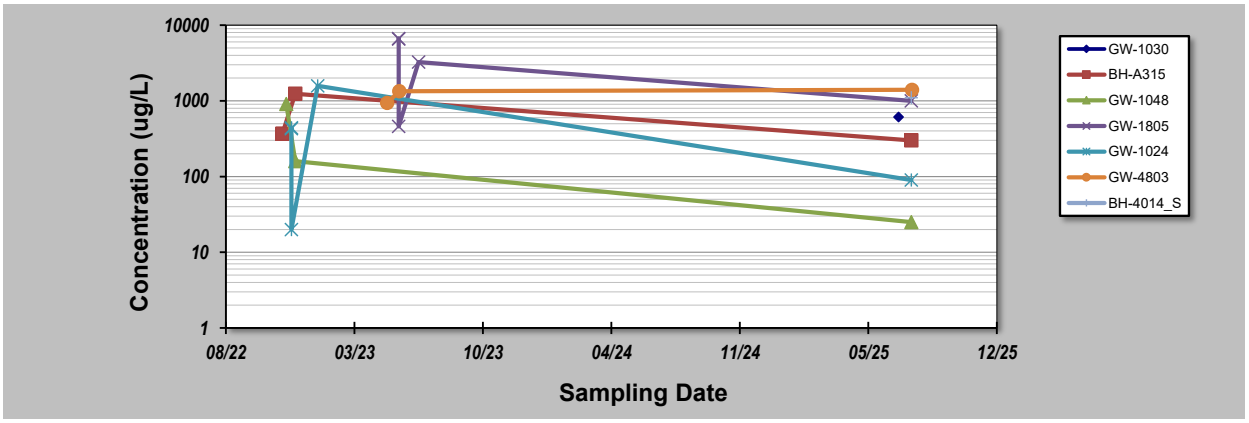
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Phosphorus |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1030 | BH-A315 | GW-1048 | GW-1805 | GW-1024 | GW-4803 | BH-4014_S |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOTAL PHOSPHORUS CONCENTRATION (ug/L) | | | | | | |
| 1 | 09 Jul 2025 | 610 | | | | | | |
| 2 | 23 Nov 2022 | | 370 | | | | | |
| 3 | 13 Dec 2022 | | 1240 | | | | | |
| 4 | 29 Jul 2025 | | 300 | | | | | |
| 5 | 29 Nov 2022 | | | 910 | | | | |
| 6 | 13 Dec 2022 | | | 160 | | | | |
| 7 | 29 Jul 2025 | | | 25 | | | | |
| 8 | 23 May 2023 | | | | 6560 | | | |
| 9 | 23 May 2023 | | | | 6640 | | | |
| 10 | 23 May 2023 | | | | 460 | | | |
| 11 | 23 Jun 2023 | | | | 3260 | | | |
| 12 | 29 Jul 2025 | | | | 1000 | | | |
| 13 | 07 Dec 2022 | | | | | 430 | | |
| 14 | 07 Dec 2022 | | | | | 440 | | |
| 15 | 07 Dec 2022 | | | | | 20 | | |
| 16 | 17 Jan 2023 | | | | | 1580 | | |
| 17 | 29 Jul 2025 | | | | | 90 | | |
| 18 | 05 May 2023 | | | | | | 940 | |
| 19 | 24 May 2023 | | | | | | 1340 | |
| 20 | 30 Jul 2025 | | | | | | 1400 | |
| 21 | 29 Jul 2025 | | | | | | | 1100 |
| 22 | | | | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| Coefficient of Variation: | | | 0.82 | 1.31 | 0.82 | 1.22 | 0.20 | |
| Mann-Kendall Statistic (S): | | | -1 | -3 | -4 | 0 | 3 | |
| Confidence Factor: | | | | | 75.8% | 40.8% | | |
| Concentration Trend: | | | | | Stable | No Trend | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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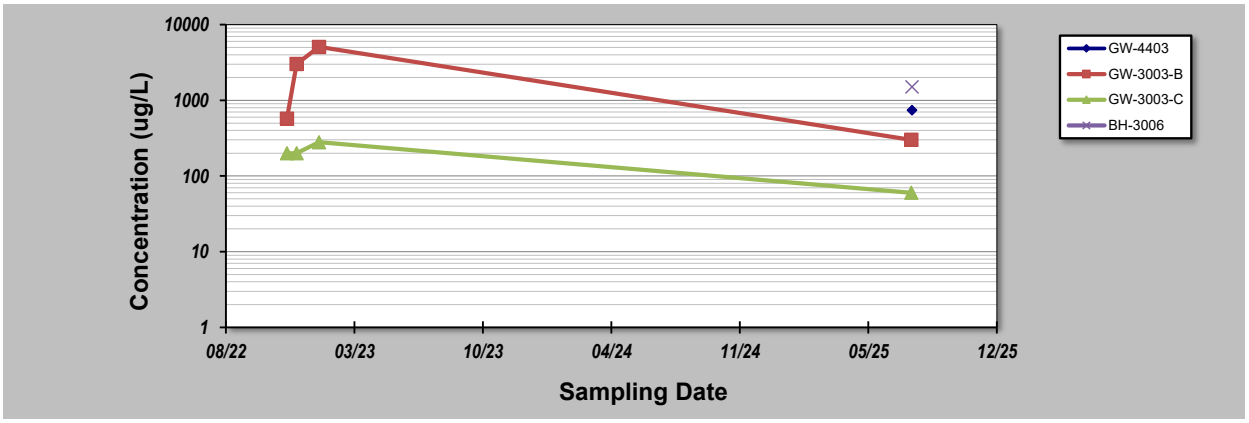
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Total Phosphorus |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-4403 | GW-3003-B | GW-3003-C | BH-3006 | | | |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | TOTAL PHOSPHORUS CONCENTRATION (ug/L) | | | | | | |
| 1 | 30 Jul 2025 | 740 | | | | | | |
| 2 | 30 Nov 2022 | | 570 | 200 | | | | |
| 3 | 15 Dec 2022 | | 3010 | 200 | | | | |
| 4 | 19 Jan 2023 | | 5080 | 280 | | | | |
| 5 | 29 Jul 2025 | | 300 | 60 | | | | |
| 6 | 30 Jul 2025 | | | | 1500 | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | | 1.01 | 0.49 | | | | |
| Mann-Kendall Statistic (S): | | | 0 | -1 | | | | |
| Confidence Factor: | | | 37.5% | 50.0% | | | | |
| Concentration Trend: | | | No Trend | Stable | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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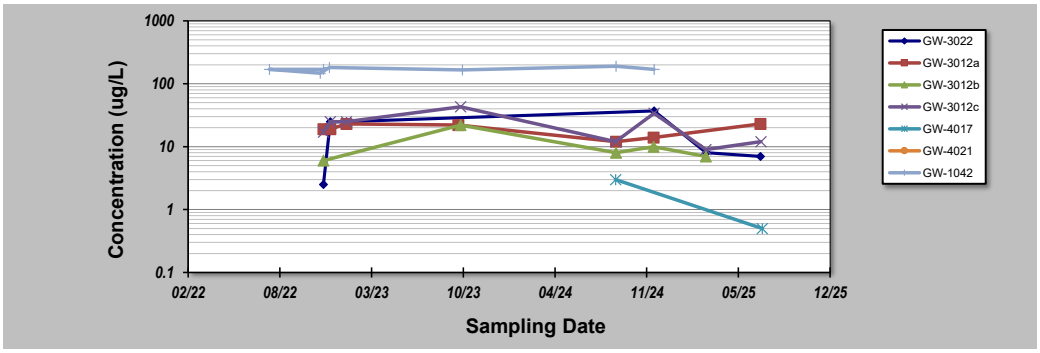
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Zn - dissolved |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-3022 | GW-3012a | GW-3012b | GW-3012c | GW-4017 | GW-4021 | GW-1042 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | ZN - DISSOLVED CONCENTRATION (ug/L) | | | | | | |
| 1 | 30 Nov 2022 | 2.5 | | | | | | 169 |
| 2 | 15 Dec 2022 | 25 | | | | | | |
| 3 | 19 Jan 2023 | 25 | | | | | | |
| 4 | 20 Nov 2024 | 37 | | | | | | |
| 5 | 14 Mar 2025 | 8 | | | | | | |
| 6 | 10 Jul 2025 | 7 | | | | | | |
| 7 | 30 Nov 2022 | | 19 | | | | | |
| 8 | 15 Dec 2022 | | 19 | | | | | |
| 9 | 19 Jan 2023 | | 23 | | | | | |
| 10 | 20 Sep 2023 | | 22 | | | | | |
| 11 | 29 Aug 2024 | | 12 | | | | | |
| 12 | 19 Nov 2024 | | 14 | | | | | |
| 13 | 10 Jul 2025 | | 23 | | | | | |
| 14 | 30 Nov 2022 | | | 6 | | | | |
| 15 | 15 Dec 2022 | | | 25 | | | | |
| 16 | 19 Jan 2023 | | | 25 | | | | |
| 17 | 25 Sep 2023 | | | 22 | | | | |
| 18 | 29 Aug 2024 | | | 8 | | | | |
| 19 | 19 Nov 2024 | | | 10 | | | | |
| 20 | 13 Mar 2025 | | | 7 | | | | |
| 21 | 11 Jul 2025 | | | 9 | | | | |
| 22 | 30 Nov 2022 | | | | 17 | | | |
| 23 | 15 Dec 2022 | | | | 25 | | | |
| 24 | 19 Jan 2023 | | | | 25 | | | |
| 25 | 25 Sep 2023 | | | | 43 | | | |
| 26 | 28 Aug 2024 | | | | 12 | | | |
| 27 | 20 Nov 2024 | | | | 34 | | | |
| 28 | 13 Mar 2025 | | | | 9 | | | |
| 29 | 11 Jul 2025 | | | | 12 | | | |
| 30 | 28 Aug 2024 | | | | | 3 | | |
| 31 | 14 Jul 2025 | | | | | 0.5 | | |
| 32 | 04 Aug 2022 | | | | | | | 169 |
| 33 | 23 Nov 2022 | | | | | | | 147 |
| 34 | 13 Dec 2022 | | | | | | | 182 |
| 35 | 29 Sep 2023 | | | | | | | 166 |
| 36 | 29 Aug 2024 | | | | | | | 190 |
| 37 | 20 Nov 2024 | | | | | | | 170 |
| 38 | 10 Jul 2025 | | | | | | | 200 |
| 39 | | | | | | | | |
| 40 | | | | | | | | |
| Coefficient of Variation: | | 0.78 | 0.23 | 0.62 | 0.54 | 1.01 | | 0.08 |
| Mann-Kendall Statistic (S): | | 0 | 1 | 1 | -6 | -1 | | 13 |
| Confidence Factor: | | 39.3% | 50.0% | 50.0% | 72.6% | | | 96.5% |
| Concentration Trend: | | Stable | No Trend | No Trend | Stable | | | Increasing |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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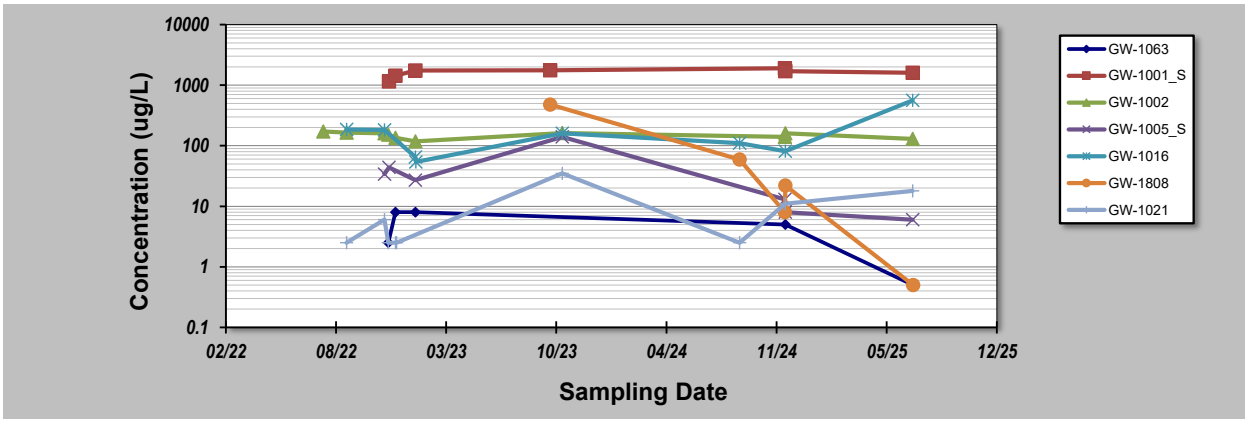
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Zn |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1063 | GW-1001_S | GW-1002 | GW-1005_S | GW-1016 | GW-1808 | GW-1021 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | ZN CONCENTRATION (ug/L) | | | | | | |
| 1 | 04 Aug 2022 | | | 172 | | | | |
| 2 | 15 Sep 2022 | | | 164 | | 186 | | 3 |
| 3 | 23 Nov 2022 | | | 160 | 34 | 182 | | 6 |
| 4 | 30 Nov 2022 | 3 | | 152 | | | | 3 |
| 5 | 01 Dec 2022 | | 1150 | | 44 | | | |
| 6 | 13 Dec 2022 | 8 | 1430 | 135 | | | | 3 |
| 7 | 15 Dec 2022 | | | | | | | 3 |
| 8 | 18 Jan 2023 | 8 | 1750 | 118 | 27 | 65 | | |
| 9 | 19 Jan 2023 | | | | | 54 | | |
| 10 | 20 Sep 2023 | | 1760 | | | | 478 | |
| 11 | 12 Oct 2023 | | | 162 | 140 | 161 | | 35 |
| 12 | 29 Aug 2024 | | | | | 110 | 59 | 3 |
| 13 | 19 Nov 2024 | | 1900 | 140 | 13 | | 8 | |
| 14 | 20 Nov 2024 | 5 | 1700 | 160 | 8 | 81 | 22 | 11 |
| 15 | 10 Jul 2025 | 1 | | | | | 1 | |
| 16 | 09 Jul 2025 | | 1600 | 130 | 6 | 560 | | 18 |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.69 | 0.16 | 0.12 | 1.20 | 0.94 | 1.81 | 1.21 |
| Mann-Kendall Statistic (S): | | -3 | 7 | -22 | -13 | -2 | -8 | 12 |
| Confidence Factor: | | 67.5% | 80.9% | 97.1% | 96.5% | 54.8% | 95.8% | 87.0% |
| Concentration Trend: | | Stable | No Trend | Decreasing | Decreasing | Stable | Decreasing | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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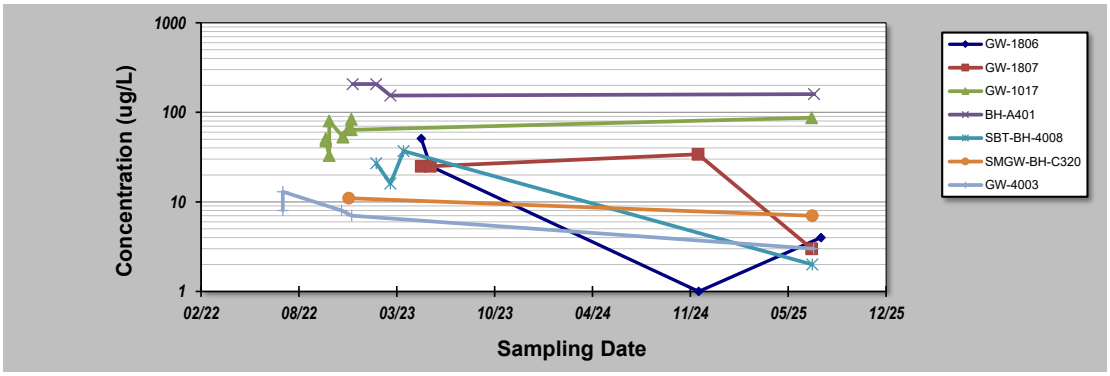
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Zn |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1806 | GW-1807 | GW-1017 | BH-A401 | SBT-BH-4008 | SMGW-BH-C320 | GW-4003 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | ZN CONCENTRATION (ug/L) | | | | | | |
| 1 | 04 May 2023 | 51 | | | | | | |
| 2 | 23 May 2023 | 25 | | | | | | |
| 3 | 21 Nov 2024 | 1 | | | | | | |
| 4 | 29 Jul 2025 | 4 | | | | | | |
| 5 | 04 May 2023 | | 25 | | | | | |
| 6 | 23 May 2023 | | 25 | | | | | |
| 7 | 20 Nov 2024 | | 34 | | | | | |
| 8 | 10 Jul 2025 | | 3 | | | | | |
| 9 | 21 Oct 2022 | | | 51 | | | | |
| 10 | 21 Oct 2022 | | | 48 | | | | |
| 11 | 28 Oct 2022 | | | 33 | | | | |
| 12 | 28 Oct 2022 | | | 80 | | | | |
| 13 | 25 Nov 2022 | | | 53 | | | | |
| 14 | 25 Nov 2022 | | | 53 | | | | |
| 15 | 12 Dec 2022 | | | 84 | | | | |
| 16 | 12 Dec 2022 | | | 64 | | | | |
| 17 | 10 Jul 2025 | | | 87 | | | | |
| 18 | 15 Dec 2022 | | | | 207 | | | |
| 19 | 01 Feb 2023 | | | | 207 | | | |
| 20 | 02 Mar 2023 | | | | 154 | | | |
| 21 | 15 Jul 2025 | | | | 160 | | | |
| 22 | 01 Feb 2023 | | | | | 27 | | |
| 23 | 02 Mar 2023 | | | | | 16 | | |
| 24 | 29 Mar 2023 | | | | | 37 | | |
| 25 | 11 Jul 2025 | | | | | 2 | | |
| 26 | 07 Dec 2022 | | | | | | 11 | |
| 27 | 11 Jul 2025 | | | | | | 7 | |
| 28 | 25 Jul 2022 | | | | | | | 8 |
| 29 | 25 Jul 2022 | | | | | | | 13 |
| 30 | 22 Nov 2022 | | | | | | | 8 |
| 31 | 13 Dec 2022 | | | | | | | 7 |
| 32 | 14 Jul 2025 | | | | | | | 3 |
| 33 | | | | | | | | |
| 34 | | | | | | | | |
| 35 | | | | | | | | |
| Coefficient of Variation: | | 1.14 | 0.61 | 0.30 | 0.16 | 0.73 | 0.31 | 0.46 |
| Mann-Kendall Statistic (S): | | -4 | -1 | 21 | -3 | -2 | -1 | -7 |
| Confidence Factor: | | 83.3% | 50.0% | 98.3% | 72.9% | 62.5% | | 92.1% |
| Concentration Trend: | | No Trend | Stable | Increasing | Stable | Stable | | Prob. Decreasing |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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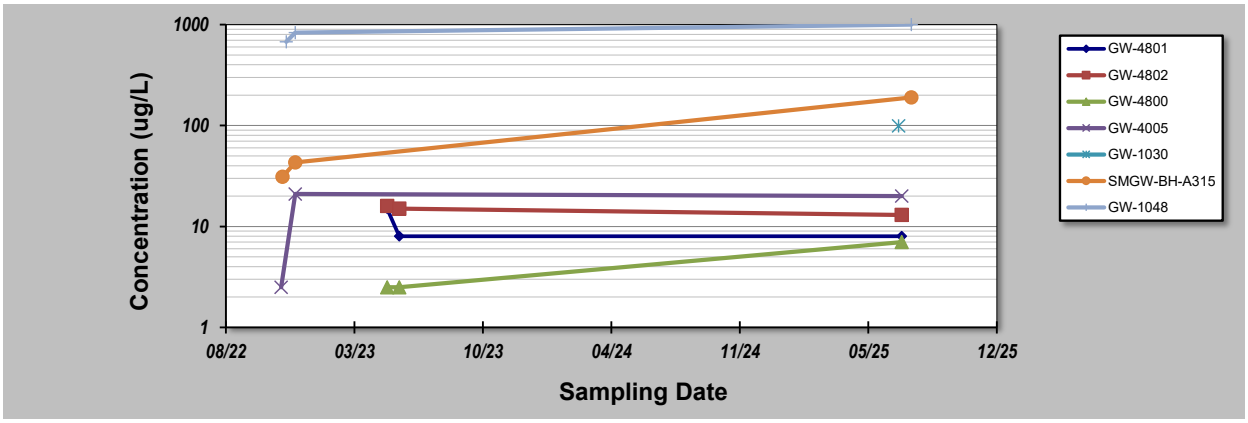
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Zn |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-4801 | GW-4802 | GW-4800 | GW-4005 | GW-1030 | SMGW-BH-A315 | GW-1048 |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | ZN CONCENTRATION (ug/L) | | | | | | |
| 1 | 05 May 2023 | 15 | 16 | 2.5 | | | | |
| 2 | 24 May 2023 | 8 | 15 | 2.5 | | | | |
| 3 | 14 Jul 2025 | 8 | 13 | 7 | | | | |
| 4 | 21 Nov 2022 | | | | 3 | | | |
| 5 | 13 Dec 2022 | | | | 21 | | | |
| 6 | 14 Jul 2025 | | | | 20 | | | |
| 7 | 09 Jul 2025 | | | | | 99 | | |
| 8 | 23 Nov 2022 | | | | | | 31 | |
| 9 | 13 Dec 2022 | | | | | | 43 | |
| 10 | 29 Jul 2025 | | | | | | 190 | |
| 11 | 29 Nov 2022 | | | | | | | 676 |
| 12 | 13 Dec 2022 | | | | | | | 833 |
| 13 | 29 Jul 2025 | | | | | | | 1000 |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.39 | 0.10 | 0.65 | 0.72 | | 1.01 | 0.19 |
| Mann-Kendall Statistic (S): | | -2 | -3 | 2 | 1 | | 3 | 3 |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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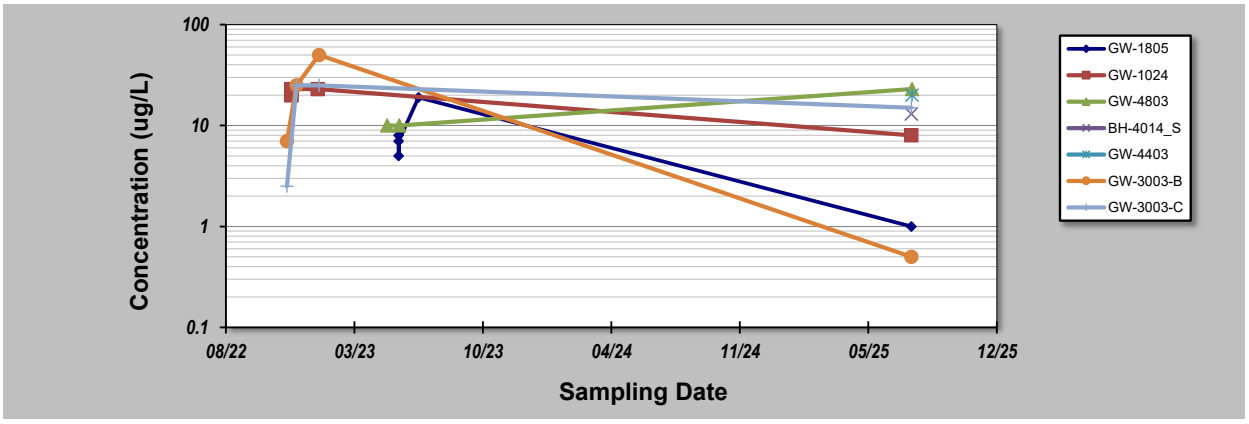
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Zn |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

| Sampling Point ID: | GW-1805 | GW-1024 | GW-4803 | BH-4014_S | GW-4403 | GW-3003-B | GW-3003-C |
|---|---|---|---|---|---|---|---|
| Sampling Event | Sampling Date | ZN CONCENTRATION (ug/L) | | | | | | |
| 1 | 23 May 2023 | 8 | | | | | | |
| 2 | 23 May 2023 | 5 | | | | | | |
| 3 | 23 May 2023 | 7 | | | | | | |
| 4 | 23 Jun 2023 | 19 | | | | | | |
| 5 | 29 Jul 2025 | 1 | | | | | | |
| 6 | 07 Dec 2022 | | 20 | | | | | |
| 7 | 07 Dec 2022 | | 20 | | | | | |
| 8 | 07 Dec 2022 | | 23 | | | | | |
| 9 | 17 Jan 2023 | | 23 | | | | | |
| 10 | 29 Jul 2025 | | 8 | | 13 | | | |
| 11 | 05 May 2023 | | | 10 | | | | |
| 12 | 24 May 2023 | | | 10 | | | | |
| 13 | 30 Jul 2025 | | | 23 | | 20 | | |
| 14 | 30 Nov 2022 | | | | | | 7 | 2.5 |
| 15 | 15 Dec 2022 | | | | | | 25 | 25.0 |
| 16 | 19 Jan 2023 | | | | | | 50 | 25.0 |
| 17 | 29 Jul 2025 | | | | | | 0.5 | 15.0 |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | 0.84 | 0.33 | 0.52 | | | 1.07 | 0.63 |
| Mann-Kendall Statistic (S): | | -2 | 0 | 2 | | | 0 | 1 |
| Confidence Factor: | | 59.2% | 40.8% | | | | 37.5% | 50.0% |
| Concentration Trend: | | Stable | Stable | | | | No Trend | No Trend |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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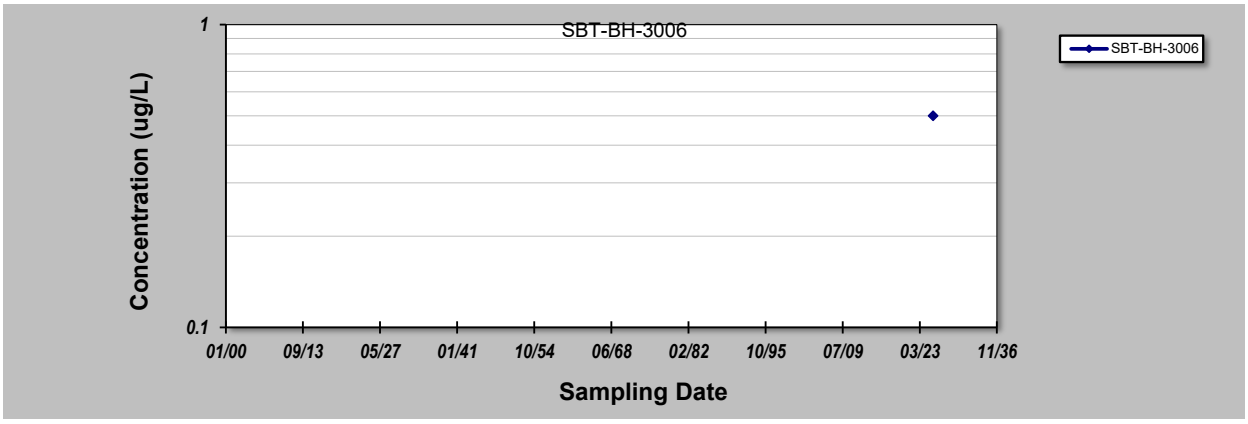
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 28-Jul-25 | Job ID: | 22.0343 SSTOM |
| Facility Name: | SSTOM | Constituent: | Zn |
| Conducted By: | Graham Hawkes | Concentration Units: | ug/L |

Sampling Point ID: SBT-BH-3006

| Sampling Event | Sampling Date | ZN CONCENTRATION (ug/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | 30 Jul 2025 | 0.5 | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| Coefficient of Variation: | | | | | | | | |
| Mann-Kendall Statistic (S): | | | | | | | | |
| Confidence Factor: | | | | | | | | |
| Concentration Trend: | | | | | | | | |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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# Appendix G – Laboratory Report Sheets

# CHAIN OF CUSTODY FORM - Client

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**ENVIROLAB GROUP ENVIROLAB GROUP ENVIROLAB GROUP**
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**Melbourne Lab - Envirolab Services**
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✆ 07 3266 9532 | ✉ brisbane@envirolab.com.au

**Darwin Office - Envirolab Services**
Unit 20/119 Reichardt Road, Winnellie, NT 0820
✆ 08 8967 1201 | ✉ darwin@envirolab.com.au


| | |
|---|---|
| **Client:** ADE group | **Client Project Name/Number/Site etc (ie report title):** A101022.0343.01.003 |
| **Contact Person:** Matthew Toole/ Monique Hitchens | |
| **Project Mgr:** Matthew Toole | **PO No.:** A101022.0343.01.003,L21 |
| **Sampler:** Monique Hitchens | **Envirolab Quote No. :** |
| **Address:** 6/7 Millenium Court, Silverwater NSW | **Date results required:** Or choose: standard / same day / 1 day / 2 day / 3 day *Note: Inform lab in advance if urgent turnaround is required - surcharges apply* |
| **Phone:** Mob: 0414 202 096 | **Additional report format:** esdat / equis / |
| **Email:** matthew.toole@ade.group, Ankita.saxena@ade.group, accounts@ade.group monique.hitchens@ade.group, graham.hawkes@ade.group misha.konarev@ade.group, reuben.pinto@ade.group, madison.hollamby@ade.group | **Lab Comments:** |

| Sample Information | | | | | Tests Required | | | | | | | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Envirolab Sample ID (INT_DELETE) | Client Sample ID or Information | Depth | Date sampled | Type of sample | CW003_D (TRH/BTEX/PAH/MB) | CW001M_D (TRH/BTEXN/M8_D | E08520 (PFAS Trace level) | pH | EC | TDS | TOC (E00450) | Total metals (Al, Co, Fe, Mn) | Major cations | Major anions | E01900 Nutrient Suite | Dissolved metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Al, Fe, Mn) | TPH | BTEXN | Phenols | ON HOLD | Provide as much information about the sample as you can |
| 1 | GW-1042 | | 10/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 2 | GW-1807 | | 10/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 3 | GW-1063 | | 10/07/2025 | Water | X | X | X | X | X | X | X | X | X | X | X | X | | | | | please analyse full BTEXN |
| 4 | GW-1808 | | 10/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 5 | GW-1017 | | 10/07/2025 | Water | X | X | X | X | X | X | X | X | X | X | X | X | | | | | please analyse full BTEXN |
| 6 | GW-1005-S | | 9/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 7 | GW-1001_S | | 9/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 8 | GW-1002 | | 9/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 9 | GW-1021 | | 9/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | X | |
| 10 | GW-1016 | | 9/07/2025 | Water | X | X | X | X | X | X | X | X | X | X | X | X | | | | | Please analyse full BTEXN Please filter metals for this sample, not field sampled |
| NR | SMGW-BH-A40 | | 15/07/2025 | Water | X | X | X | X | X | X | X | X | X | X | X | X | | | | | please analyse full BTEXN |
| 11 | BH-A401 | | 15/07/2025 | Water | X | X | X | X | X | X | X | X | X | X | X | X | | | | | Please analyse full BTEXN Please filter metals for this sample, not field sampled |
| 12 | GW-4021 | | 14/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 13 | GW-4008 | | 11/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 14 | GW-3012A | | 10/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 15 | GW-3012B | | 11/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | X | | | | |
| 16 | GW-3012C | | 11/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 17 | GW-3022 | | 11/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 18 | SMGW-BH-C320 | | 11/07/2025 | Water | X | X | X | X | X | X | X | X | X | X | X | X | | | | | please analyse full BTEXN |
| 19 | SBT-GW-4003 | | 14/07/2025 | Water | X | X | X | X | X | X | X | X | X | X | X | X | | | | | Please analyse full BTEXN Please filter metals for this sample, not field sampled |
| 20 | SBT-GW-4501 | | 14/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | Please filter metals for this sample, not field sampled |
| 21 | SBT-GW-4802 | | 14/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 22 | SBT-GW-4800 | | 14/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 23 | SBT-GW-4005 | | 14/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 24 | SBT-GW-1030 | | 9/07/2025 | Water | | | X | X | X | X | X | X | X | X | X | X | | | | | |
| 25 | RIN_1 | | 9/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 26 | RIN_2 | | 10/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 27 | RIN_3 | | 11/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 28 | RIN_4 | | 14/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 29 | RIN_5 | | 15/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 30 | BR_1 | | 9/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 31 | BR_2 | | 11/07/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| | | | | | | | | | | | | | | | | | | | | | Please put all extra bottles on hold if analytes have not been selected for those bottles. |

☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

| | | | |
|---|---|---|---|
| **Relinquished by (Company):** ADE | **Received by (Company):** ES SYD | **Lab Use Only** | |
| **Print Name:** | **Print Name:** K. Chaney | **Job number:** 396021 | **Cooling:** Ice / Ice pack / None |
| **Date & Time:** 14/03/2025 | **Date & Time:** 16/7/25 1500 | **Temperature:** 5 C | **Security seal:** Intact / Broken / None |
| **Signature:** | **Signature:** K.C | **TAT Req - SAME day / 1 / 2 / 3 / 4 / STD** | |

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ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

# CERTIFICATE OF ANALYSIS 386021

## Client Details

| | |
|---|---|
| **Client** | ADE CONSULTING GROUP PTY LTD |
| **Attention** | Monique Hitchens, Matthew Toole |
| **Address** | Unit 6, 7 Millenium Court, Silverwater, NSW, 2128 |

## Sample Details

| | |
|---|---|
| **Your Reference** | **A101022.0343.01.008** |
| **Number of Samples** | 31 Water |
| **Date samples received** | 16/07/2025 |
| **Date completed instructions received** | 16/07/2025 |

## Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

**Please refer to the last page of this report for any comments relating to the results.**

## Report Details

| | |
|---|---|
| **Date results requested by** | 23/07/2025 |
| **Date of Issue** | 23/07/2025 |

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**Results Approved By**
Amanda Chui, LC/Air Toxics Supervisor
Giovanni Agosti, Group Technical Manager
Jack Wallis, Senior Chemist
Loren Bardwell, Development Chemist
Nick Sarlamis, Assistant Operation Manager
Priya Samarawickrama, Senior Chemist
Timothy Toll, Senior Chemist

**Authorised By**
Nancy Zhang, Laboratory Manager

| vTRH(C6-C10)/BTEXN in Water | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-3 | 386021-5 | 386021-10 | 386021-11 | 386021-15 |
| Your Reference | UNITS | GW-1063 | GW-1017 | GW-1016 | GA-A401 | GW-3012B |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 09/07/2025 | 15/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date extracted | - | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| Date analysed | - | 21/07/2025 | 21/07/2025 | 21/07/2025 | 21/07/2025 | 21/07/2025 |
| TRH $C_6$ - $C_9$ | µg/L | <100 | <100 | <10 | <10 | <10 |
| TRH $C_6$ - $C_{10}$ | µg/L | <100 | <100 | <10 | <10 | <10 |
| TRH $C_6$ - $C_{10}$ less BTEX (F1) | µg/L | <10 | <10 | <10 | <10 | [NA] |
| Benzene | µg/L | <10 | <10 | <1 | <1 | [NA] |
| Toluene | µg/L | <10 | <10 | <1 | <1 | [NA] |
| Ethylbenzene | µg/L | <10 | <10 | <1 | <1 | [NA] |
| m+p-xylene | µg/L | <20 | <20 | <2 | <2 | [NA] |
| o-xylene | µg/L | <10 | <10 | <1 | <1 | [NA] |
| Naphthalene | µg/L | <10 | <10 | <1 | <1 | [NA] |
| *Surrogate* Dibromofluoromethane | % | 98 | 96 | 92 | 93 | 90 |
| *Surrogate* Toluene-d8 | % | 100 | 101 | 100 | 100 | 100 |
| *Surrogate* 4-Bromofluorobenzene | % | 102 | 102 | 103 | 102 | 102 |

| vTRH(C6-C10)/BTEXN in Water | | | | |
|---|---|---|---|---|
| Our Reference | | 386021-17 | 386021-18 | 386021-19 |
| Your Reference | UNITS | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water |
| Date extracted | - | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| Date analysed | - | 21/07/2025 | 21/07/2025 | 21/07/2025 |
| TRH $C_6$ - $C_9$ | µg/L | <10 | <10 | <10 |
| TRH $C_6$ - $C_{10}$ | µg/L | <10 | <10 | <10 |
| TRH $C_6$ - $C_{10}$ less BTEX (F1) | µg/L | [NA] | <10 | <10 |
| Benzene | µg/L | [NA] | <1 | <1 |
| Toluene | µg/L | [NA] | <1 | <1 |
| Ethylbenzene | µg/L | [NA] | <1 | <1 |
| m+p-xylene | µg/L | [NA] | <2 | <2 |
| o-xylene | µg/L | [NA] | <1 | <1 |
| Naphthalene | µg/L | [NA] | <1 | <1 |
| *Surrogate* Dibromofluoromethane | % | 91 | 92 | 90 |
| *Surrogate* Toluene-d8 | % | 100 | 100 | 100 |
| *Surrogate* 4-Bromofluorobenzene | % | 103 | 102 | 102 |

| svTRH (C10-C40) in Water | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-3 | 386021-5 | 386021-10 | 386021-11 | 386021-15 |
| Your Reference | UNITS | GW-1063 | GW-1017 | GW-1016 | GA-A401 | GW-3012B |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 09/07/2025 | 15/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date extracted | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| TRH $C_{10}$ - $C_{14}$ | µg/L | <50 | <50 | <50 | <50 | <50 |
| TRH $C_{15}$ - $C_{28}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRH $C_{29}$ - $C_{36}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| Total +ve TRH (C10-C36) | µg/L | <50 | <50 | <50 | <50 | <50 |
| TRH >$C_{10}$ - $C_{16}$ | µg/L | <50 | <50 | <50 | <50 | <50 |
| TRH >$C_{10}$ - $C_{16}$ less Naphthalene (F2) | µg/L | <50 | <50 | <50 | <50 | [NA] |
| TRH >$C_{16}$ - $C_{34}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRH >$C_{34}$ - $C_{40}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| Total +ve TRH (>C10-C40) | µg/L | <50 | <50 | <50 | <50 | <50 |
| *Surrogate* o-Terphenyl | % | 92 | 91 | 96 | 92 | 95 |

| svTRH (C10-C40) in Water | | | | |
|---|---|---|---|---|
| Our Reference | | 386021-17 | 386021-18 | 386021-19 |
| Your Reference | UNITS | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water |
| Date extracted | - | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| TRH $C_{10}$ - $C_{14}$ | µg/L | <50 | <50 | <50 |
| TRH $C_{15}$ - $C_{28}$ | µg/L | <100 | <100 | <100 |
| TRH $C_{29}$ - $C_{36}$ | µg/L | <100 | <100 | <100 |
| Total +ve TRH (C10-C36) | µg/L | <50 | <50 | <50 |
| TRH >$C_{10}$ - $C_{16}$ | µg/L | <50 | <50 | <50 |
| TRH >$C_{10}$ - $C_{16}$ less Naphthalene (F2) | µg/L | [NA] | <50 | <50 |
| TRH >$C_{16}$ - $C_{34}$ | µg/L | <100 | <100 | <100 |
| TRH >$C_{34}$ - $C_{40}$ | µg/L | <100 | <100 | <100 |
| Total +ve TRH (>C10-C40) | µg/L | <50 | <50 | <50 |
| *Surrogate* o-Terphenyl | % | 89 | 89 | 97 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-1 | 386021-2 | 386021-3 | 386021-4 | 386021-5 |
| Your Reference | UNITS | GW-1042 | GW-1807 | GW-1063 | GW-1808 | GW-1017 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 4.8 | 6.9 | 6.9 | 6.1 | 4.7 |
| Electrical Conductivity | µS/cm | 12,000 | 18,000 | 4,900 | 5,500 | 21,000 |
| Total Dissolved Solids (grav) | mg/L | 7,500 | 14,000 | 2,700 | 3,100 | 14,000 |
| Total Organic Carbon | mg/L | 41 | 11 | 14 | 22 | 7 |
| Ammonia as N in water | mg/L | 0.17 | 0.61 | 2.3 | 0.92 | 0.096 |
| Nitrate as N in water | mg/L | 100 | 0.19 | 0.005 | 0.02 | 0.097 |
| Nitrite as N in water | mg/L | 0.05 | <0.005 | <0.005 | <0.005 | <0.005 |
| NOx as N in water | mg/L | 100 | 0.19 | 0.005 | 0.02 | 0.10 |
| Total Nitrogen in water | mg/L | 110 | 1.6 | 2.2 | 3.0 | 0.3 |
| TKN in water | mg/L | 5.3 | 1.4 | 2.2 | 3.0 | 0.2 |
| Phosphate as P in water | mg/L | 0.02 | 0.005 | 0.32 | 0.007 | 0.02 |
| Organic Nitrogen as N | mg/L | 5.1 | 0.8 | <0.2 | 2.0 | <0.2 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-6 | 386021-7 | 386021-8 | 386021-9 | 386021-10 |
| Your Reference | UNITS | GW-1005-S | GW-1001_S | GW-1002 | GW-1021 | GW-1016 |
| Date Sampled | | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 6.3 | 4.3 | 3.9 | 3.1 | 4.5 |
| Electrical Conductivity | µS/cm | 6,200 | 22,000 | 8,300 | 1,800 | 19,000 |
| Total Dissolved Solids (grav) | mg/L | 3,400 | 17,000 | 4,100 | 990 | 13,000 |
| Total Organic Carbon | mg/L | 15 | 13 | 12 | 10 | 5 |
| Ammonia as N in water | mg/L | 0.03 | 0.23 | 0.04 | 0.19 | 0.29 |
| Nitrate as N in water | mg/L | 0.62 | 0.02 | 0.087 | 0.68 | 0.25 |
| Nitrite as N in water | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| NOx as N in water | mg/L | 0.62 | 0.02 | 0.088 | 0.68 | 0.25 |
| Total Nitrogen in water | mg/L | 1.4 | 0.5 | 0.5 | 1.5 | 0.6 |
| TKN in water | mg/L | 0.7 | 0.5 | 0.5 | 0.9 | 0.3 |
| Phosphate as P in water | mg/L | 0.03 | 0.03 | 0.02 | 0.057 | 0.02 |
| Organic Nitrogen as N | mg/L | 0.7 | 0.3 | 0.4 | 0.7 | <0.2 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-11 | 386021-12 | 386021-13 | 386021-14 | 386021-15 |
| Your Reference | UNITS | GA-A401 | GW-4021 | GW-4008 | GW-3012A | GW-3012B |
| Date Sampled | | 15/07/2025 | 14/07/2025 | 11/07/2025 | 10/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 6.3 | 6.9 | 7.1 | 6.3 | 6.9 |
| Electrical Conductivity | µS/cm | 2,100 | 3,700 | 22,000 | 3,900 | 26,000 |
| Total Dissolved Solids (grav) | mg/L | 1,400 | 2,000 | 15,000 | 2,200 | 19,000 |
| Total Organic Carbon | mg/L | 7 | 9.9 | 6 | 7 | 3 |
| Ammonia as N in water | mg/L | 0.078 | 1.3 | 9.2 | 0.02 | 0.02 |
| Nitrate as N in water | mg/L | 0.35 | <0.005 | 0.01 | 5.9 | 0.05 |
| Nitrite as N in water | mg/L | 0.01 | <0.005 | <0.005 | <0.005 | <0.005 |
| NOx as N in water | mg/L | 0.36 | <0.005 | 0.02 | 5.9 | 0.05 |
| Total Nitrogen in water | mg/L | 0.7 | 1.3 | 9.4 | 6.0 | 0.2 |
| TKN in water | mg/L | 0.4 | 1.3 | 9.4 | <0.1 | 0.1 |
| Phosphate as P in water | mg/L | <0.005 | <0.005 | <0.005 | 0.009 | 0.02 |
| Organic Nitrogen as N | mg/L | 0.3 | <0.2 | <0.2 | <0.2 | <0.2 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-16 | 386021-17 | 386021-18 | 386021-19 | 386021-20 |
| Your Reference | UNITS | GW-3012C | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 | SBT-GW-4801 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 11/07/2025 | 14/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 7.0 | 6.8 | 7.0 | 7.0 | 7.1 |
| Electrical Conductivity | µS/cm | 22,000 | 7,100 | 26,000 | 18,000 | 14,000 |
| Total Dissolved Solids (grav) | mg/L | 15,000 | 4,600 | 20,000 | 13,000 | 8,200 |
| Total Organic Carbon | mg/L | 3 | 10 | 1 | 5 | 19 |
| Ammonia as N in water | mg/L | 4.1 | 0.078 | 0.02 | 1.2 | 0.57 |
| Nitrate as N in water | mg/L | 9.2 | 1.5 | 0.02 | 0.93 | 0.20 |
| Nitrite as N in water | mg/L | 0.01 | 0.02 | <0.005 | 0.01 | 0.008 |
| NOx as N in water | mg/L | 9.2 | 1.6 | 0.03 | 0.95 | 0.21 |
| Total Nitrogen in water | mg/L | 14 | 1.8 | <0.1 | 2.2 | 1.2 |
| TKN in water | mg/L | 4.9 | 0.2 | <0.1 | 1.2 | 1 |
| Phosphate as P in water | mg/L | 0.005 | <0.005 | 0.02 | 0.01 | 0.005 |
| Organic Nitrogen as N | mg/L | 0.7 | <0.2 | <0.2 | <0.2 | 0.4 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-21 | 386021-22 | 386021-23 | 386021-24 | 386021-25 |
| Your Reference | UNITS | SBT-GW-4802 | SBT-GW-4800 | SBT-GW-4005 | SBT-GW-1030 | RIN_1 |
| Date Sampled | | 14/07/2025 | 14/07/2025 | 14/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 7.0 | 7.4 | 7.1 | 6.6 | 6.0 |
| Electrical Conductivity | µS/cm | 27,000 | 17,000 | 26,000 | 3,900 | 14 |
| Total Dissolved Solids (grav) | mg/L | 16,000 | 10,000 | 19,000 | 2,400 | 8 |
| Total Organic Carbon | mg/L | 4 | 260 | 7 | 17 | 1 |
| Ammonia as N in water | mg/L | 1.1 | 0.44 | 1.1 | 0.090 | 0.01 |
| Nitrate as N in water | mg/L | 11 | 0.05 | 2.9 | 0.47 | 0.056 |
| Nitrite as N in water | mg/L | 0.057 | <0.005 | 0.006 | 0.008 | 0.02 |
| NOx as N in water | mg/L | 11 | 0.05 | 2.9 | 0.47 | 0.078 |
| Total Nitrogen in water | mg/L | 12 | 0.5 | 4.9 | 1.1 | <0.1 |
| TKN in water | mg/L | 1.5 | 0.4 | 2.0 | 0.6 | <0.1 |
| Phosphate as P in water | mg/L | 0.007 | 0.02 | 0.01 | <0.005 | <0.005 |
| Organic Nitrogen as N | mg/L | 0.5 | <0.2 | 0.8 | 0.5 | <0.2 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-26 | 386021-27 | 386021-28 | 386021-29 | 386021-30 |
| Your Reference | UNITS | RIN_2 | RIN_3 | RIN_4 | RIN_5 | BR_1 |
| Date Sampled | | 10/07/2025 | 11/07/2025 | 14/07/2025 | 15/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 6.2 | 5.4 | 5.2 | 4.4 | 6.1 |
| Electrical Conductivity | µS/cm | 30 | 2 | 2 | 13 | 1,400 |
| Total Dissolved Solids (grav) | mg/L | 18 | <5 | <5 | 8 | 1,000 |
| Total Organic Carbon | mg/L | <1 | <1 | <1 | <1 | 9 |
| Ammonia as N in water | mg/L | 0.02 | <0.005 | <0.005 | <0.005 | 0.13 |
| Nitrate as N in water | mg/L | 0.15 | <0.005 | <0.005 | 0.02 | 4.9 |
| Nitrite as N in water | mg/L | 0.066 | <0.005 | <0.005 | <0.005 | <0.005 |
| NOx as N in water | mg/L | 0.22 | <0.005 | <0.005 | 0.02 | 4.9 |
| Total Nitrogen in water | mg/L | 0.3 | <0.1 | <0.1 | <0.1 | 5.2 |
| TKN in water | mg/L | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 |
| Phosphate as P in water | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | 0.007 |
| Organic Nitrogen as N | mg/L | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |

| Miscellaneous Inorganics | | |
|---|---|---|
| Our Reference | | 386021-31 |
| Your Reference | UNITS | BR_2 |
| Date Sampled | | 11/07/2025 |
| Type of sample | | Water |
| Date prepared | - | 16/07/2025 |
| Date analysed | - | 16/07/2025 |
| pH | pH Units | 6.9 |
| Electrical Conductivity | µS/cm | 7,200 |
| Total Dissolved Solids (grav) | mg/L | 4,600 |
| Total Organic Carbon | mg/L | 11 |
| Ammonia as N in water | mg/L | 0.063 |
| Nitrate as N in water | mg/L | 1.5 |
| Nitrite as N in water | mg/L | 0.02 |
| NOx as N in water | mg/L | 1.5 |
| Total Nitrogen in water | mg/L | 1.6 |
| TKN in water | mg/L | <0.1 |
| Phosphate as P in water | mg/L | 0.006 |
| Organic Nitrogen as N | mg/L | <0.2 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-1 | 386021-2 | 386021-3 | 386021-4 | 386021-5 |
| Your Reference | UNITS | GW-1042 | GW-1807 | GW-1063 | GW-1808 | GW-1017 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 17/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 17/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 4 | 240 | 59 | 19 | 19 |
| Potassium - Dissolved | mg/L | 5 | 19 | 8.2 | 8.0 | 3 |
| Sodium - Dissolved | mg/L | 2,600 | 4,500 | 1,200 | 1,800 | 4,200 |
| Magnesium - Dissolved | mg/L | 290 | 840 | 160 | 260 | 570 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 1,200 | 4,000 | 810 | 1,100 | 2,400 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 15 | 380 | 390 | 88 | 23 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 15 | 380 | 390 | 88 | 23 |
| Sulphate, SO4 | mg/L | 160 | 490 | 150 | 98 | 590 |
| Chloride, Cl | mg/L | 3,000 | 5,300 | 1,000 | 1,500 | 6,000 |
| Ionic Balance | % | 22 | 25 | 27 | 38 | 12 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-6 | 386021-7 | 386021-8 | 386021-9 | 386021-10 |
| Your Reference | UNITS | GW-1005-S | GW-1001_S | GW-1002 | GW-1021 | GW-1016 |
| Date Sampled | | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 92 | 28 | 0.6 | 24 | 86 |
| Potassium - Dissolved | mg/L | 35 | 20 | 3 | 7.4 | 4 |
| Sodium - Dissolved | mg/L | 1,200 | 5,000 | 1,300 | 340 | 3,000 |
| Magnesium - Dissolved | mg/L | 300 | 770 | 150 | 14 | 710 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 1,500 | 3,300 | 640 | 120 | 3,200 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 140 | <5 | <5 | <5 | 6 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 140 | <5 | <5 | <5 | 6 |
| Sulphate, SO4 | mg/L | 190 | 310 | 160 | 530 | 750 |
| Chloride, Cl | mg/L | 1,500 | 6,800 | 2,200 | 64 | 5,100 |
| Ionic Balance | % | 25 | 17 | 5.0 | 15 | 9.0 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-11 | 386021-12 | 386021-13 | 386021-14 | 386021-15 |
| Your Reference | UNITS | GA-A401 | GW-4021 | GW-4008 | GW-3012A | GW-3012B |
| Date Sampled | | 15/07/2025 | 14/07/2025 | 11/07/2025 | 10/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 8.8 | 34 | 330 | 3 | 180 |
| Potassium - Dissolved | mg/L | 5.3 | 5 | 62 | 13 | 47 |
| Sodium - Dissolved | mg/L | 350 | 800 | 4,300 | 640 | 4,600 |
| Magnesium - Dissolved | mg/L | 18 | 66 | 250 | 44 | 1,000 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 96 | 360 | 1,800 | 190 | 4,600 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 140 | 230 | 310 | 230 | 1,200 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 140 | 230 | 310 | 230 | 1,200 |
| Sulphate, SO4 | mg/L | 83 | 91 | 130 | 210 | 1,600 |
| Chloride, Cl | mg/L | 410 | 780 | 6,200 | 760 | 8,700 |
| Ionic Balance | % | 4.0 | 19 | 10 | 3.0 | -1.0 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-16 | 386021-17 | 386021-18 | 386021-19 | 386021-20 |
| Your Reference | UNITS | GW-3012C | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 | SBT-GW-4801 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 11/07/2025 | 14/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 340 | 110 | 240 | 150 | 210 |
| Potassium - Dissolved | mg/L | 68 | 30 | 12 | 26 | 26 |
| Sodium - Dissolved | mg/L | 4,500 | 2,400 | 5,100 | 3,000 | 2,400 |
| Magnesium - Dissolved | mg/L | 430 | 360 | 740 | 570 | 270 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 2,600 | 1,800 | 3,600 | 2,700 | 1,600 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 520 | 280 | 890 | 960 | 600 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 520 | 280 | 890 | 960 | 600 |
| Sulphate, SO4 | mg/L | 370 | 550 | 680 | 700 | 810 |
| Chloride, Cl | mg/L | 7,200 | 1,500 | 8,100 | 4,900 | 3,300 |
| Ionic Balance | % | 6.0 | 41 | 6.0 | 4.0 | 5.0 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-21 | 386021-22 | 386021-23 | 386021-24 | 386021-25 |
| Your Reference | UNITS | SBT-GW-4802 | SBT-GW-4800 | SBT-GW-4005 | SBT-GW-1030 | RIN_1 |
| Date Sampled | | 14/07/2025 | 14/07/2025 | 14/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 350 | 150 | 310 | 59 | <0.5 |
| Potassium - Dissolved | mg/L | 48 | 28 | 50 | 8.1 | <0.5 |
| Sodium - Dissolved | mg/L | 5,000 | 3,000 | 4,900 | 600 | <0.5 |
| Magnesium - Dissolved | mg/L | 800 | 530 | 800 | 66 | <0.5 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 4,100 | 2,600 | 4,100 | 420 | <3 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 790 | 1,300 | 910 | 180 | <5 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 790 | 1,300 | 910 | 180 | <5 |
| Sulphate, SO4 | mg/L | 880 | 560 | 1,200 | 130 | 2 |
| Chloride, Cl | mg/L | 8,400 | 3,700 | 7,400 | 200 | 7 |
| Ionic Balance | % | 5.0 | 12 | 8.0 | 49 | -100 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-26 | 386021-27 | 386021-28 | 386021-29 | 386021-30 |
| Your Reference | UNITS | RIN_2 | RIN_3 | RIN_4 | RIN_5 | BR_1 |
| Date Sampled | | 10/07/2025 | 11/07/2025 | 14/07/2025 | 15/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 0.7 | <0.5 | <0.5 | <0.5 | 20 |
| Potassium - Dissolved | mg/L | 0.5 | <0.5 | <0.5 | <0.5 | 6.5 |
| Sodium - Dissolved | mg/L | 4 | <0.5 | <0.5 | <0.5 | 250 |
| Magnesium - Dissolved | mg/L | <0.5 | <0.5 | <0.5 | <0.5 | 11 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | <3 | <3 | <3 | <3 | 94 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 17 | 6 | <5 | <5 | 27 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 17 | 6 | <5 | <5 | 27 |
| Sulphate, SO4 | mg/L | <1 | <1 | <1 | <1 | 380 |
| Chloride, Cl | mg/L | 6 | 2 | <1 | <1 | 56 |
| Ionic Balance | % | -36 | -100 | N/A | N/A | 12 |

| Ion Balance | | |
|---|---|---|
| Our Reference | | 386021-31 |
| Your Reference | UNITS | BR_2 |
| Date Sampled | | 11/07/2025 |
| Type of sample | | Water |
| Date prepared | - | 16/07/2025 |
| Date analysed | - | 16/07/2025 |
| Calcium - Dissolved | mg/L | 120 |
| Potassium - Dissolved | mg/L | 32 |
| Sodium - Dissolved | mg/L | 2,700 |
| Magnesium - Dissolved | mg/L | 430 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 2,100 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 280 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 280 |
| Sulphate, SO4 | mg/L | 580 |
| Chloride, Cl | mg/L | 1,600 |
| Ionic Balance | % | 44 |

| Total Phenolics in Water | | |
|---|---|---|
| Our Reference | | 386021-9 |
| Your Reference | UNITS | GW-1021 |
| Date Sampled | | 09/07/2025 |
| Type of sample | | Water |
| Date extracted | - | 18/07/2025 |
| Date analysed | - | 18/07/2025 |
| Total Phenolics (as Phenol) | mg/L | <0.05 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-1 | 386021-2 | 386021-3 | 386021-4 | 386021-5 |
| Your Reference | UNITS | GW-1042 | GW-1807 | GW-1063 | GW-1808 | GW-1017 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 7,700 | 21,000 | 960,000 | 12,000 | 60,000 |
| Cobalt-Total | µg/L | 140 | 33 | 1,300 | 240 | 340 |
| Iron-Total | µg/L | 10,000 | 35,000 | 1,500,000 | 41,000 | 140,000 |
| Manganese-Total | µg/L | 120 | 830 | 11,000 | 450 | 8,700 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-6 | 386021-7 | 386021-8 | 386021-9 | 386021-10 |
| Your Reference | UNITS | GW-1005-S | GW-1001_S | GW-1002 | GW-1021 | GW-1016 |
| Date Sampled | | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 2,200 | 21,000 | 11,000 | 6,200 | 30,000 |
| Cobalt-Total | µg/L | 22 | 680 | 92 | 12 | 100 |
| Iron-Total | µg/L | 2,200 | 3,800 | 13,000 | 23,000 | 35,000 |
| Manganese-Total | µg/L | 390 | 2,700 | 38 | 110 | 510 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-11 | 386021-12 | 386021-13 | 386021-14 | 386021-15 |
| Your Reference | UNITS | GA-A401 | GW-4021 | GW-4008 | GW-3012A | GW-3012B |
| Date Sampled | | 15/07/2025 | 14/07/2025 | 11/07/2025 | 10/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 30,000 | 47,000 | 4,200 | 16,000 | 47,000 |
| Cobalt-Total | µg/L | 14 | 67 | 12 | 15 | 55 |
| Iron-Total | µg/L | 33,000 | 45,000 | 10,000 | 24,000 | 120,000 |
| Manganese-Total | µg/L | 84 | 2,500 | 320 | 180 | 3,100 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-16 | 386021-17 | 386021-18 | 386021-19 | 386021-20 |
| Your Reference | UNITS | GW-3012C | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 | SBT-GW-4801 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 11/07/2025 | 14/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 22,000 | 17,000 | 17,000 | 6,600 | 8,000 |
| Cobalt-Total | µg/L | 40 | 28 | 23 | 6 | 18 |
| Iron-Total | µg/L | 49,000 | 46,000 | 31,000 | 11,000 | 24,000 |
| Manganese-Total | µg/L | 1,500 | 450 | 1,600 | 310 | 960 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-21 | 386021-22 | 386021-23 | 386021-24 | 386021-25 |
| Your Reference | UNITS | SBT-GW-4802 | SBT-GW-4800 | SBT-GW-4005 | SBT-GW-1030 | RIN_1 |
| Date Sampled | | 14/07/2025 | 14/07/2025 | 14/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 25,000 | 20,000 | 5,400 | 20,000 | <10 |
| Cobalt-Total | µg/L | 50 | 30 | 26 | 52 | <1 |
| Iron-Total | µg/L | 66,000 | 50,000 | 8,000 | 26,000 | <10 |
| Manganese-Total | µg/L | 2,100 | 1,400 | 170 | 330 | <5 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-26 | 386021-27 | 386021-28 | 386021-29 | 386021-30 |
| Your Reference | UNITS | RIN_2 | RIN_3 | RIN_4 | RIN_5 | BR_1 |
| Date Sampled | | 10/07/2025 | 11/07/2025 | 14/07/2025 | 15/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | <10 | 170 | <10 | <10 | 4,700 |
| Cobalt-Total | µg/L | <1 | <1 | <1 | <1 | 8 |
| Iron-Total | µg/L | <10 | 120 | <10 | <10 | 15,000 |
| Manganese-Total | µg/L | <5 | <5 | <5 | <5 | 60 |

| HM in water - total | | |
|---|---|---|
| Our Reference | UNITS | 386021-31 |
| Your Reference | | BR_2 |
| Date Sampled | | 11/07/2025 |
| Type of sample | | Water |
| Date prepared | - | 17/07/2025 |
| Date analysed | - | 17/07/2025 |
| Aluminium-Total | µg/L | 17,000 |
| Cobalt-Total | µg/L | 30 |
| Iron-Total | µg/L | 46,000 |
| Manganese-Total | µg/L | 460 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-1 | 386021-2 | 386021-3 | 386021-4 | 386021-5 |
| Your Reference | UNITS | GW-1042 | GW-1807 | GW-1063 | GW-1808 | GW-1017 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | 2,100 | <20 | <10 | 10 | 50 |
| Iron-Dissolved | µg/L | 360 | 2,300 | 2,200 | 25,000 | 18,000 |
| Manganese-Dissolved | µg/L | 210 | 990 | 900 | 1,100 | 14,000 |
| Arsenic-Dissolved | µg/L | 2 | <2 | 9 | 3 | 2 |
| Cadmium-Dissolved | µg/L | 0.2 | <0.2 | <0.1 | <0.1 | 0.2 |
| Chromium-Dissolved | µg/L | <1 | <2 | 1 | 1 | <1 |
| Copper-Dissolved | µg/L | 15 | <2 | <1 | <1 | 9 |
| Lead-Dissolved | µg/L | 7 | <2 | <1 | <1 | 3 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | 93 | 2 | 2 | 5 | 72 |
| Zinc-Dissolved | µg/L | 200 | 3 | <1 | <1 | 87 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-6 | 386021-7 | 386021-8 | 386021-9 | 386021-10 |
| Your Reference | UNITS | GW-1005-S | GW-1001_S | GW-1002 | GW-1021 | GW-1016 |
| Date Sampled | | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <10 | 20,000 | 1,800 | <10 | 330 |
| Iron-Dissolved | µg/L | 180 | 1,600 | 100 | 2,000 | 70 |
| Manganese-Dissolved | µg/L | 160 | 3,400 | 44 | 78 | 420 |
| Arsenic-Dissolved | µg/L | <1 | 7 | <1 | 4 | 1 |
| Cadmium-Dissolved | µg/L | <0.1 | 1.3 | <0.1 | <0.1 | 0.3 |
| Chromium-Dissolved | µg/L | <1 | 3 | <1 | <1 | <1 |
| Copper-Dissolved | µg/L | 2 | 3 | 13 | <1 | 87 |
| Lead-Dissolved | µg/L | <1 | 24 | 5 | <1 | 23 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | 3 | 470 | 36 | 9 | 56 |
| Zinc-Dissolved | µg/L | 6 | 1,600 | 130 | 18 | 560 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-11 | 386021-12 | 386021-13 | 386021-14 | 386021-15 |
| Your Reference | UNITS | GA-A401 | GW-4021 | GW-4008 | GW-3012A | GW-3012B |
| Date Sampled | | 15/07/2025 | 14/07/2025 | 11/07/2025 | 10/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <10 | <10 | <10 | <10 | <20 |
| Iron-Dissolved | µg/L | <10 | 320 | 990 | <10 | <20 |
| Manganese-Dissolved | µg/L | 28 | 870 | 280 | 41 | 210 |
| Arsenic-Dissolved | µg/L | <1 | 1 | 12 | <1 | <2 |
| Cadmium-Dissolved | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.2 |
| Chromium-Dissolved | µg/L | 1 | <1 | <1 | <1 | <2 |
| Copper-Dissolved | µg/L | 98 | <1 | <1 | 3 | <2 |
| Lead-Dissolved | µg/L | <1 | <1 | <1 | <1 | <2 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | 5 | 1 | <1 | 8 | 3 |
| Zinc-Dissolved | µg/L | 160 | <1 | 2 | 23 | 9 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-16 | 386021-17 | 386021-18 | 386021-19 | 386021-20 |
| Your Reference | UNITS | GW-3012C | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 | SBT-GW-4801 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 11/07/2025 | 14/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <20 | <10 | <10 | <10 | <10 |
| Iron-Dissolved | µg/L | 90 | 110 | 830 | 20 | <10 |
| Manganese-Dissolved | µg/L | 680 | 130 | 1,500 | 230 | 480 |
| Arsenic-Dissolved | µg/L | <2 | <1 | <1 | <1 | <1 |
| Cadmium-Dissolved | µg/L | <0.2 | <0.1 | <0.1 | <0.1 | 0.1 |
| Chromium-Dissolved | µg/L | <2 | 5 | <1 | <1 | <1 |
| Copper-Dissolved | µg/L | <2 | 3 | <1 | 4 | 5 |
| Lead-Dissolved | µg/L | <2 | <1 | <1 | <1 | <1 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | 7 | 7 | 7 | 6 | 15 |
| Zinc-Dissolved | µg/L | 12 | 7 | 7 | 4 | 8 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-21 | 386021-22 | 386021-23 | 386021-24 | 386021-25 |
| Your Reference | UNITS | SBT-GW-4802 | SBT-GW-4800 | SBT-GW-4005 | SBT-GW-1030 | RIN_1 |
| Date Sampled | | 14/07/2025 | 14/07/2025 | 14/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <20 | <10 | <10 | <10 | <10 |
| Iron-Dissolved | µg/L | <20 | 440 | <10 | 30 | <10 |
| Manganese-Dissolved | µg/L | 1,000 | 460 | 98 | 160 | <5 |
| Arsenic-Dissolved | µg/L | <2 | <1 | 1 | <1 | <1 |
| Cadmium-Dissolved | µg/L | <0.2 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chromium-Dissolved | µg/L | <2 | <1 | <1 | <1 | <1 |
| Copper-Dissolved | µg/L | 5 | 1 | 2 | 4 | <1 |
| Lead-Dissolved | µg/L | <2 | <1 | <1 | <1 | <1 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | 18 | 5 | 33 | 9 | <1 |
| Zinc-Dissolved | µg/L | 13 | 7 | 20 | 99 | <1 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-26 | 386021-27 | 386021-28 | 386021-29 | 386021-30 |
| Your Reference | UNITS | RIN_2 | RIN_3 | RIN_4 | RIN_5 | BR_1 |
| Date Sampled | | 10/07/2025 | 11/07/2025 | 14/07/2025 | 15/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <10 | 50 | <10 | <10 | <10 |
| Iron-Dissolved | µg/L | <10 | 70 | <10 | <10 | 1,300 |
| Manganese-Dissolved | µg/L | <5 | <5 | <5 | <5 | 45 |
| Arsenic-Dissolved | µg/L | <1 | <1 | <1 | <1 | 3 |
| Cadmium-Dissolved | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chromium-Dissolved | µg/L | <1 | <1 | <1 | <1 | <1 |
| Copper-Dissolved | µg/L | <1 | <1 | <1 | <1 | <1 |
| Lead-Dissolved | µg/L | <1 | <1 | <1 | <1 | <1 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | <1 | <1 | <1 | <1 | 5 |
| Zinc-Dissolved | µg/L | <1 | 2 | <1 | <1 | 10 |

| HM in water - dissolved | | |
|---|---|---|
| Our Reference | UNITS | 386021-31 |
| Your Reference | | BR_2 |
| Date Sampled | | 11/07/2025 |
| Type of sample | | Water |
| Date prepared | - | 17/07/2025 |
| Date analysed | - | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <10 |
| Iron-Dissolved | µg/L | 120 |
| Manganese-Dissolved | µg/L | 97 |
| Arsenic-Dissolved | µg/L | <1 |
| Cadmium-Dissolved | µg/L | <0.1 |
| Chromium-Dissolved | µg/L | 7 |
| Copper-Dissolved | µg/L | 2 |
| Lead-Dissolved | µg/L | <1 |
| Mercury-Dissolved | µg/L | <0.05 |
| Nickel-Dissolved | µg/L | 7 |
| Zinc-Dissolved | µg/L | 7 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-1 | 386021-2 | 386021-3 | 386021-4 | 386021-5 |
| Your Reference | UNITS | GW-1042 | GW-1807 | GW-1063 | GW-1808 | GW-1017 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.06 | 0.4 | 23 | 0.5 | 0.3 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-6 | 386021-7 | 386021-8 | 386021-9 | 386021-10 |
| Your Reference | UNITS | GW-1005-S | GW-1001_S | GW-1002 | GW-1021 | GW-1016 |
| Date Sampled | | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.1 | 0.06 | 0.1 | 0.3 | 1.4 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-11 | 386021-12 | 386021-13 | 386021-14 | 386021-15 |
| Your Reference | UNITS | GA-A401 | GW-4021 | GW-4008 | GW-3012A | GW-3012B |
| Date Sampled | | 15/07/2025 | 14/07/2025 | 11/07/2025 | 10/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.3 | 0.5 | 0.4 | 0.4 | 2.2 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-16 | 386021-17 | 386021-18 | 386021-19 | 386021-20 |
| Your Reference | UNITS | GW-3012C | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 | SBT-GW-4801 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 11/07/2025 | 14/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.85 | 0.73 | 1.5 | 0.2 | 0.4 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-21 | 386021-22 | 386021-23 | 386021-24 | 386021-25 |
| Your Reference | UNITS | SBT-GW-4802 | SBT-GW-4800 | SBT-GW-4005 | SBT-GW-1030 | RIN_1 |
| Date Sampled | | 14/07/2025 | 14/07/2025 | 14/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 1.0 | 0.62 | 0.2 | 0.61 | <0.05 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-26 | 386021-27 | 386021-28 | 386021-29 | 386021-30 |
| Your Reference | UNITS | RIN_2 | RIN_3 | RIN_4 | RIN_5 | BR_1 |
| Date Sampled | | 10/07/2025 | 11/07/2025 | 14/07/2025 | 15/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | <0.05 | <0.05 | <0.05 | <0.05 | 0.2 |

| Metals in Waters - Acid extractable | | |
|---|---|---|
| Our Reference | | 386021-31 |
| Your Reference | UNITS | BR_2 |
| Date Sampled | | 11/07/2025 |
| Type of sample | | Water |
| Date prepared | - | 17/07/2025 |
| Date analysed | - | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.2 |

| PFAS in Water TRACE Short | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-3 | 386021-5 | 386021-10 | 386021-11 | 386021-18 |
| Your Reference | UNITS | GW-1063 | GW-1017 | GW-1016 | GA-A401 | SMGW-BH-C32 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 09/07/2025 | 15/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| Date analysed | - | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| Perfluorobutanesulfonic acid | µg/L | 0.082 | 0.001 | 0.0009 | 0.018 | <0.0004 |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.012 | <0.0002 | <0.0002 | 0.0040 | <0.0002 |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.025 | 0.0009 | 0.0008 | 0.014 | <0.0002 |
| Perfluorooctanoic acid PFOA | µg/L | 0.032 | 0.0028 | 0.001 | 0.017 | <0.0002 |
| 6:2 FTS | µg/L | 0.026 | 0.004 | 0.003 | 0.004 | 0.002 |
| 8:2 FTS | µg/L | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 97 | 96 | 97 | 98 | 96 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 114 | 108 | 108 | 110 | 108 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 56 | 46 | 52 | 47 | 57 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 87 | 87 | 79 | 81 | 89 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 63 | 58 | 51 | 50 | 64 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 101 | 100 | 82 | 82 | 99 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 162 | 122 | 144 | 141 | 135 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 186 | 163 | 151 | 151 | 147 |
| Total Positive PFHxS & PFOS | µg/L | 0.037 | 0.0009 | 0.0008 | 0.018 | <0.0002 |
| Total Positive PFOS & PFOA | µg/L | 0.057 | 0.0037 | 0.002 | 0.031 | <0.0002 |
| Total Positive PFAS | µg/L | 0.18 | 0.0087 | 0.0057 | 0.057 | 0.0022 |

| PFAS in Water TRACE Short | | | |
|---|---|---|---|
| Our Reference | | 386021-19 | 386021-24 |
| Your Reference | UNITS | SBT-GW-4003 | SBT-GW-1030 |
| Date Sampled | | 14/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water |
| Date prepared | - | 18/07/2025 | 18/07/2025 |
| Date analysed | - | 18/07/2025 | 18/07/2025 |
| Perfluorobutanesulfonic acid | µg/L | <0.0004 | 0.022 |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | <0.0002 | 0.0098 |
| Perfluorooctanesulfonic acid PFOS | µg/L | <0.0002 | 0.0077 |
| Perfluorooctanoic acid PFOA | µg/L | 0.0002 | 0.016 |
| 6:2 FTS | µg/L | 0.001 | 0.004 |
| 8:2 FTS | µg/L | <0.0004 | <0.0004 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 91 | 98 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 110 | 103 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 55 | 44 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 85 | 78 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 54 | 56 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 95 | 82 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 139 | 137 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 130 | 164 |
| Total Positive PFHxS & PFOS | µg/L | <0.0002 | 0.018 |
| Total Positive PFOS & PFOA | µg/L | 0.0002 | 0.023 |
| Total Positive PFAS | µg/L | 0.001 | 0.059 |

| Method ID | Methodology Summary |
|---|---|
| **Inorg-001** | pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| **Inorg-002** | Conductivity and Salinity - measured using a conductivity cell. |
| **Inorg-006** | Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B. |
| **Inorg-018** | Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C.<br><br>NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:-<br><br>TDS = EC * 0.6 |
| **Inorg-031** | Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish).<br>Solids are extracted in a caustic media prior to analysis. |
| **Inorg-040** | The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%. |
| **Inorg-055** | Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction. |
| **Inorg-055** | Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction. |
| **Inorg-055/062/127** | Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence. |
| **Inorg-057** | Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction. |
| **Inorg-060** | Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction. |
| **Inorg-062** | TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx). |
| **Inorg-079** | TOC determined using a TOC analyser using the combustion method. Dissolved requires filtering prior to determination. Analysis using APHA latest edition 5310B. |
| **Inorg-081** | Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis.<br>Alternatively determined by colourimetry/turbidity using Discrete Analyser. |

| Method ID | Methodology Summary |
|---|---|
| **Metals-020** | Determination of various metals by ICP-AES.<br><br>Total Phosphate determined stochiometrically from Phosphorus (assumed to be present as Phosphate).<br><br>Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.<br><br>Submission of low masses of sample e.g. for dust samples, may result in raised PQLs. |
| **Metals-021** | Determination of Mercury by Cold Vapour AAS. |
| **Metals-022** | Determination of various metals by ICP-MS.<br><br>Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements.<br><br>Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation. |
| **Org-020** | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. |
| **Org-023** | Water samples are analysed directly by purge and trap GC-MS. |
| **Org-023** | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. |
| **Org-029** | Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.<br><br>Analysis is undertaken with LC-MS/MS.<br><br>PFAS results include the sum of branched and linear isomers where applicable.<br><br>Please note that PFAS results are corrected for Extracted Internal Standards (QSM terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.<br><br>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER. |

| QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water | | | | | Duplicate | | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W6 | [NT] |
| Date extracted | - | | | 18/07/2025 | 10 | 18/07/2025 | 21/07/2025 | | 18/07/2025 | [NT] |
| Date analysed | - | | | 21/07/2025 | 10 | 21/07/2025 | 22/07/2025 | | 21/07/2025 | [NT] |
| TRH $C_6$ - $C_9$ | µg/L | 10 | Org-023 | <10 | 10 | <10 | <10 | 0 | 106 | [NT] |
| TRH $C_6$ - $C_{10}$ | µg/L | 10 | Org-023 | <10 | 10 | <10 | <10 | 0 | 106 | [NT] |
| Benzene | µg/L | 1 | Org-023 | <1 | 10 | <1 | <1 | 0 | 103 | [NT] |
| Toluene | µg/L | 1 | Org-023 | <1 | 10 | <1 | <1 | 0 | 102 | [NT] |
| Ethylbenzene | µg/L | 1 | Org-023 | <1 | 10 | <1 | <1 | 0 | 106 | [NT] |
| m+p-xylene | µg/L | 2 | Org-023 | <2 | 10 | <2 | <2 | 0 | 109 | [NT] |
| o-xylene | µg/L | 1 | Org-023 | <1 | 10 | <1 | <1 | 0 | 108 | [NT] |
| Naphthalene | µg/L | 1 | Org-023 | <1 | 10 | <1 | <1 | 0 | [NT] | [NT] |
| *Surrogate* Dibromofluoromethane | % | | Org-023 | 95 | 10 | 92 | 103 | 11 | 106 | [NT] |
| *Surrogate* Toluene-d8 | % | | Org-023 | 100 | 10 | 100 | 99 | 1 | 102 | [NT] |
| *Surrogate* 4-Bromofluorobenzene | % | | Org-023 | 102 | 10 | 103 | 103 | 0 | 107 | [NT] |

| QUALITY CONTROL: svTRH (C10-C40) in Water | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | [NT] |
| Date extracted | - | | | 17/07/2025 | 3 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | [NT] |
| Date analysed | - | | | 17/07/2025 | 3 | 18/07/2025 | 18/07/2025 | | 17/07/2025 | [NT] |
| TRH $C_{10}$ - $C_{14}$ | µg/L | 50 | Org-020 | <50 | 3 | <50 | <50 | 0 | 119 | [NT] |
| TRH $C_{15}$ - $C_{28}$ | µg/L | 100 | Org-020 | <100 | 3 | <100 | <100 | 0 | 113 | [NT] |
| TRH $C_{29}$ - $C_{36}$ | µg/L | 100 | Org-020 | <100 | 3 | <100 | <100 | 0 | 114 | [NT] |
| TRH >$C_{10}$ - $C_{16}$ | µg/L | 50 | Org-020 | <50 | 3 | <50 | <50 | 0 | 119 | [NT] |
| TRH >$C_{16}$ - $C_{34}$ | µg/L | 100 | Org-020 | <100 | 3 | <100 | <100 | 0 | 113 | [NT] |
| TRH >$C_{34}$ - $C_{40}$ | µg/L | 100 | Org-020 | <100 | 3 | <100 | <100 | 0 | 114 | [NT] |
| *Surrogate* o-Terphenyl | % | | Org-020 | 93 | 3 | 92 | 94 | 2 | 115 | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | 386021-2 |
| Date prepared | - | | | 16/07/2025 | 1 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Date analysed | - | | | 16/07/2025 | 1 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 1 | 4.8 | [NT] | | 100 | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | <1 | 1 | 12000 | [NT] | | 100 | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | <5 | 1 | 7500 | 7200 | 4 | 88 | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | <1 | 1 | 41 | [NT] | | 86 | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | <0.005 | 1 | 0.17 | 0.17 | 0 | 101 | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | <0.005 | 1 | 100 | 110 | 10 | 99 | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | <0.005 | 1 | 0.05 | 0.05 | 0 | 90 | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | <0.005 | 1 | 100 | 110 | 10 | 99 | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | <0.1 | 1 | 110 | [NT] | | 99 | 104 |
| TKN in water | mg/L | 0.1 | Inorg-062 | <0.1 | 1 | 5.3 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | <0.005 | 1 | 0.02 | 0.02 | 0 | 109 | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | <0.2 | 1 | 5.1 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | 386021-4 |
| Date prepared | - | | | [NT] | 2 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Date analysed | - | | | [NT] | 2 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 2 | 6.9 | [NT] | | 99 | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 2 | 18000 | [NT] | | 98 | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 2 | 14000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 2 | 11 | 11 | 0 | 91 | 83 |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 2 | 0.61 | [NT] | | 105 | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 2 | 0.19 | [NT] | | 100 | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 2 | <0.005 | [NT] | | 90 | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 2 | 0.19 | [NT] | | 109 | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 2 | 1.6 | [NT] | | 101 | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 2 | 1.4 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 2 | 0.005 | [NT] | | 109 | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 2 | 0.8 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-13 |
| Date prepared | - | | | [NT] | 8 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 8 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 8 | 3.9 | 3.9 | 0 | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 8 | 8300 | 8400 | 1 | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 8 | 4100 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 8 | 12 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 8 | 0.04 | [NT] | | [NT] | # |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 8 | 0.087 | [NT] | | [NT] | 103 |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 8 | <0.005 | [NT] | | [NT] | 110 |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 8 | 0.088 | [NT] | | [NT] | 103 |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 8 | 0.5 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 8 | 0.5 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 8 | 0.02 | [NT] | | [NT] | 106 |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 8 | 0.4 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-15 |
| Date prepared | - | | | [NT] | 10 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 10 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 10 | 4.5 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 10 | 19000 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 10 | 13000 | 12000 | 8 | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 10 | 5 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 10 | 0.29 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 10 | 0.25 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 10 | <0.005 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 10 | 0.25 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 10 | 0.6 | [NT] | | [NT] | 96 |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 10 | 0.3 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 10 | 0.02 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 10 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-24 |
| Date prepared | - | | | [NT] | 12 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 12 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 12 | 6.9 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 12 | 3700 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 12 | 2000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 12 | 9.9 | [NT] | | [NT] | 70 |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 12 | 1.3 | 1.2 | 8 | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 12 | <0.005 | <0.005 | 0 | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 12 | <0.005 | <0.005 | 0 | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 12 | <0.005 | <0.005 | 0 | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 12 | 1.3 | 1.3 | 0 | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 12 | 1.3 | 1.3 | 0 | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 12 | <0.005 | <0.005 | 0 | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 12 | <0.2 | <0.2 | 0 | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-29 |
| Date prepared | - | | | [NT] | 13 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 13 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 13 | 7.1 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 13 | 22000 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 13 | 15000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 13 | 6 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 13 | 9.2 | [NT] | | [NT] | 102 |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 13 | 0.01 | [NT] | | [NT] | 102 |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 13 | <0.005 | [NT] | | [NT] | 92 |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 13 | 0.02 | [NT] | | [NT] | 102 |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 13 | 9.4 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 13 | 9.4 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 13 | <0.005 | [NT] | | [NT] | 91 |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 13 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 15 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 15 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 15 | 6.9 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 15 | 26000 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 15 | 19000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 15 | 3 | 3 | 0 | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 15 | 0.02 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 15 | 0.05 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 15 | <0.005 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 15 | 0.05 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 15 | 0.2 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 15 | 0.1 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 15 | 0.02 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 15 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 18 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 18 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 18 | 7.0 | 7.0 | 0 | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 18 | 26000 | 26000 | 0 | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 18 | 20000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 18 | 1 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 18 | 0.02 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 18 | 0.02 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 18 | <0.005 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 18 | 0.03 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 18 | <0.1 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 18 | <0.1 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 18 | 0.02 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 18 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 21 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 21 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 21 | 7.0 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 21 | 27000 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 21 | 16000 | 16000 | 0 | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 21 | 4 | <1 | 120 | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 21 | 1.1 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 21 | 11 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 21 | 0.057 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 21 | 11 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 21 | 12 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 21 | 1.5 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 21 | 0.007 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 21 | 0.5 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 22 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 22 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 22 | 7.4 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 22 | 17000 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 22 | 10000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 22 | 260 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 22 | 0.44 | 0.44 | 0 | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 22 | 0.05 | 0.05 | 0 | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 22 | <0.005 | <0.005 | 0 | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 22 | 0.05 | 0.05 | 0 | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 22 | 0.5 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 22 | 0.4 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 22 | 0.02 | 0.01 | 67 | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 22 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 24 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 24 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 24 | 6.6 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 24 | 3900 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 24 | 2400 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 24 | 17 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 24 | 0.090 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 24 | 0.47 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 24 | 0.008 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 24 | 0.47 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 24 | 1.1 | 1.1 | 0 | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 24 | 0.6 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 24 | <0.005 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 24 | 0.5 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 28 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 28 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 28 | 5.2 | 5.1 | 2 | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 28 | 2 | 2 | 0 | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 28 | <5 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 28 | <1 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 28 | <0.005 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 28 | <0.005 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 28 | <0.005 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 28 | <0.005 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 28 | <0.1 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 28 | <0.1 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 28 | <0.005 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 28 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 31 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 31 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 31 | 6.9 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 31 | 7200 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 31 | 4600 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 31 | 11 | 11 | 0 | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 31 | 0.063 | 0.060 | 5 | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 31 | 1.5 | 1.5 | 0 | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 31 | 0.02 | 0.02 | 0 | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 31 | 1.5 | 1.5 | 0 | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 31 | 1.6 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 31 | <0.1 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 31 | 0.006 | <0.005 | 18 | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 31 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | 386021-2 |
| Date prepared | - | | | 16/07/2025 | 1 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Date analysed | - | | | 16/07/2025 | 1 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | <0.5 | 1 | 4 | [NT] | | 99 | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | <0.5 | 1 | 5 | [NT] | | 92 | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | <0.5 | 1 | 2600 | [NT] | | 92 | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | <0.5 | 1 | 290 | [NT] | | 93 | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 1 | 1200 | [NT] | | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | <5 | 1 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | <5 | 1 | 15 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | <5 | 1 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | <5 | 1 | 15 | [NT] | | 118 | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | <1 | 1 | 160 | 150 | 6 | 101 | # |
| Chloride, Cl | mg/L | 1 | Inorg-081 | <1 | 1 | 3000 | 2900 | 3 | 95 | # |
| Ionic Balance | % | | Inorg-040 | [NT] | 1 | 22 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | 386021-4 |
| Date prepared | - | | | [NT] | 3 | 17/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Date analysed | - | | | [NT] | 3 | 17/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 3 | 59 | 59 | 0 | 100 | 100 |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 3 | 8.2 | 11 | 29 | 95 | 108 |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 3 | 1200 | 1100 | 9 | 106 | # |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 3 | 160 | 160 | 0 | 94 | # |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 3 | 810 | 820 | 1 | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 3 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 3 | 390 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 3 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 3 | 390 | [NT] | | 120 | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 3 | 150 | [NT] | | 102 | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 3 | 1000 | [NT] | | 95 | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 3 | 27 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-13 |
| Date prepared | - | | | [NT] | 8 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 8 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 8 | 0.6 | [NT] | | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 8 | 3 | [NT] | | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 8 | 1300 | [NT] | | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 8 | 150 | [NT] | | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 8 | 640 | [NT] | | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 8 | <5 | <5 | 0 | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 8 | <5 | <5 | 0 | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 8 | <5 | <5 | 0 | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 8 | <5 | <5 | 0 | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 8 | 160 | [NT] | | [NT] | 89 |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 8 | 2200 | [NT] | | [NT] | # |
| Ionic Balance | % | | Inorg-040 | [NT] | 8 | 5.0 | N/A | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-23 |
| Date prepared | - | | | [NT] | 12 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 12 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 12 | 34 | [NT] | | [NT] | # |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 12 | 5 | [NT] | | [NT] | 74 |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 12 | 800 | [NT] | | [NT] | # |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 12 | 66 | [NT] | | [NT] | # |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 12 | 360 | [NT] | | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 12 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 12 | 230 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 12 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 12 | 230 | [NT] | | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 12 | 91 | 89 | 2 | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 12 | 780 | 790 | 1 | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 12 | 19 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 13 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 13 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 13 | 330 | 320 | 3 | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 13 | 62 | 62 | 0 | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 13 | 4300 | 4200 | 2 | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 13 | 250 | 250 | 0 | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 13 | 1800 | 1800 | 0 | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 13 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 13 | 310 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 13 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 13 | 310 | [NT] | | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 13 | 130 | [NT] | | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 13 | 6200 | [NT] | | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 13 | 10 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 18 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 18 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 18 | 240 | 240 | 0 | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 18 | 12 | 12 | 0 | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 18 | 5100 | 5000 | 2 | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 18 | 740 | 740 | 0 | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 18 | 3600 | 3600 | 0 | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 18 | <5 | <5 | 0 | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 18 | 890 | 870 | 2 | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 18 | <5 | <5 | 0 | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 18 | 890 | 870 | 2 | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 18 | 680 | [NT] | | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 18 | 8100 | [NT] | | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 18 | 6.0 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | Duplicate | | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 22 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 22 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 22 | 150 | [NT] | | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 22 | 28 | [NT] | | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 22 | 3000 | [NT] | | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 22 | 530 | [NT] | | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 22 | 2600 | [NT] | | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 22 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 22 | 1300 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 22 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 22 | 1300 | [NT] | | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 22 | 560 | 560 | 0 | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 22 | 3700 | 3800 | 3 | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 22 | 12 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | Duplicate | | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 24 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 24 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 24 | 59 | 59 | 0 | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 24 | 8.1 | 8.2 | 1 | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 24 | 600 | 570 | 5 | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 24 | 66 | 67 | 2 | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 24 | 420 | 420 | 0 | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 24 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 24 | 180 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 24 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 24 | 180 | [NT] | | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 24 | 130 | [NT] | | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 24 | 200 | [NT] | | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 24 | 49 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 28 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 28 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 28 | <0.5 | [NT] | | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 28 | <0.5 | [NT] | | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 28 | <0.5 | [NT] | | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 28 | <0.5 | [NT] | | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 28 | <3 | [NT] | | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 28 | <5 | <5 | 0 | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 28 | <5 | <5 | 0 | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 28 | <5 | <5 | 0 | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 28 | <5 | <5 | 0 | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 28 | <1 | [NT] | | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 28 | <1 | [NT] | | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 28 | N/A | N/A | | [NT] | [NT] |

| QUALITY CONTROL: Total Phenolics in Water | | | | | Duplicate | | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | [NT] |
| Date extracted | - | | | 18/07/2025 | [NT] | [NT] | [NT] | [NT] | 18/07/2025 | [NT] |
| Date analysed | - | | | 18/07/2025 | [NT] | [NT] | [NT] | [NT] | 18/07/2025 | [NT] |
| Total Phenolics (as Phenol) | mg/L | 0.05 | Inorg-031 | <0.05 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |

| QUALITY CONTROL: HM in water - total | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W4 | 386021-11 |
| Date prepared | - | | | 21/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Date analysed | - | | | 21/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 10 | Metals-022 | <10 | 1 | 7700 | 7700 | 0 | 98 | # |
| Cobalt-Total | µg/L | 1 | Metals-022 | <1 | 1 | 140 | 140 | 0 | 96 | 86 |
| Iron-Total | µg/L | 10 | Metals-022 | <10 | 1 | 10000 | 11000 | 10 | 87 | # |
| Manganese-Total | µg/L | 5 | Metals-022 | <5 | 1 | 120 | 130 | 8 | 93 | 83 |

| QUALITY CONTROL: HM in water - total | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W5 | 386021-23 |
| Date prepared | - | | | [NT] | 8 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Date analysed | - | | | [NT] | 8 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 10 | Metals-022 | [NT] | 8 | 11000 | 11000 | 0 | 90 | # |
| Cobalt-Total | µg/L | 1 | Metals-022 | [NT] | 8 | 92 | 100 | 8 | 91 | 96 |
| Iron-Total | µg/L | 10 | Metals-022 | [NT] | 8 | 13000 | 13000 | 0 | 85 | # |
| Manganese-Total | µg/L | 5 | Metals-022 | [NT] | 8 | 38 | 43 | 12 | 90 | # |

| QUALITY CONTROL: HM in water - total | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W3 | [NT] |
| Date prepared | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | [NT] |
| Date analysed | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | [NT] |
| Aluminium-Total | µg/L | 10 | Metals-022 | [NT] | 21 | 25000 | 25000 | 0 | 84 | [NT] |
| Cobalt-Total | µg/L | 1 | Metals-022 | [NT] | 21 | 50 | 52 | 4 | 92 | [NT] |
| Iron-Total | µg/L | 10 | Metals-022 | [NT] | 21 | 66000 | 66000 | 0 | 93 | [NT] |
| Manganese-Total | µg/L | 5 | Metals-022 | [NT] | 21 | 2100 | 2200 | 5 | 88 | [NT] |

| QUALITY CONTROL: HM in water - total | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Total | µg/L | 10 | Metals-022 | [NT] | 30 | 4700 | 5200 | 10 | [NT] | [NT] |
| Cobalt-Total | µg/L | 1 | Metals-022 | [NT] | 30 | 8 | 8 | 0 | [NT] | [NT] |
| Iron-Total | µg/L | 10 | Metals-022 | [NT] | 30 | 15000 | 16000 | 6 | [NT] | [NT] |
| Manganese-Total | µg/L | 5 | Metals-022 | [NT] | 30 | 60 | 59 | 2 | [NT] | [NT] |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W3 | 386021-2 |
| Date prepared | - | | | 17/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 21/07/2025 |
| Date analysed | - | | | 17/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 21/07/2025 |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | <10 | 1 | 2100 | 1900 | 10 | 87 | 95 |
| Iron-Dissolved | µg/L | 10 | Metals-022 | <10 | 1 | 360 | 350 | 3 | 91 | # |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | <5 | 1 | 210 | 200 | 5 | 91 | # |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | 2 | 2 | 0 | 92 | 100 |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | <0.1 | 1 | 0.2 | 0.2 | 0 | 90 | 99 |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | <1 | <1 | 0 | 89 | 123 |
| Copper-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | 15 | 15 | 0 | 91 | 107 |
| Lead-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | 7 | 7 | 0 | 93 | 87 |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | <0.05 | 1 | <0.05 | <0.05 | 0 | 88 | 87 |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | 93 | 88 | 6 | 91 | 110 |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | 200 | 210 | 5 | 93 | 108 |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W4 | 386021-22 |
| Date prepared | - | | | [NT] | 10 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Date analysed | - | | | [NT] | 10 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 10 | 330 | [NT] | | 84 | 73 |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 10 | 70 | [NT] | | 87 | # |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 10 | 420 | [NT] | | 87 | # |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | 1 | [NT] | | 88 | 91 |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 10 | 0.3 | [NT] | | 86 | 91 |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | <1 | [NT] | | 86 | 102 |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | 87 | [NT] | | 89 | 89 |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | 23 | [NT] | | 90 | 75 |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 10 | <0.05 | <0.05 | 0 | 96 | 70 |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | 56 | [NT] | | 89 | 93 |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | 560 | [NT] | | 88 | 90 |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 12 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 12 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 12 | <10 | <10 | 0 | [NT] | [NT] |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 12 | 320 | 330 | 3 | [NT] | [NT] |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 12 | 870 | 880 | 1 | [NT] | [NT] |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | 1 | <1 | 0 | [NT] | [NT] |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 12 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | <1 | <1 | 0 | [NT] | [NT] |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | <1 | <1 | 0 | [NT] | [NT] |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | <1 | <1 | 0 | [NT] | [NT] |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 12 | <0.05 | [NT] | | [NT] | [NT] |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | 1 | 1 | 0 | [NT] | [NT] |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | <1 | <1 | 0 | [NT] | [NT] |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 16 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 16 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 16 | <20 | [NT] | | [NT] | [NT] |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 16 | 90 | [NT] | | [NT] | [NT] |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 16 | 680 | [NT] | | [NT] | [NT] |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | <2 | [NT] | | [NT] | [NT] |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 16 | <0.2 | [NT] | | [NT] | [NT] |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | <2 | [NT] | | [NT] | [NT] |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | <2 | [NT] | | [NT] | [NT] |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | <2 | [NT] | | [NT] | [NT] |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 16 | <0.05 | <0.05 | 0 | [NT] | [NT] |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | 7 | [NT] | | [NT] | [NT] |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | 12 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 17 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 17 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 17 | <10 | <10 | 0 | [NT] | [NT] |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 17 | 110 | 130 | 17 | [NT] | [NT] |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 17 | 130 | 110 | 17 | [NT] | [NT] |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | <1 | <1 | 0 | [NT] | [NT] |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 17 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | 5 | 4 | 22 | [NT] | [NT] |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | 3 | 2 | 40 | [NT] | [NT] |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | <1 | <1 | 0 | [NT] | [NT] |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 17 | <0.05 | [NT] | | [NT] | [NT] |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | 7 | 6 | 15 | [NT] | [NT] |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | 7 | 6 | 15 | [NT] | [NT] |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 21 | <20 | <20 | 0 | [NT] | [NT] |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 21 | <20 | <20 | 0 | [NT] | [NT] |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 21 | 1000 | 1000 | 0 | [NT] | [NT] |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | <2 | <2 | 0 | [NT] | [NT] |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 21 | <0.2 | <0.2 | 0 | [NT] | [NT] |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | <2 | <2 | 0 | [NT] | [NT] |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | 5 | 5 | 0 | [NT] | [NT] |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | <2 | <2 | 0 | [NT] | [NT] |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 21 | <0.05 | <0.05 | 0 | [NT] | [NT] |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | 18 | 18 | 0 | [NT] | [NT] |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | 13 | 14 | 7 | [NT] | [NT] |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 30 | <10 | [NT] | | [NT] | [NT] |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 30 | 1300 | [NT] | | [NT] | [NT] |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 30 | 45 | [NT] | | [NT] | [NT] |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | 3 | [NT] | | [NT] | [NT] |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 30 | <0.1 | [NT] | | [NT] | [NT] |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | <1 | [NT] | | [NT] | [NT] |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | <1 | [NT] | | [NT] | [NT] |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | <1 | [NT] | | [NT] | [NT] |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 30 | <0.05 | [NT] | | [NT] | [NT] |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | 5 | [NT] | | [NT] | [NT] |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | 10 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Metals in Waters - Acid extractable | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | 386021-10 |
| Date prepared | - | | | 17/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Date analysed | - | | | 17/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.05 | Metals-020 | <0.05 | 1 | 0.06 | 0.06 | 0 | 85 | 86 |

| QUALITY CONTROL: Metals in Waters - Acid extractable | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | 386021-22 |
| Date prepared | - | | | [NT] | 8 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Date analysed | - | | | [NT] | 8 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.05 | Metals-020 | [NT] | 8 | 0.1 | 0.1 | 0 | 81 | 92 |

| QUALITY CONTROL: Metals in Waters - Acid extractable | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Phosphorus - Total | mg/L | 0.05 | Metals-020 | [NT] | 21 | 1.0 | 0.99 | 1 | [NT] | [NT] |

| QUALITY CONTROL: Metals in Waters - Acid extractable | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Phosphorus - Total | mg/L | 0.05 | Metals-020 | [NT] | 30 | 0.2 | 0.2 | 0 | [NT] | [NT] |

| QUALITY CONTROL: PFAS in Water TRACE Short | | | | | Duplicate | | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | [NT] |
| Date prepared | - | | | 18/07/2025 | [NT] | [NT] | [NT] | [NT] | 18/07/2025 | [NT] |
| Date analysed | - | | | 18/07/2025 | [NT] | [NT] | [NT] | [NT] | 18/07/2025 | [NT] |
| Perfluorobutanesulfonic acid | µg/L | 0.0004 | Org-029 | <0.0004 | [NT] | [NT] | [NT] | [NT] | 106 | [NT] |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.0002 | Org-029 | <0.0002 | [NT] | [NT] | [NT] | [NT] | 97 | [NT] |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.0002 | Org-029 | <0.0002 | [NT] | [NT] | [NT] | [NT] | 97 | [NT] |
| Perfluorooctanoic acid PFOA | µg/L | 0.0002 | Org-029 | <0.0002 | [NT] | [NT] | [NT] | [NT] | 96 | [NT] |
| 6:2 FTS | µg/L | 0.0004 | Org-029 | <0.0004 | [NT] | [NT] | [NT] | [NT] | 111 | [NT] |
| 8:2 FTS | µg/L | 0.0004 | Org-029 | <0.0004 | [NT] | [NT] | [NT] | [NT] | 98 | [NT] |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 97 | [NT] | [NT] | [NT] | [NT] | 96 | [NT] |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 104 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 68 | [NT] | [NT] | [NT] | [NT] | 66 | [NT] |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 87 | [NT] | [NT] | [NT] | [NT] | 83 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 84 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 92 | [NT] | [NT] | [NT] | [NT] | 88 | [NT] |
| *Extracted ISTD*$^{13}C_2$ *6:2FTS* | % | | Org-029 | 106 | [NT] | [NT] | [NT] | [NT] | 99 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 162 | [NT] | [NT] | [NT] | [NT] | 152 | [NT] |

## Result Definitions

| | |
|---|---|
| **NT** | Not tested |
| **NA** | Test not required |
| **INS** | Insufficient sample for this test |
| **PQL** | Practical Quantitation Limit |
| **<** | Less than |
| **>** | Greater than |
| **RPD** | Relative Percent Difference |
| **LCS** | Laboratory Control Sample |
| **NS** | Not specified |
| **NEPM** | National Environmental Protection Measure |
| **NR** | Not Reported |

## Quality Control Definitions

| | |
|---|---|
| **Blank** | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. |
| **Duplicate** | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable. |
| **Matrix Spike** | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| **LCS (Laboratory Control Sample)** | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. |
| **Surrogate Spike** | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples. |

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volumes) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

For Dust Deposit Gauge (DDG) analysis the sampling, sampling period and funnel exposure area do not fall under Envirolab's NATA accreditation (unless the Newcastle laboratory where responsible for the sampling), hence the annotation on the DDG units of reporting.

Urine Analysis - The BEI values listed are taken from the 2022 edition of "TLVs and BEIs Threshold Limits" by ACGIH.

## Report Comments

ION_BALANCE: # Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.
- Dissolved Metals: For the determination of dissolved metals for #11,19 and 20, the unpreserved sample was filtered through 0.45um filter at the lab due to the appearance
of colloids and/or sediment in the supplied HNO3 bottle (it appears the sample has not been field filtered).
Note: there is a possibility some elements may be underestimated.

Total metals: no unfiltered, preserved sample was received for samples #1-9, 12-24, & 29-31, therefore analysis was conducted from the unpreserved sample bottle.
Note: there is a possibility some elements may be underestimated.

pH/TDS/Nitrite/Nitrate - Samples were out of the recommended holding time for this analysis.

8 HM in water - dissolved
- # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.
- The PQL has been raised X2 times due to suppression of the internal standard, which required the samples to be diluted. This is likely due to the high level of salts in the sample.

8 HM in water - total - # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

8 HM in water - TRACE METALS: In theory the total metal content should be higher than the dissolved metal content. However, in some samples this is not the case. The sample has been re-analysed for both Total and Dissolved metals and results have been confirmed.

MISC_INORG:# Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

vTRH & BTEXN in Water NEPM - The PQL for 386021-3,5 has been raised due to the sample matrix thereby requiring a dilution.

The mass inbalance for samples#1,2,3,4,6,7,9,12,17,24,31 may be caused by other ions that have not included in the calculation.

ION BALANCE: Samples #25 and 27 has recorded a high ion balance value. This may be the cause of the low values reported in the cation/anion balance, as such the value attract a higher level of uncertainty.

# CHAIN OF CUSTODY FORM - Client

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Esky 1/3

| | |
|---|---|
| Client: ADE group | Client Project Name/Number/Site etc (ie report title): A101022.0343.01.008 |
| Contact Person: Matthew Toole/ Monique Hitchens | |
| Project Mgr: Matthew Toole | PO No.: A101022.0343.01.008.L21 |
| Sampler: Monique Hitchens | Envirolab Quote No. : |
| Address: 6/7 Millenium Court, Silverwater NSW | Date results required: Or choose: standard / same day / 1 day / 2 day / 3 day *Note: Inform lab in advance if urgent turnaround is required - surcharges apply* |
| Phone: Mob: 0414 202 096 | Additional report format: esdat / equis / |
| Email: matthew.toole@ade.group, Ankita.saxena@ade.group, accounts@ade.group monique.hitchens@ade.group graham.hawkes@ade.group misha.konarev@ade.group, reuben.pinto@ade.group, madison.hollamby@ade.group | Lab Comments: |

| Sample information | | | | | Tests Required | | | | | | | | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Envirolab Sample ID (INT_DELETE) | Client Sample ID or information | Depth | Date sampled | Type of sample | CW003_D (TRH/BTEX/PAH/M8) | CW001M_D (TRH/BTEXN/M8_D | E08520 (PFAS Trace level) | pH | EC | TDS | TOC (E00490) | Total metals (Al, Co, Fe, Mn) | Major cations | Major anions | E010300 Nutrient Suite | Dissolved metals ( As, Cd, Cr, Cu, Pb, Hg, Ni, Zn, Al, Fe, Mn) | TPH | BTEXN | Phenols | ON HOLD | Provide as much information about the sample as you can |
| 1 | SBT-GW-1806 | | 29.07.25 | Water | | X | | X | X | X | X | X | X | X | X | X | X | | | | |
| 2 | SMGW-BH-A315 | | 29.07.25 | Water | | X | X | X | X | X | X | X | X | X | X | X | X | | | | |
| 3 | SBT-GW-1048 | | 29.07.25 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | Please filter metals |
| 4 | SBT-GW-1805 | | 29.07.25 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | pfas on hold |
| 5 | SBT-GW-1024 | | 29.07.25 | Water | | X | X | X | X | X | X | X | X | X | X | X | X | | | | |
| 6 | SBT-GW-4803 | | 30.07.25 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 7 | BH-4014_S | | 29.07.25 | Water | | | X | X | X | X | X | X | X | X | X | X | | | | | |
| 8 | SBT-GW-4017 | | 30.07.25 | Water | | X | X | X | X | X | X | X | X | X | X | X | X | | | | |
| 9 | SBT-GW-4403 | | 30.07.25 | Water | | X | | X | X | X | X | X | X | X | X | X | X | | | | |
| 10 | ABP-SBT-GW-3003/B | | 29.07.25 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 11 | ABP-SBT-GW-3003/C | | 29.07.25 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 12 | SBT-BH-3006 | | 30.07.25 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 13 | RIN_29.07.25 | | 29.07.25 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 14 | RIN_30.07.25 | | 30.07.25 | Water | | X | X | X | X | X | X | X | X | X | X | X | X | | | | |
| 15 | BR_30.07.25 | | 30.07.25 | Water | | X | X | X | X | X | X | X | X | X | X | X | X | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

| | | | |
|---|---|---|---|
| Relinquished by (C ADE | Received by (Company): ELS SYD | *Lab Use Only* | |
| Print Name: | Print Name: Richard Huang | Job number: 387359 | Cooling: Ice / Ice pack / None |
| Date & Time: 31/07/2025 | Date & Time: 31/7/25 1603 | Temperature: 3°C | Security seal: Intact / Broken / None |
| Signature: | Signature: | TAT Req - SAME day / 1 / 2 / 3 / 4 / STD | |

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# CERTIFICATE OF ANALYSIS 386021

## Client Details

| | |
|---|---|
| **Client** | ADE CONSULTING GROUP PTY LTD |
| **Attention** | Monique Hitchens, Matthew Toole |
| **Address** | Unit 6, 7 Millenium Court, Silverwater, NSW, 2128 |

## Sample Details

| | |
|---|---|
| **Your Reference** | **A101022.0343.01.008** |
| **Number of Samples** | 31 Water |
| **Date samples received** | 16/07/2025 |
| **Date completed instructions received** | 16/07/2025 |

## Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

**Please refer to the last page of this report for any comments relating to the results.**

## Report Details

| | |
|---|---|
| **Date results requested by** | 23/07/2025 |
| **Date of Issue** | 23/07/2025 |

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**Results Approved By**
Amanda Chui, LC/Air Toxics Supervisor
Giovanni Agosti, Group Technical Manager
Jack Wallis, Senior Chemist
Loren Bardwell, Development Chemist
Nick Sarlamis, Assistant Operation Manager
Priya Samarawickrama, Senior Chemist
Timothy Toll, Senior Chemist

**Authorised By**
Nancy Zhang, Laboratory Manager

| vTRH(C6-C10)/BTEXN in Water | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-3 | 386021-5 | 386021-10 | 386021-11 | 386021-15 |
| Your Reference | UNITS | GW-1063 | GW-1017 | GW-1016 | GA-A401 | GW-3012B |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 09/07/2025 | 15/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date extracted | - | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| Date analysed | - | 21/07/2025 | 21/07/2025 | 21/07/2025 | 21/07/2025 | 21/07/2025 |
| TRH $C_6$ - $C_9$ | µg/L | <100 | <100 | <10 | <10 | <10 |
| TRH $C_6$ - $C_{10}$ | µg/L | <100 | <100 | <10 | <10 | <10 |
| TRH $C_6$ - $C_{10}$ less BTEX (F1) | µg/L | <10 | <10 | <10 | <10 | [NA] |
| Benzene | µg/L | <10 | <10 | <1 | <1 | [NA] |
| Toluene | µg/L | <10 | <10 | <1 | <1 | [NA] |
| Ethylbenzene | µg/L | <10 | <10 | <1 | <1 | [NA] |
| m+p-xylene | µg/L | <20 | <20 | <2 | <2 | [NA] |
| o-xylene | µg/L | <10 | <10 | <1 | <1 | [NA] |
| Naphthalene | µg/L | <10 | <10 | <1 | <1 | [NA] |
| *Surrogate* Dibromofluoromethane | % | 98 | 96 | 92 | 93 | 90 |
| *Surrogate* Toluene-d8 | % | 100 | 101 | 100 | 100 | 100 |
| *Surrogate* 4-Bromofluorobenzene | % | 102 | 102 | 103 | 102 | 102 |

| vTRH(C6-C10)/BTEXN in Water | | | | |
|---|---|---|---|---|
| Our Reference | | 386021-17 | 386021-18 | 386021-19 |
| Your Reference | UNITS | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water |
| Date extracted | - | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| Date analysed | - | 21/07/2025 | 21/07/2025 | 21/07/2025 |
| TRH $C_6$ - $C_9$ | µg/L | <10 | <10 | <10 |
| TRH $C_6$ - $C_{10}$ | µg/L | <10 | <10 | <10 |
| TRH $C_6$ - $C_{10}$ less BTEX (F1) | µg/L | [NA] | <10 | <10 |
| Benzene | µg/L | [NA] | <1 | <1 |
| Toluene | µg/L | [NA] | <1 | <1 |
| Ethylbenzene | µg/L | [NA] | <1 | <1 |
| m+p-xylene | µg/L | [NA] | <2 | <2 |
| o-xylene | µg/L | [NA] | <1 | <1 |
| Naphthalene | µg/L | [NA] | <1 | <1 |
| *Surrogate* Dibromofluoromethane | % | 91 | 92 | 90 |
| *Surrogate* Toluene-d8 | % | 100 | 100 | 100 |
| *Surrogate* 4-Bromofluorobenzene | % | 103 | 102 | 102 |

| svTRH (C10-C40) in Water | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-3 | 386021-5 | 386021-10 | 386021-11 | 386021-15 |
| Your Reference | UNITS | GW-1063 | GW-1017 | GW-1016 | GA-A401 | GW-3012B |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 09/07/2025 | 15/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date extracted | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| TRH $C_{10}$ - $C_{14}$ | µg/L | <50 | <50 | <50 | <50 | <50 |
| TRH $C_{15}$ - $C_{28}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRH $C_{29}$ - $C_{36}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| Total +ve TRH (C10-C36) | µg/L | <50 | <50 | <50 | <50 | <50 |
| TRH >$C_{10}$ - $C_{16}$ | µg/L | <50 | <50 | <50 | <50 | <50 |
| TRH >$C_{10}$ - $C_{16}$ less Naphthalene (F2) | µg/L | <50 | <50 | <50 | <50 | [NA] |
| TRH >$C_{16}$ - $C_{34}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| TRH >$C_{34}$ - $C_{40}$ | µg/L | <100 | <100 | <100 | <100 | <100 |
| Total +ve TRH (>C10-C40) | µg/L | <50 | <50 | <50 | <50 | <50 |
| *Surrogate* o-Terphenyl | % | 92 | 91 | 96 | 92 | 95 |

| svTRH (C10-C40) in Water | | | | |
|---|---|---|---|---|
| Our Reference | | 386021-17 | 386021-18 | 386021-19 |
| Your Reference | UNITS | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water |
| Date extracted | - | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| TRH $C_{10}$ - $C_{14}$ | µg/L | <50 | <50 | <50 |
| TRH $C_{15}$ - $C_{28}$ | µg/L | <100 | <100 | <100 |
| TRH $C_{29}$ - $C_{36}$ | µg/L | <100 | <100 | <100 |
| Total +ve TRH (C10-C36) | µg/L | <50 | <50 | <50 |
| TRH >$C_{10}$ - $C_{16}$ | µg/L | <50 | <50 | <50 |
| TRH >$C_{10}$ - $C_{16}$ less Naphthalene (F2) | µg/L | [NA] | <50 | <50 |
| TRH >$C_{16}$ - $C_{34}$ | µg/L | <100 | <100 | <100 |
| TRH >$C_{34}$ - $C_{40}$ | µg/L | <100 | <100 | <100 |
| Total +ve TRH (>C10-C40) | µg/L | <50 | <50 | <50 |
| *Surrogate* o-Terphenyl | % | 89 | 89 | 97 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-1 | 386021-2 | 386021-3 | 386021-4 | 386021-5 |
| Your Reference | UNITS | GW-1042 | GW-1807 | GW-1063 | GW-1808 | GW-1017 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 4.8 | 6.9 | 6.9 | 6.1 | 4.7 |
| Electrical Conductivity | µS/cm | 12,000 | 18,000 | 4,900 | 5,500 | 21,000 |
| Total Dissolved Solids (grav) | mg/L | 7,500 | 14,000 | 2,700 | 3,100 | 14,000 |
| Total Organic Carbon | mg/L | 41 | 11 | 14 | 22 | 7 |
| Ammonia as N in water | mg/L | 0.17 | 0.61 | 2.3 | 0.92 | 0.096 |
| Nitrate as N in water | mg/L | 100 | 0.19 | 0.005 | 0.02 | 0.097 |
| Nitrite as N in water | mg/L | 0.05 | <0.005 | <0.005 | <0.005 | <0.005 |
| NOx as N in water | mg/L | 100 | 0.19 | 0.005 | 0.02 | 0.10 |
| Total Nitrogen in water | mg/L | 110 | 1.6 | 2.2 | 3.0 | 0.3 |
| TKN in water | mg/L | 5.3 | 1.4 | 2.2 | 3.0 | 0.2 |
| Phosphate as P in water | mg/L | 0.02 | 0.005 | 0.32 | 0.007 | 0.02 |
| Organic Nitrogen as N | mg/L | 5.1 | 0.8 | <0.2 | 2.0 | <0.2 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-6 | 386021-7 | 386021-8 | 386021-9 | 386021-10 |
| Your Reference | UNITS | GW-1005-S | GW-1001_S | GW-1002 | GW-1021 | GW-1016 |
| Date Sampled | | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 6.3 | 4.3 | 3.9 | 3.1 | 4.5 |
| Electrical Conductivity | µS/cm | 6,200 | 22,000 | 8,300 | 1,800 | 19,000 |
| Total Dissolved Solids (grav) | mg/L | 3,400 | 17,000 | 4,100 | 990 | 13,000 |
| Total Organic Carbon | mg/L | 15 | 13 | 12 | 10 | 5 |
| Ammonia as N in water | mg/L | 0.03 | 0.23 | 0.04 | 0.19 | 0.29 |
| Nitrate as N in water | mg/L | 0.62 | 0.02 | 0.087 | 0.68 | 0.25 |
| Nitrite as N in water | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| NOx as N in water | mg/L | 0.62 | 0.02 | 0.088 | 0.68 | 0.25 |
| Total Nitrogen in water | mg/L | 1.4 | 0.5 | 0.5 | 1.5 | 0.6 |
| TKN in water | mg/L | 0.7 | 0.5 | 0.5 | 0.9 | 0.3 |
| Phosphate as P in water | mg/L | 0.03 | 0.03 | 0.02 | 0.057 | 0.02 |
| Organic Nitrogen as N | mg/L | 0.7 | 0.3 | 0.4 | 0.7 | <0.2 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-11 | 386021-12 | 386021-13 | 386021-14 | 386021-15 |
| Your Reference | UNITS | GA-A401 | GW-4021 | GW-4008 | GW-3012A | GW-3012B |
| Date Sampled | | 15/07/2025 | 14/07/2025 | 11/07/2025 | 10/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 6.3 | 6.9 | 7.1 | 6.3 | 6.9 |
| Electrical Conductivity | µS/cm | 2,100 | 3,700 | 22,000 | 3,900 | 26,000 |
| Total Dissolved Solids (grav) | mg/L | 1,400 | 2,000 | 15,000 | 2,200 | 19,000 |
| Total Organic Carbon | mg/L | 7 | 9.9 | 6 | 7 | 3 |
| Ammonia as N in water | mg/L | 0.078 | 1.3 | 9.2 | 0.02 | 0.02 |
| Nitrate as N in water | mg/L | 0.35 | <0.005 | 0.01 | 5.9 | 0.05 |
| Nitrite as N in water | mg/L | 0.01 | <0.005 | <0.005 | <0.005 | <0.005 |
| NOx as N in water | mg/L | 0.36 | <0.005 | 0.02 | 5.9 | 0.05 |
| Total Nitrogen in water | mg/L | 0.7 | 1.3 | 9.4 | 6.0 | 0.2 |
| TKN in water | mg/L | 0.4 | 1.3 | 9.4 | <0.1 | 0.1 |
| Phosphate as P in water | mg/L | <0.005 | <0.005 | <0.005 | 0.009 | 0.02 |
| Organic Nitrogen as N | mg/L | 0.3 | <0.2 | <0.2 | <0.2 | <0.2 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-16 | 386021-17 | 386021-18 | 386021-19 | 386021-20 |
| Your Reference | UNITS | GW-3012C | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 | SBT-GW-4801 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 11/07/2025 | 14/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 7.0 | 6.8 | 7.0 | 7.0 | 7.1 |
| Electrical Conductivity | µS/cm | 22,000 | 7,100 | 26,000 | 18,000 | 14,000 |
| Total Dissolved Solids (grav) | mg/L | 15,000 | 4,600 | 20,000 | 13,000 | 8,200 |
| Total Organic Carbon | mg/L | 3 | 10 | 1 | 5 | 19 |
| Ammonia as N in water | mg/L | 4.1 | 0.078 | 0.02 | 1.2 | 0.57 |
| Nitrate as N in water | mg/L | 9.2 | 1.5 | 0.02 | 0.93 | 0.20 |
| Nitrite as N in water | mg/L | 0.01 | 0.02 | <0.005 | 0.01 | 0.008 |
| NOx as N in water | mg/L | 9.2 | 1.6 | 0.03 | 0.95 | 0.21 |
| Total Nitrogen in water | mg/L | 14 | 1.8 | <0.1 | 2.2 | 1.2 |
| TKN in water | mg/L | 4.9 | 0.2 | <0.1 | 1.2 | 1 |
| Phosphate as P in water | mg/L | 0.005 | <0.005 | 0.02 | 0.01 | 0.005 |
| Organic Nitrogen as N | mg/L | 0.7 | <0.2 | <0.2 | <0.2 | 0.4 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-21 | 386021-22 | 386021-23 | 386021-24 | 386021-25 |
| Your Reference | UNITS | SBT-GW-4802 | SBT-GW-4800 | SBT-GW-4005 | SBT-GW-1030 | RIN_1 |
| Date Sampled | | 14/07/2025 | 14/07/2025 | 14/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 7.0 | 7.4 | 7.1 | 6.6 | 6.0 |
| Electrical Conductivity | µS/cm | 27,000 | 17,000 | 26,000 | 3,900 | 14 |
| Total Dissolved Solids (grav) | mg/L | 16,000 | 10,000 | 19,000 | 2,400 | 8 |
| Total Organic Carbon | mg/L | 4 | 260 | 7 | 17 | 1 |
| Ammonia as N in water | mg/L | 1.1 | 0.44 | 1.1 | 0.090 | 0.01 |
| Nitrate as N in water | mg/L | 11 | 0.05 | 2.9 | 0.47 | 0.056 |
| Nitrite as N in water | mg/L | 0.057 | <0.005 | 0.006 | 0.008 | 0.02 |
| NOx as N in water | mg/L | 11 | 0.05 | 2.9 | 0.47 | 0.078 |
| Total Nitrogen in water | mg/L | 12 | 0.5 | 4.9 | 1.1 | <0.1 |
| TKN in water | mg/L | 1.5 | 0.4 | 2.0 | 0.6 | <0.1 |
| Phosphate as P in water | mg/L | 0.007 | 0.02 | 0.01 | <0.005 | <0.005 |
| Organic Nitrogen as N | mg/L | 0.5 | <0.2 | 0.8 | 0.5 | <0.2 |

| Miscellaneous Inorganics | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-26 | 386021-27 | 386021-28 | 386021-29 | 386021-30 |
| Your Reference | UNITS | RIN_2 | RIN_3 | RIN_4 | RIN_5 | BR_1 |
| Date Sampled | | 10/07/2025 | 11/07/2025 | 14/07/2025 | 15/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| pH | pH Units | 6.2 | 5.4 | 5.2 | 4.4 | 6.1 |
| Electrical Conductivity | µS/cm | 30 | 2 | 2 | 13 | 1,400 |
| Total Dissolved Solids (grav) | mg/L | 18 | <5 | <5 | 8 | 1,000 |
| Total Organic Carbon | mg/L | <1 | <1 | <1 | <1 | 9 |
| Ammonia as N in water | mg/L | 0.02 | <0.005 | <0.005 | <0.005 | 0.13 |
| Nitrate as N in water | mg/L | 0.15 | <0.005 | <0.005 | 0.02 | 4.9 |
| Nitrite as N in water | mg/L | 0.066 | <0.005 | <0.005 | <0.005 | <0.005 |
| NOx as N in water | mg/L | 0.22 | <0.005 | <0.005 | 0.02 | 4.9 |
| Total Nitrogen in water | mg/L | 0.3 | <0.1 | <0.1 | <0.1 | 5.2 |
| TKN in water | mg/L | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 |
| Phosphate as P in water | mg/L | <0.005 | <0.005 | <0.005 | <0.005 | 0.007 |
| Organic Nitrogen as N | mg/L | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |

| Miscellaneous Inorganics | | |
|---|---|---|
| Our Reference | | 386021-31 |
| Your Reference | UNITS | BR_2 |
| Date Sampled | | 11/07/2025 |
| Type of sample | | Water |
| Date prepared | - | 16/07/2025 |
| Date analysed | - | 16/07/2025 |
| pH | pH Units | 6.9 |
| Electrical Conductivity | µS/cm | 7,200 |
| Total Dissolved Solids (grav) | mg/L | 4,600 |
| Total Organic Carbon | mg/L | 11 |
| Ammonia as N in water | mg/L | 0.063 |
| Nitrate as N in water | mg/L | 1.5 |
| Nitrite as N in water | mg/L | 0.02 |
| NOx as N in water | mg/L | 1.5 |
| Total Nitrogen in water | mg/L | 1.6 |
| TKN in water | mg/L | <0.1 |
| Phosphate as P in water | mg/L | 0.006 |
| Organic Nitrogen as N | mg/L | <0.2 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-1 | 386021-2 | 386021-3 | 386021-4 | 386021-5 |
| Your Reference | UNITS | GW-1042 | GW-1807 | GW-1063 | GW-1808 | GW-1017 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 17/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 17/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 4 | 240 | 59 | 19 | 19 |
| Potassium - Dissolved | mg/L | 5 | 19 | 8.2 | 8.0 | 3 |
| Sodium - Dissolved | mg/L | 2,600 | 4,500 | 1,200 | 1,800 | 4,200 |
| Magnesium - Dissolved | mg/L | 290 | 840 | 160 | 260 | 570 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 1,200 | 4,000 | 810 | 1,100 | 2,400 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 15 | 380 | 390 | 88 | 23 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 15 | 380 | 390 | 88 | 23 |
| Sulphate, SO4 | mg/L | 160 | 490 | 150 | 98 | 590 |
| Chloride, Cl | mg/L | 3,000 | 5,300 | 1,000 | 1,500 | 6,000 |
| Ionic Balance | % | 22 | 25 | 27 | 38 | 12 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-6 | 386021-7 | 386021-8 | 386021-9 | 386021-10 |
| Your Reference | UNITS | GW-1005-S | GW-1001_S | GW-1002 | GW-1021 | GW-1016 |
| Date Sampled | | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 92 | 28 | 0.6 | 24 | 86 |
| Potassium - Dissolved | mg/L | 35 | 20 | 3 | 7.4 | 4 |
| Sodium - Dissolved | mg/L | 1,200 | 5,000 | 1,300 | 340 | 3,000 |
| Magnesium - Dissolved | mg/L | 300 | 770 | 150 | 14 | 710 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 1,500 | 3,300 | 640 | 120 | 3,200 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 140 | <5 | <5 | <5 | 6 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 140 | <5 | <5 | <5 | 6 |
| Sulphate, SO4 | mg/L | 190 | 310 | 160 | 530 | 750 |
| Chloride, Cl | mg/L | 1,500 | 6,800 | 2,200 | 64 | 5,100 |
| Ionic Balance | % | 25 | 17 | 5.0 | 15 | 9.0 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-11 | 386021-12 | 386021-13 | 386021-14 | 386021-15 |
| Your Reference | UNITS | GA-A401 | GW-4021 | GW-4008 | GW-3012A | GW-3012B |
| Date Sampled | | 15/07/2025 | 14/07/2025 | 11/07/2025 | 10/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 8.8 | 34 | 330 | 3 | 180 |
| Potassium - Dissolved | mg/L | 5.3 | 5 | 62 | 13 | 47 |
| Sodium - Dissolved | mg/L | 350 | 800 | 4,300 | 640 | 4,600 |
| Magnesium - Dissolved | mg/L | 18 | 66 | 250 | 44 | 1,000 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 96 | 360 | 1,800 | 190 | 4,600 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 140 | 230 | 310 | 230 | 1,200 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 140 | 230 | 310 | 230 | 1,200 |
| Sulphate, SO4 | mg/L | 83 | 91 | 130 | 210 | 1,600 |
| Chloride, Cl | mg/L | 410 | 780 | 6,200 | 760 | 8,700 |
| Ionic Balance | % | 4.0 | 19 | 10 | 3.0 | -1.0 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-16 | 386021-17 | 386021-18 | 386021-19 | 386021-20 |
| Your Reference | UNITS | GW-3012C | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 | SBT-GW-4801 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 11/07/2025 | 14/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 340 | 110 | 240 | 150 | 210 |
| Potassium - Dissolved | mg/L | 68 | 30 | 12 | 26 | 26 |
| Sodium - Dissolved | mg/L | 4,500 | 2,400 | 5,100 | 3,000 | 2,400 |
| Magnesium - Dissolved | mg/L | 430 | 360 | 740 | 570 | 270 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 2,600 | 1,800 | 3,600 | 2,700 | 1,600 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 520 | 280 | 890 | 960 | 600 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 520 | 280 | 890 | 960 | 600 |
| Sulphate, SO4 | mg/L | 370 | 550 | 680 | 700 | 810 |
| Chloride, Cl | mg/L | 7,200 | 1,500 | 8,100 | 4,900 | 3,300 |
| Ionic Balance | % | 6.0 | 41 | 6.0 | 4.0 | 5.0 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-21 | 386021-22 | 386021-23 | 386021-24 | 386021-25 |
| Your Reference | UNITS | SBT-GW-4802 | SBT-GW-4800 | SBT-GW-4005 | SBT-GW-1030 | RIN_1 |
| Date Sampled | | 14/07/2025 | 14/07/2025 | 14/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 350 | 150 | 310 | 59 | <0.5 |
| Potassium - Dissolved | mg/L | 48 | 28 | 50 | 8.1 | <0.5 |
| Sodium - Dissolved | mg/L | 5,000 | 3,000 | 4,900 | 600 | <0.5 |
| Magnesium - Dissolved | mg/L | 800 | 530 | 800 | 66 | <0.5 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 4,100 | 2,600 | 4,100 | 420 | <3 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 790 | 1,300 | 910 | 180 | <5 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 790 | 1,300 | 910 | 180 | <5 |
| Sulphate, SO4 | mg/L | 880 | 560 | 1,200 | 130 | 2 |
| Chloride, Cl | mg/L | 8,400 | 3,700 | 7,400 | 200 | 7 |
| Ionic Balance | % | 5.0 | 12 | 8.0 | 49 | -100 |

| Ion Balance | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-26 | 386021-27 | 386021-28 | 386021-29 | 386021-30 |
| Your Reference | UNITS | RIN_2 | RIN_3 | RIN_4 | RIN_5 | BR_1 |
| Date Sampled | | 10/07/2025 | 11/07/2025 | 14/07/2025 | 15/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Date analysed | - | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 0.7 | <0.5 | <0.5 | <0.5 | 20 |
| Potassium - Dissolved | mg/L | 0.5 | <0.5 | <0.5 | <0.5 | 6.5 |
| Sodium - Dissolved | mg/L | 4 | <0.5 | <0.5 | <0.5 | 250 |
| Magnesium - Dissolved | mg/L | <0.5 | <0.5 | <0.5 | <0.5 | 11 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | <3 | <3 | <3 | <3 | 94 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 17 | 6 | <5 | <5 | 27 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 | <5 | <5 | <5 | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 17 | 6 | <5 | <5 | 27 |
| Sulphate, SO4 | mg/L | <1 | <1 | <1 | <1 | 380 |
| Chloride, Cl | mg/L | 6 | 2 | <1 | <1 | 56 |
| Ionic Balance | % | -36 | -100 | N/A | N/A | 12 |

| Ion Balance | | |
|---|---|---|
| Our Reference | | 386021-31 |
| Your Reference | UNITS | BR_2 |
| Date Sampled | | 11/07/2025 |
| Type of sample | | Water |
| Date prepared | - | 16/07/2025 |
| Date analysed | - | 16/07/2025 |
| Calcium - Dissolved | mg/L | 120 |
| Potassium - Dissolved | mg/L | 32 |
| Sodium - Dissolved | mg/L | 2,700 |
| Magnesium - Dissolved | mg/L | 430 |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 2,100 |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | <5 |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 280 |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | <5 |
| Total Alkalinity as $CaCO_3$ | mg/L | 280 |
| Sulphate, SO4 | mg/L | 580 |
| Chloride, Cl | mg/L | 1,600 |
| Ionic Balance | % | 44 |

| Total Phenolics in Water | | |
|---|---|---|
| Our Reference | | 386021-9 |
| Your Reference | UNITS | GW-1021 |
| Date Sampled | | 09/07/2025 |
| Type of sample | | Water |
| Date extracted | - | 18/07/2025 |
| Date analysed | - | 18/07/2025 |
| Total Phenolics (as Phenol) | mg/L | <0.05 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-1 | 386021-2 | 386021-3 | 386021-4 | 386021-5 |
| Your Reference | UNITS | GW-1042 | GW-1807 | GW-1063 | GW-1808 | GW-1017 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 7,700 | 21,000 | 960,000 | 12,000 | 60,000 |
| Cobalt-Total | µg/L | 140 | 33 | 1,300 | 240 | 340 |
| Iron-Total | µg/L | 10,000 | 35,000 | 1,500,000 | 41,000 | 140,000 |
| Manganese-Total | µg/L | 120 | 830 | 11,000 | 450 | 8,700 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-6 | 386021-7 | 386021-8 | 386021-9 | 386021-10 |
| Your Reference | UNITS | GW-1005-S | GW-1001_S | GW-1002 | GW-1021 | GW-1016 |
| Date Sampled | | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 2,200 | 21,000 | 11,000 | 6,200 | 30,000 |
| Cobalt-Total | µg/L | 22 | 680 | 92 | 12 | 100 |
| Iron-Total | µg/L | 2,200 | 3,800 | 13,000 | 23,000 | 35,000 |
| Manganese-Total | µg/L | 390 | 2,700 | 38 | 110 | 510 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-11 | 386021-12 | 386021-13 | 386021-14 | 386021-15 |
| Your Reference | UNITS | GA-A401 | GW-4021 | GW-4008 | GW-3012A | GW-3012B |
| Date Sampled | | 15/07/2025 | 14/07/2025 | 11/07/2025 | 10/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 30,000 | 47,000 | 4,200 | 16,000 | 47,000 |
| Cobalt-Total | µg/L | 14 | 67 | 12 | 15 | 55 |
| Iron-Total | µg/L | 33,000 | 45,000 | 10,000 | 24,000 | 120,000 |
| Manganese-Total | µg/L | 84 | 2,500 | 320 | 180 | 3,100 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-16 | 386021-17 | 386021-18 | 386021-19 | 386021-20 |
| Your Reference | UNITS | GW-3012C | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 | SBT-GW-4801 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 11/07/2025 | 14/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 22,000 | 17,000 | 17,000 | 6,600 | 8,000 |
| Cobalt-Total | µg/L | 40 | 28 | 23 | 6 | 18 |
| Iron-Total | µg/L | 49,000 | 46,000 | 31,000 | 11,000 | 24,000 |
| Manganese-Total | µg/L | 1,500 | 450 | 1,600 | 310 | 960 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-21 | 386021-22 | 386021-23 | 386021-24 | 386021-25 |
| Your Reference | UNITS | SBT-GW-4802 | SBT-GW-4800 | SBT-GW-4005 | SBT-GW-1030 | RIN_1 |
| Date Sampled | | 14/07/2025 | 14/07/2025 | 14/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 25,000 | 20,000 | 5,400 | 20,000 | <10 |
| Cobalt-Total | µg/L | 50 | 30 | 26 | 52 | <1 |
| Iron-Total | µg/L | 66,000 | 50,000 | 8,000 | 26,000 | <10 |
| Manganese-Total | µg/L | 2,100 | 1,400 | 170 | 330 | <5 |

| HM in water - total | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-26 | 386021-27 | 386021-28 | 386021-29 | 386021-30 |
| Your Reference | UNITS | RIN_2 | RIN_3 | RIN_4 | RIN_5 | BR_1 |
| Date Sampled | | 10/07/2025 | 11/07/2025 | 14/07/2025 | 15/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | <10 | 170 | <10 | <10 | 4,700 |
| Cobalt-Total | µg/L | <1 | <1 | <1 | <1 | 8 |
| Iron-Total | µg/L | <10 | 120 | <10 | <10 | 15,000 |
| Manganese-Total | µg/L | <5 | <5 | <5 | <5 | 60 |

| HM in water - total | | |
|---|---|---|
| Our Reference | UNITS | 386021-31 |
| Your Reference | | BR_2 |
| Date Sampled | | 11/07/2025 |
| Type of sample | | Water |
| Date prepared | - | 17/07/2025 |
| Date analysed | - | 17/07/2025 |
| Aluminium-Total | µg/L | 17,000 |
| Cobalt-Total | µg/L | 30 |
| Iron-Total | µg/L | 46,000 |
| Manganese-Total | µg/L | 460 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-1 | 386021-2 | 386021-3 | 386021-4 | 386021-5 |
| Your Reference | UNITS | GW-1042 | GW-1807 | GW-1063 | GW-1808 | GW-1017 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | 2,100 | <20 | <10 | 10 | 50 |
| Iron-Dissolved | µg/L | 360 | 2,300 | 2,200 | 25,000 | 18,000 |
| Manganese-Dissolved | µg/L | 210 | 990 | 900 | 1,100 | 14,000 |
| Arsenic-Dissolved | µg/L | 2 | <2 | 9 | 3 | 2 |
| Cadmium-Dissolved | µg/L | 0.2 | <0.2 | <0.1 | <0.1 | 0.2 |
| Chromium-Dissolved | µg/L | <1 | <2 | 1 | 1 | <1 |
| Copper-Dissolved | µg/L | 15 | <2 | <1 | <1 | 9 |
| Lead-Dissolved | µg/L | 7 | <2 | <1 | <1 | 3 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | 93 | 2 | 2 | 5 | 72 |
| Zinc-Dissolved | µg/L | 200 | 3 | <1 | <1 | 87 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-6 | 386021-7 | 386021-8 | 386021-9 | 386021-10 |
| Your Reference | UNITS | GW-1005-S | GW-1001_S | GW-1002 | GW-1021 | GW-1016 |
| Date Sampled | | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <10 | 20,000 | 1,800 | <10 | 330 |
| Iron-Dissolved | µg/L | 180 | 1,600 | 100 | 2,000 | 70 |
| Manganese-Dissolved | µg/L | 160 | 3,400 | 44 | 78 | 420 |
| Arsenic-Dissolved | µg/L | <1 | 7 | <1 | 4 | 1 |
| Cadmium-Dissolved | µg/L | <0.1 | 1.3 | <0.1 | <0.1 | 0.3 |
| Chromium-Dissolved | µg/L | <1 | 3 | <1 | <1 | <1 |
| Copper-Dissolved | µg/L | 2 | 3 | 13 | <1 | 87 |
| Lead-Dissolved | µg/L | <1 | 24 | 5 | <1 | 23 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | 3 | 470 | 36 | 9 | 56 |
| Zinc-Dissolved | µg/L | 6 | 1,600 | 130 | 18 | 560 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-11 | 386021-12 | 386021-13 | 386021-14 | 386021-15 |
| Your Reference | UNITS | GA-A401 | GW-4021 | GW-4008 | GW-3012A | GW-3012B |
| Date Sampled | | 15/07/2025 | 14/07/2025 | 11/07/2025 | 10/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <10 | <10 | <10 | <10 | <20 |
| Iron-Dissolved | µg/L | <10 | 320 | 990 | <10 | <20 |
| Manganese-Dissolved | µg/L | 28 | 870 | 280 | 41 | 210 |
| Arsenic-Dissolved | µg/L | <1 | 1 | 12 | <1 | <2 |
| Cadmium-Dissolved | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.2 |
| Chromium-Dissolved | µg/L | 1 | <1 | <1 | <1 | <2 |
| Copper-Dissolved | µg/L | 98 | <1 | <1 | 3 | <2 |
| Lead-Dissolved | µg/L | <1 | <1 | <1 | <1 | <2 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | 5 | 1 | <1 | 8 | 3 |
| Zinc-Dissolved | µg/L | 160 | <1 | 2 | 23 | 9 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-16 | 386021-17 | 386021-18 | 386021-19 | 386021-20 |
| Your Reference | UNITS | GW-3012C | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 | SBT-GW-4801 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 11/07/2025 | 14/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <20 | <10 | <10 | <10 | <10 |
| Iron-Dissolved | µg/L | 90 | 110 | 830 | 20 | <10 |
| Manganese-Dissolved | µg/L | 680 | 130 | 1,500 | 230 | 480 |
| Arsenic-Dissolved | µg/L | <2 | <1 | <1 | <1 | <1 |
| Cadmium-Dissolved | µg/L | <0.2 | <0.1 | <0.1 | <0.1 | 0.1 |
| Chromium-Dissolved | µg/L | <2 | 5 | <1 | <1 | <1 |
| Copper-Dissolved | µg/L | <2 | 3 | <1 | 4 | 5 |
| Lead-Dissolved | µg/L | <2 | <1 | <1 | <1 | <1 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | 7 | 7 | 7 | 6 | 15 |
| Zinc-Dissolved | µg/L | 12 | 7 | 7 | 4 | 8 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-21 | 386021-22 | 386021-23 | 386021-24 | 386021-25 |
| Your Reference | UNITS | SBT-GW-4802 | SBT-GW-4800 | SBT-GW-4005 | SBT-GW-1030 | RIN_1 |
| Date Sampled | | 14/07/2025 | 14/07/2025 | 14/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <20 | <10 | <10 | <10 | <10 |
| Iron-Dissolved | µg/L | <20 | 440 | <10 | 30 | <10 |
| Manganese-Dissolved | µg/L | 1,000 | 460 | 98 | 160 | <5 |
| Arsenic-Dissolved | µg/L | <2 | <1 | 1 | <1 | <1 |
| Cadmium-Dissolved | µg/L | <0.2 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chromium-Dissolved | µg/L | <2 | <1 | <1 | <1 | <1 |
| Copper-Dissolved | µg/L | 5 | 1 | 2 | 4 | <1 |
| Lead-Dissolved | µg/L | <2 | <1 | <1 | <1 | <1 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | 18 | 5 | 33 | 9 | <1 |
| Zinc-Dissolved | µg/L | 13 | 7 | 20 | 99 | <1 |

| HM in water - dissolved | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-26 | 386021-27 | 386021-28 | 386021-29 | 386021-30 |
| Your Reference | UNITS | RIN_2 | RIN_3 | RIN_4 | RIN_5 | BR_1 |
| Date Sampled | | 10/07/2025 | 11/07/2025 | 14/07/2025 | 15/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <10 | 50 | <10 | <10 | <10 |
| Iron-Dissolved | µg/L | <10 | 70 | <10 | <10 | 1,300 |
| Manganese-Dissolved | µg/L | <5 | <5 | <5 | <5 | 45 |
| Arsenic-Dissolved | µg/L | <1 | <1 | <1 | <1 | 3 |
| Cadmium-Dissolved | µg/L | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Chromium-Dissolved | µg/L | <1 | <1 | <1 | <1 | <1 |
| Copper-Dissolved | µg/L | <1 | <1 | <1 | <1 | <1 |
| Lead-Dissolved | µg/L | <1 | <1 | <1 | <1 | <1 |
| Mercury-Dissolved | µg/L | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Nickel-Dissolved | µg/L | <1 | <1 | <1 | <1 | 5 |
| Zinc-Dissolved | µg/L | <1 | 2 | <1 | <1 | 10 |

| HM in water - dissolved | | |
|---|---|---|
| Our Reference | UNITS | 386021-31 |
| Your Reference | | BR_2 |
| Date Sampled | | 11/07/2025 |
| Type of sample | | Water |
| Date prepared | - | 17/07/2025 |
| Date analysed | - | 17/07/2025 |
| Aluminium-Dissolved | µg/L | <10 |
| Iron-Dissolved | µg/L | 120 |
| Manganese-Dissolved | µg/L | 97 |
| Arsenic-Dissolved | µg/L | <1 |
| Cadmium-Dissolved | µg/L | <0.1 |
| Chromium-Dissolved | µg/L | 7 |
| Copper-Dissolved | µg/L | 2 |
| Lead-Dissolved | µg/L | <1 |
| Mercury-Dissolved | µg/L | <0.05 |
| Nickel-Dissolved | µg/L | 7 |
| Zinc-Dissolved | µg/L | 7 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-1 | 386021-2 | 386021-3 | 386021-4 | 386021-5 |
| Your Reference | UNITS | GW-1042 | GW-1807 | GW-1063 | GW-1808 | GW-1017 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 | 10/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.06 | 0.4 | 23 | 0.5 | 0.3 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-6 | 386021-7 | 386021-8 | 386021-9 | 386021-10 |
| Your Reference | UNITS | GW-1005-S | GW-1001_S | GW-1002 | GW-1021 | GW-1016 |
| Date Sampled | | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.1 | 0.06 | 0.1 | 0.3 | 1.4 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-11 | 386021-12 | 386021-13 | 386021-14 | 386021-15 |
| Your Reference | UNITS | GA-A401 | GW-4021 | GW-4008 | GW-3012A | GW-3012B |
| Date Sampled | | 15/07/2025 | 14/07/2025 | 11/07/2025 | 10/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.3 | 0.5 | 0.4 | 0.4 | 2.2 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-16 | 386021-17 | 386021-18 | 386021-19 | 386021-20 |
| Your Reference | UNITS | GW-3012C | GW-3022 | SMGW-BH-C32 | SBT-GW-4003 | SBT-GW-4801 |
| Date Sampled | | 11/07/2025 | 11/07/2025 | 11/07/2025 | 14/07/2025 | 14/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.85 | 0.73 | 1.5 | 0.2 | 0.4 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-21 | 386021-22 | 386021-23 | 386021-24 | 386021-25 |
| Your Reference | UNITS | SBT-GW-4802 | SBT-GW-4800 | SBT-GW-4005 | SBT-GW-1030 | RIN_1 |
| Date Sampled | | 14/07/2025 | 14/07/2025 | 14/07/2025 | 09/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 1.0 | 0.62 | 0.2 | 0.61 | <0.05 |

| Metals in Waters - Acid extractable | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-26 | 386021-27 | 386021-28 | 386021-29 | 386021-30 |
| Your Reference | UNITS | RIN_2 | RIN_3 | RIN_4 | RIN_5 | BR_1 |
| Date Sampled | | 10/07/2025 | 11/07/2025 | 14/07/2025 | 15/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Date analysed | - | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | <0.05 | <0.05 | <0.05 | <0.05 | 0.2 |

| Metals in Waters - Acid extractable | | |
|---|---|---|
| Our Reference | | 386021-31 |
| Your Reference | UNITS | BR_2 |
| Date Sampled | | 11/07/2025 |
| Type of sample | | Water |
| Date prepared | - | 17/07/2025 |
| Date analysed | - | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.2 |

| PFAS in Water TRACE Short | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 386021-3 | 386021-5 | 386021-10 | 386021-11 | 386021-18 |
| Your Reference | UNITS | GW-1063 | GW-1017 | GW-1016 | GA-A401 | SMGW-BH-C32 |
| Date Sampled | | 10/07/2025 | 10/07/2025 | 09/07/2025 | 15/07/2025 | 11/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date prepared | - | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| Date analysed | - | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 | 18/07/2025 |
| Perfluorobutanesulfonic acid | µg/L | 0.082 | 0.001 | 0.0009 | 0.018 | <0.0004 |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.012 | <0.0002 | <0.0002 | 0.0040 | <0.0002 |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.025 | 0.0009 | 0.0008 | 0.014 | <0.0002 |
| Perfluorooctanoic acid PFOA | µg/L | 0.032 | 0.0028 | 0.001 | 0.017 | <0.0002 |
| 6:2 FTS | µg/L | 0.026 | 0.004 | 0.003 | 0.004 | 0.002 |
| 8:2 FTS | µg/L | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 97 | 96 | 97 | 98 | 96 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 114 | 108 | 108 | 110 | 108 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 56 | 46 | 52 | 47 | 57 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 87 | 87 | 79 | 81 | 89 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 63 | 58 | 51 | 50 | 64 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 101 | 100 | 82 | 82 | 99 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 162 | 122 | 144 | 141 | 135 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 186 | 163 | 151 | 151 | 147 |
| Total Positive PFHxS & PFOS | µg/L | 0.037 | 0.0009 | 0.0008 | 0.018 | <0.0002 |
| Total Positive PFOS & PFOA | µg/L | 0.057 | 0.0037 | 0.002 | 0.031 | <0.0002 |
| Total Positive PFAS | µg/L | 0.18 | 0.0087 | 0.0057 | 0.057 | 0.0022 |

| PFAS in Water TRACE Short | | | |
|---|---|---|---|
| Our Reference | | 386021-19 | 386021-24 |
| Your Reference | UNITS | SBT-GW-4003 | SBT-GW-1030 |
| Date Sampled | | 14/07/2025 | 09/07/2025 |
| Type of sample | | Water | Water |
| Date prepared | - | 18/07/2025 | 18/07/2025 |
| Date analysed | - | 18/07/2025 | 18/07/2025 |
| Perfluorobutanesulfonic acid | µg/L | <0.0004 | 0.022 |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | <0.0002 | 0.0098 |
| Perfluorooctanesulfonic acid PFOS | µg/L | <0.0002 | 0.0077 |
| Perfluorooctanoic acid PFOA | µg/L | 0.0002 | 0.016 |
| 6:2 FTS | µg/L | 0.001 | 0.004 |
| 8:2 FTS | µg/L | <0.0004 | <0.0004 |
| *Surrogate* $^{13}C_8$ *PFOS* | % | 91 | 98 |
| *Surrogate* $^{13}C_2$ *PFOA* | % | 110 | 103 |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | 55 | 44 |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | 85 | 78 |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | 54 | 56 |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | 95 | 82 |
| *Extracted ISTD* $^{13}C_2$ *6:2FTS* | % | 139 | 137 |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | 130 | 164 |
| Total Positive PFHxS & PFOS | µg/L | <0.0002 | 0.018 |
| Total Positive PFOS & PFOA | µg/L | 0.0002 | 0.023 |
| Total Positive PFAS | µg/L | 0.001 | 0.059 |

| Method ID | Methodology Summary |
|---|---|
| **Inorg-001** | pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times. |
| **Inorg-002** | Conductivity and Salinity - measured using a conductivity cell. |
| **Inorg-006** | Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B. |
| **Inorg-018** | Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C.<br><br>NOTE: Where the EC of the sample is <100µS/cm, the TDS will typically be below 70mg/L (as the sample is very likely to be at least drinking water quality). Therefore to ensure data quality for TDS, the TDS is typically calculated as per the equation below:-<br><br>TDS = EC * 0.6 |
| **Inorg-031** | Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish).<br>Solids are extracted in a caustic media prior to analysis. |
| **Inorg-040** | The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%. |
| **Inorg-055** | Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction. |
| **Inorg-055** | Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction. |
| **Inorg-055/062/127** | Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence. |
| **Inorg-057** | Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction. |
| **Inorg-060** | Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction. |
| **Inorg-062** | TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx). |
| **Inorg-079** | TOC determined using a TOC analyser using the combustion method. Dissolved requires filtering prior to determination. Analysis using APHA latest edition 5310B. |
| **Inorg-081** | Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis.<br>Alternatively determined by colourimetry/turbidity using Discrete Analyser. |

| Method ID | Methodology Summary |
|---|---|
| **Metals-020** | Determination of various metals by ICP-AES.<br><br>Total Phosphate determined stochiometrically from Phosphorus (assumed to be present as Phosphate).<br><br>Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.<br><br>Submission of low masses of sample e.g. for dust samples, may result in raised PQLs. |
| **Metals-021** | Determination of Mercury by Cold Vapour AAS. |
| **Metals-022** | Determination of various metals by ICP-MS.<br><br>Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements.<br><br>Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation. |
| **Org-020** | Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.<br>F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. |
| **Org-023** | Water samples are analysed directly by purge and trap GC-MS. |
| **Org-023** | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. |
| **Org-029** | Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.<br><br>Analysis is undertaken with LC-MS/MS.<br><br>PFAS results include the sum of branched and linear isomers where applicable.<br><br>Please note that PFAS results are corrected for Extracted Internal Standards (QSM terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.<br><br>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER. |

| QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water | | | | | Duplicate | | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W6 | [NT] |
| Date extracted | - | | | 18/07/2025 | 10 | 18/07/2025 | 21/07/2025 | | 18/07/2025 | [NT] |
| Date analysed | - | | | 21/07/2025 | 10 | 21/07/2025 | 22/07/2025 | | 21/07/2025 | [NT] |
| TRH $C_6$ - $C_9$ | µg/L | 10 | Org-023 | <10 | 10 | <10 | <10 | 0 | 106 | [NT] |
| TRH $C_6$ - $C_{10}$ | µg/L | 10 | Org-023 | <10 | 10 | <10 | <10 | 0 | 106 | [NT] |
| Benzene | µg/L | 1 | Org-023 | <1 | 10 | <1 | <1 | 0 | 103 | [NT] |
| Toluene | µg/L | 1 | Org-023 | <1 | 10 | <1 | <1 | 0 | 102 | [NT] |
| Ethylbenzene | µg/L | 1 | Org-023 | <1 | 10 | <1 | <1 | 0 | 106 | [NT] |
| m+p-xylene | µg/L | 2 | Org-023 | <2 | 10 | <2 | <2 | 0 | 109 | [NT] |
| o-xylene | µg/L | 1 | Org-023 | <1 | 10 | <1 | <1 | 0 | 108 | [NT] |
| Naphthalene | µg/L | 1 | Org-023 | <1 | 10 | <1 | <1 | 0 | [NT] | [NT] |
| *Surrogate* Dibromofluoromethane | % | | Org-023 | 95 | 10 | 92 | 103 | 11 | 106 | [NT] |
| *Surrogate* Toluene-d8 | % | | Org-023 | 100 | 10 | 100 | 99 | 1 | 102 | [NT] |
| *Surrogate* 4-Bromofluorobenzene | % | | Org-023 | 102 | 10 | 103 | 103 | 0 | 107 | [NT] |

| QUALITY CONTROL: svTRH (C10-C40) in Water | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | [NT] |
| Date extracted | - | | | 17/07/2025 | 3 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | [NT] |
| Date analysed | - | | | 17/07/2025 | 3 | 18/07/2025 | 18/07/2025 | | 17/07/2025 | [NT] |
| TRH $C_{10}$ - $C_{14}$ | µg/L | 50 | Org-020 | <50 | 3 | <50 | <50 | 0 | 119 | [NT] |
| TRH $C_{15}$ - $C_{28}$ | µg/L | 100 | Org-020 | <100 | 3 | <100 | <100 | 0 | 113 | [NT] |
| TRH $C_{29}$ - $C_{36}$ | µg/L | 100 | Org-020 | <100 | 3 | <100 | <100 | 0 | 114 | [NT] |
| TRH >$C_{10}$ - $C_{16}$ | µg/L | 50 | Org-020 | <50 | 3 | <50 | <50 | 0 | 119 | [NT] |
| TRH >$C_{16}$ - $C_{34}$ | µg/L | 100 | Org-020 | <100 | 3 | <100 | <100 | 0 | 113 | [NT] |
| TRH >$C_{34}$ - $C_{40}$ | µg/L | 100 | Org-020 | <100 | 3 | <100 | <100 | 0 | 114 | [NT] |
| *Surrogate* o-Terphenyl | % | | Org-020 | 93 | 3 | 92 | 94 | 2 | 115 | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | 386021-2 |
| Date prepared | - | | | 16/07/2025 | 1 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Date analysed | - | | | 16/07/2025 | 1 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 1 | 4.8 | [NT] | | 100 | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | <1 | 1 | 12000 | [NT] | | 100 | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | <5 | 1 | 7500 | 7200 | 4 | 88 | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | <1 | 1 | 41 | [NT] | | 86 | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | <0.005 | 1 | 0.17 | 0.17 | 0 | 101 | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | <0.005 | 1 | 100 | 110 | 10 | 99 | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | <0.005 | 1 | 0.05 | 0.05 | 0 | 90 | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | <0.005 | 1 | 100 | 110 | 10 | 99 | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | <0.1 | 1 | 110 | [NT] | | 99 | 104 |
| TKN in water | mg/L | 0.1 | Inorg-062 | <0.1 | 1 | 5.3 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | <0.005 | 1 | 0.02 | 0.02 | 0 | 109 | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | <0.2 | 1 | 5.1 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | 386021-4 |
| Date prepared | - | | | [NT] | 2 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Date analysed | - | | | [NT] | 2 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 2 | 6.9 | [NT] | | 99 | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 2 | 18000 | [NT] | | 98 | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 2 | 14000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 2 | 11 | 11 | 0 | 91 | 83 |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 2 | 0.61 | [NT] | | 105 | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 2 | 0.19 | [NT] | | 100 | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 2 | <0.005 | [NT] | | 90 | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 2 | 0.19 | [NT] | | 109 | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 2 | 1.6 | [NT] | | 101 | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 2 | 1.4 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 2 | 0.005 | [NT] | | 109 | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 2 | 0.8 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-13 |
| Date prepared | - | | | [NT] | 8 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 8 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 8 | 3.9 | 3.9 | 0 | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 8 | 8300 | 8400 | 1 | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 8 | 4100 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 8 | 12 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 8 | 0.04 | [NT] | | [NT] | # |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 8 | 0.087 | [NT] | | [NT] | 103 |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 8 | <0.005 | [NT] | | [NT] | 110 |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 8 | 0.088 | [NT] | | [NT] | 103 |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 8 | 0.5 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 8 | 0.5 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 8 | 0.02 | [NT] | | [NT] | 106 |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 8 | 0.4 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-15 |
| Date prepared | - | | | [NT] | 10 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 10 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 10 | 4.5 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 10 | 19000 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 10 | 13000 | 12000 | 8 | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 10 | 5 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 10 | 0.29 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 10 | 0.25 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 10 | <0.005 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 10 | 0.25 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 10 | 0.6 | [NT] | | [NT] | 96 |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 10 | 0.3 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 10 | 0.02 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 10 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-24 |
| Date prepared | - | | | [NT] | 12 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 12 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 12 | 6.9 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 12 | 3700 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 12 | 2000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 12 | 9.9 | [NT] | | [NT] | 70 |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 12 | 1.3 | 1.2 | 8 | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 12 | <0.005 | <0.005 | 0 | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 12 | <0.005 | <0.005 | 0 | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 12 | <0.005 | <0.005 | 0 | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 12 | 1.3 | 1.3 | 0 | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 12 | 1.3 | 1.3 | 0 | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 12 | <0.005 | <0.005 | 0 | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 12 | <0.2 | <0.2 | 0 | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-29 |
| Date prepared | - | | | [NT] | 13 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 13 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| pH | pH Units | | Inorg-001 | [NT] | 13 | 7.1 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 13 | 22000 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 13 | 15000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 13 | 6 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 13 | 9.2 | [NT] | | [NT] | 102 |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 13 | 0.01 | [NT] | | [NT] | 102 |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 13 | <0.005 | [NT] | | [NT] | 92 |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 13 | 0.02 | [NT] | | [NT] | 102 |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 13 | 9.4 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 13 | 9.4 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 13 | <0.005 | [NT] | | [NT] | 91 |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 13 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 15 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 15 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 15 | 6.9 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 15 | 26000 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 15 | 19000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 15 | 3 | 3 | 0 | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 15 | 0.02 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 15 | 0.05 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 15 | <0.005 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 15 | 0.05 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 15 | 0.2 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 15 | 0.1 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 15 | 0.02 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 15 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 18 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 18 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 18 | 7.0 | 7.0 | 0 | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 18 | 26000 | 26000 | 0 | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 18 | 20000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 18 | 1 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 18 | 0.02 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 18 | 0.02 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 18 | <0.005 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 18 | 0.03 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 18 | <0.1 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 18 | <0.1 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 18 | 0.02 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 18 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 21 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 21 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 21 | 7.0 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 21 | 27000 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 21 | 16000 | 16000 | 0 | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 21 | 4 | <1 | 120 | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 21 | 1.1 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 21 | 11 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 21 | 0.057 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 21 | 11 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 21 | 12 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 21 | 1.5 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 21 | 0.007 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 21 | 0.5 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 22 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 22 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 22 | 7.4 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 22 | 17000 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 22 | 10000 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 22 | 260 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 22 | 0.44 | 0.44 | 0 | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 22 | 0.05 | 0.05 | 0 | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 22 | <0.005 | <0.005 | 0 | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 22 | 0.05 | 0.05 | 0 | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 22 | 0.5 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 22 | 0.4 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 22 | 0.02 | 0.01 | 67 | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 22 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 24 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 24 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 24 | 6.6 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 24 | 3900 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 24 | 2400 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 24 | 17 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 24 | 0.090 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 24 | 0.47 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 24 | 0.008 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 24 | 0.47 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 24 | 1.1 | 1.1 | 0 | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 24 | 0.6 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 24 | <0.005 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 24 | 0.5 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 28 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 28 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 28 | 5.2 | 5.1 | 2 | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 28 | 2 | 2 | 0 | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 28 | <5 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 28 | <1 | [NT] | | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 28 | <0.005 | [NT] | | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 28 | <0.005 | [NT] | | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 28 | <0.005 | [NT] | | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 28 | <0.005 | [NT] | | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 28 | <0.1 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 28 | <0.1 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 28 | <0.005 | [NT] | | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 28 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Miscellaneous Inorganics | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 31 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 31 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| pH | pH Units | | Inorg-001 | [NT] | 31 | 6.9 | [NT] | | [NT] | [NT] |
| Electrical Conductivity | µS/cm | 1 | Inorg-002 | [NT] | 31 | 7200 | [NT] | | [NT] | [NT] |
| Total Dissolved Solids (grav) | mg/L | 5 | Inorg-018 | [NT] | 31 | 4600 | [NT] | | [NT] | [NT] |
| Total Organic Carbon | mg/L | 1 | Inorg-079 | [NT] | 31 | 11 | 11 | 0 | [NT] | [NT] |
| Ammonia as N in water | mg/L | 0.005 | Inorg-057 | [NT] | 31 | 0.063 | 0.060 | 5 | [NT] | [NT] |
| Nitrate as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 31 | 1.5 | 1.5 | 0 | [NT] | [NT] |
| Nitrite as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 31 | 0.02 | 0.02 | 0 | [NT] | [NT] |
| NOx as N in water | mg/L | 0.005 | Inorg-055 | [NT] | 31 | 1.5 | 1.5 | 0 | [NT] | [NT] |
| Total Nitrogen in water | mg/L | 0.1 | Inorg-055/062/127 | [NT] | 31 | 1.6 | [NT] | | [NT] | [NT] |
| TKN in water | mg/L | 0.1 | Inorg-062 | [NT] | 31 | <0.1 | [NT] | | [NT] | [NT] |
| Phosphate as P in water | mg/L | 0.005 | Inorg-060 | [NT] | 31 | 0.006 | <0.005 | 18 | [NT] | [NT] |
| Organic Nitrogen as N | mg/L | 0.2 | Inorg-055/062/127 | [NT] | 31 | <0.2 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | 386021-2 |
| Date prepared | - | | | 16/07/2025 | 1 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Date analysed | - | | | 16/07/2025 | 1 | 16/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | <0.5 | 1 | 4 | [NT] | | 99 | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | <0.5 | 1 | 5 | [NT] | | 92 | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | <0.5 | 1 | 2600 | [NT] | | 92 | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | <0.5 | 1 | 290 | [NT] | | 93 | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 1 | 1200 | [NT] | | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | <5 | 1 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | <5 | 1 | 15 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | <5 | 1 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | <5 | 1 | 15 | [NT] | | 118 | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | <1 | 1 | 160 | 150 | 6 | 101 | # |
| Chloride, Cl | mg/L | 1 | Inorg-081 | <1 | 1 | 3000 | 2900 | 3 | 95 | # |
| Ionic Balance | % | | Inorg-040 | [NT] | 1 | 22 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | 386021-4 |
| Date prepared | - | | | [NT] | 3 | 17/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Date analysed | - | | | [NT] | 3 | 17/07/2025 | 16/07/2025 | | 16/07/2025 | 16/07/2025 |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 3 | 59 | 59 | 0 | 100 | 100 |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 3 | 8.2 | 11 | 29 | 95 | 108 |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 3 | 1200 | 1100 | 9 | 106 | # |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 3 | 160 | 160 | 0 | 94 | # |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 3 | 810 | 820 | 1 | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 3 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 3 | 390 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 3 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 3 | 390 | [NT] | | 120 | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 3 | 150 | [NT] | | 102 | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 3 | 1000 | [NT] | | 95 | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 3 | 27 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-13 |
| Date prepared | - | | | [NT] | 8 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 8 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 8 | 0.6 | [NT] | | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 8 | 3 | [NT] | | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 8 | 1300 | [NT] | | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 8 | 150 | [NT] | | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 8 | 640 | [NT] | | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 8 | <5 | <5 | 0 | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 8 | <5 | <5 | 0 | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 8 | <5 | <5 | 0 | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 8 | <5 | <5 | 0 | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 8 | 160 | [NT] | | [NT] | 89 |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 8 | 2200 | [NT] | | [NT] | # |
| Ionic Balance | % | | Inorg-040 | [NT] | 8 | 5.0 | N/A | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | 386021-23 |
| Date prepared | - | | | [NT] | 12 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Date analysed | - | | | [NT] | 12 | 16/07/2025 | 16/07/2025 | | [NT] | 16/07/2025 |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 12 | 34 | [NT] | | [NT] | # |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 12 | 5 | [NT] | | [NT] | 74 |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 12 | 800 | [NT] | | [NT] | # |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 12 | 66 | [NT] | | [NT] | # |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 12 | 360 | [NT] | | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 12 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 12 | 230 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 12 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 12 | 230 | [NT] | | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 12 | 91 | 89 | 2 | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 12 | 780 | 790 | 1 | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 12 | 19 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 13 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 13 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 13 | 330 | 320 | 3 | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 13 | 62 | 62 | 0 | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 13 | 4300 | 4200 | 2 | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 13 | 250 | 250 | 0 | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 13 | 1800 | 1800 | 0 | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 13 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 13 | 310 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 13 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 13 | 310 | [NT] | | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 13 | 130 | [NT] | | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 13 | 6200 | [NT] | | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 13 | 10 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 18 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 18 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 18 | 240 | 240 | 0 | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 18 | 12 | 12 | 0 | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 18 | 5100 | 5000 | 2 | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 18 | 740 | 740 | 0 | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 18 | 3600 | 3600 | 0 | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 18 | <5 | <5 | 0 | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 18 | 890 | 870 | 2 | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 18 | <5 | <5 | 0 | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 18 | 890 | 870 | 2 | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 18 | 680 | [NT] | | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 18 | 8100 | [NT] | | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 18 | 6.0 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | Duplicate | | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 22 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 22 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 22 | 150 | [NT] | | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 22 | 28 | [NT] | | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 22 | 3000 | [NT] | | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 22 | 530 | [NT] | | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 22 | 2600 | [NT] | | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 22 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 22 | 1300 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 22 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 22 | 1300 | [NT] | | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 22 | 560 | 560 | 0 | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 22 | 3700 | 3800 | 3 | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 22 | 12 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | Duplicate | | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 24 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 24 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 24 | 59 | 59 | 0 | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 24 | 8.1 | 8.2 | 1 | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 24 | 600 | 570 | 5 | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 24 | 66 | 67 | 2 | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 24 | 420 | 420 | 0 | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 24 | <5 | [NT] | | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 24 | 180 | [NT] | | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 24 | <5 | [NT] | | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 24 | 180 | [NT] | | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 24 | 130 | [NT] | | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 24 | 200 | [NT] | | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 24 | 49 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Ion Balance | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 28 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 28 | 16/07/2025 | 16/07/2025 | | [NT] | [NT] |
| Calcium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 28 | <0.5 | [NT] | | [NT] | [NT] |
| Potassium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 28 | <0.5 | [NT] | | [NT] | [NT] |
| Sodium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 28 | <0.5 | [NT] | | [NT] | [NT] |
| Magnesium - Dissolved | mg/L | 0.5 | Metals-020 | [NT] | 28 | <0.5 | [NT] | | [NT] | [NT] |
| Hardness (calc) equivalent $CaCO_3$ | mg/L | 3 | Metals-020 | [NT] | 28 | <3 | [NT] | | [NT] | [NT] |
| Hydroxide Alkalinity ($OH^-$) as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 28 | <5 | <5 | 0 | [NT] | [NT] |
| Bicarbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 28 | <5 | <5 | 0 | [NT] | [NT] |
| Carbonate Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 28 | <5 | <5 | 0 | [NT] | [NT] |
| Total Alkalinity as $CaCO_3$ | mg/L | 5 | Inorg-006 | [NT] | 28 | <5 | <5 | 0 | [NT] | [NT] |
| Sulphate, SO4 | mg/L | 1 | Inorg-081 | [NT] | 28 | <1 | [NT] | | [NT] | [NT] |
| Chloride, Cl | mg/L | 1 | Inorg-081 | [NT] | 28 | <1 | [NT] | | [NT] | [NT] |
| Ionic Balance | % | | Inorg-040 | [NT] | 28 | N/A | N/A | | [NT] | [NT] |

| QUALITY CONTROL: Total Phenolics in Water | | | | | Duplicate | | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | [NT] |
| Date extracted | - | | | 18/07/2025 | [NT] | [NT] | [NT] | [NT] | 18/07/2025 | [NT] |
| Date analysed | - | | | 18/07/2025 | [NT] | [NT] | [NT] | [NT] | 18/07/2025 | [NT] |
| Total Phenolics (as Phenol) | mg/L | 0.05 | Inorg-031 | <0.05 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |

| QUALITY CONTROL: HM in water - total | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W4 | 386021-11 |
| Date prepared | - | | | 21/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Date analysed | - | | | 21/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 10 | Metals-022 | <10 | 1 | 7700 | 7700 | 0 | 98 | # |
| Cobalt-Total | µg/L | 1 | Metals-022 | <1 | 1 | 140 | 140 | 0 | 96 | 86 |
| Iron-Total | µg/L | 10 | Metals-022 | <10 | 1 | 10000 | 11000 | 10 | 87 | # |
| Manganese-Total | µg/L | 5 | Metals-022 | <5 | 1 | 120 | 130 | 8 | 93 | 83 |

| QUALITY CONTROL: HM in water - total | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W5 | 386021-23 |
| Date prepared | - | | | [NT] | 8 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Date analysed | - | | | [NT] | 8 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Aluminium-Total | µg/L | 10 | Metals-022 | [NT] | 8 | 11000 | 11000 | 0 | 90 | # |
| Cobalt-Total | µg/L | 1 | Metals-022 | [NT] | 8 | 92 | 100 | 8 | 91 | 96 |
| Iron-Total | µg/L | 10 | Metals-022 | [NT] | 8 | 13000 | 13000 | 0 | 85 | # |
| Manganese-Total | µg/L | 5 | Metals-022 | [NT] | 8 | 38 | 43 | 12 | 90 | # |

| QUALITY CONTROL: HM in water - total | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W3 | [NT] |
| Date prepared | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | [NT] |
| Date analysed | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | [NT] |
| Aluminium-Total | µg/L | 10 | Metals-022 | [NT] | 21 | 25000 | 25000 | 0 | 84 | [NT] |
| Cobalt-Total | µg/L | 1 | Metals-022 | [NT] | 21 | 50 | 52 | 4 | 92 | [NT] |
| Iron-Total | µg/L | 10 | Metals-022 | [NT] | 21 | 66000 | 66000 | 0 | 93 | [NT] |
| Manganese-Total | µg/L | 5 | Metals-022 | [NT] | 21 | 2100 | 2200 | 5 | 88 | [NT] |

| QUALITY CONTROL: HM in water - total | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Total | µg/L | 10 | Metals-022 | [NT] | 30 | 4700 | 5200 | 10 | [NT] | [NT] |
| Cobalt-Total | µg/L | 1 | Metals-022 | [NT] | 30 | 8 | 8 | 0 | [NT] | [NT] |
| Iron-Total | µg/L | 10 | Metals-022 | [NT] | 30 | 15000 | 16000 | 6 | [NT] | [NT] |
| Manganese-Total | µg/L | 5 | Metals-022 | [NT] | 30 | 60 | 59 | 2 | [NT] | [NT] |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W3 | 386021-2 |
| Date prepared | - | | | 17/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 21/07/2025 |
| Date analysed | - | | | 17/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 21/07/2025 |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | <10 | 1 | 2100 | 1900 | 10 | 87 | 95 |
| Iron-Dissolved | µg/L | 10 | Metals-022 | <10 | 1 | 360 | 350 | 3 | 91 | # |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | <5 | 1 | 210 | 200 | 5 | 91 | # |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | 2 | 2 | 0 | 92 | 100 |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | <0.1 | 1 | 0.2 | 0.2 | 0 | 90 | 99 |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | <1 | <1 | 0 | 89 | 123 |
| Copper-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | 15 | 15 | 0 | 91 | 107 |
| Lead-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | 7 | 7 | 0 | 93 | 87 |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | <0.05 | 1 | <0.05 | <0.05 | 0 | 88 | 87 |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | 93 | 88 | 6 | 91 | 110 |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | <1 | 1 | 200 | 210 | 5 | 93 | 108 |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W4 | 386021-22 |
| Date prepared | - | | | [NT] | 10 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Date analysed | - | | | [NT] | 10 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 10 | 330 | [NT] | | 84 | 73 |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 10 | 70 | [NT] | | 87 | # |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 10 | 420 | [NT] | | 87 | # |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | 1 | [NT] | | 88 | 91 |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 10 | 0.3 | [NT] | | 86 | 91 |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | <1 | [NT] | | 86 | 102 |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | 87 | [NT] | | 89 | 89 |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | 23 | [NT] | | 90 | 75 |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 10 | <0.05 | <0.05 | 0 | 96 | 70 |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | 56 | [NT] | | 89 | 93 |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 10 | 560 | [NT] | | 88 | 90 |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 12 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 12 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 12 | <10 | <10 | 0 | [NT] | [NT] |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 12 | 320 | 330 | 3 | [NT] | [NT] |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 12 | 870 | 880 | 1 | [NT] | [NT] |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | 1 | <1 | 0 | [NT] | [NT] |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 12 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | <1 | <1 | 0 | [NT] | [NT] |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | <1 | <1 | 0 | [NT] | [NT] |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | <1 | <1 | 0 | [NT] | [NT] |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 12 | <0.05 | [NT] | | [NT] | [NT] |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | 1 | 1 | 0 | [NT] | [NT] |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 12 | <1 | <1 | 0 | [NT] | [NT] |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 16 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 16 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 16 | <20 | [NT] | | [NT] | [NT] |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 16 | 90 | [NT] | | [NT] | [NT] |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 16 | 680 | [NT] | | [NT] | [NT] |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | <2 | [NT] | | [NT] | [NT] |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 16 | <0.2 | [NT] | | [NT] | [NT] |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | <2 | [NT] | | [NT] | [NT] |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | <2 | [NT] | | [NT] | [NT] |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | <2 | [NT] | | [NT] | [NT] |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 16 | <0.05 | <0.05 | 0 | [NT] | [NT] |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | 7 | [NT] | | [NT] | [NT] |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 16 | 12 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 17 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 17 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 17 | <10 | <10 | 0 | [NT] | [NT] |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 17 | 110 | 130 | 17 | [NT] | [NT] |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 17 | 130 | 110 | 17 | [NT] | [NT] |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | <1 | <1 | 0 | [NT] | [NT] |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 17 | <0.1 | <0.1 | 0 | [NT] | [NT] |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | 5 | 4 | 22 | [NT] | [NT] |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | 3 | 2 | 40 | [NT] | [NT] |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | <1 | <1 | 0 | [NT] | [NT] |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 17 | <0.05 | [NT] | | [NT] | [NT] |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | 7 | 6 | 15 | [NT] | [NT] |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 17 | 7 | 6 | 15 | [NT] | [NT] |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 21 | <20 | <20 | 0 | [NT] | [NT] |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 21 | <20 | <20 | 0 | [NT] | [NT] |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 21 | 1000 | 1000 | 0 | [NT] | [NT] |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | <2 | <2 | 0 | [NT] | [NT] |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 21 | <0.2 | <0.2 | 0 | [NT] | [NT] |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | <2 | <2 | 0 | [NT] | [NT] |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | 5 | 5 | 0 | [NT] | [NT] |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | <2 | <2 | 0 | [NT] | [NT] |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 21 | <0.05 | <0.05 | 0 | [NT] | [NT] |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | 18 | 18 | 0 | [NT] | [NT] |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 21 | 13 | 14 | 7 | [NT] | [NT] |

| QUALITY CONTROL: HM in water - dissolved | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Aluminium-Dissolved | µg/L | 10 | Metals-022 | [NT] | 30 | <10 | [NT] | | [NT] | [NT] |
| Iron-Dissolved | µg/L | 10 | Metals-022 | [NT] | 30 | 1300 | [NT] | | [NT] | [NT] |
| Manganese-Dissolved | µg/L | 5 | Metals-022 | [NT] | 30 | 45 | [NT] | | [NT] | [NT] |
| Arsenic-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | 3 | [NT] | | [NT] | [NT] |
| Cadmium-Dissolved | µg/L | 0.1 | Metals-022 | [NT] | 30 | <0.1 | [NT] | | [NT] | [NT] |
| Chromium-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | <1 | [NT] | | [NT] | [NT] |
| Copper-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | <1 | [NT] | | [NT] | [NT] |
| Lead-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | <1 | [NT] | | [NT] | [NT] |
| Mercury-Dissolved | µg/L | 0.05 | Metals-021 | [NT] | 30 | <0.05 | [NT] | | [NT] | [NT] |
| Nickel-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | 5 | [NT] | | [NT] | [NT] |
| Zinc-Dissolved | µg/L | 1 | Metals-022 | [NT] | 30 | 10 | [NT] | | [NT] | [NT] |

| QUALITY CONTROL: Metals in Waters - Acid extractable | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | 386021-10 |
| Date prepared | - | | | 17/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Date analysed | - | | | 17/07/2025 | 1 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.05 | Metals-020 | <0.05 | 1 | 0.06 | 0.06 | 0 | 85 | 86 |

| QUALITY CONTROL: Metals in Waters - Acid extractable | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W2 | 386021-22 |
| Date prepared | - | | | [NT] | 8 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Date analysed | - | | | [NT] | 8 | 17/07/2025 | 17/07/2025 | | 17/07/2025 | 17/07/2025 |
| Phosphorus - Total | mg/L | 0.05 | Metals-020 | [NT] | 8 | 0.1 | 0.1 | 0 | 81 | 92 |

| QUALITY CONTROL: Metals in Waters - Acid extractable | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 21 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Phosphorus - Total | mg/L | 0.05 | Metals-020 | [NT] | 21 | 1.0 | 0.99 | 1 | [NT] | [NT] |

| QUALITY CONTROL: Metals in Waters - Acid extractable | | | | | | Duplicate | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | [NT] | [NT] |
| Date prepared | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Date analysed | - | | | [NT] | 30 | 17/07/2025 | 17/07/2025 | | [NT] | [NT] |
| Phosphorus - Total | mg/L | 0.05 | Metals-020 | [NT] | 30 | 0.2 | 0.2 | 0 | [NT] | [NT] |

| QUALITY CONTROL: PFAS in Water TRACE Short | | | | | Duplicate | | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | [NT] |
| Date prepared | - | | | 18/07/2025 | [NT] | [NT] | [NT] | [NT] | 18/07/2025 | [NT] |
| Date analysed | - | | | 18/07/2025 | [NT] | [NT] | [NT] | [NT] | 18/07/2025 | [NT] |
| Perfluorobutanesulfonic acid | µg/L | 0.0004 | Org-029 | <0.0004 | [NT] | [NT] | [NT] | [NT] | 106 | [NT] |
| Perfluorohexanesulfonic acid - PFHxS | µg/L | 0.0002 | Org-029 | <0.0002 | [NT] | [NT] | [NT] | [NT] | 97 | [NT] |
| Perfluorooctanesulfonic acid PFOS | µg/L | 0.0002 | Org-029 | <0.0002 | [NT] | [NT] | [NT] | [NT] | 97 | [NT] |
| Perfluorooctanoic acid PFOA | µg/L | 0.0002 | Org-029 | <0.0002 | [NT] | [NT] | [NT] | [NT] | 96 | [NT] |
| 6:2 FTS | µg/L | 0.0004 | Org-029 | <0.0004 | [NT] | [NT] | [NT] | [NT] | 111 | [NT] |
| 8:2 FTS | µg/L | 0.0004 | Org-029 | <0.0004 | [NT] | [NT] | [NT] | [NT] | 98 | [NT] |
| *Surrogate* $^{13}C_8$ *PFOS* | % | | Org-029 | 97 | [NT] | [NT] | [NT] | [NT] | 96 | [NT] |
| *Surrogate* $^{13}C_2$ *PFOA* | % | | Org-029 | 104 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |
| *Extracted ISTD* $^{13}C_3$ *PFBS* | % | | Org-029 | 68 | [NT] | [NT] | [NT] | [NT] | 66 | [NT] |
| *Extracted ISTD* $^{18}O_2$ *PFHxS* | % | | Org-029 | 87 | [NT] | [NT] | [NT] | [NT] | 83 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOS* | % | | Org-029 | 84 | [NT] | [NT] | [NT] | [NT] | 80 | [NT] |
| *Extracted ISTD* $^{13}C_4$ *PFOA* | % | | Org-029 | 92 | [NT] | [NT] | [NT] | [NT] | 88 | [NT] |
| *Extracted ISTD*$^{13}C_2$ *6:2FTS* | % | | Org-029 | 106 | [NT] | [NT] | [NT] | [NT] | 99 | [NT] |
| *Extracted ISTD* $^{13}C_2$ *8:2FTS* | % | | Org-029 | 162 | [NT] | [NT] | [NT] | [NT] | 152 | [NT] |

## Result Definitions

| | |
|---|---|
| **NT** | Not tested |
| **NA** | Test not required |
| **INS** | Insufficient sample for this test |
| **PQL** | Practical Quantitation Limit |
| **<** | Less than |
| **>** | Greater than |
| **RPD** | Relative Percent Difference |
| **LCS** | Laboratory Control Sample |
| **NS** | Not specified |
| **NEPM** | National Environmental Protection Measure |
| **NR** | Not Reported |

## Quality Control Definitions

| | |
|---|---|
| **Blank** | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. |
| **Duplicate** | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable. |
| **Matrix Spike** | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| **LCS (Laboratory Control Sample)** | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. |
| **Surrogate Spike** | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples. |

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volumes) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

For Dust Deposit Gauge (DDG) analysis the sampling, sampling period and funnel exposure area do not fall under Envirolab's NATA accreditation (unless the Newcastle laboratory where responsible for the sampling), hence the annotation on the DDG units of reporting.

Urine Analysis - The BEI values listed are taken from the 2022 edition of "TLVs and BEIs Threshold Limits" by ACGIH.

## Report Comments

ION_BALANCE: # Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.
- Dissolved Metals: For the determination of dissolved metals for #11,19 and 20, the unpreserved sample was filtered through 0.45um filter at the lab due to the appearance
of colloids and/or sediment in the supplied HNO3 bottle (it appears the sample has not been field filtered).
Note: there is a possibility some elements may be underestimated.

Total metals: no unfiltered, preserved sample was received for samples #1-9, 12-24, & 29-31, therefore analysis was conducted from the unpreserved sample bottle.
Note: there is a possibility some elements may be underestimated.

pH/TDS/Nitrite/Nitrate - Samples were out of the recommended holding time for this analysis.

8 HM in water - dissolved
- # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.
- The PQL has been raised X2 times due to suppression of the internal standard, which required the samples to be diluted. This is likely due to the high level of salts in the sample.

8 HM in water - total - # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

8 HM in water - TRACE METALS: In theory the total metal content should be higher than the dissolved metal content. However, in some samples this is not the case. The sample has been re-analysed for both Total and Dissolved metals and results have been confirmed.

MISC_INORG:# Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

vTRH & BTEXN in Water NEPM - The PQL for 386021-3,5 has been raised due to the sample matrix thereby requiring a dilution.

The mass inbalance for samples#1,2,3,4,6,7,9,12,17,24,31 may be caused by other ions that have not included in the calculation.

ION BALANCE: Samples #25 and 27 has recorded a high ion balance value. This may be the cause of the low values reported in the cation/anion balance, as such the value attract a higher level of uncertainty.

# CHAIN OF CUSTODY FORM - Client

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08 8967 1201 | darwin@envirolab.com.au


| | |
|---|---|
| **Client:** ADE Consulting group | SSTOM - 22.0343.01 \| 008 L21 |
| **Contact Person:** Misha Konarev | |
| **Project Mgr:** Misha Konarev | PO No.: |
| **Sampler:** Various | Envirolab Quote No. : |
| **Address:** | Date results required: 1 day<br>Or choose: 1 day<br>*Note: Inform lab in advance if urgent turnaround is required - surcharges apply* |
| **Phone:** 0424410724 **Mob:** | Additional report format: esdat / equis / |
| **Email:** misha.konarev@ade.group ; Monique.Hitchens@ade.group ; Madison.Hollamby@ade.group<br>Matt.toole@ade.group | Lab Comments: |

| Sample information | | | | | Tests Required | Comments |
|---|---|---|---|---|---|---|
| Envirolab Sample ID | Client Sample ID or information | Depth | Date sampled | Type of sample | BTEX | |
| 1 | TB1_09/07/25 | | 9/07/2025 | Water | ☒ | |
| 2 | TS1_09/07/25 | | 9/07/2025 | Water | ☒ | |
| 3 | TB2_14/07/25 | | 14/07/2025 | Water | ☒ | |
| 4 | TS2_14/07/25 | | 14/07/2025 | Water | ☒ | |
| 5 | TB3_30/07/25 | | 30/07/2025 | Water | ☒ | |
| 6 | TS3_30/07/25 | | 30/07/2025 | Water | ☒ | |

☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

| | | | |
|---|---|---|---|
| **Relinquished by (Company):** | **Received by (Company):** ES | **Lab Use Only** | |
| **Print Name:** | **Print Name:** Da Flynn Lee | **Job number:** 389507 | **Cooling:** (Ice) / Ice pack / None |
| **Date & Time:** | **Date & Time:** 28/8/25, 1830 | **Temperature:** 2 | **Security seal:** Intact / Broken / None |
| **Signature:** | **Signature:** | **TAT Req - SAME day / 1 / 2 / 3 / 4 / STD** | |

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# CERTIFICATE OF ANALYSIS 389507

## Client Details

| | |
|---|---|
| **Client** | ADE CONSULTING GROUP PTY LTD |
| **Attention** | Misha Konarev |
| **Address** | Unit 6, 7 Millenium Court, Silverwater, NSW, 2128 |

## Sample Details

| | |
|---|---|
| **Your Reference** | **SSTOM - 22.0343.01.008.L21** |
| **Number of Samples** | 6 Water |
| **Date samples received** | 28/08/2025 |
| **Date completed instructions received** | 28/08/2025 |

## Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client unless as indicated below in the method summaries. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

**Please refer to the last page of this report for any comments relating to the results.**

## Report Details

| | |
|---|---|
| **Date results requested by** | 29/08/2025 |
| **Date of Issue** | 29/08/2025 |

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

**Results Approved By**
Jack Wallis, Senior Chemist

**Authorised By**
Nancy Zhang, Laboratory Manager

| BTEX in Water | | | | | | |
|---|---|---|---|---|---|---|
| Our Reference | | 389507-1 | 389507-2 | 389507-3 | 389507-4 | 389507-5 |
| Your Reference | UNITS | TB1_09/07/25 | TS1_09/07/25 | TB2_14/07/25 | TS2_14/07/25 | TB3_30/07/25 |
| Date Sampled | | 09/07/2025 | 09/07/2025 | 14/07/2025 | 14/07/2025 | 30/07/2025 |
| Type of sample | | Water | Water | Water | Water | Water |
| Date extracted | - | 28/08/2025 | 28/08/2025 | 28/08/2025 | 28/08/2025 | 28/08/2025 |
| Date analysed | - | 29/08/2025 | 29/08/2025 | 29/08/2025 | 29/08/2025 | 29/08/2025 |
| Benzene | µg/L | <1 | 22 | <1 | 22 | <1 |
| Toluene | µg/L | <1 | 22 | <1 | 23 | <1 |
| Ethylbenzene | µg/L | <1 | 23 | <1 | 23 | <1 |
| m+p-xylene | µg/L | <2 | 43 | <2 | 44 | <2 |
| o-xylene | µg/L | <1 | 23 | <1 | 23 | <1 |
| *Surrogate* Dibromofluoromethane | % | 105 | 101 | 105 | 103 | 104 |
| *Surrogate* Toluene-d8 | % | 100 | 99 | 99 | 100 | 99 |
| *Surrogate* 4-Bromofluorobenzene | % | 102 | 102 | 103 | 102 | 103 |

| BTEX in Water | | |
|---|---|---|
| Our Reference | | 389507-6 |
| Your Reference | UNITS | TS3_30/07/25 |
| Date Sampled | | 30/07/2025 |
| Type of sample | | Water |
| Date extracted | - | 28/08/2025 |
| Date analysed | - | 29/08/2025 |
| Benzene | µg/L | 24 |
| Toluene | µg/L | 24 |
| Ethylbenzene | µg/L | 25 |
| m+p-xylene | µg/L | 47 |
| o-xylene | µg/L | 25 |
| *Surrogate* Dibromofluoromethane | % | 104 |
| *Surrogate* Toluene-d8 | % | 100 |
| *Surrogate* 4-Bromofluorobenzene | % | 100 |

| Method ID | Methodology Summary |
|---|---|
| Org-023 | Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. |

| QUALITY CONTROL: BTEX in Water | | | | | Duplicate | | | | Spike Recovery % | |
|---|---|---|---|---|---|---|---|---|---|---|
| Test Description | Units | PQL | Method | Blank | # | Base | Dup. | RPD | LCS-W1 | [NT] |
| Date extracted | - | | | 28/08/2025 | [NT] | [NT] | [NT] | [NT] | 28/08/2025 | [NT] |
| Date analysed | - | | | 29/08/2025 | [NT] | [NT] | [NT] | [NT] | 29/08/2025 | [NT] |
| Benzene | µg/L | 1 | Org-023 | <1 | [NT] | [NT] | [NT] | [NT] | 76 | [NT] |
| Toluene | µg/L | 1 | Org-023 | <1 | [NT] | [NT] | [NT] | [NT] | 76 | [NT] |
| Ethylbenzene | µg/L | 1 | Org-023 | <1 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| m+p-xylene | µg/L | 2 | Org-023 | <2 | [NT] | [NT] | [NT] | [NT] | 78 | [NT] |
| o-xylene | µg/L | 1 | Org-023 | <1 | [NT] | [NT] | [NT] | [NT] | 77 | [NT] |
| *Surrogate* Dibromofluoromethane | % | | Org-023 | 101 | [NT] | [NT] | [NT] | [NT] | 99 | [NT] |
| *Surrogate* Toluene-d8 | % | | Org-023 | 98 | [NT] | [NT] | [NT] | [NT] | 101 | [NT] |
| *Surrogate* 4-Bromofluorobenzene | % | | Org-023 | 103 | [NT] | [NT] | [NT] | [NT] | 100 | [NT] |

## Result Definitions

| | |
|---|---|
| **NT** | Not tested |
| **NA** | Test not required |
| **INS** | Insufficient sample for this test |
| **PQL** | Practical Quantitation Limit |
| **<** | Less than |
| **>** | Greater than |
| **RPD** | Relative Percent Difference |
| **LCS** | Laboratory Control Sample |
| **NS** | Not specified |
| **NEPM** | National Environmental Protection Measure |
| **NR** | Not Reported |

## Quality Control Definitions

| | |
|---|---|
| **Blank** | This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. |
| **Duplicate** | This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable. |
| **Matrix Spike** | A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. |
| **LCS (Laboratory Control Sample)** | This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. |
| **Surrogate Spike** | Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples. |

## Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volumes) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

For Dust Deposit Gauge (DDG) analysis the sampling, sampling period and funnel exposure area do not fall under Envirolab's NATA accreditation (unless the Newcastle laboratory where responsible for the sampling), hence the annotation on the DDG units of reporting.

Urine Analysis - The BEI values listed are taken from the 2022 edition of "TLVs and BEIs Threshold Limits" by ACGIH.

## Report Comments

BTEX in Water - The trip spike has not been prepared/supplied by Envirolab. As such, we cannot determine the %recovery of the trip spike and the on-column result has been reported.

Updated CoC: 20/03/2025 1357

# CHAIN OF CUSTODY FORM - Client

[Copyright and Confidential]

**ENVIROLAB GROUP**
National phone number 1300 424 344

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
02 9910 6200 | sydney@envirolab.com.au

Perth Lab - MPL Laboratories
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08 9317 2505 | lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
03 9763 2500 | melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
08 7087 6800 | adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
07 3266 9532 | brisbane@envirolab.com.au

Darwin Office - Envirolab Services
Unit 20/119 Reichardt Road, Winnellie, NT 0820

| | |
|---|---|
| Client: ADE group | Client Project Name/Number/Site etc (ie report title): A101022.0343.01.004 |
| Contact Person: Matthew Toole/ Monique Hitchens | |
| Project Mgr: Matthew Toole | PO No.: A101022.0343.01.004.L21 |
| Sampler: Monique Hitchens | Envirolab Quote No. : |
| Address: 6/7 Millenium Court, Silverwater NSW | Date results required: Or choose standard / same day / 1 day / 2 day / 3 day *Note: Inform lab in advance if urgent turnaround is required - surcharges apply* |
| Phone: Mob: 0414 202 096 | Additional report format: esdat / equis / |
| Email: matthew.toole@ade.group Ankita.saxena@ade.group, accounts@ade.group monique.hitchens@ade.group graham.hawkes@ade.group | Lab Comments: |

| Envirolab Sample ID | Client Sample ID or information | Depth | Date sampled | Type of sample | CW003_D (TRH/BTEX/PAH/M8) | CW001M_D (TRH/BTEX/M8_D) | E08520 (PFAS Trace level) | pH | EC | TDS | TOC (E00490) | Total metals (Al, Co, Fe, Mn) | Major cations | Major anions | E010300 Nutrient Suite | Dissolved metals (Al, Fe, Mn) | TPH | ON HOLD | E07380 (Trip blank) | E07390 (Trip spike) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3012-C | | 13/03/2025 | Water | | | | X | X | X | X | X | X | X | X | X | | | | | |
| 2 | 3012-B | | 13/03/2025 | Water | | | | X | X | X | X | X | X | X | X | X | X | | | | |
| 5 | 3022 | | 14/03/2025 | Water | | | | X | X | X | X | X | X | X | X | X | X | | | | Dissolved metlas- Al, As, Cd, Cr, Cu, Fe, Pb, Hg, Ni, Zn, manganese) |
| 3 | BR1 | | 13/03/2025 | Water | | | | X | X | X | X | X | X | X | X | X | X | | | | |
| 4 | RIN1 | | 13/03/2025 | Water | | | | X | X | X | X | X | X | X | X | X | X | | | | |
| 6 | RIN2 | | 14/03/2025 | Water | | | | X | X | X | X | X | X | X | X | X | X | | | | |
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☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

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|---|---|---|---|
| Relinquished by (C ADE | Received by (Company): ELS. SYD. | Lab Use Only | |
| Print Name: | Print Name: | Job number: 375663. | Cooling: Ice / Ice pack / None |
| Date & Time: 14/03/2025 | Date & Time: 20/03/2025. | Temperature: | Security seal: Intact / Broken / None |
| Signature: | Signature: | TAT Req - SAME day / 1 / 2 / 3 / 4 / STD | |

# CHAIN OF CUSTODY FORM - Client

[Copyright and Confidential]

A101022.0343.01, 004, L21


**ENVIROLAB GROUP**
National phone number 1300 424 344

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
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Melbourne Lab - Envirolab Services
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Adelaide Office - Envirolab Services
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08 7087 6800 | adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
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Darwin Office - Envirolab Services
Unit 20/119 Reichardt Road, Winnellie, NT 0820
08 8967 1201 | darwin@envirolab.com.au


| | |
|---|---|
| Client: ADE group | Client Project Name/Number/Site etc (ie report title): A101022.0343.01, 004, L21 |
| Contact Person: Matthew Toole/ Monique Hitchens | |
| Project Mgr: Matthew Toole | PO No.: A101022.0343.01, 004, L21 |
| Sampler: Monique Hitchens | Envirolab Quote No. : |
| Address: 6/7 Millenium Court, Silverwater NSW | Date results required: Or choose: standard / same day / 1 day / 2 day / 3 day *Note: Inform lab in advance if urgent turnaround is required - surcharges apply* |
| Phone: Mob: 0414 202 096 | Additional report format: esdat / equis / |
| Email: matthew.toole@ade.group Ankita.saxena@ade.group, accounts@ade.group monique.hitchens@ade.group graham.Hawkes@ade.group | Lab Comments: |

| Sample information | | | | | Tests Required | | | | | | | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Envirolab Sample ID | Client Sample ID or information | Depth | Date sampled | Type of sample | CW003_D (TRH/BTEX/PAH/M8) | CW001M_D (TRH/BTEX/M8_D) | E08520 (PFAS Trace level) | pH | EC | TDS | TOC (E00490) | Total metals (Al, Co, Fe, Mn) | Major cations | Major anions | E01030D Nutrient Suite | Dissolved metals (Al, Fe, Mn) | E03710-D (M8) | ON HOLD | E07380 (Trip blank) | E07390 (Trip spike) | Provide as much information about the sample as you can |
| 1 | 3012-C | | 14/03/2025 | Water | | | | | | | | | | | | | | [redacted] | | | |
| 2 | 3012-B | | 14/03/2025 | Water | | | | | | | | | | | | | | [redacted] | | | |
| 3 | BR1 | | 14/03/2025 | Water | | | | | | | | | | | | | | [redacted] | | | |
| 4 | RIN1 | | 14/03/2025 | Water | | | | | | | | | | | | | | [redacted] | | | |
| 5 | 3022 | | 14/03/25 | water | | | | | | | | | | | | | | X | | | |
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☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

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|---|---|---|---|
| Relinquished by (C ADE | Received by (Company): ELS SYD | Lab Use Only | |
| Print Name: | Print Name: Owen Cunliffe | Job number: 375663 | Cooling: (Ice) / Ice pack / None |
| Date & Time: 14/032025 | Date & Time: 14/3/25 1930 | Temperature: 5° | Security seal: Intact / Broken / (None) |
| Signature: | Signature: OC | TAT Req - SAME day / 1 / 2 / 3 / 4 / STD | |

#375663.

Outlook

## COCs for samples on Hold

**From** Monique Hitchens <Monique.Hitchens@ade.group>
**Date** Thu 20/03/2025 13:57
**To** Customer Service <CustomerService@envirolab.com.au>; Aileen Hie <AHie@envirolab.com.au>
**Cc** Matthew Toole <matthew.toole@ade.group>; Graham Hawkes <Graham.Hawkes@ade.group>; Ankita Saxena <Ankita.Saxena@ade.group>

1 attachment (71 KB)
Envirolab COC_14.03.25 Primaries.xls;

**CAUTION:** This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Hi Envirolab,

Earlier this week we submitted an esky with some samples which were placed on hold for project:

A101022.0343.01.004.

Please see attached COC for the analysis of these samples.

One rinsate sample was missed when originally sent and we have arranged for this to be sent today.

Please reach out with any questions,

Kind Regards,

Monique Hitchens
Environmental Consultant

ADECONSULTINGGROUP
SOLUTIONS THROUGH INNOVATION

6/7 Millennium Court,
Silverwater NSW, 2128
Phone: +61 2 8541 7214
Mobile: 0404319330
E-mail: monique.hitchens@ade.group

Website: ade.group

# CHAIN OF CUSTODY FORM - Client

[Copyright and Confidential]


**ENVIROLAB GROUP**
National phone number 1300 424 344

Sydney Lab - Envirolab Services
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Perth Lab - MPL Laboratories
16-18 Hayden Crt, Myaree, WA 6154
✆ 08 9317 2505 | ✉ lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
✆ 03 9763 2500 | ✉ melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
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✆ 08 7087 6800 | ✉ adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
✆ 07 3266 9532 | ✉ brisbane@envirolab.com.au

Darwin Office - Envirolab Services
Unit 20/119 Reichardt Road, Winnellie, NT 0820
✆ 08 8967 1201 | ✉ darwin@envirolab.com.au


| | |
|---|---|
| **Client:** ADE group | **Client Project Name/Number/Site etc (ie report title):** A101022.0343.01.004 |
| **Contact Person:** Matthew Toole/ Monique Hitchens | |
| **Project Mgr:** Matthew Toole | **PO No.:** A101022.0343.01.004.L21 |
| **Sampler:** Monique Hitchens | **Envirolab Quote No. :** |
| **Address:** 6/7 Millenium Court, Silverwater NSW | **Date results required:** Or choose: standard / same day / 1 day / 2 day / 3 day *Note: Inform lab in advance if urgent turnaround is required - surcharges apply* |
| **Phone:** Mob: 0414 202 096 | **Additional report format:** esdat / equis / |
| **Email:** matthew.toole@ade.group Ankita.saxena@ade.group, accounts@ade.group monique.hitchens@ade.group graham.hawkes@ade.group | **Lab Comments:** |

| Sample information | | | | | Tests Required | | | | | | | | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Envirolab Sample ID | Client Sample ID or information | Depth | Date sampled | Type of sample | CW003_D (TRH/BTEX/PAH/M8) | CW001M_D (TRH/BTEX/M8_D) | E08520 (PFAS Trace level) | pH | EC | TDS | TOC (E00490) | Total metals (Al, Co, Fe, Mn) | Major cations | Major anions | E010300 Nutrient Suite | Dissolved metals (Al, Fe, Mn) | TPH | ON HOLD | E07380 (Trip blank) | E07390 (Trip spike) | Provide as much information about the sample as you can |
| 1 6 | RIN2 | | 14/03/2025 | Water | | | | | | | | | | | | | | [redacted] | | | |
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☐ *Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis*

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|---|---|---|---|
| **Relinquished by (C** | ADE | **Received by (Company):** ES SYD | **Lab Use Only** |
| **Print Name:** | | **Print Name:** Dani LAU | **Job number:** ~~375615~~ 375663 · **Cooling:** Ice / Ice pack / None |
| **Date & Time:** | 14/03/2025 | **Date & Time:** 20/03/25 1615 | **Temperature:** 12°C **Security seal:** Intact / Broken / None |
| **Signature:** | | **Signature:** DLAU | **TAT Req - SAME day / 1 / 2 / 3 / 4 / STD** |

# CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →


☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com

☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com

☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com


| | | |
|---|---|---|
| **CLIENT:** ADE Consulting Group | **TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics) | ☒☐ Standard TAT (List due date): |
| **OFFICE:** 6/7 Millenium Court, Silverwater, NSW | | ☐ Non Standard or urgent TAT (List due date): |
| **PROJECT:** A101022.0343.01 | **ALS QUOTE NO.:** | **COC SEQUENCE NUMBER (Circle)** COC: 1 2 3 4 5 6 7 |
| **ORDER NUMBER:** A101022.0343.01 | | OF: 1 2 3 4 5 6 7 |
| **PROJECT MANAGER:** Matthew Toole | **CONTACT PH:** | |
| **SAMPLER:** Monique Hitchens | **SAMPLER MOBILE:** | |
| **COC emailed to ALS?** ( YES / NO) | **EDD FORMAT (or default):** | |

**FOR LABORATORY USE ONLY (Circle)**

| | | | |
|---|---|---|---|
| Custody Seal Intact? | Yes | No | N/A |
| Free ice / frozen ice bricks present upon receipt? | Yes | No | N/A |
| Random Sample Temperature on Receipt: | | °C | |
| Other comment: | | | |

**Email Reports to** (will default to PM if no other addresses are listed):

ade.group, matthew.toole@ade.group, ankita.saxena@ade.group, misha.konarev@ade.group, monique.hitchens

**Email Invoice to** (will default to PM if no other addresses are listed): **matthew.toole@ade.group, accounts@ade.group**

| RELINQUISHED BY: | RECEIVED BY: | RELINQUISHED BY: | RECEIVED BY: |
|---|---|---|---|
| EG | DT | | |
| DATE/TIME: | DATE/TIME: | DATE/TIME: | DATE/TIME: |
| 16/07/2025 | 16/7/25 1500 | | |

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

| ALS USE | SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) | | | CONTAINER INFORMATION | ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). | | | | | | | | Additional Information |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAB ID | SAMPLE ID | SAMPLE DATE | MATRIX | TYPE & PRESERVATIVE (refer to codes below) | pH, EC | Total Dissolved Solids | dissolved metals (Al,As,Cd,Cr,Cu,Fe, Pb,Mn,Hg,Ni,Zn) | total metals (Al, Co, Fe, Mn | nutrients (ammonia, nitrate, nitrite, TKN, total N, total P, reactive P | | | | Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc. |
| 1 | SR_1 | 9/07/2025 | W | | x | x | x | x | x | | | | |
| 2 | SR_2 | 11/07/2025 | W | | x | x | x | x | x | | | | |
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| | | | | TOTAL | 1 | 1 | 1 | 1 | 1 | | | | |

***Water Container Codes:*** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plast
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
S-16 = GSW WAC, W-13+W-26= GSW WAC Rinsate

Environmental Division Sydney
Work Order Reference
ES2521809

- 61-2-8784 8555

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2521809** | Page | : 1 of 4 |
| Client | : **ADE Consulting Group Pty Ltd** | Laboratory | : Environmental Division Sydney |
| Contact | : MR MATTHEW TOOLE | Contact | : Customer Services ES |
| Address | : 6/7 MILLENIUM COURT<br>SILVERWATER NSW 2128 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61-2-8784 8555 |
| Project | : A101022.0343.01 | Date Samples Received | : 16-Jul-2025 15:00 |
| Order number | : A101022.0343.01 | Date Analysis Commenced | : 17-Jul-2025 |
| C-O-C number | : ---- | Issue Date | : 23-Jul-2025 20:09 |
| Sampler | : MONIQUE HITCHENS | | |
| Site | : ---- | | |
| Quote number | : EN/111 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

## *Signatories*

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

| *Signatories* | *Position* | *Accreditation Category* |
|---|---|---|
| Ankit Joshi | Senior Chemist - Inorganics | Sydney Inorganics, Smithfield, NSW |
| Dian Dao | Senior Chemist - Inorganics | Sydney Inorganics, Smithfield, NSW |

## 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.

- EK061G: LOR raised for TKN on sample 2 due to sample matrix.

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | SR_1 | SR_2 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Jul-2025 00:00 | 09-Jul-2025 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2521809-001 | ES2521809-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | **6.74** | **7.12** | ---- | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | **1420** | **7510** | ---- | ---- | ---- |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | | |
| Total Dissolved Solids @180°C | ---- | 10 | mg/L | **1040** | **4540** | ---- | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | ---- | ---- | ---- |
| Arsenic | 7440-38-2 | 0.001 | mg/L | **0.005** | <0.001 | ---- | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | ---- | ---- | ---- |
| Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | **0.002** | ---- | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | **0.002** | ---- | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | **0.005** | **0.007** | ---- | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | ---- | ---- | ---- |
| Zinc | 7440-66-6 | 0.005 | mg/L | **0.012** | **0.008** | ---- | ---- | ---- |
| Manganese | 7439-96-5 | 0.001 | mg/L | **0.050** | **0.094** | ---- | ---- | ---- |
| Iron | 7439-89-6 | 0.05 | mg/L | **1.71** | **0.06** | ---- | ---- | ---- |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| Aluminium | 7429-90-5 | 0.01 | mg/L | **5.60** | **13.6** | ---- | ---- | ---- |
| Cobalt | 7440-48-4 | 0.001 | mg/L | **0.014** | **0.026** | ---- | ---- | ---- |
| Manganese | 7439-96-5 | 0.001 | mg/L | **0.111** | **0.397** | ---- | ---- | ---- |
| Iron | 7439-89-6 | 0.05 | mg/L | **23.2** | **44.3** | ---- | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | ---- | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | |
| Ammonia as N | 7664-41-7 | 0.01 | mg/L | **0.16** | **0.08** | ---- | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | |
| Nitrite as N | 14797-65-0 | 0.01 | mg/L | <0.01 | **0.02** | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | SR_1 | SR_2 | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 09-Jul-2025 00:00 | 09-Jul-2025 00:00 | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2521809-001 | ES2521809-002 | -------- | -------- | -------- |
| | | | | Result | Result | ---- | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | |
| **Nitrate as N** | 14797-55-8 | 0.01 | mg/L | **4.10** | **1.46** | **----** | **----** | **----** |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **4.10** | **1.48** | **----** | **----** | **----** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | **1.7** | <2.0 | **----** | **----** | **----** |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | **5.8** | <2.0 | **----** | **----** | **----** |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | **0.32** | **0.98** | **----** | **----** | **----** |
| **EK071G: Reactive Phosphorus as P by discrete analyser** | | | | | | | | |
| **Reactive Phosphorus as P** | 14265-44-2 | 0.01 | mg/L | <0.01 | <0.01 | **----** | **----** | **----** |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2521809** | Page | : 1 of 7 |
| Client | : **ADE Consulting Group Pty Ltd** | Laboratory | : Environmental Division Sydney |
| Contact | : MR MATTHEW TOOLE | Contact | : Customer Services ES |
| Address | : 6/7 MILLENIUM COURT<br>SILVERWATER NSW 2128 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : ---- | Telephone | : +61-2-8784 8555 |
| Project | : A101022.0343.01 | Date Samples Received | : 16-Jul-2025 |
| Order number | : A101022.0343.01 | Date Analysis Commenced | : 17-Jul-2025 |
| C-O-C number | : ---- | Issue Date | : 23-Jul-2025 |
| Sampler | : MONIQUE HITCHENS | | |
| Site | : ---- | | |
| Quote number | : EN/111 | | |
| No. of samples received | : 2 | | |
| No. of samples analysed | : 2 | | |

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* |
|---|---|---|
| Ankit Joshi | Senior Chemist - Inorganics | Sydney Inorganics, Smithfield, NSW |
| Dian Dao | Senior Chemist - Inorganics | Sydney Inorganics, Smithfield, NSW |

## 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
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

## 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: 6726578)** | | | | | | | | | |
| ES2521646-001 | Anonymous | EA005-P: pH Value | ---- | 0.01 | pH Unit | 7.15 | 7.15 | 0.0 | 0% - 20% |
| ES2521810-001 | Anonymous | EA005-P: pH Value | ---- | 0.01 | pH Unit | 7.41 | 7.43 | 0.3 | 0% - 20% |
| **EA010P: Conductivity by PC Titrator (QC Lot: 6726577)** | | | | | | | | | |
| ES2521646-001 | Anonymous | EA010-P: Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | 3360 | 3110 | 7.5 | 0% - 20% |
| ES2521810-001 | Anonymous | EA010-P: Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | 8460 | 8460 | 0.0 | 0% - 20% |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6733279)** | | | | | | | | | |
| EN2511883-001 | Anonymous | EA015H: Total Dissolved Solids @180°C | ---- | 10 | mg/L | 654 | 688 | 5.1 | 0% - 20% |
| ES2521621-004 | Anonymous | EA015H: Total Dissolved Solids @180°C | ---- | 10 | mg/L | 1490 | 1520 | 1.9 | 0% - 20% |
| ES2521773-003 | Anonymous | EA015H: Total Dissolved Solids @180°C | ---- | 10 | mg/L | 784 | 824 | 5.0 | 0% - 20% |
| ES2521830-007 | Anonymous | EA015H: Total Dissolved Solids @180°C | ---- | 10 | mg/L | <10 | <10 | 0.0 | No Limit |
| **EG020F: Dissolved Metals by ICP-MS (QC Lot: 6734241)** | | | | | | | | | |
| ES2521849-007 | Anonymous | EG020A-F: Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | 0.0 | No Limit |
| | | EG020A-F: Arsenic | 7440-38-2 | 0.001 | mg/L | 0.005 | 0.005 | 0.0 | No Limit |
| | | EG020A-F: Chromium | 7440-47-3 | 0.001 | mg/L | 0.002 | 0.001 | 0.0 | No Limit |
| | | EG020A-F: Copper | 7440-50-8 | 0.001 | mg/L | 0.002 | 0.002 | 0.0 | No Limit |
| | | EG020A-F: Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Manganese | 7439-96-5 | 0.001 | mg/L | 0.501 | 0.503 | 0.4 | 0% - 20% |
| | | EG020A-F: Nickel | 7440-02-0 | 0.001 | mg/L | 0.003 | 0.003 | 0.0 | No Limit |
| | | EG020A-F: Zinc | 7440-66-6 | 0.005 | mg/L | 0.042 | 0.041 | 2.8 | No Limit |
| | | EG020A-F: Aluminium | 7429-90-5 | 0.01 | mg/L | 0.02 | 0.02 | 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 (%)* |
| **EG020F: Dissolved Metals by ICP-MS (QC Lot: 6734241) - continued** | | | | | | | | | |
| ES2521849-007 | Anonymous | EG020A-F: Iron | 7439-89-6 | 0.05 | mg/L | 0.34 | 0.34 | 0.0 | No Limit |
| ES2521798-015 | Anonymous | EG020A-F: Cadmium | 7440-43-9 | 0.0001 | mg/L | 0.0001 | 0.0001 | 0.0 | No Limit |
| | | EG020A-F: Arsenic | 7440-38-2 | 0.001 | mg/L | 0.009 | 0.009 | 0.0 | No Limit |
| | | EG020A-F: Chromium | 7440-47-3 | 0.001 | mg/L | 0.148 | 0.150 | 1.2 | 0% - 20% |
| | | EG020A-F: Copper | 7440-50-8 | 0.001 | mg/L | 0.048 | 0.051 | 6.1 | 0% - 20% |
| | | EG020A-F: Lead | 7439-92-1 | 0.001 | mg/L | 0.005 | 0.005 | 0.0 | No Limit |
| | | EG020A-F: Manganese | 7439-96-5 | 0.001 | mg/L | 0.423 | 0.418 | 1.3 | 0% - 20% |
| | | EG020A-F: Nickel | 7440-02-0 | 0.001 | mg/L | 0.352 | 0.354 | 0.6 | 0% - 20% |
| | | EG020A-F: Zinc | 7440-66-6 | 0.005 | mg/L | 3.00 | 3.00 | 0.1 | 0% - 20% |
| | | EG020A-F: Aluminium | 7429-90-5 | 0.01 | mg/L | 0.12 | 0.12 | 0.0 | 0% - 50% |
| | | EG020A-F: Iron | 7439-89-6 | 0.05 | mg/L | 6.57 | 6.51 | 0.9 | 0% - 20% |
| **EG020T: Total Metals by ICP-MS (QC Lot: 6734163)** | | | | | | | | | |
| ES2521779-002 | Anonymous | EG020A-T: Cobalt | 7440-48-4 | 0.001 | mg/L | 0.015 | 0.015 | 0.0 | 0% - 50% |
| | | EG020A-T: Manganese | 7439-96-5 | 0.001 | mg/L | 0.051 | 0.050 | 0.0 | 0% - 20% |
| | | EG020A-T: Aluminium | 7429-90-5 | 0.01 | mg/L | 0.40 | 0.42 | 2.9 | 0% - 20% |
| | | EG020A-T: Iron | 7439-89-6 | 0.05 | mg/L | 0.46 | 0.43 | 7.5 | No Limit |
| ES2521861-001 | Anonymous | EG020A-T: Cobalt | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-T: Manganese | 7439-96-5 | 0.001 | mg/L | 0.081 | 0.079 | 2.1 | 0% - 20% |
| | | EG020A-T: Aluminium | 7429-90-5 | 0.01 | mg/L | 0.25 | 0.24 | 0.0 | 0% - 20% |
| | | EG020A-T: Iron | 7439-89-6 | 0.05 | mg/L | 0.57 | 0.53 | 8.6 | 0% - 50% |
| **EG035F: Dissolved Mercury by FIMS (QC Lot: 6734242)** | | | | | | | | | |
| ES2522089-002 | Anonymous | EG035F: Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | 0.0 | No Limit |
| ES2521798-015 | Anonymous | EG035F: Mercury | 7439-97-6 | 0.0001 | mg/L | 0.0001 | 0.0001 | 0.0 | No Limit |
| **EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6731412)** | | | | | | | | | |
| ES2520215-001 | Anonymous | EK055G: Ammonia as N | 7664-41-7 | 0.01 | mg/L | 0.02 | 0.02 | 0.0 | No Limit |
| ES2521616-002 | Anonymous | EK055G: Ammonia as N | 7664-41-7 | 0.01 | mg/L | 0.09 | 0.09 | 0.0 | No Limit |
| **EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6727069)** | | | | | | | | | |
| ES2521858-002 | Anonymous | EK057G: Nitrite as N | 14797-65-0 | 0.01 | mg/L | <0.01 | <0.01 | 0.0 | No Limit |
| ES2521769-010 | 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: 6731413)** | | | | | | | | | |
| ES2521793-003 | Anonymous | EK059G: Nitrite + Nitrate as N | ---- | 0.01 | mg/L | 1.38 | 1.38 | 0.0 | 0% - 20% |
| ES2521813-001 | Anonymous | EK059G: Nitrite + Nitrate as N | ---- | 0.01 | mg/L | 0.10 | 0.10 | 0.0 | 0% - 50% |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6731409)** | | | | | | | | | |
| ES2521732-001 | Anonymous | EK061G: Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | 4.4 | 4.1 | 6.5 | 0% - 20% |
| **EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6731410)** | | | | | | | | | |
| ES2521809-001 | SR_1 | EK067G: Total Phosphorus as P | ---- | 0.01 (0.05)* | mg/L | 0.32 | 0.29 | 8.2 | No Limit |
| ES2521732-001 | Anonymous | EK067G: Total Phosphorus as P | ---- | 0.01 | mg/L | 0.15 | 0.14 | 0.0 | 0% - 50% |

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 (%)* |
| **EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 6727072)** | | | | | | | | | |
| ES2521809-001 | SR_1 | EK071G: Reactive Phosphorus as P | 14265-44-2 | 0.01 | mg/L | <0.01 | <0.01 | 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: 6726578)** | | | | | | | | |
| EA005-P: pH Value | ---- | ---- | pH Unit | ---- | 4 pH Unit | 100 | 98.8 | 101 |
| | | | | ---- | 7 pH Unit | 100 | 99.2 | 101 |
| **EA010P: Conductivity by PC Titrator (QCLot: 6726577)** | | | | | | | | |
| EA010-P: Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | <1 | 220 µS/cm | 100 | 89.9 | 110 |
| | | | | <1 | 2100 µS/cm | 102 | 90.2 | 111 |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6733279)** | | | | | | | | |
| EA015H: Total Dissolved Solids @180°C | ---- | 10 | mg/L | <10 | 2000 mg/L | 103 | 87.0 | 109 |
| | | | | <10 | 293 mg/L | 104 | 75.2 | 126 |
| | | | | <10 | 2420 mg/L | 100 | 83.0 | 124 |
| **EG020F: Dissolved Metals by ICP-MS (QCLot: 6734241)** | | | | | | | | |
| EG020A-F: Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 96.0 | 80.0 | 116 |
| EG020A-F: Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 96.8 | 85.0 | 114 |
| EG020A-F: Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | 0.1 mg/L | 94.7 | 84.0 | 110 |
| EG020A-F: Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 98.8 | 85.0 | 111 |
| EG020A-F: Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 98.5 | 81.0 | 111 |
| EG020A-F: Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 97.9 | 83.0 | 111 |
| EG020A-F: Manganese | 7439-96-5 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 92.7 | 82.0 | 110 |
| EG020A-F: Nickel | 7440-02-0 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 93.7 | 82.0 | 112 |
| EG020A-F: Zinc | 7440-66-6 | 0.005 | mg/L | <0.005 | 0.1 mg/L | 97.2 | 81.0 | 117 |
| EG020A-F: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | 0.5 mg/L | 97.8 | 82.0 | 112 |
| **EG020T: Total Metals by ICP-MS (QCLot: 6734163)** | | | | | | | | |
| EG020A-T: Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 99.2 | 82.0 | 120 |
| EG020A-T: Cobalt | 7440-48-4 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 96.4 | 84.0 | 116 |
| EG020A-T: Manganese | 7439-96-5 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 95.6 | 85.0 | 113 |
| EG020A-T: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | 0.5 mg/L | 99.6 | 85.0 | 117 |
| **EG035F: Dissolved Mercury by FIMS (QCLot: 6734242)** | | | | | | | | |
| EG035F: Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | 0.01 mg/L | 95.2 | 83.0 | 105 |
| **EK055G: Ammonia as N by Discrete Analyser (QCLot: 6731412)** | | | | | | | | |
| EK055G: Ammonia as N | 7664-41-7 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 100 | 90.0 | 114 |
| **EK057G: Nitrite as N by Discrete Analyser (QCLot: 6727069)** | | | | | | | | |

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 |
|---|---|---|---|---|---|---|---|---|
| **EK057G: Nitrite as N by Discrete Analyser (QCLot: 6727069) - continued** | | | | | | | | |
| EK057G: Nitrite as N | 14797-65-0 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 98.4 | 82.0 | 114 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6731413)** | | | | | | | | |
| EK059G: Nitrite + Nitrate as N | ---- | 0.01 | mg/L | <0.01 | 0.5 mg/L | 104 | 91.0 | 113 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6731409)** | | | | | | | | |
| EK061G: Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | <0.1 | 5 mg/L | 96.0 | 69.0 | 123 |
| | | | | <0.1 | 2.5 mg/L | 99.6 | 70.0 | 123 |
| **EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6731410)** | | | | | | | | |
| EK067G: Total Phosphorus as P | ---- | 0.01 | mg/L | <0.01 | 2.21 mg/L | 96.7 | 71.3 | 126 |
| | | | | <0.01 | 0.5 mg/L | 105 | 71.3 | 126 |
| **EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 6727072)** | | | | | | | | |
| EK071G: Reactive Phosphorus as P | 14265-44-2 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 104 | 85.0 | 117 |

## 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 |
|---|---|---|---|---|---|---|---|
| **EG020F: Dissolved Metals by ICP-MS (QCLot: 6734241)** | | | | | | | |
| ES2521575-001 | Anonymous | EG020A-F: Arsenic | 7440-38-2 | 1 mg/L | 124 | 70.0 | 130 |
| | | EG020A-F: Cadmium | 7440-43-9 | 0.25 mg/L | 123 | 70.0 | 130 |
| | | EG020A-F: Chromium | 7440-47-3 | 1 mg/L | 129 | 70.0 | 130 |
| | | EG020A-F: Copper | 7440-50-8 | 1 mg/L | 121 | 70.0 | 130 |
| | | EG020A-F: Lead | 7439-92-1 | 1 mg/L | 120 | 70.0 | 130 |
| | | EG020A-F: Manganese | 7439-96-5 | 1 mg/L | 126 | 70.0 | 130 |
| | | EG020A-F: Nickel | 7440-02-0 | 1 mg/L | 124 | 70.0 | 130 |
| | | EG020A-F: Zinc | 7440-66-6 | 1 mg/L | 127 | 70.0 | 130 |
| **EG020T: Total Metals by ICP-MS (QCLot: 6734163)** | | | | | | | |
| ES2521779-001 | Anonymous | EG020A-T: Cobalt | 7440-48-4 | 1 mg/L | 112 | 70.0 | 130 |
| | | EG020A-T: Manganese | 7439-96-5 | 1 mg/L | 95.7 | 70.0 | 130 |
| **EG035F: Dissolved Mercury by FIMS (QCLot: 6734242)** | | | | | | | |
| ES2521425-001 | Anonymous | EG035F: Mercury | 7439-97-6 | 0.01 mg/L | 88.8 | 70.0 | 130 |
| **EK055G: Ammonia as N by Discrete Analyser (QCLot: 6731412)** | | | | | | | |
| ES2520215-001 | Anonymous | EK055G: Ammonia as N | 7664-41-7 | 0.5 mg/L | 89.0 | 70.0 | 130 |
| **EK057G: Nitrite as N by Discrete Analyser (QCLot: 6727069)** | | | | | | | |

Sub-Matrix: **WATER**

| Laboratory sample ID | Sample ID | Method: Compound | CAS Number | Matrix Spike (MS) Report | | | |
|---|---|---|---|---|---|---|---|
| | | | | Spike | SpikeRecovery(%) | Acceptable Limits (%) | |
| | | | | Concentration | MS | Low | High |
| **EK057G: Nitrite as N by Discrete Analyser (QCLot: 6727069) - continued** | | | | | | | |
| ES2521769-010 | Anonymous | EK057G: Nitrite as N | 14797-65-0 | 0.5 mg/L | 113 | 70.0 | 130 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6731413)** | | | | | | | |
| ES2521793-003 | Anonymous | EK059G: Nitrite + Nitrate as N | ---- | 0.5 mg/L | 112 | 70.0 | 130 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6731409)** | | | | | | | |
| ES2521762-001 | Anonymous | EK061G: Total Kjeldahl Nitrogen as N | ---- | 1000 mg/L | 94.4 | 70.0 | 130 |
| **EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6731410)** | | | | | | | |
| ES2521793-001 | Anonymous | EK067G: Total Phosphorus as P | ---- | 1 mg/L | 76.5 | 70.0 | 130 |
| **EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 6727072)** | | | | | | | |
| ES2521809-001 | SR_1 | EK071G: Reactive Phosphorus as P | 14265-44-2 | 0.5 mg/L | 114 | 70.0 | 130 |

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2521809** | Page | : 1 of 7 |
| Client | : **ADE Consulting Group Pty Ltd** | Laboratory | : Environmental Division Sydney |
| Contact | : MR MATTHEW TOOLE | Telephone | : +61-2-8784 8555 |
| Project | : A101022.0343.01 | Date Samples Received | : 16-Jul-2025 |
| Site | : ---- | Issue Date | : 23-Jul-2025 |
| Sampler | : MONIQUE HITCHENS | No. of samples received | : 2 |
| Order number | : A101022.0343.01 | No. of samples analysed | : 2 |

**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.**
- **NO Matrix Spike outliers occur.**
- **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 : 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** | | | | | | |
| SR_1, SR_2 | ---- | ---- | ---- | 17-Jul-2025 | 09-Jul-2025 | **8** |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR_1, SR_2 | ---- | ---- | ---- | 22-Jul-2025 | 16-Jul-2025 | **6** |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR_1, SR_2 | ---- | ---- | ---- | 18-Jul-2025 | 11-Jul-2025 | **7** |
| **EK071G: Reactive Phosphorus as P by discrete analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR_1, SR_2 | ---- | ---- | ---- | 18-Jul-2025 | 11-Jul-2025 | **7** |

## 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)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **----** | ---- | **----** | **17-Jul-2025** | 09-Jul-2025 | × |
| **EA010P: Conductivity by PC Titrator** | | | | | | | |
| **Clear Plastic Bottle - Natural (EA010-P)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **----** | ---- | **----** | **17-Jul-2025** | 06-Aug-2025 | ✓ |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | |
| **Clear Plastic Bottle - Natural (EA015H)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **----** | ---- | **----** | **22-Jul-2025** | 16-Jul-2025 | × |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | |
| **Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **----** | ---- | **----** | **22-Jul-2025** | 05-Jan-2026 | ✓ |

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 |
| **EG020T: Total Metals by ICP-MS** | | | | | | | |
| **Clear Plastic Bottle - Natural (EG020A-T)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **22-Jul-2025** | 05-Jan-2026 | ✓ | **22-Jul-2025** | 05-Jan-2026 | ✓ |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | |
| **Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **----** | ---- | **----** | **23-Jul-2025** | 06-Aug-2025 | ✓ |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | |
| **Clear Plastic Bottle - Sulfuric Acid (EK055G)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **----** | ---- | **----** | **22-Jul-2025** | 06-Aug-2025 | ✓ |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | |
| **Clear Plastic Bottle - Natural (EK057G)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **----** | ---- | **----** | **18-Jul-2025** | 11-Jul-2025 | × |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | |
| **Clear Plastic Bottle - Sulfuric Acid (EK059G)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **----** | ---- | **----** | **22-Jul-2025** | 06-Aug-2025 | ✓ |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | |
| **Clear Plastic Bottle - Sulfuric Acid (EK061G)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **21-Jul-2025** | 06-Aug-2025 | ✓ | **22-Jul-2025** | 06-Aug-2025 | ✓ |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | |
| **Clear Plastic Bottle - Sulfuric Acid (EK067G)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **21-Jul-2025** | 06-Aug-2025 | ✓ | **22-Jul-2025** | 06-Aug-2025 | ✓ |
| **EK071G: Reactive Phosphorus as P by discrete analyser** | | | | | | | |
| **Clear Plastic Bottle - Natural (EK071G)** | | | | | | | |
| SR_1, SR_2 | **09-Jul-2025** | **----** | ---- | **----** | **18-Jul-2025** | 11-Jul-2025 | × |

# 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)** | | | | | | | |
| Ammonia as N by Discrete analyser | EK055G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Conductivity by Auto Titrator | EA010-P | 2 | 8 | **25.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 2 | 15 | **13.33** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| pH by Auto Titrator | EA005-P | 2 | 12 | **16.67** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 3 | **33.33** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Dissolved Solids (High Level) | EA015H | 4 | 40 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 1 | 7 | **14.29** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 2 | 19 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Phosphorus as P By Discrete Analyser | EK067G | 2 | 15 | **13.33** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Ammonia as N by Discrete analyser | EK055G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Conductivity by Auto Titrator | EA010-P | 2 | 8 | **25.00** | **8.33** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 1 | 15 | **6.67** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| pH by Auto Titrator | EA005-P | 2 | 12 | **16.67** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Dissolved Solids (High Level) | EA015H | 5 | 40 | **12.50** | **12.50** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 3 | 7 | **42.86** | **15.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Phosphorus as P By Discrete Analyser | EK067G | 2 | 15 | **13.33** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Method Blanks (MB)** | | | | | | | |
| Ammonia as N by Discrete analyser | EK055G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Conductivity by Auto Titrator | EA010-P | 1 | 8 | **12.50** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 1 | 15 | **6.67** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Dissolved Solids (High Level) | EA015H | 2 | 40 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 1 | 7 | **14.29** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 1 | 19 | **5.26** | **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 | 15 | **6.67** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Ammonia as N by Discrete analyser | EK055G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 1 | 15 | **6.67** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 3 | **33.33** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 1 | 7 | **14.29** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Phosphorus as P By Discrete Analyser | EK067G | 1 | 15 | **6.67** | **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) |
| Dissolved Metals by ICP-MS - Suite A | EG020A-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. |
| Total Metals by ICP-MS - Suite A | EG020A-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). |
| 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) |
| 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) |

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| 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) |

| 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) |

# CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →


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| | | |
|---|---|---|
| **CLIENT:** ADE Consulting Group | **TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics) | ☒☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date): |
| **OFFICE:** 6/7 Millenium Court, Silverwater, NSW | | |
| **PROJECT:** A101022.0343.01 | **ALS QUOTE NO.:** | **COC SEQUENCE NUMBER (Circle)** COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7 |
| **ORDER NUMBER:** A101022.0343.01 | | |
| **PROJECT MANAGER:** Matthew Toole | **CONTACT PH:** | |
| **SAMPLER:** Monique Hitchens | **SAMPLER MOBILE:** | |
| **COC emailed to ALS?** ( YES / NO) | **EDD FORMAT (or default):** | |
| **Email Reports to** (will default to PM if no other addresses are listed): ade.group, matthew.toole@ade.group, ankita.saxena@ade.group, misha.konarev@ade.group, monique.hitchens | | |
| **Email Invoice to** (will default to PM if no other addresses are listed): **matthew.toole@ade.group, accounts@ade.group** | | |

**FOR LABORATORY USE ONLY (Circle)**

| | | | |
|---|---|---|---|
| Custody Seal Intact? | Yes | No | N/A |
| Free ice / frozen ice bricks present upon receipt? | Yes | No | N/A |
| Random Sample Temperature on Receipt: | | °C | |
| Other comment: | | | |

| RELINQUISHED BY: | RECEIVED BY: | RELINQUISHED BY: | RECEIVED BY: |
|---|---|---|---|
| EG | | | |
| DATE/TIME: 30+/07/2025 | DATE/TIME: 31/7/25 1544. | DATE/TIME: | DATE/TIME: |

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

| ALS USE | SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) | | | CONTAINER INFORMATION | | ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required). | | | | | | | | Additional Information |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAB ID | SAMPLE ID | SAMPLE DATE | MATRIX | TYPE & PRESERVATIVE *(refer to codes below)* | pH, EC | Total Dissolved Solids | dissolved metals (Al,As,Cd,Cr,Cu,Fe, Pb,Mn,Hg,Ni,Zn) | total metals (Al, Co, Fe, Mn | nutrients (ammonia, nitrate, nitrite, TKN, total N, total P, reactive P | | | | | |
| | SR_30.07.25 | 30.07.25 | W | | x | x | x | x | x | | | | | |
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| | | | | TOTAL | 1 | 1 | 1 | 1 | 1 | | | | | |

HT

Environmental Division Sydney
Work Order Reference
ES2523280

Telephone : +61-2-8784 8555

***Water Container Codes:*** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
S-16 = GSW WAC, W-13+W-26= GSW WAC Rinsate

# CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →


☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com


| | | |
|---|---|---|
| **CLIENT:** ADE Consulting Group | **TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics) | ☒☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date): |
| **OFFICE:** 6/7 Millenium Court, Silverwater, NSW | | |
| **PROJECT:** A101022.0343.01 | **ALS QUOTE NO.:** | **COC SEQUENCE NUMBER (Circle)** COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7 |
| **ORDER NUMBER:** A101022.0343.01 | | |
| **PROJECT MANAGER:** Matthew Toole | **CONTACT PH:** | |
| **SAMPLER:** Monique Hitchens | **SAMPLER MOBILE:** | |
| **COC emailed to ALS?** ( YES / NO) | **EDD FORMAT (or default):** | |
| **Email Reports to** (will default to PM if no other addresses are listed): ade.group, matthew.toole@ade.group, ankita.saxena@ade.group, misha.konarev@ade.group, monique.hitchens | | |
| **Email Invoice to** (will default to PM if no other addresses are listed): **matthew.toole@ade.group, accounts@ade.group** | | |

**FOR LABORATORY USE ONLY (Circle)**

| | | | |
|---|---|---|---|
| Custody Seal Intact? | Yes | No | N/A |
| Free ice / frozen ice bricks present upon receipt? | Yes | No | N/A |
| Random Sample Temperature on Receipt: | | °C | |
| Other comment: | | | |

| RELINQUISHED BY: | RECEIVED BY: | RELINQUISHED BY: | RECEIVED BY: |
|---|---|---|---|
| EG | | | |
| DATE/TIME: 30+/07/2025 | DATE/TIME: 31/7/25 1544. | DATE/TIME: | DATE/TIME: |

**COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:**

| ALS USE | SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) | | | CONTAINER INFORMATION | | ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required). | | | | | | | | Additional Information |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAB ID | SAMPLE ID | SAMPLE DATE | MATRIX | TYPE & PRESERVATIVE *(refer to codes below)* | pH, EC | Total Dissolved Solids | dissolved metals (Al,As,Cd,Cr,Cu,Fe, Pb,Mn,Hg,Ni,Zn) | total metals (Al, Co, Fe, Mn | nutrients (ammonia, nitrate, nitrite, TKN, total N, total P, reactive P | | | | | |
| | SR_30.07.25 | 30.07.25 | W | | x | x | x | x | x | | | | | |
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| | | | | TOTAL | 1 | 1 | 1 | 1 | 1 | | | | | |

HT

Environmental Division Sydney
Work Order Reference
ES2523280

Telephone : +61-2-8784 8555

***Water Container Codes:*** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.
S-16 = GSW WAC, W-13+W-26= GSW WAC Rinsate

# CHAIN OF CUSTODY

ALS Laboratory: please tick →


ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com

PERTH 10 Hod Way Malaga WA 6090 Ph: 08 6209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com


| | | | |
|---|---|---|---|
| CLIENT: ADE Consulting Group | TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics) | ☒ Standard TAT (List due date): | FOR LABORATORY USE ONLY (Circle) |
| OFFICE: 6/7 Millennium Court, Silverwater, NSW | | ☐ Non Standard or urgent TAT (List due date): | Custody Seal Intact? Yes / No / N/A |
| PROJECT: A101022.0343.01 | ALS QUOTE NO.: | COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7 | Free ice / frozen ice bricks present upon receipt? Yes / No / N/A |
| ORDER NUMBER: A101022.0343.01 .004. L21 | | | Random Sample Temperature on Receipt: °C |
| PROJECT MANAGER: MATTHEW TOOLE | CONTACT PH: | | Other comment: |

| | | | | |
|---|---|---|---|---|
| SAMPLER: Monique Hitchens | SAMPLER MOBILE: | RELINQUISHED BY: MH | RECEIVED BY: | RELINQUISHED BY: |
| COC emailed to ALS? ( YES / NO) | EDD FORMAT (or default): | DATE/TIME: 14/03/25 | DATE/TIME: 14/3/25 1546. | DATE/TIME: |
| Email Reports to (will default to PM if no other addresses are listed): matthew.toole@ade.group; Monique.hitchens@ade.group; ankita.saxena@ade.group; Graham.Hawkes@ade.group | | | | |
| Email Invoice to (will default to PM if no other addresses are listed): ~~elin.griffiths@ade.group~~, accounts@ade.group; Matthew.Toole@ade.group | | | | |

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

| ALS USE | SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) | | | CONTAINER INFORMATION | | ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). | | | | | | | | Additional Information |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAB ID | SAMPLE ID | SAMPLE DATE | MATRIX | TYPE & PRESERVATIVE (refer to codes below) | pH, EC | Total Dissolved Solids | dissolved metals (Al,Ar,Cd,Cr,Cu,Fe, Pb,Mn,Hg,Ni,Zn) | total metals (Al, Co, Fe, Mn | nutrients (ammonia, nitrate, nitrite, TKN, total N, total P, reactive P | ON HOLD | | | | Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc. |
| | SR1 | 14/03/2025 | W | | | | | | | X | | | | |
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| TOTAL | | | | | 1 | 1 | 1 | 1 | 1 | | | | | |

Environmental Division Sydney
Work Order Reference
ES2507427

Telephone : +61-2-8784 8555

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

S-16 = GSW WAC, W-13+W-26= GSW WAC Rinsate

**UPDATED COC**

# CHAIN OF CUSTODY

ALS Laboratory: please tick →

| | | | |
|---|---|---|---|
| CLIENT: ADE Consulting Group | TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) | ☒ Standard TAT (List due date): | FOR LABORATORY USE ONLY (Circle) |
| OFFICE: | | ☐ Non Standard or urgent TAT (List due date): | Custody Seal Intact? Yes No N/A |
| PROJECT: A101022.0343.01 | ALS QUOTE NO.: | COC SEQUENCE NUMBER (Circle) | Cooler Ice / Frozen Ice Bricks present upon receipt? Yes No N/A |
| ORDER NUMBER: A101022.0343.01 | | COC 1 2 3 4 5 6 7 | Random Sample Temperature on Receipt: C |
| PROJECT MANAGER: MATTHEW TOOLE | CONTACT PH: | OF 1 2 3 4 5 6 7 | Other comment: |

| | | | | |
|---|---|---|---|---|
| SAMPLER: Monique Hitchens | SAMPLER MOBILE: | RELINQUISHED BY: | RECEIVED BY: | RELINQUISHED BY: / RECEIVED BY: |
| COC emailed to ALS? ( YES / NO) | EDD FORMAT (or default): | MH | | |
| Email Reports to (will default to PM if no other addresses are listed) | | DATE/TIME | DATE/TIME | DATE/TIME / DATE/TIME |
| matthew.toole@ade.group, graham.hawkes@ade.group | | 14/03/25 | 20/3/25 1145. | |
| Monique.hitchens@ade.group | ankita.saxena@ade.group | | | |

Email Invoice to (will default to PM if no other addresses are listed): matthew.toole@ade.group, accounts@ade.group

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

| ALS USE | SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) | | | CONTAINER INFORMATION | ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required) | | | | | | | | | Additional Information |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAB ID | SAMPLE ID | SAMPLE DATE | MATRIX | TYPE & PRESERVATIVE (refer to codes below) | pH, EC | Total Dissolved Solids | dissolved metals (Al,As,Cd,Cr,Cu,Fe, Pb,Mn,Hg,Ni,Zn) | total metals (Al, Co, Fe, Mn | nutrients (ammonia, nitrate, nitrite, TKN, total N, total P, reactive P | Major Cations | Major Anions | TOC | TPH | Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc |
| | SR1 | 13/03/2025 | W | | X | X | X | X | X | X | X | X | X | HT |
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| | | | | TOTAL | 1 | 1 | 1 | 1 | 1 | | | | | |

Environmental Division Sydney
Work Order Reference
ES2507427

Telephone : +61-2-8784 8555

*Water Container Codes:* P = Unpreserved Plastic. N = Nitric Preserved Plastic. ORC = Nitric Preserved ORC. SH = Sodium Hydroxide/Cd Preserved. S = Sodium Hydroxide Preserved Plastic. AG = Amber Glass Unpreserved. AP = Airfreight Unpreserved Plastic. V = VOA Vial HCl Preserved. VB = VOA Vial Sodium Bisulphate Preserved. VS = VOA Vial Sulfuric Preserved. AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass. H = HCl preserved Plastic. HS = HCl preserved Speciation bottle. SP = Sulfuric Preserved Plastic. F = Formaldehyde Preserved Glass. Z = Zinc Acetate Preserved Bottle. E = EDTA Preserved Bottles. ST = Sterile Bottle. ASS = Plastic Bag for Acid Sulphate Soils. B = Unpreserved Bag.

S-16 = GSW WAC. W-13+W-26= GSW WAC Rinsate

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2507427** | Page | : 1 of 7 |
| Client | : **ADE Consulting Group Pty Ltd** | Laboratory | : Environmental Division Sydney |
| Contact | : MR MATTHEW TOOLE | Contact | : Customer Services ES |
| Address | : 6/7 MILLENIUM COURT<br>SILVERWATER NSW 2128 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : +61 02 94007711 | Telephone | : +61-2-8784 8555 |
| Project | : A101022.0343.01 | Date Samples Received | : 17-Mar-2025 10:33 |
| Order number | : A101022.0343.01.004.L21 | Date Analysis Commenced | : 21-Mar-2025 |
| C-O-C number | : ---- | Issue Date | : 31-Mar-2025 10:58 |
| Sampler | : MONIQUE HITCHENS | | |
| Site | : ---- | | |
| Quote number | : EN/111 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

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* |
|---|---|---|
| Ankit Joshi | Senior Chemist - Inorganics | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar | Organic Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## 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.

- EK061/67: LOR raised for TKN/TP due to sample matrix.
- 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.
- EK061G: LOR raised for TKN due to sample matrix.
- 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 | SR1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2025 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2507427-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | **7.36** | ---- | ---- | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | **27600** | ---- | ---- | ---- | ---- |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | | |
| Total Dissolved Solids @180°C | ---- | 10 | mg/L | **18500** | ---- | ---- | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | <1 | ---- | ---- | ---- | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | <1 | ---- | ---- | ---- | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | **456** | ---- | ---- | ---- | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | **456** | ---- | ---- | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | **434** | ---- | ---- | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | **9240** | ---- | ---- | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | **557** | ---- | ---- | ---- | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | **523** | ---- | ---- | ---- | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | **4870** | ---- | ---- | ---- | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | **68** | ---- | ---- | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | ---- | ---- | ---- | ---- |
| Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | ---- | ---- | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | ---- | ---- | ---- | ---- |
| Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | ---- | ---- | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | ---- | ---- | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | **0.010** | ---- | ---- | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | SR1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2025 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2507427-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | **0.009** | ---- | ---- | ---- | ---- |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.670** | ---- | ---- | ---- | ---- |
| **Iron** | 7439-89-6 | 0.05 | mg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **12.3** | ---- | ---- | ---- | ---- |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | **0.028** | ---- | ---- | ---- | ---- |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **1.06** | ---- | ---- | ---- | ---- |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **35.0** | ---- | ---- | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | ---- | ---- | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | |
| **Ammonia as N** | 7664-41-7 | 0.01 | mg/L | **0.41** | ---- | ---- | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | |
| **Nitrite as N** | 14797-65-0 | 0.01 | mg/L | **2.23** | ---- | ---- | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | |
| **Nitrate as N** | 14797-55-8 | 0.01 | mg/L | **11.6** | ---- | ---- | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **13.8** | ---- | ---- | ---- | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | <10.0 | ---- | ---- | ---- | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | **13.8** | ---- | ---- | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | <1.00 | ---- | ---- | ---- | ---- |
| **EK071G: Reactive Phosphorus as P by discrete analyser** | | | | | | | | |
| **Reactive Phosphorus as P** | 14265-44-2 | 0.01 | mg/L | <0.01 | ---- | ---- | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | |
| ø **Total Anions** | ---- | 0.01 | meq/L | **279** | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | SR1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 13-Mar-2025 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | ES2507427-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EN055: Ionic Balance - Continued** | | | | | | | | | |
| ø **Total Cations** | ---- | 0.01 | meq/L | | **284** | ---- | ---- | ---- | ---- |
| ø **Ionic Balance** | ---- | 0.01 | % | | **1.00** | ---- | ---- | ---- | ---- |
| **EP005: Total Organic Carbon (TOC)** | | | | | | | | | |
| **Total Organic Carbon** | ---- | 1 | mg/L | | **10** | ---- | ---- | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| **C6 - C9 Fraction** | ---- | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| **C6 - C10 Fraction** | C6_C10 | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |
| ^ **C6 - C10 Fraction minus BTEX (F1)** | C6_C10-BTEX | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |
| **>C10 - C16 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| ^ **>C10 - C16 Fraction minus Naphthalene (F2)** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **EP080: BTEXN** | | | | | | | | | |
| **Benzene** | 71-43-2 | 1 | µg/L | | <1 | ---- | ---- | ---- | ---- |
| **Toluene** | 108-88-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Ethylbenzene** | 100-41-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **meta- & para-Xylene** | 108-38-3 106-42-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **ortho-Xylene** | 95-47-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ **Total Xylenes** | ---- | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ **Sum of BTEX** | ---- | 1 | µg/L | | <1 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | SR1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 13-Mar-2025 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | ES2507427-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EP080: BTEXN - Continued** | | | | | | | | | |
| **Naphthalene** | 91-20-3 | 5 | µg/L | | <5 | **----** | **----** | **----** | **----** |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 2 | % | | **106** | **----** | **----** | **----** | **----** |
| **Toluene-D8** | 2037-26-5 | 2 | % | | **93.2** | **----** | **----** | **----** | **----** |
| **4-Bromofluorobenzene** | 460-00-4 | 2 | % | | **89.0** | **----** | **----** | **----** | **----** |

## 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 | 72 | 143 |
| **Toluene-D8** | 2037-26-5 | 75 | 131 |
| **4-Bromofluorobenzene** | 460-00-4 | 73 | 137 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2507427** | Page | : 1 of 9 |
| Client | : **ADE Consulting Group Pty Ltd** | Laboratory | : Environmental Division Sydney |
| Contact | : MR MATTHEW TOOLE | Contact | : Customer Services ES |
| Address | : 6/7 MILLENIUM COURT<br>SILVERWATER NSW 2128 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : +61 02 94007711 | Telephone | : +61-2-8784 8555 |
| Project | : A101022.0343.01 | Date Samples Received | : 17-Mar-2025 |
| Order number | : A101022.0343.01.004.L21 | Date Analysis Commenced | : 21-Mar-2025 |
| C-O-C number | : ---- | Issue Date | : 31-Mar-2025 |
| Sampler | : MONIQUE HITCHENS | | |
| Site | : ---- | | |
| Quote number | : EN/111 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

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* |
|---|---|---|
| Ankit Joshi | Senior Chemist - Inorganics | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar | Organic Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## 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
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

## 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: 6457417)** | | | | | | | | | |
| ED2500450-001 | Anonymous | EA005-P: pH Value | ---- | 0.01 | pH Unit | 7.30 | 7.44 | 1.9 | 0% - 20% |
| ES2508096-001 | Anonymous | EA005-P: pH Value | ---- | 0.01 | pH Unit | 7.03 | 7.11 | 1.1 | 0% - 20% |
| **EA010P: Conductivity by PC Titrator (QC Lot: 6457416)** | | | | | | | | | |
| ES2508197-002 | Anonymous | EA010-P: Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | 1510 | 1510 | 0.2 | 0% - 20% |
| ED2500450-001 | Anonymous | EA010-P: Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | 957 | 964 | 0.7 | 0% - 20% |
| ES2508096-001 | Anonymous | EA010-P: Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | 1050 | 1030 | 1.5 | 0% - 20% |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6461185)** | | | | | | | | | |
| ES2507427-001 | SR1 | EA015H: Total Dissolved Solids @180°C | ---- | 10 | mg/L | 18500 | 18800 | 1.4 | 0% - 20% |
| **ED037P: Alkalinity by PC Titrator (QC Lot: 6457418)** | | | | | | | | | |
| ED2500450-001 | 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 | 63 | 64 | 0.0 | 0% - 20% |
| | | ED037-P: Total Alkalinity as CaCO3 | ---- | 1 | mg/L | 63 | 64 | 0.0 | 0% - 20% |
| ES2508096-001 | 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 | 154 | 155 | 0.0 | 0% - 20% |
| | | ED037-P: Total Alkalinity as CaCO3 | ---- | 1 | mg/L | 154 | 155 | 0.0 | 0% - 20% |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 6457550)** | | | | | | | | | |
| ES2507913-001 | Anonymous | ED041G: Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | 99 | 107 | 7.7 | 0% - 20% |
| ES2507912-001 | Anonymous | ED041G: Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | 120 | 119 | 1.5 | 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 (%)* |
| **ED045G: Chloride by Discrete Analyser (QC Lot: 6457549)** | | | | | | | | | |
| ES2507913-001 | Anonymous | ED045G: Chloride | 16887-00-6 | 1 | mg/L | 154 | 157 | 1.9 | 0% - 20% |
| ES2507912-001 | Anonymous | ED045G: Chloride | 16887-00-6 | 1 | mg/L | 202 | 206 | 2.2 | 0% - 20% |
| **ED093F: Dissolved Major Cations (QC Lot: 6467794)** | | | | | | | | | |
| ES2508442-002 | Anonymous | ED093F: Calcium | 7440-70-2 | 1 | mg/L | 23 | 22 | 0.0 | 0% - 20% |
| | | ED093F: Magnesium | 7439-95-4 | 1 | mg/L | 11 | 11 | 0.0 | 0% - 50% |
| | | ED093F: Sodium | 7440-23-5 | 1 | mg/L | 36 | 36 | 0.0 | 0% - 20% |
| | | ED093F: Potassium | 7440-09-7 | 1 | mg/L | 3 | 3 | 0.0 | No Limit |
| ES2507427-001 | SR1 | ED093F: Calcium | 7440-70-2 | 1 | mg/L | 557 | 563 | 1.1 | 0% - 20% |
| | | ED093F: Magnesium | 7439-95-4 | 1 | mg/L | 523 | 522 | 0.3 | 0% - 20% |
| | | ED093F: Sodium | 7440-23-5 | 1 | mg/L | 4870 | 4900 | 0.6 | 0% - 20% |
| | | ED093F: Potassium | 7440-09-7 | 1 | mg/L | 68 | 69 | 1.6 | 0% - 20% |
| **EG020F: Dissolved Metals by ICP-MS (QC Lot: 6467792)** | | | | | | | | | |
| ES2508660-001 | Anonymous | EG020A-F: Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | 0.0 | No Limit |
| | | EG020A-F: Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Chromium | 7440-47-3 | 0.001 | mg/L | 0.002 | 0.001 | 0.0 | No Limit |
| | | EG020A-F: Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Manganese | 7439-96-5 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Nickel | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Zinc | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | 0.0 | No Limit |
| | | EG020A-F: Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | 0.0 | No Limit |
| | | EG020A-F: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 | 0.0 | No Limit |
| ES2507427-001 | SR1 | EG020A-F: Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | 0.0 | No Limit |
| | | EG020A-F: Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | 0.001 | 0.0 | No Limit |
| | | EG020A-F: Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Manganese | 7439-96-5 | 0.001 | mg/L | 0.670 | 0.670 | 0.0 | 0% - 20% |
| | | EG020A-F: Nickel | 7440-02-0 | 0.001 | mg/L | 0.010 | 0.010 | 0.0 | 0% - 50% |
| | | EG020A-F: Zinc | 7440-66-6 | 0.005 | mg/L | 0.009 | 0.007 | 16.5 | No Limit |
| | | EG020A-F: Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | 0.0 | No Limit |
| | | EG020A-F: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 | 0.0 | No Limit |
| **EG020T: Total Metals by ICP-MS (QC Lot: 6464382)** | | | | | | | | | |
| EN2504908-001 | Anonymous | EG020A-T: Cobalt | 7440-48-4 | 0.001 | mg/L | 0.009 | 0.009 | 0.0 | No Limit |
| | | EG020A-T: Manganese | 7439-96-5 | 0.001 | mg/L | 0.763 | 0.757 | 0.8 | 0% - 20% |
| | | EG020A-T: Aluminium | 7429-90-5 | 0.01 | mg/L | 9.44 | 9.52 | 0.9 | 0% - 20% |
| | | EG020A-T: Iron | 7439-89-6 | 0.05 | mg/L | 28.7 | 29.1 | 1.2 | 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 (%)* |
| **EG020T: Total Metals by ICP-MS (QC Lot: 6464382) - continued** | | | | | | | | | |
| ES2508413-003 | Anonymous | EG020A-T: Cobalt | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-T: Manganese | 7439-96-5 | 0.001 | mg/L | 0.002 | 0.002 | 0.0 | No Limit |
| | | EG020A-T: Aluminium | 7429-90-5 | 0.01 | mg/L | 0.05 | 0.05 | 0.0 | No Limit |
| | | EG020A-T: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 | 0.0 | No Limit |
| **EG035F: Dissolved Mercury by FIMS (QC Lot: 6467793)** | | | | | | | | | |
| ES2508279-001 | Anonymous | EG035F: Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | 0.0 | No Limit |
| ES2508563-001 | Anonymous | EG035F: Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | 0.0 | No Limit |
| **EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6464714)** | | | | | | | | | |
| EN2504974-001 | Anonymous | EK055G: Ammonia as N | 7664-41-7 | 0.01 | mg/L | 0.04 | 0.04 | 0.0 | No Limit |
| ES2507757-001 | Anonymous | EK055G: Ammonia as N | 7664-41-7 | 0.01 | mg/L | 0.03 | 0.04 | 0.0 | No Limit |
| **EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6457548)** | | | | | | | | | |
| ES2507913-001 | Anonymous | EK057G: Nitrite as N | 14797-65-0 | 0.01 | mg/L | <0.01 | 0.01 | 0.0 | No Limit |
| ES2507912-001 | 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: 6464713)** | | | | | | | | | |
| EN2504974-001 | Anonymous | EK059G: Nitrite + Nitrate as N | ---- | 0.01 | mg/L | 0.02 | 0.01 | 0.0 | No Limit |
| ES2507757-001 | Anonymous | EK059G: Nitrite + Nitrate as N | ---- | 0.01 | mg/L | 8.04 | 8.07 | 0.3 | 0% - 20% |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6464709)** | | | | | | | | | |
| ES2507757-002 | Anonymous | EK061G: Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | 0.8 | 0.2 | 120 | No Limit |
| ES2507427-001 | SR1 | EK061G: Total Kjeldahl Nitrogen as N | ---- | 0.1 (10.0)* | mg/L | <10.0 | 15.8 | 45.1 | No Limit |
| **EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6464710)** | | | | | | | | | |
| ES2507757-002 | Anonymous | EK067G: Total Phosphorus as P | ---- | 0.01 | mg/L | 2.39 | 2.33 | 2.5 | 0% - 20% |
| ES2507427-001 | SR1 | EK067G: Total Phosphorus as P | ---- | 0.01 (1.00)* | mg/L | <1.00 | 2.07 | 69.7 | No Limit |
| **EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 6457547)** | | | | | | | | | |
| ES2507912-001 | Anonymous | EK071G: Reactive Phosphorus as P | 14265-44-2 | 0.01 | mg/L | 0.01 | <0.01 | 0.0 | No Limit |
| **EP005: Total Organic Carbon (TOC) (QC Lot: 6458038)** | | | | | | | | | |
| ES2507427-001 | SR1 | EP005: Total Organic Carbon | ---- | 1 | mg/L | 10 | 12 | 15.0 | 0% - 50% |
| ES2508155-002 | Anonymous | EP005: Total Organic Carbon | ---- | 1 | mg/L | 4 | 4 | 0.0 | No Limit |
| **EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6456901)** | | | | | | | | | |
| CA2501574-001 | Anonymous | EP080: C6 - C9 Fraction | ---- | 20 | µg/L | <20 | <20 | 0.0 | No Limit |
| ES2508096-001 | Anonymous | EP080: C6 - C9 Fraction | ---- | 20 | µg/L | <20 | <20 | 0.0 | No Limit |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6456901)** | | | | | | | | | |
| CA2501574-001 | Anonymous | EP080: C6 - C10 Fraction | C6_C10 | 20 | µg/L | <20 | <20 | 0.0 | No Limit |
| ES2508096-001 | Anonymous | EP080: C6 - C10 Fraction | C6_C10 | 20 | µg/L | <20 | <20 | 0.0 | No Limit |
| **EP080: BTEXN (QC Lot: 6456901)** | | | | | | | | | |
| CA2501574-001 | 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 |

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: 6456901) - continued** | | | | | | | | | |
| CA2501574-001 | Anonymous | EP080: Ethylbenzene | 100-41-4 | 2 | µg/L | <2 | <2 | 0.0 | No Limit |
| | | EP080: meta- & para-Xylene | 108-38-3<br>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 |
| ES2508096-001 | 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<br>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 |

## 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: 6457417)** | | | | | | | | |
| EA005-P: pH Value | ---- | ---- | pH Unit | ---- | 4 pH Unit | 100 | 98.8 | 101 |
| | | | | ---- | 7 pH Unit | 100 | 99.2 | 101 |
| **EA010P: Conductivity by PC Titrator (QCLot: 6457416)** | | | | | | | | |
| EA010-P: Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | <1 | 220 µS/cm | 102 | 89.9 | 110 |
| | | | | <1 | 2100 µS/cm | 106 | 90.2 | 111 |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6461185)** | | | | | | | | |
| EA015H: Total Dissolved Solids @180°C | ---- | 10 | mg/L | <10 | 2000 mg/L | 99.4 | 87.0 | 109 |
| | | | | <10 | 293 mg/L | 101 | 75.2 | 126 |
| | | | | <10 | 2410 mg/L | 104 | 83.0 | 124 |
| **ED037P: Alkalinity by PC Titrator (QCLot: 6457418)** | | | | | | | | |
| ED037-P: Total Alkalinity as CaCO3 | ---- | ---- | mg/L | ---- | 200 mg/L | 103 | 81.0 | 115 |
| | | | | ---- | 50 mg/L | 105 | 80.0 | 128 |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6457550)** | | | | | | | | |
| ED041G: Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | <1 | 25 mg/L | 103 | 82.0 | 122 |
| | | | | <1 | 500 mg/L | 101 | 82.0 | 122 |
| **ED045G: Chloride by Discrete Analyser (QCLot: 6457549)** | | | | | | | | |
| ED045G: Chloride | 16887-00-6 | 1 | mg/L | <1 | 50 mg/L | 99.2 | 80.9 | 127 |
| | | | | <1 | 1000 mg/L | 97.3 | 80.9 | 127 |
| **ED093F: Dissolved Major Cations (QCLot: 6467794)** | | | | | | | | |
| ED093F: Calcium | 7440-70-2 | 1 | mg/L | <1 | 50 mg/L | 108 | 80.0 | 114 |
| ED093F: Magnesium | 7439-95-4 | 1 | mg/L | <1 | 50 mg/L | 103 | 90.0 | 116 |
| ED093F: Sodium | 7440-23-5 | 1 | mg/L | <1 | 50 mg/L | 101 | 82.0 | 120 |
| ED093F: Potassium | 7440-09-7 | 1 | mg/L | <1 | 50 mg/L | 102 | 85.0 | 113 |
| **EG020F: Dissolved Metals by ICP-MS (QCLot: 6467792)** | | | | | | | | |
| EG020A-F: Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 93.2 | 80.0 | 116 |
| EG020A-F: Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 95.7 | 85.0 | 114 |
| EG020A-F: Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | 0.1 mg/L | 92.0 | 84.0 | 110 |
| EG020A-F: Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 95.6 | 85.0 | 111 |
| EG020A-F: Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 93.8 | 81.0 | 111 |
| EG020A-F: Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 93.7 | 83.0 | 111 |
| EG020A-F: Manganese | 7439-96-5 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 92.4 | 82.0 | 110 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EG020F: Dissolved Metals by ICP-MS (QCLot: 6467792) - continued** | | | | | | | | |
| EG020A-F: Nickel | 7440-02-0 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 92.7 | 82.0 | 112 |
| EG020A-F: Zinc | 7440-66-6 | 0.005 | mg/L | <0.005 | 0.1 mg/L | 99.8 | 81.0 | 117 |
| EG020A-F: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | 0.5 mg/L | 94.6 | 82.0 | 112 |
| **EG020T: Total Metals by ICP-MS (QCLot: 6464382)** | | | | | | | | |
| EG020A-T: Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 94.1 | 82.0 | 120 |
| EG020A-T: Cobalt | 7440-48-4 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 88.9 | 84.0 | 116 |
| EG020A-T: Manganese | 7439-96-5 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 89.3 | 85.0 | 113 |
| EG020A-T: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | 0.5 mg/L | 94.5 | 85.0 | 117 |
| **EG035F: Dissolved Mercury by FIMS (QCLot: 6467793)** | | | | | | | | |
| EG035F: Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | 0.01 mg/L | 89.6 | 83.0 | 105 |
| **EK055G: Ammonia as N by Discrete Analyser (QCLot: 6464714)** | | | | | | | | |
| EK055G: Ammonia as N | 7664-41-7 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 106 | 90.0 | 114 |
| **EK057G: Nitrite as N by Discrete Analyser (QCLot: 6457548)** | | | | | | | | |
| EK057G: Nitrite as N | 14797-65-0 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 99.5 | 82.0 | 114 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6464713)** | | | | | | | | |
| EK059G: Nitrite + Nitrate as N | ---- | 0.01 | mg/L | <0.01 | 0.5 mg/L | 105 | 91.0 | 113 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6464709)** | | | | | | | | |
| EK061G: Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | <0.1 | 5 mg/L | 90.1 | 69.0 | 123 |
| | | | | <0.1 | 2.5 mg/L | 91.2 | 70.0 | 123 |
| **EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6464710)** | | | | | | | | |
| EK067G: Total Phosphorus as P | ---- | 0.01 | mg/L | <0.01 | 2.21 mg/L | 93.0 | 71.3 | 126 |
| | | | | <0.01 | 0.5 mg/L | 86.4 | 71.3 | 126 |
| **EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 6457547)** | | | | | | | | |
| EK071G: Reactive Phosphorus as P | 14265-44-2 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 97.7 | 85.0 | 117 |
| **EP005: Total Organic Carbon (TOC) (QCLot: 6458038)** | | | | | | | | |
| EP005: Total Organic Carbon | ---- | 1 | mg/L | <1 | 10 mg/L | 108 | 72.0 | 120 |
| **EP080/071: Total Petroleum Hydrocarbons (QCLot: 6456901)** | | | | | | | | |
| EP080: C6 - C9 Fraction | ---- | 20 | µg/L | <20 | 260 µg/L | 90.1 | 75.0 | 127 |
| **EP080/071: Total Petroleum Hydrocarbons (QCLot: 6458611)** | | | | | | | | |
| EP071: C10 - C14 Fraction | ---- | 50 | µg/L | <50 | 400 µg/L | 76.3 | 53.7 | 97.0 |
| EP071: C15 - C28 Fraction | ---- | 100 | µg/L | <100 | 600 µg/L | 95.2 | 63.3 | 107 |
| EP071: C29 - C36 Fraction | ---- | 50 | µg/L | <50 | 400 µg/L | 101 | 58.3 | 120 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6456901)** | | | | | | | | |
| EP080: C6 - C10 Fraction | C6_C10 | 20 | µg/L | <20 | 310 µg/L | 94.7 | 75.0 | 127 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | LCS: Spike Recovery (%) | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6458611)** | | | | | | | | |
| EP071: >C10 - C16 Fraction | ---- | 100 | µg/L | <100 | 500 µg/L | 76.5 | 53.9 | 95.5 |
| EP071: >C16 - C34 Fraction | ---- | 100 | µg/L | <100 | 700 µg/L | 101 | 57.8 | 110 |
| EP071: >C34 - C40 Fraction | ---- | 100 | µg/L | <100 | 300 µg/L | 98.8 | 50.5 | 115 |
| **EP080: BTEXN (QCLot: 6456901)** | | | | | | | | |
| EP080: Benzene | 71-43-2 | 1 | µg/L | <1 | 10 µg/L | 102 | 68.3 | 119 |
| EP080: Toluene | 108-88-3 | 2 | µg/L | <2 | 10 µg/L | 97.8 | 73.5 | 120 |
| EP080: Ethylbenzene | 100-41-4 | 2 | µg/L | <2 | 10 µg/L | 97.4 | 73.8 | 122 |
| EP080: meta- & para-Xylene | 108-38-3<br>106-42-3 | 2 | µg/L | <2 | 10 µg/L | 94.7 | 73.0 | 122 |
| EP080: ortho-Xylene | 95-47-6 | 2 | µg/L | <2 | 10 µg/L | 93.9 | 76.4 | 123 |
| EP080: Naphthalene | 91-20-3 | 5 | µg/L | <5 | 10 µg/L | 110 | 75.5 | 124 |

## 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 |
|---|---|---|---|---|---|---|---|
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6457550)** | | | | | | | |
| ES2507912-001 | Anonymous | ED041G: Sulfate as SO4 - Turbidimetric | 14808-79-8 | 10 mg/L | # Not Determined | 70.0 | 130 |
| **ED045G: Chloride by Discrete Analyser (QCLot: 6457549)** | | | | | | | |
| ES2507912-001 | Anonymous | ED045G: Chloride | 16887-00-6 | 250 mg/L | 106 | 70.0 | 130 |
| **EG020F: Dissolved Metals by ICP-MS (QCLot: 6467792)** | | | | | | | |
| ES2508426-002 | Anonymous | EG020A-F: Arsenic | 7440-38-2 | 1 mg/L | 94.3 | 70.0 | 130 |
| | | EG020A-F: Cadmium | 7440-43-9 | 0.25 mg/L | 92.1 | 70.0 | 130 |
| | | EG020A-F: Chromium | 7440-47-3 | 1 mg/L | 92.9 | 70.0 | 130 |
| | | EG020A-F: Copper | 7440-50-8 | 1 mg/L | 92.7 | 70.0 | 130 |
| | | EG020A-F: Lead | 7439-92-1 | 1 mg/L | 93.6 | 70.0 | 130 |
| | | EG020A-F: Manganese | 7439-96-5 | 1 mg/L | 95.1 | 70.0 | 130 |
| | | EG020A-F: Nickel | 7440-02-0 | 1 mg/L | 92.8 | 70.0 | 130 |
| | | EG020A-F: Zinc | 7440-66-6 | 1 mg/L | 96.7 | 70.0 | 130 |
| **EG020T: Total Metals by ICP-MS (QCLot: 6464382)** | | | | | | | |
| EN2504908-002 | Anonymous | EG020A-T: Cobalt | 7440-48-4 | 1 mg/L | 98.1 | 70.0 | 130 |
| | | EG020A-T: Manganese | 7439-96-5 | 1 mg/L | 100 | 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* |
| **EG035F: Dissolved Mercury by FIMS (QCLot: 6467793)** | | | | | | | |
| ES2508426-001 | Anonymous | EG035F: Mercury | 7439-97-6 | 0.01 mg/L | 91.1 | 70.0 | 130 |
| **EK055G: Ammonia as N by Discrete Analyser (QCLot: 6464714)** | | | | | | | |
| EN2504974-001 | Anonymous | EK055G: Ammonia as N | 7664-41-7 | 0.5 mg/L | 126 | 70.0 | 130 |
| **EK057G: Nitrite as N by Discrete Analyser (QCLot: 6457548)** | | | | | | | |
| ES2507912-001 | Anonymous | EK057G: Nitrite as N | 14797-65-0 | 0.5 mg/L | 100 | 70.0 | 130 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6464713)** | | | | | | | |
| EN2504974-001 | Anonymous | EK059G: Nitrite + Nitrate as N | ---- | 0.5 mg/L | 106 | 70.0 | 130 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6464709)** | | | | | | | |
| ES2507713-002 | Anonymous | EK061G: Total Kjeldahl Nitrogen as N | ---- | 5 mg/L | 84.7 | 70.0 | 130 |
| **EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6464710)** | | | | | | | |
| ES2507713-002 | Anonymous | EK067G: Total Phosphorus as P | ---- | 5 mg/L | 91.8 | 70.0 | 130 |
| **EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 6457547)** | | | | | | | |
| ES2507912-001 | Anonymous | EK071G: Reactive Phosphorus as P | 14265-44-2 | 0.5 mg/L | 96.5 | 70.0 | 130 |
| **EP005: Total Organic Carbon (TOC) (QCLot: 6458038)** | | | | | | | |
| ES2507878-001 | Anonymous | EP005: Total Organic Carbon | ---- | 100 mg/L | 103 | 70.0 | 130 |
| **EP080/071: Total Petroleum Hydrocarbons (QCLot: 6456901)** | | | | | | | |
| CA2501574-001 | Anonymous | EP080: C6 - C9 Fraction | ---- | 325 µg/L | 98.5 | 70.0 | 130 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6456901)** | | | | | | | |
| CA2501574-001 | Anonymous | EP080: C6 - C10 Fraction | C6_C10 | 375 µg/L | 100 | 70.0 | 130 |
| **EP080: BTEXN (QCLot: 6456901)** | | | | | | | |
| CA2501574-001 | Anonymous | EP080: Benzene | 71-43-2 | 25 µg/L | 107 | 70.0 | 130 |
| | | EP080: Toluene | 108-88-3 | 25 µg/L | 104 | 70.0 | 130 |
| | | EP080: Ethylbenzene | 100-41-4 | 25 µg/L | 102 | 70.0 | 130 |
| | | EP080: meta- & para-Xylene | 108-38-3<br>106-42-3 | 25 µg/L | 101 | 70.0 | 130 |
| | | EP080: ortho-Xylene | 95-47-6 | 25 µg/L | 102 | 70.0 | 130 |
| | | EP080: Naphthalene | 91-20-3 | 25 µg/L | 107 | 70.0 | 130 |

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2507427** | Page | : 1 of 10 |
| Client | : **ADE Consulting Group Pty Ltd** | Laboratory | : Environmental Division Sydney |
| Contact | : MR MATTHEW TOOLE | Telephone | : +61-2-8784 8555 |
| Project | : A101022.0343.01 | Date Samples Received | : 17-Mar-2025 |
| Site | : ---- | Issue Date | : 31-Mar-2025 |
| Sampler | : MONIQUE HITCHENS | No. of samples received | : 1 |
| Order number | : A101022.0343.01.004.L21 | No. of samples analysed | : 1 |

**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*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## 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** | | | | | | | |
| ED041G: Sulfate (Turbidimetric) as SO4 2- by DA | ES2507912--001 | Anonymous | **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |

## 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** | | | | | | |
| SR1 | ---- | ---- | ---- | 21-Mar-2025 | 13-Mar-2025 | **8** |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 24-Mar-2025 | 20-Mar-2025 | **4** |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 28-Mar-2025 | 14-Mar-2025 | **14** |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 25-Mar-2025 | 15-Mar-2025 | **10** |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 28-Mar-2025 | 15-Mar-2025 | **13** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | 26-Mar-2025 | 14-Mar-2025 | **12** | ---- | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | 26-Mar-2025 | 15-Mar-2025 | **11** | ---- | ---- | ---- |
| **EK071G: Reactive Phosphorus as P by discrete analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 25-Mar-2025 | 15-Mar-2025 | **10** |
| **EP005: Total Organic Carbon (TOC)** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 25-Mar-2025 | 14-Mar-2025 | **11** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | |
| **Amber Glass Bottle - Unpreserved** | | | | | | |
| SR1 | 24-Mar-2025 | 20-Mar-2025 | **4** | ---- | ---- | ---- |

Matrix: **WATER**

| Method / Container / Client Sample ID(s) | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Days overdue | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Days overdue |
|---|---|---|---|---|---|---|
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | |
| **Amber Glass Bottle - Unpreserved** | | | | | | |
| SR1 | 24-Mar-2025 | 20-Mar-2025 | **4** | ---- | ---- | ---- |

## *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Analytical Methods | Method | Count: QC | Count: Regular | Rate (%): Actual | Rate (%): Expected | Quality Control Specification |
|---|---|---|---|---|---|---|
| Laboratory Duplicates (DUP) | | | | | | |
| TRH - Semivolatile Fraction | EP071 | 0 | 9 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | |
| TRH - Semivolatile Fraction | EP071 | 0 | 9 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# *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: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Evaluation | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Evaluation |
|---|---|---|---|---|---|---|---|
| **EA005P: pH by PC Titrator** | | | | | | | |
| **Clear Plastic Bottle - Natural (EA005-P)** | | | | | | | |
| SR1 | **13-Mar-2025** | **----** | ---- | **----** | **21-Mar-2025** | 13-Mar-2025 | × |
| **EA010P: Conductivity by PC Titrator** | | | | | | | |
| **Clear Plastic Bottle - Natural (EA010-P)** | | | | | | | |
| SR1 | **13-Mar-2025** | **----** | ---- | **----** | **21-Mar-2025** | 10-Apr-2025 | ✓ |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | |
| **Clear Plastic Bottle - Natural (EA015H)** | | | | | | | |
| SR1 | **13-Mar-2025** | **----** | ---- | **----** | **24-Mar-2025** | 20-Mar-2025 | × |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | |
| **Clear Plastic Bottle - Natural (ED037-P)** | | | | | | | |
| SR1 | **13-Mar-2025** | **----** | ---- | **----** | **21-Mar-2025** | 27-Mar-2025 | ✓ |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | |
| **Clear Plastic Bottle - Natural (ED041G)** | | | | | | | |
| SR1 | **13-Mar-2025** | **----** | ---- | **----** | **25-Mar-2025** | 10-Apr-2025 | ✓ |

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 |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (ED045G) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 25-Mar-2025 | 10-Apr-2025 | ✓ |
| **ED093F: Dissolved Major Cations** | | | | | | | |
| Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 27-Mar-2025 | 10-Apr-2025 | ✓ |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | |
| Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 27-Mar-2025 | 09-Sep-2025 | ✓ |
| **EG020T: Total Metals by ICP-MS** | | | | | | | |
| Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) | | | | | | | |
| SR1 | 13-Mar-2025 | 26-Mar-2025 | 09-Sep-2025 | ✓ | 26-Mar-2025 | 09-Sep-2025 | ✓ |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | |
| Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 31-Mar-2025 | 10-Apr-2025 | ✓ |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK055G) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 28-Mar-2025 | 14-Mar-2025 | × |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK057G) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 25-Mar-2025 | 15-Mar-2025 | × |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK059G) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 28-Mar-2025 | 15-Mar-2025 | × |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK061G) | | | | | | | |
| SR1 | 13-Mar-2025 | 26-Mar-2025 | 14-Mar-2025 | × | 26-Mar-2025 | 23-Apr-2025 | ✓ |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK067G) | | | | | | | |
| SR1 | 13-Mar-2025 | 26-Mar-2025 | 15-Mar-2025 | × | 26-Mar-2025 | 23-Apr-2025 | ✓ |
| **EK071G: Reactive Phosphorus as P by discrete analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK071G) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 25-Mar-2025 | 15-Mar-2025 | × |
| **EP005: Total Organic Carbon (TOC)** | | | | | | | |
| Clear Plastic Bottle - Natural (EP005) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 25-Mar-2025 | 14-Mar-2025 | × |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | |
| Amber Glass Bottle - Unpreserved (EP071) | | | | | | | |
| SR1 | 13-Mar-2025 | 24-Mar-2025 | 20-Mar-2025 | × | 26-Mar-2025 | 03-May-2025 | ✓ |
| Clear glass VOC vial - HCl (EP080) | | | | | | | |
| SR1 | 13-Mar-2025 | 21-Mar-2025 | 27-Mar-2025 | ✓ | 22-Mar-2025 | 27-Mar-2025 | ✓ |

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 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | |
| **Amber Glass Bottle - Unpreserved (EP071)** | | | | | | | |
| SR1 | **13-Mar-2025** | **24-Mar-2025** | 20-Mar-2025 | × | **26-Mar-2025** | 03-May-2025 | ✓ |
| **Clear glass VOC vial - HCl (EP080)** | | | | | | | |
| SR1 | **13-Mar-2025** | **21-Mar-2025** | 27-Mar-2025 | ✓ | **22-Mar-2025** | 27-Mar-2025 | ✓ |
| **EP080: BTEXN** | | | | | | | |
| **Clear glass VOC vial - HCl (EP080)** | | | | | | | |
| SR1 | **13-Mar-2025** | **21-Mar-2025** | 27-Mar-2025 | ✓ | **22-Mar-2025** | 27-Mar-2025 | ✓ |

# 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 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Ammonia as N by Discrete analyser | EK055G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Chloride by Discrete Analyser | ED045G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Conductivity by Auto Titrator | EA010-P | 3 | 18 | **16.67** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 2 | 17 | **11.76** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 2 | 19 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Major Cations - Dissolved | ED093F | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 2 | 19 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| pH by Auto Titrator | EA005-P | 2 | 17 | **11.76** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 8 | **12.50** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser | ED041G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Dissolved Solids (High Level) | EA015H | 1 | 9 | **11.11** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 2 | 19 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 2 | 19 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Organic Carbon | EP005 | 2 | 15 | **13.33** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Phosphorus as P By Discrete Analyser | EK067G | 2 | 18 | **11.11** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH - Semivolatile Fraction | EP071 | 0 | 9 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| TRH Volatiles/BTEX | EP080 | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Alkalinity by Auto Titrator | ED037-P | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Ammonia as N by Discrete analyser | EK055G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Chloride by Discrete Analyser | ED045G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Conductivity by Auto Titrator | EA010-P | 3 | 18 | **16.67** | **8.33** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 1 | 17 | **5.88** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Major Cations - Dissolved | ED093F | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| pH by Auto Titrator | EA005-P | 2 | 17 | **11.76** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 8 | **12.50** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser | ED041G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Dissolved Solids (High Level) | EA015H | 3 | 9 | **33.33** | **12.50** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 3 | 19 | **15.79** | **15.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Organic Carbon | EP005 | 1 | 15 | **6.67** | **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 | | | | | | | |
| Total Phosphorus as P By Discrete Analyser | EK067G | 2 | 18 | **11.11** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH - Semivolatile Fraction | EP071 | 1 | 9 | **11.11** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH Volatiles/BTEX | EP080 | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Ammonia as N by Discrete analyser | EK055G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Chloride by Discrete Analyser | ED045G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Conductivity by Auto Titrator | EA010-P | 2 | 18 | **11.11** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 1 | 17 | **5.88** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Major Cations - Dissolved | ED093F | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 8 | **12.50** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser | ED041G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Dissolved Solids (High Level) | EA015H | 1 | 9 | **11.11** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Organic Carbon | EP005 | 1 | 15 | **6.67** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Phosphorus as P By Discrete Analyser | EK067G | 1 | 18 | **5.56** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH - Semivolatile Fraction | EP071 | 1 | 9 | **11.11** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH Volatiles/BTEX | EP080 | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Ammonia as N by Discrete analyser | EK055G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Chloride by Discrete Analyser | ED045G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 1 | 17 | **5.88** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 8 | **12.50** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser | ED041G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Organic Carbon | EP005 | 1 | 15 | **6.67** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Phosphorus as P By Discrete Analyser | EK067G | 1 | 18 | **5.56** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH - Semivolatile Fraction | EP071 | 0 | 9 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |
| TRH Volatiles/BTEX | EP080 | 1 | 11 | **9.09** | **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) |
| 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) |
| 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 A | EG020A-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. |
| Total Metals by ICP-MS - Suite A | EG020A-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). |

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| 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) |
| 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 1030E. This method is compliant with NEPM Schedule B(3) |
| Total Organic Carbon | EP005 | WATER | In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. 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) |

| 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. |

# CHAIN OF CUSTODY

ALS Laboratory: please tick →


ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com

PERTH 10 Hod Way Malaga WA 6090 Ph: 08 6209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com


| | | | |
|---|---|---|---|
| CLIENT: ADE Consulting Group | TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics) | ☒ Standard TAT (List due date): | FOR LABORATORY USE ONLY (Circle) |
| OFFICE: 6/7 Millennium Court, Silverwater, NSW | | ☐ Non Standard or urgent TAT (List due date): | Custody Seal Intact? Yes / No / N/A |
| PROJECT: A101022.0343.01 | ALS QUOTE NO.: | COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7 | Free ice / frozen ice bricks present upon receipt? Yes / No / N/A |
| ORDER NUMBER: A101022.0343.01 .004. L21 | | | Random Sample Temperature on Receipt: °C |
| PROJECT MANAGER: MATTHEW TOOLE | CONTACT PH: | | Other comment: |

| | | | | |
|---|---|---|---|---|
| SAMPLER: Monique Hitchens | SAMPLER MOBILE: | RELINQUISHED BY: MH | RECEIVED BY: | RELINQUISHED BY: |
| COC emailed to ALS? ( YES / NO) | EDD FORMAT (or default): | DATE/TIME: 14/03/25 | DATE/TIME: 14/3/25 1546. | DATE/TIME: |
| Email Reports to (will default to PM if no other addresses are listed): matthew.toole@ade.group; Monique.hitchens@ade.group; ankita.saxena@ade.group; Graham.Hawkes@ade.group | | | | |
| Email Invoice to (will default to PM if no other addresses are listed): ~~elin.griffiths@ade.group~~, accounts@ade.group; Matthew.Toole@ade.group | | | | |

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

| ALS USE | SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) | | | CONTAINER INFORMATION | | ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). | | | | | | | | Additional Information |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAB ID | SAMPLE ID | SAMPLE DATE | MATRIX | TYPE & PRESERVATIVE (refer to codes below) | pH, EC | Total Dissolved Solids | dissolved metals (Al,Ar,Cd,Cr,Cu,Fe, Pb,Mn,Hg,Ni,Zn) | total metals (Al, Co, Fe, Mn | nutrients (ammonia, nitrate, nitrite, TKN, total N, total P, reactive P | ON HOLD | | | | Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc. |
| | SR1 | 14/03/2025 | W | | | | | | | X | | | | |
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| | | | | | | | | | | | | | | |
| TOTAL | | | | | 1 | 1 | 1 | 1 | 1 | | | | | |

Environmental Division Sydney
Work Order Reference
ES2507427

Telephone : +61-2-8784 8555

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

S-16 = GSW WAC, W-13+W-26= GSW WAC Rinsate

**UPDATED COC**

# CHAIN OF CUSTODY

ALS Laboratory: please tick →

| | | | |
|---|---|---|---|
| CLIENT: ADE Consulting Group | TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics) | ☒ Standard TAT (List due date): | FOR LABORATORY USE ONLY (Circle) |
| OFFICE: | | ☐ Non Standard or urgent TAT (List due date): | Custody Seal Intact? Yes No N/A |
| PROJECT: A101022.0343.01 | ALS QUOTE NO.: | COC SEQUENCE NUMBER (Circle) | Cooler Ice / Frozen Ice Bricks present upon receipt? Yes No N/A |
| ORDER NUMBER: A101022.0343.01 | | COC 1 2 3 4 5 6 7 | Random Sample Temperature on Receipt: C |
| PROJECT MANAGER: MATTHEW TOOLE | CONTACT PH: | OF 1 2 3 4 5 6 7 | Other comment: |

| | | | | |
|---|---|---|---|---|
| SAMPLER: Monique Hitchens | SAMPLER MOBILE: | RELINQUISHED BY: | RECEIVED BY: | RELINQUISHED BY: / RECEIVED BY: |
| COC emailed to ALS? ( YES / NO) | EDD FORMAT (or default): | MH | | |
| Email Reports to (will default to PM if no other addresses are listed) | | DATE/TIME | DATE/TIME | DATE/TIME / DATE/TIME |
| matthew.toole@ade.group, graham.hawkes@ade.group | | 14/03/25 | 20/3/25 1145. | |
| Monique.hitchens@ade.group | ankita.saxena@ade.group | | | |

Email Invoice to (will default to PM if no other addresses are listed): matthew.toole@ade.group, accounts@ade.group

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

| ALS USE | SAMPLE DETAILS MATRIX: SOLID (S) WATER (W) | | | CONTAINER INFORMATION | ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required) | | | | | | | | | Additional Information |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAB ID | SAMPLE ID | SAMPLE DATE | MATRIX | TYPE & PRESERVATIVE (refer to codes below) | pH, EC | Total Dissolved Solids | dissolved metals (Al,As,Cd,Cr,Cu,Fe, Pb,Mn,Hg,Ni,Zn) | total metals (Al, Co, Fe, Mn | nutrients (ammonia, nitrate, nitrite, TKN, total N, total P, reactive P | Major Cations | Major Anions | TOC | TPH | Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc |
| | SR1 | 13/03/2025 | W | | X | X | X | X | X | X | X | X | X | HT |
| | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | |
| | | | | TOTAL | 1 | 1 | 1 | 1 | 1 | | | | | |

Environmental Division Sydney
Work Order Reference
ES2507427

Telephone : +61-2-8784 8555

*Water Container Codes:* P = Unpreserved Plastic. N = Nitric Preserved Plastic. ORC = Nitric Preserved ORC. SH = Sodium Hydroxide/Cd Preserved. S = Sodium Hydroxide Preserved Plastic. AG = Amber Glass Unpreserved. AP = Airfreight Unpreserved Plastic. V = VOA Vial HCl Preserved. VB = VOA Vial Sodium Bisulphate Preserved. VS = VOA Vial Sulfuric Preserved. AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass. H = HCl preserved Plastic. HS = HCl preserved Speciation bottle. SP = Sulfuric Preserved Plastic. F = Formaldehyde Preserved Glass. Z = Zinc Acetate Preserved Bottle. E = EDTA Preserved Bottles. ST = Sterile Bottle. ASS = Plastic Bag for Acid Sulphate Soils. B = Unpreserved Bag.

S-16 = GSW WAC. W-13+W-26= GSW WAC Rinsate

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2507427** | Page | : 1 of 7 |
| Client | : **ADE Consulting Group Pty Ltd** | Laboratory | : Environmental Division Sydney |
| Contact | : MR MATTHEW TOOLE | Contact | : Customer Services ES |
| Address | : 6/7 MILLENIUM COURT<br>SILVERWATER NSW 2128 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : +61 02 94007711 | Telephone | : +61-2-8784 8555 |
| Project | : A101022.0343.01 | Date Samples Received | : 17-Mar-2025 10:33 |
| Order number | : A101022.0343.01.004.L21 | Date Analysis Commenced | : 21-Mar-2025 |
| C-O-C number | : ---- | Issue Date | : 31-Mar-2025 10:58 |
| Sampler | : MONIQUE HITCHENS | | |
| Site | : ---- | | |
| Quote number | : EN/111 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

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* |
|---|---|---|
| Ankit Joshi | Senior Chemist - Inorganics | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar | Organic Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## 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.

- EK061/67: LOR raised for TKN/TP due to sample matrix.
- 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.
- EK061G: LOR raised for TKN due to sample matrix.
- 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 | SR1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2025 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2507427-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EA005P: pH by PC Titrator** | | | | | | | | |
| pH Value | ---- | 0.01 | pH Unit | **7.36** | ---- | ---- | ---- | ---- |
| **EA010P: Conductivity by PC Titrator** | | | | | | | | |
| Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | **27600** | ---- | ---- | ---- | ---- |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | | |
| Total Dissolved Solids @180°C | ---- | 10 | mg/L | **18500** | ---- | ---- | ---- | ---- |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | | |
| Hydroxide Alkalinity as CaCO3 | DMO-210-001 | 1 | mg/L | <1 | ---- | ---- | ---- | ---- |
| Carbonate Alkalinity as CaCO3 | 3812-32-6 | 1 | mg/L | <1 | ---- | ---- | ---- | ---- |
| Bicarbonate Alkalinity as CaCO3 | 71-52-3 | 1 | mg/L | **456** | ---- | ---- | ---- | ---- |
| Total Alkalinity as CaCO3 | ---- | 1 | mg/L | **456** | ---- | ---- | ---- | ---- |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | | |
| Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | **434** | ---- | ---- | ---- | ---- |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | | |
| Chloride | 16887-00-6 | 1 | mg/L | **9240** | ---- | ---- | ---- | ---- |
| **ED093F: Dissolved Major Cations** | | | | | | | | |
| Calcium | 7440-70-2 | 1 | mg/L | **557** | ---- | ---- | ---- | ---- |
| Magnesium | 7439-95-4 | 1 | mg/L | **523** | ---- | ---- | ---- | ---- |
| Sodium | 7440-23-5 | 1 | mg/L | **4870** | ---- | ---- | ---- | ---- |
| Potassium | 7440-09-7 | 1 | mg/L | **68** | ---- | ---- | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | | |
| Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | ---- | ---- | ---- | ---- |
| Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | ---- | ---- | ---- | ---- |
| Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | ---- | ---- | ---- | ---- |
| Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | ---- | ---- | ---- | ---- |
| Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | ---- | ---- | ---- | ---- |
| Nickel | 7440-02-0 | 0.001 | mg/L | **0.010** | ---- | ---- | ---- | ---- |
| Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | Sample ID | SR1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|
| | | | Sampling date / time | 13-Mar-2025 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | ES2507427-001 | -------- | -------- | -------- | -------- |
| | | | | Result | ---- | ---- | ---- | ---- |
| **EG020F: Dissolved Metals by ICP-MS - Continued** | | | | | | | | |
| **Zinc** | 7440-66-6 | 0.005 | mg/L | **0.009** | ---- | ---- | ---- | ---- |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **0.670** | ---- | ---- | ---- | ---- |
| **Iron** | 7439-89-6 | 0.05 | mg/L | <0.05 | ---- | ---- | ---- | ---- |
| **EG020T: Total Metals by ICP-MS** | | | | | | | | |
| **Aluminium** | 7429-90-5 | 0.01 | mg/L | **12.3** | ---- | ---- | ---- | ---- |
| **Cobalt** | 7440-48-4 | 0.001 | mg/L | **0.028** | ---- | ---- | ---- | ---- |
| **Manganese** | 7439-96-5 | 0.001 | mg/L | **1.06** | ---- | ---- | ---- | ---- |
| **Iron** | 7439-89-6 | 0.05 | mg/L | **35.0** | ---- | ---- | ---- | ---- |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | | |
| **Mercury** | 7439-97-6 | 0.0001 | mg/L | <0.0001 | ---- | ---- | ---- | ---- |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | | |
| **Ammonia as N** | 7664-41-7 | 0.01 | mg/L | **0.41** | ---- | ---- | ---- | ---- |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | | |
| **Nitrite as N** | 14797-65-0 | 0.01 | mg/L | **2.23** | ---- | ---- | ---- | ---- |
| **EK058G: Nitrate as N by Discrete Analyser** | | | | | | | | |
| **Nitrate as N** | 14797-55-8 | 0.01 | mg/L | **11.6** | ---- | ---- | ---- | ---- |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | | |
| **Nitrite + Nitrate as N** | ---- | 0.01 | mg/L | **13.8** | ---- | ---- | ---- | ---- |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | | |
| **Total Kjeldahl Nitrogen as N** | ---- | 0.1 | mg/L | <10.0 | ---- | ---- | ---- | ---- |
| **EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser** | | | | | | | | |
| ^ **Total Nitrogen as N** | ---- | 0.1 | mg/L | **13.8** | ---- | ---- | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | | |
| **Total Phosphorus as P** | ---- | 0.01 | mg/L | <1.00 | ---- | ---- | ---- | ---- |
| **EK071G: Reactive Phosphorus as P by discrete analyser** | | | | | | | | |
| **Reactive Phosphorus as P** | 14265-44-2 | 0.01 | mg/L | <0.01 | ---- | ---- | ---- | ---- |
| **EN055: Ionic Balance** | | | | | | | | |
| ø **Total Anions** | ---- | 0.01 | meq/L | **279** | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | SR1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 13-Mar-2025 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | ES2507427-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EN055: Ionic Balance - Continued** | | | | | | | | | |
| ø **Total Cations** | ---- | 0.01 | meq/L | | **284** | ---- | ---- | ---- | ---- |
| ø **Ionic Balance** | ---- | 0.01 | % | | **1.00** | ---- | ---- | ---- | ---- |
| **EP005: Total Organic Carbon (TOC)** | | | | | | | | | |
| **Total Organic Carbon** | ---- | 1 | mg/L | | **10** | ---- | ---- | ---- | ---- |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | | | |
| **C6 - C9 Fraction** | ---- | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |
| **C10 - C14 Fraction** | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| **C15 - C28 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **C29 - C36 Fraction** | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| ^ **C10 - C36 Fraction (sum)** | ---- | 50 | µg/L | | <50 | ---- | ---- | ---- | ---- |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | | | |
| **C6 - C10 Fraction** | C6_C10 | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |
| ^ **C6 - C10 Fraction minus BTEX (F1)** | C6_C10-BTEX | 20 | µg/L | | <20 | ---- | ---- | ---- | ---- |
| **>C10 - C16 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **>C16 - C34 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **>C34 - C40 Fraction** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| ^ **>C10 - C40 Fraction (sum)** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| ^ **>C10 - C16 Fraction minus Naphthalene (F2)** | ---- | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **EP080: BTEXN** | | | | | | | | | |
| **Benzene** | 71-43-2 | 1 | µg/L | | <1 | ---- | ---- | ---- | ---- |
| **Toluene** | 108-88-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **Ethylbenzene** | 100-41-4 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **meta- & para-Xylene** | 108-38-3 106-42-3 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| **ortho-Xylene** | 95-47-6 | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ **Total Xylenes** | ---- | 2 | µg/L | | <2 | ---- | ---- | ---- | ---- |
| ^ **Sum of BTEX** | ---- | 1 | µg/L | | <1 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: WATER (Matrix: WATER) | | | | Sample ID | SR1 | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Sampling date / time | 13-Mar-2025 00:00 | ---- | ---- | ---- | ---- |
| Compound | CAS Number | LOR | Unit | | ES2507427-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **EP080: BTEXN - Continued** | | | | | | | | | |
| **Naphthalene** | 91-20-3 | 5 | µg/L | | <5 | **----** | **----** | **----** | **----** |
| **EP080S: TPH(V)/BTEX Surrogates** | | | | | | | | | |
| **1.2-Dichloroethane-D4** | 17060-07-0 | 2 | % | | **106** | **----** | **----** | **----** | **----** |
| **Toluene-D8** | 2037-26-5 | 2 | % | | **93.2** | **----** | **----** | **----** | **----** |
| **4-Bromofluorobenzene** | 460-00-4 | 2 | % | | **89.0** | **----** | **----** | **----** | **----** |

## 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 | 72 | 143 |
| **Toluene-D8** | 2037-26-5 | 75 | 131 |
| **4-Bromofluorobenzene** | 460-00-4 | 73 | 137 |

# QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2507427** | Page | : 1 of 9 |
| Client | : **ADE Consulting Group Pty Ltd** | Laboratory | : Environmental Division Sydney |
| Contact | : MR MATTHEW TOOLE | Contact | : Customer Services ES |
| Address | : 6/7 MILLENIUM COURT<br>SILVERWATER NSW 2128 | Address | : 277-289 Woodpark Road Smithfield NSW Australia 2164 |
| Telephone | : +61 02 94007711 | Telephone | : +61-2-8784 8555 |
| Project | : A101022.0343.01 | Date Samples Received | : 17-Mar-2025 |
| Order number | : A101022.0343.01.004.L21 | Date Analysis Commenced | : 21-Mar-2025 |
| C-O-C number | : ---- | Issue Date | : 31-Mar-2025 |
| Sampler | : MONIQUE HITCHENS | | |
| Site | : ---- | | |
| Quote number | : EN/111 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

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* |
|---|---|---|
| Ankit Joshi | Senior Chemist - Inorganics | Sydney Inorganics, Smithfield, NSW |
| Edwandy Fadjar | Organic Coordinator | Sydney Organics, Smithfield, NSW |
| Ivan Taylor | Analyst | Sydney Inorganics, Smithfield, NSW |

## 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
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

## 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: 6457417)** | | | | | | | | | |
| ED2500450-001 | Anonymous | EA005-P: pH Value | ---- | 0.01 | pH Unit | 7.30 | 7.44 | 1.9 | 0% - 20% |
| ES2508096-001 | Anonymous | EA005-P: pH Value | ---- | 0.01 | pH Unit | 7.03 | 7.11 | 1.1 | 0% - 20% |
| **EA010P: Conductivity by PC Titrator (QC Lot: 6457416)** | | | | | | | | | |
| ES2508197-002 | Anonymous | EA010-P: Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | 1510 | 1510 | 0.2 | 0% - 20% |
| ED2500450-001 | Anonymous | EA010-P: Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | 957 | 964 | 0.7 | 0% - 20% |
| ES2508096-001 | Anonymous | EA010-P: Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | 1050 | 1030 | 1.5 | 0% - 20% |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6461185)** | | | | | | | | | |
| ES2507427-001 | SR1 | EA015H: Total Dissolved Solids @180°C | ---- | 10 | mg/L | 18500 | 18800 | 1.4 | 0% - 20% |
| **ED037P: Alkalinity by PC Titrator (QC Lot: 6457418)** | | | | | | | | | |
| ED2500450-001 | 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 | 63 | 64 | 0.0 | 0% - 20% |
| | | ED037-P: Total Alkalinity as CaCO3 | ---- | 1 | mg/L | 63 | 64 | 0.0 | 0% - 20% |
| ES2508096-001 | 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 | 154 | 155 | 0.0 | 0% - 20% |
| | | ED037-P: Total Alkalinity as CaCO3 | ---- | 1 | mg/L | 154 | 155 | 0.0 | 0% - 20% |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 6457550)** | | | | | | | | | |
| ES2507913-001 | Anonymous | ED041G: Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | 99 | 107 | 7.7 | 0% - 20% |
| ES2507912-001 | Anonymous | ED041G: Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | 120 | 119 | 1.5 | 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 (%)* |
| **ED045G: Chloride by Discrete Analyser (QC Lot: 6457549)** | | | | | | | | | |
| ES2507913-001 | Anonymous | ED045G: Chloride | 16887-00-6 | 1 | mg/L | 154 | 157 | 1.9 | 0% - 20% |
| ES2507912-001 | Anonymous | ED045G: Chloride | 16887-00-6 | 1 | mg/L | 202 | 206 | 2.2 | 0% - 20% |
| **ED093F: Dissolved Major Cations (QC Lot: 6467794)** | | | | | | | | | |
| ES2508442-002 | Anonymous | ED093F: Calcium | 7440-70-2 | 1 | mg/L | 23 | 22 | 0.0 | 0% - 20% |
| | | ED093F: Magnesium | 7439-95-4 | 1 | mg/L | 11 | 11 | 0.0 | 0% - 50% |
| | | ED093F: Sodium | 7440-23-5 | 1 | mg/L | 36 | 36 | 0.0 | 0% - 20% |
| | | ED093F: Potassium | 7440-09-7 | 1 | mg/L | 3 | 3 | 0.0 | No Limit |
| ES2507427-001 | SR1 | ED093F: Calcium | 7440-70-2 | 1 | mg/L | 557 | 563 | 1.1 | 0% - 20% |
| | | ED093F: Magnesium | 7439-95-4 | 1 | mg/L | 523 | 522 | 0.3 | 0% - 20% |
| | | ED093F: Sodium | 7440-23-5 | 1 | mg/L | 4870 | 4900 | 0.6 | 0% - 20% |
| | | ED093F: Potassium | 7440-09-7 | 1 | mg/L | 68 | 69 | 1.6 | 0% - 20% |
| **EG020F: Dissolved Metals by ICP-MS (QC Lot: 6467792)** | | | | | | | | | |
| ES2508660-001 | Anonymous | EG020A-F: Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | 0.0 | No Limit |
| | | EG020A-F: Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Chromium | 7440-47-3 | 0.001 | mg/L | 0.002 | 0.001 | 0.0 | No Limit |
| | | EG020A-F: Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Manganese | 7439-96-5 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Nickel | 7440-02-0 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Zinc | 7440-66-6 | 0.005 | mg/L | <0.005 | <0.005 | 0.0 | No Limit |
| | | EG020A-F: Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | 0.0 | No Limit |
| | | EG020A-F: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 | 0.0 | No Limit |
| ES2507427-001 | SR1 | EG020A-F: Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | <0.0001 | 0.0 | No Limit |
| | | EG020A-F: Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | 0.001 | 0.0 | No Limit |
| | | EG020A-F: Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-F: Manganese | 7439-96-5 | 0.001 | mg/L | 0.670 | 0.670 | 0.0 | 0% - 20% |
| | | EG020A-F: Nickel | 7440-02-0 | 0.001 | mg/L | 0.010 | 0.010 | 0.0 | 0% - 50% |
| | | EG020A-F: Zinc | 7440-66-6 | 0.005 | mg/L | 0.009 | 0.007 | 16.5 | No Limit |
| | | EG020A-F: Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | <0.01 | 0.0 | No Limit |
| | | EG020A-F: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 | 0.0 | No Limit |
| **EG020T: Total Metals by ICP-MS (QC Lot: 6464382)** | | | | | | | | | |
| EN2504908-001 | Anonymous | EG020A-T: Cobalt | 7440-48-4 | 0.001 | mg/L | 0.009 | 0.009 | 0.0 | No Limit |
| | | EG020A-T: Manganese | 7439-96-5 | 0.001 | mg/L | 0.763 | 0.757 | 0.8 | 0% - 20% |
| | | EG020A-T: Aluminium | 7429-90-5 | 0.01 | mg/L | 9.44 | 9.52 | 0.9 | 0% - 20% |
| | | EG020A-T: Iron | 7439-89-6 | 0.05 | mg/L | 28.7 | 29.1 | 1.2 | 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 (%)* |
| **EG020T: Total Metals by ICP-MS (QC Lot: 6464382) - continued** | | | | | | | | | |
| ES2508413-003 | Anonymous | EG020A-T: Cobalt | 7440-48-4 | 0.001 | mg/L | <0.001 | <0.001 | 0.0 | No Limit |
| | | EG020A-T: Manganese | 7439-96-5 | 0.001 | mg/L | 0.002 | 0.002 | 0.0 | No Limit |
| | | EG020A-T: Aluminium | 7429-90-5 | 0.01 | mg/L | 0.05 | 0.05 | 0.0 | No Limit |
| | | EG020A-T: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | <0.05 | 0.0 | No Limit |
| **EG035F: Dissolved Mercury by FIMS (QC Lot: 6467793)** | | | | | | | | | |
| ES2508279-001 | Anonymous | EG035F: Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | 0.0 | No Limit |
| ES2508563-001 | Anonymous | EG035F: Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | <0.0001 | 0.0 | No Limit |
| **EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6464714)** | | | | | | | | | |
| EN2504974-001 | Anonymous | EK055G: Ammonia as N | 7664-41-7 | 0.01 | mg/L | 0.04 | 0.04 | 0.0 | No Limit |
| ES2507757-001 | Anonymous | EK055G: Ammonia as N | 7664-41-7 | 0.01 | mg/L | 0.03 | 0.04 | 0.0 | No Limit |
| **EK057G: Nitrite as N by Discrete Analyser (QC Lot: 6457548)** | | | | | | | | | |
| ES2507913-001 | Anonymous | EK057G: Nitrite as N | 14797-65-0 | 0.01 | mg/L | <0.01 | 0.01 | 0.0 | No Limit |
| ES2507912-001 | 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: 6464713)** | | | | | | | | | |
| EN2504974-001 | Anonymous | EK059G: Nitrite + Nitrate as N | ---- | 0.01 | mg/L | 0.02 | 0.01 | 0.0 | No Limit |
| ES2507757-001 | Anonymous | EK059G: Nitrite + Nitrate as N | ---- | 0.01 | mg/L | 8.04 | 8.07 | 0.3 | 0% - 20% |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6464709)** | | | | | | | | | |
| ES2507757-002 | Anonymous | EK061G: Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | 0.8 | 0.2 | 120 | No Limit |
| ES2507427-001 | SR1 | EK061G: Total Kjeldahl Nitrogen as N | ---- | 0.1 (10.0)* | mg/L | <10.0 | 15.8 | 45.1 | No Limit |
| **EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6464710)** | | | | | | | | | |
| ES2507757-002 | Anonymous | EK067G: Total Phosphorus as P | ---- | 0.01 | mg/L | 2.39 | 2.33 | 2.5 | 0% - 20% |
| ES2507427-001 | SR1 | EK067G: Total Phosphorus as P | ---- | 0.01 (1.00)* | mg/L | <1.00 | 2.07 | 69.7 | No Limit |
| **EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 6457547)** | | | | | | | | | |
| ES2507912-001 | Anonymous | EK071G: Reactive Phosphorus as P | 14265-44-2 | 0.01 | mg/L | 0.01 | <0.01 | 0.0 | No Limit |
| **EP005: Total Organic Carbon (TOC) (QC Lot: 6458038)** | | | | | | | | | |
| ES2507427-001 | SR1 | EP005: Total Organic Carbon | ---- | 1 | mg/L | 10 | 12 | 15.0 | 0% - 50% |
| ES2508155-002 | Anonymous | EP005: Total Organic Carbon | ---- | 1 | mg/L | 4 | 4 | 0.0 | No Limit |
| **EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6456901)** | | | | | | | | | |
| CA2501574-001 | Anonymous | EP080: C6 - C9 Fraction | ---- | 20 | µg/L | <20 | <20 | 0.0 | No Limit |
| ES2508096-001 | Anonymous | EP080: C6 - C9 Fraction | ---- | 20 | µg/L | <20 | <20 | 0.0 | No Limit |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6456901)** | | | | | | | | | |
| CA2501574-001 | Anonymous | EP080: C6 - C10 Fraction | C6_C10 | 20 | µg/L | <20 | <20 | 0.0 | No Limit |
| ES2508096-001 | Anonymous | EP080: C6 - C10 Fraction | C6_C10 | 20 | µg/L | <20 | <20 | 0.0 | No Limit |
| **EP080: BTEXN (QC Lot: 6456901)** | | | | | | | | | |
| CA2501574-001 | 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 |

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: 6456901) - continued** | | | | | | | | | |
| CA2501574-001 | Anonymous | EP080: Ethylbenzene | 100-41-4 | 2 | µg/L | <2 | <2 | 0.0 | No Limit |
| | | EP080: meta- & para-Xylene | 108-38-3<br>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 |
| ES2508096-001 | 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<br>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 |

## 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: 6457417)** | | | | | | | | |
| EA005-P: pH Value | ---- | ---- | pH Unit | ---- | 4 pH Unit | 100 | 98.8 | 101 |
| | | | | ---- | 7 pH Unit | 100 | 99.2 | 101 |
| **EA010P: Conductivity by PC Titrator (QCLot: 6457416)** | | | | | | | | |
| EA010-P: Electrical Conductivity @ 25°C | ---- | 1 | µS/cm | <1 | 220 µS/cm | 102 | 89.9 | 110 |
| | | | | <1 | 2100 µS/cm | 106 | 90.2 | 111 |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 6461185)** | | | | | | | | |
| EA015H: Total Dissolved Solids @180°C | ---- | 10 | mg/L | <10 | 2000 mg/L | 99.4 | 87.0 | 109 |
| | | | | <10 | 293 mg/L | 101 | 75.2 | 126 |
| | | | | <10 | 2410 mg/L | 104 | 83.0 | 124 |
| **ED037P: Alkalinity by PC Titrator (QCLot: 6457418)** | | | | | | | | |
| ED037-P: Total Alkalinity as CaCO3 | ---- | ---- | mg/L | ---- | 200 mg/L | 103 | 81.0 | 115 |
| | | | | ---- | 50 mg/L | 105 | 80.0 | 128 |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6457550)** | | | | | | | | |
| ED041G: Sulfate as SO4 - Turbidimetric | 14808-79-8 | 1 | mg/L | <1 | 25 mg/L | 103 | 82.0 | 122 |
| | | | | <1 | 500 mg/L | 101 | 82.0 | 122 |
| **ED045G: Chloride by Discrete Analyser (QCLot: 6457549)** | | | | | | | | |
| ED045G: Chloride | 16887-00-6 | 1 | mg/L | <1 | 50 mg/L | 99.2 | 80.9 | 127 |
| | | | | <1 | 1000 mg/L | 97.3 | 80.9 | 127 |
| **ED093F: Dissolved Major Cations (QCLot: 6467794)** | | | | | | | | |
| ED093F: Calcium | 7440-70-2 | 1 | mg/L | <1 | 50 mg/L | 108 | 80.0 | 114 |
| ED093F: Magnesium | 7439-95-4 | 1 | mg/L | <1 | 50 mg/L | 103 | 90.0 | 116 |
| ED093F: Sodium | 7440-23-5 | 1 | mg/L | <1 | 50 mg/L | 101 | 82.0 | 120 |
| ED093F: Potassium | 7440-09-7 | 1 | mg/L | <1 | 50 mg/L | 102 | 85.0 | 113 |
| **EG020F: Dissolved Metals by ICP-MS (QCLot: 6467792)** | | | | | | | | |
| EG020A-F: Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 93.2 | 80.0 | 116 |
| EG020A-F: Arsenic | 7440-38-2 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 95.7 | 85.0 | 114 |
| EG020A-F: Cadmium | 7440-43-9 | 0.0001 | mg/L | <0.0001 | 0.1 mg/L | 92.0 | 84.0 | 110 |
| EG020A-F: Chromium | 7440-47-3 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 95.6 | 85.0 | 111 |
| EG020A-F: Copper | 7440-50-8 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 93.8 | 81.0 | 111 |
| EG020A-F: Lead | 7439-92-1 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 93.7 | 83.0 | 111 |
| EG020A-F: Manganese | 7439-96-5 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 92.4 | 82.0 | 110 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report | Laboratory Control Spike (LCS) Report | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Spike | Spike Recovery (%) | Acceptable Limits (%) | |
| | | | | Result | Concentration | LCS | Low | High |
| **EG020F: Dissolved Metals by ICP-MS (QCLot: 6467792) - continued** | | | | | | | | |
| EG020A-F: Nickel | 7440-02-0 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 92.7 | 82.0 | 112 |
| EG020A-F: Zinc | 7440-66-6 | 0.005 | mg/L | <0.005 | 0.1 mg/L | 99.8 | 81.0 | 117 |
| EG020A-F: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | 0.5 mg/L | 94.6 | 82.0 | 112 |
| **EG020T: Total Metals by ICP-MS (QCLot: 6464382)** | | | | | | | | |
| EG020A-T: Aluminium | 7429-90-5 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 94.1 | 82.0 | 120 |
| EG020A-T: Cobalt | 7440-48-4 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 88.9 | 84.0 | 116 |
| EG020A-T: Manganese | 7439-96-5 | 0.001 | mg/L | <0.001 | 0.1 mg/L | 89.3 | 85.0 | 113 |
| EG020A-T: Iron | 7439-89-6 | 0.05 | mg/L | <0.05 | 0.5 mg/L | 94.5 | 85.0 | 117 |
| **EG035F: Dissolved Mercury by FIMS (QCLot: 6467793)** | | | | | | | | |
| EG035F: Mercury | 7439-97-6 | 0.0001 | mg/L | <0.0001 | 0.01 mg/L | 89.6 | 83.0 | 105 |
| **EK055G: Ammonia as N by Discrete Analyser (QCLot: 6464714)** | | | | | | | | |
| EK055G: Ammonia as N | 7664-41-7 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 106 | 90.0 | 114 |
| **EK057G: Nitrite as N by Discrete Analyser (QCLot: 6457548)** | | | | | | | | |
| EK057G: Nitrite as N | 14797-65-0 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 99.5 | 82.0 | 114 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6464713)** | | | | | | | | |
| EK059G: Nitrite + Nitrate as N | ---- | 0.01 | mg/L | <0.01 | 0.5 mg/L | 105 | 91.0 | 113 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6464709)** | | | | | | | | |
| EK061G: Total Kjeldahl Nitrogen as N | ---- | 0.1 | mg/L | <0.1 | 5 mg/L | 90.1 | 69.0 | 123 |
| | | | | <0.1 | 2.5 mg/L | 91.2 | 70.0 | 123 |
| **EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6464710)** | | | | | | | | |
| EK067G: Total Phosphorus as P | ---- | 0.01 | mg/L | <0.01 | 2.21 mg/L | 93.0 | 71.3 | 126 |
| | | | | <0.01 | 0.5 mg/L | 86.4 | 71.3 | 126 |
| **EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 6457547)** | | | | | | | | |
| EK071G: Reactive Phosphorus as P | 14265-44-2 | 0.01 | mg/L | <0.01 | 0.5 mg/L | 97.7 | 85.0 | 117 |
| **EP005: Total Organic Carbon (TOC) (QCLot: 6458038)** | | | | | | | | |
| EP005: Total Organic Carbon | ---- | 1 | mg/L | <1 | 10 mg/L | 108 | 72.0 | 120 |
| **EP080/071: Total Petroleum Hydrocarbons (QCLot: 6456901)** | | | | | | | | |
| EP080: C6 - C9 Fraction | ---- | 20 | µg/L | <20 | 260 µg/L | 90.1 | 75.0 | 127 |
| **EP080/071: Total Petroleum Hydrocarbons (QCLot: 6458611)** | | | | | | | | |
| EP071: C10 - C14 Fraction | ---- | 50 | µg/L | <50 | 400 µg/L | 76.3 | 53.7 | 97.0 |
| EP071: C15 - C28 Fraction | ---- | 100 | µg/L | <100 | 600 µg/L | 95.2 | 63.3 | 107 |
| EP071: C29 - C36 Fraction | ---- | 50 | µg/L | <50 | 400 µg/L | 101 | 58.3 | 120 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6456901)** | | | | | | | | |
| EP080: C6 - C10 Fraction | C6_C10 | 20 | µg/L | <20 | 310 µg/L | 94.7 | 75.0 | 127 |

Sub-Matrix: **WATER**

| Method: Compound | CAS Number | LOR | Unit | Method Blank (MB) Report: Result | Laboratory Control Spike (LCS) Report: Spike Concentration | LCS: Spike Recovery (%) | Acceptable Limits (%): Low | Acceptable Limits (%): High |
|---|---|---|---|---|---|---|---|---|
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6458611)** | | | | | | | | |
| EP071: >C10 - C16 Fraction | ---- | 100 | µg/L | <100 | 500 µg/L | 76.5 | 53.9 | 95.5 |
| EP071: >C16 - C34 Fraction | ---- | 100 | µg/L | <100 | 700 µg/L | 101 | 57.8 | 110 |
| EP071: >C34 - C40 Fraction | ---- | 100 | µg/L | <100 | 300 µg/L | 98.8 | 50.5 | 115 |
| **EP080: BTEXN (QCLot: 6456901)** | | | | | | | | |
| EP080: Benzene | 71-43-2 | 1 | µg/L | <1 | 10 µg/L | 102 | 68.3 | 119 |
| EP080: Toluene | 108-88-3 | 2 | µg/L | <2 | 10 µg/L | 97.8 | 73.5 | 120 |
| EP080: Ethylbenzene | 100-41-4 | 2 | µg/L | <2 | 10 µg/L | 97.4 | 73.8 | 122 |
| EP080: meta- & para-Xylene | 108-38-3<br>106-42-3 | 2 | µg/L | <2 | 10 µg/L | 94.7 | 73.0 | 122 |
| EP080: ortho-Xylene | 95-47-6 | 2 | µg/L | <2 | 10 µg/L | 93.9 | 76.4 | 123 |
| EP080: Naphthalene | 91-20-3 | 5 | µg/L | <5 | 10 µg/L | 110 | 75.5 | 124 |

## 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 |
|---|---|---|---|---|---|---|---|
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 6457550)** | | | | | | | |
| ES2507912-001 | Anonymous | ED041G: Sulfate as SO4 - Turbidimetric | 14808-79-8 | 10 mg/L | # Not Determined | 70.0 | 130 |
| **ED045G: Chloride by Discrete Analyser (QCLot: 6457549)** | | | | | | | |
| ES2507912-001 | Anonymous | ED045G: Chloride | 16887-00-6 | 250 mg/L | 106 | 70.0 | 130 |
| **EG020F: Dissolved Metals by ICP-MS (QCLot: 6467792)** | | | | | | | |
| ES2508426-002 | Anonymous | EG020A-F: Arsenic | 7440-38-2 | 1 mg/L | 94.3 | 70.0 | 130 |
| | | EG020A-F: Cadmium | 7440-43-9 | 0.25 mg/L | 92.1 | 70.0 | 130 |
| | | EG020A-F: Chromium | 7440-47-3 | 1 mg/L | 92.9 | 70.0 | 130 |
| | | EG020A-F: Copper | 7440-50-8 | 1 mg/L | 92.7 | 70.0 | 130 |
| | | EG020A-F: Lead | 7439-92-1 | 1 mg/L | 93.6 | 70.0 | 130 |
| | | EG020A-F: Manganese | 7439-96-5 | 1 mg/L | 95.1 | 70.0 | 130 |
| | | EG020A-F: Nickel | 7440-02-0 | 1 mg/L | 92.8 | 70.0 | 130 |
| | | EG020A-F: Zinc | 7440-66-6 | 1 mg/L | 96.7 | 70.0 | 130 |
| **EG020T: Total Metals by ICP-MS (QCLot: 6464382)** | | | | | | | |
| EN2504908-002 | Anonymous | EG020A-T: Cobalt | 7440-48-4 | 1 mg/L | 98.1 | 70.0 | 130 |
| | | EG020A-T: Manganese | 7439-96-5 | 1 mg/L | 100 | 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* |
| **EG035F: Dissolved Mercury by FIMS (QCLot: 6467793)** | | | | | | | |
| ES2508426-001 | Anonymous | EG035F: Mercury | 7439-97-6 | 0.01 mg/L | 91.1 | 70.0 | 130 |
| **EK055G: Ammonia as N by Discrete Analyser (QCLot: 6464714)** | | | | | | | |
| EN2504974-001 | Anonymous | EK055G: Ammonia as N | 7664-41-7 | 0.5 mg/L | 126 | 70.0 | 130 |
| **EK057G: Nitrite as N by Discrete Analyser (QCLot: 6457548)** | | | | | | | |
| ES2507912-001 | Anonymous | EK057G: Nitrite as N | 14797-65-0 | 0.5 mg/L | 100 | 70.0 | 130 |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6464713)** | | | | | | | |
| EN2504974-001 | Anonymous | EK059G: Nitrite + Nitrate as N | ---- | 0.5 mg/L | 106 | 70.0 | 130 |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6464709)** | | | | | | | |
| ES2507713-002 | Anonymous | EK061G: Total Kjeldahl Nitrogen as N | ---- | 5 mg/L | 84.7 | 70.0 | 130 |
| **EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6464710)** | | | | | | | |
| ES2507713-002 | Anonymous | EK067G: Total Phosphorus as P | ---- | 5 mg/L | 91.8 | 70.0 | 130 |
| **EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 6457547)** | | | | | | | |
| ES2507912-001 | Anonymous | EK071G: Reactive Phosphorus as P | 14265-44-2 | 0.5 mg/L | 96.5 | 70.0 | 130 |
| **EP005: Total Organic Carbon (TOC) (QCLot: 6458038)** | | | | | | | |
| ES2507878-001 | Anonymous | EP005: Total Organic Carbon | ---- | 100 mg/L | 103 | 70.0 | 130 |
| **EP080/071: Total Petroleum Hydrocarbons (QCLot: 6456901)** | | | | | | | |
| CA2501574-001 | Anonymous | EP080: C6 - C9 Fraction | ---- | 325 µg/L | 98.5 | 70.0 | 130 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6456901)** | | | | | | | |
| CA2501574-001 | Anonymous | EP080: C6 - C10 Fraction | C6_C10 | 375 µg/L | 100 | 70.0 | 130 |
| **EP080: BTEXN (QCLot: 6456901)** | | | | | | | |
| CA2501574-001 | Anonymous | EP080: Benzene | 71-43-2 | 25 µg/L | 107 | 70.0 | 130 |
| | | EP080: Toluene | 108-88-3 | 25 µg/L | 104 | 70.0 | 130 |
| | | EP080: Ethylbenzene | 100-41-4 | 25 µg/L | 102 | 70.0 | 130 |
| | | EP080: meta- & para-Xylene | 108-38-3<br>106-42-3 | 25 µg/L | 101 | 70.0 | 130 |
| | | EP080: ortho-Xylene | 95-47-6 | 25 µg/L | 102 | 70.0 | 130 |
| | | EP080: Naphthalene | 91-20-3 | 25 µg/L | 107 | 70.0 | 130 |

# QA/QC Compliance Assessment to assist with Quality Review

| | | | |
|---|---|---|---|
| **Work Order** | : **ES2507427** | Page | : 1 of 10 |
| Client | : **ADE Consulting Group Pty Ltd** | Laboratory | : Environmental Division Sydney |
| Contact | : MR MATTHEW TOOLE | Telephone | : +61-2-8784 8555 |
| Project | : A101022.0343.01 | Date Samples Received | : 17-Mar-2025 |
| Site | : ---- | Issue Date | : 31-Mar-2025 |
| Sampler | : MONIQUE HITCHENS | No. of samples received | : 1 |
| Order number | : A101022.0343.01.004.L21 | No. of samples analysed | : 1 |

**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*

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

## 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** | | | | | | | |
| ED041G: Sulfate (Turbidimetric) as SO4 2- by DA | ES2507912--001 | Anonymous | **Sulfate as SO4 - Turbidimetric** | 14808-79-8 | Not Determined | ---- | **MS recovery not determined, background level greater than or equal to 4x spike level.** |

## 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** | | | | | | |
| SR1 | ---- | ---- | ---- | 21-Mar-2025 | 13-Mar-2025 | **8** |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 24-Mar-2025 | 20-Mar-2025 | **4** |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 28-Mar-2025 | 14-Mar-2025 | **14** |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 25-Mar-2025 | 15-Mar-2025 | **10** |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 28-Mar-2025 | 15-Mar-2025 | **13** |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | 26-Mar-2025 | 14-Mar-2025 | **12** | ---- | ---- | ---- |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | 26-Mar-2025 | 15-Mar-2025 | **11** | ---- | ---- | ---- |
| **EK071G: Reactive Phosphorus as P by discrete analyser** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 25-Mar-2025 | 15-Mar-2025 | **10** |
| **EP005: Total Organic Carbon (TOC)** | | | | | | |
| **Clear Plastic Bottle - Natural** | | | | | | |
| SR1 | ---- | ---- | ---- | 25-Mar-2025 | 14-Mar-2025 | **11** |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | |
| **Amber Glass Bottle - Unpreserved** | | | | | | |
| SR1 | 24-Mar-2025 | 20-Mar-2025 | **4** | ---- | ---- | ---- |

Matrix: **WATER**

| Method / Container / Client Sample ID(s) | Extraction / Preparation: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Days overdue | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Days overdue |
|---|---|---|---|---|---|---|
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | |
| **Amber Glass Bottle - Unpreserved** | | | | | | |
| SR1 | 24-Mar-2025 | 20-Mar-2025 | **4** | ---- | ---- | ---- |

## *Outliers : Frequency of Quality Control Samples*

Matrix: **WATER**

| Quality Control Sample Type / Analytical Methods | Method | Count: QC | Count: Regular | Rate (%): Actual | Rate (%): Expected | Quality Control Specification |
|---|---|---|---|---|---|---|
| Laboratory Duplicates (DUP) | | | | | | |
| TRH - Semivolatile Fraction | EP071 | 0 | 9 | 0.00 | 10.00 | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | |
| TRH - Semivolatile Fraction | EP071 | 0 | 9 | 0.00 | 5.00 | NEPM 2013 B3 & ALS QC Standard |

# *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: Date extracted | Extraction / Preparation: Due for extraction | Extraction / Preparation: Evaluation | Analysis: Date analysed | Analysis: Due for analysis | Analysis: Evaluation |
|---|---|---|---|---|---|---|---|
| **EA005P: pH by PC Titrator** | | | | | | | |
| **Clear Plastic Bottle - Natural (EA005-P)** | | | | | | | |
| SR1 | **13-Mar-2025** | **----** | ---- | **----** | **21-Mar-2025** | 13-Mar-2025 | × |
| **EA010P: Conductivity by PC Titrator** | | | | | | | |
| **Clear Plastic Bottle - Natural (EA010-P)** | | | | | | | |
| SR1 | **13-Mar-2025** | **----** | ---- | **----** | **21-Mar-2025** | 10-Apr-2025 | ✓ |
| **EA015: Total Dissolved Solids dried at 180 ± 5 °C** | | | | | | | |
| **Clear Plastic Bottle - Natural (EA015H)** | | | | | | | |
| SR1 | **13-Mar-2025** | **----** | ---- | **----** | **24-Mar-2025** | 20-Mar-2025 | × |
| **ED037P: Alkalinity by PC Titrator** | | | | | | | |
| **Clear Plastic Bottle - Natural (ED037-P)** | | | | | | | |
| SR1 | **13-Mar-2025** | **----** | ---- | **----** | **21-Mar-2025** | 27-Mar-2025 | ✓ |
| **ED041G: Sulfate (Turbidimetric) as SO4 2- by DA** | | | | | | | |
| **Clear Plastic Bottle - Natural (ED041G)** | | | | | | | |
| SR1 | **13-Mar-2025** | **----** | ---- | **----** | **25-Mar-2025** | 10-Apr-2025 | ✓ |

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 |
| **ED045G: Chloride by Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (ED045G) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 25-Mar-2025 | 10-Apr-2025 | ✓ |
| **ED093F: Dissolved Major Cations** | | | | | | | |
| Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 27-Mar-2025 | 10-Apr-2025 | ✓ |
| **EG020F: Dissolved Metals by ICP-MS** | | | | | | | |
| Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 27-Mar-2025 | 09-Sep-2025 | ✓ |
| **EG020T: Total Metals by ICP-MS** | | | | | | | |
| Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) | | | | | | | |
| SR1 | 13-Mar-2025 | 26-Mar-2025 | 09-Sep-2025 | ✓ | 26-Mar-2025 | 09-Sep-2025 | ✓ |
| **EG035F: Dissolved Mercury by FIMS** | | | | | | | |
| Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 31-Mar-2025 | 10-Apr-2025 | ✓ |
| **EK055G: Ammonia as N by Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK055G) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 28-Mar-2025 | 14-Mar-2025 | × |
| **EK057G: Nitrite as N by Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK057G) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 25-Mar-2025 | 15-Mar-2025 | × |
| **EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK059G) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 28-Mar-2025 | 15-Mar-2025 | × |
| **EK061G: Total Kjeldahl Nitrogen By Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK061G) | | | | | | | |
| SR1 | 13-Mar-2025 | 26-Mar-2025 | 14-Mar-2025 | × | 26-Mar-2025 | 23-Apr-2025 | ✓ |
| **EK067G: Total Phosphorus as P by Discrete Analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK067G) | | | | | | | |
| SR1 | 13-Mar-2025 | 26-Mar-2025 | 15-Mar-2025 | × | 26-Mar-2025 | 23-Apr-2025 | ✓ |
| **EK071G: Reactive Phosphorus as P by discrete analyser** | | | | | | | |
| Clear Plastic Bottle - Natural (EK071G) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 25-Mar-2025 | 15-Mar-2025 | × |
| **EP005: Total Organic Carbon (TOC)** | | | | | | | |
| Clear Plastic Bottle - Natural (EP005) | | | | | | | |
| SR1 | 13-Mar-2025 | ---- | ---- | ---- | 25-Mar-2025 | 14-Mar-2025 | × |
| **EP080/071: Total Petroleum Hydrocarbons** | | | | | | | |
| Amber Glass Bottle - Unpreserved (EP071) | | | | | | | |
| SR1 | 13-Mar-2025 | 24-Mar-2025 | 20-Mar-2025 | × | 26-Mar-2025 | 03-May-2025 | ✓ |
| Clear glass VOC vial - HCl (EP080) | | | | | | | |
| SR1 | 13-Mar-2025 | 21-Mar-2025 | 27-Mar-2025 | ✓ | 22-Mar-2025 | 27-Mar-2025 | ✓ |

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 |
| **EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions** | | | | | | | |
| **Amber Glass Bottle - Unpreserved (EP071)** | | | | | | | |
| SR1 | **13-Mar-2025** | **24-Mar-2025** | 20-Mar-2025 | × | **26-Mar-2025** | 03-May-2025 | ✓ |
| **Clear glass VOC vial - HCl (EP080)** | | | | | | | |
| SR1 | **13-Mar-2025** | **21-Mar-2025** | 27-Mar-2025 | ✓ | **22-Mar-2025** | 27-Mar-2025 | ✓ |
| **EP080: BTEXN** | | | | | | | |
| **Clear glass VOC vial - HCl (EP080)** | | | | | | | |
| SR1 | **13-Mar-2025** | **21-Mar-2025** | 27-Mar-2025 | ✓ | **22-Mar-2025** | 27-Mar-2025 | ✓ |

# 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 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Ammonia as N by Discrete analyser | EK055G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Chloride by Discrete Analyser | ED045G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Conductivity by Auto Titrator | EA010-P | 3 | 18 | **16.67** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 2 | 17 | **11.76** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 2 | 19 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Major Cations - Dissolved | ED093F | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 2 | 19 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| pH by Auto Titrator | EA005-P | 2 | 17 | **11.76** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 8 | **12.50** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser | ED041G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Dissolved Solids (High Level) | EA015H | 1 | 9 | **11.11** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 2 | 19 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 2 | 19 | **10.53** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Organic Carbon | EP005 | 2 | 15 | **13.33** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Phosphorus as P By Discrete Analyser | EK067G | 2 | 18 | **11.11** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH - Semivolatile Fraction | EP071 | 0 | 9 | **0.00** | **10.00** | × | NEPM 2013 B3 & ALS QC Standard |
| TRH Volatiles/BTEX | EP080 | 2 | 11 | **18.18** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| **Laboratory Control Samples (LCS)** | | | | | | | |
| Alkalinity by Auto Titrator | ED037-P | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Ammonia as N by Discrete analyser | EK055G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Chloride by Discrete Analyser | ED045G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Conductivity by Auto Titrator | EA010-P | 3 | 18 | **16.67** | **8.33** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 1 | 17 | **5.88** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Major Cations - Dissolved | ED093F | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| pH by Auto Titrator | EA005-P | 2 | 17 | **11.76** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 8 | **12.50** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser | ED041G | 2 | 20 | **10.00** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Dissolved Solids (High Level) | EA015H | 3 | 9 | **33.33** | **12.50** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 3 | 19 | **15.79** | **15.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Organic Carbon | EP005 | 1 | 15 | **6.67** | **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 | | | | | | | |
| Total Phosphorus as P By Discrete Analyser | EK067G | 2 | 18 | **11.11** | **10.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH - Semivolatile Fraction | EP071 | 1 | 9 | **11.11** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH Volatiles/BTEX | EP080 | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Method Blanks (MB) | | | | | | | |
| Ammonia as N by Discrete analyser | EK055G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Chloride by Discrete Analyser | ED045G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Conductivity by Auto Titrator | EA010-P | 2 | 18 | **11.11** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 1 | 17 | **5.88** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Major Cations - Dissolved | ED093F | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 8 | **12.50** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser | ED041G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Dissolved Solids (High Level) | EA015H | 1 | 9 | **11.11** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Organic Carbon | EP005 | 1 | 15 | **6.67** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Phosphorus as P By Discrete Analyser | EK067G | 1 | 18 | **5.56** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH - Semivolatile Fraction | EP071 | 1 | 9 | **11.11** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH Volatiles/BTEX | EP080 | 1 | 11 | **9.09** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Matrix Spikes (MS) | | | | | | | |
| Ammonia as N by Discrete analyser | EK055G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Chloride by Discrete Analyser | ED045G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Mercury by FIMS | EG035F | 1 | 17 | **5.88** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Dissolved Metals by ICP-MS - Suite A | EG020A-F | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite and Nitrate as N (NOx) by Discrete Analyser | EK059G | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Nitrite as N by Discrete Analyser | EK057G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Reactive Phosphorus as P-By Discrete Analyser | EK071G | 1 | 8 | **12.50** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser | ED041G | 1 | 20 | **5.00** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Kjeldahl Nitrogen as N By Discrete Analyser | EK061G | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Metals by ICP-MS - Suite A | EG020A-T | 1 | 19 | **5.26** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Organic Carbon | EP005 | 1 | 15 | **6.67** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| Total Phosphorus as P By Discrete Analyser | EK067G | 1 | 18 | **5.56** | **5.00** | ✓ | NEPM 2013 B3 & ALS QC Standard |
| TRH - Semivolatile Fraction | EP071 | 0 | 9 | **0.00** | **5.00** | × | NEPM 2013 B3 & ALS QC Standard |
| TRH Volatiles/BTEX | EP080 | 1 | 11 | **9.09** | **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) |
| 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) |
| 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 A | EG020A-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. |
| Total Metals by ICP-MS - Suite A | EG020A-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). |

| Analytical Methods | Method | Matrix | Method Descriptions |
|---|---|---|---|
| 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) |
| 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 1030E. This method is compliant with NEPM Schedule B(3) |
| Total Organic Carbon | EP005 | WATER | In house: Referenced to APHA 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. 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) |

| 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. |

**UPDATED COC**

# CHAIN OF CUSTODY

ALS Laboratory: please tick →


ADELAIDE 3/1 Burma Road Pooraka SA 5095 Ph: 08 8162 5130 E: adelaide@alsglobal.com

BRISBANE 2 Byth Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

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WOLLONGONG 1/19-21 Ralph Black Drive, Nth Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com


| | | | |
|---|---|---|---|
| CLIENT: Webuild | TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics) ☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date): | | FOR LABORATORY USE ONLY (Circle) |
| OFFICE: 175 Liverpool St, Sydney NSW | | | Custody Seal Intact? Yes No N/A |
| PROJECT: SSTOM PROJECT NO.: | ALS QUOTE NO.: ES23WEBUILD0001_V3 | COC SEQUENCE NUMBER (Circle) | Free ice / frozen ice bricks present upon receipt? Yes No N/A |
| ORDER NUMBER: 6400045324 PURCHASE ORDER NO.: | COUNTRY OF ORIGIN: | COC: 1 2 3 4 5 6 7 | Random Sample Temperature on Receipt: °C |
| PROJECT MANAGER: Imtiaz Risha CONTACT PH: 0476850579 | | OF: 1 2 3 4 5 6 7 | Other comment: |
| SAMPLER: Andrew Reece SAMPLER MOBILE: 0408825957 | RELINQUISHED BY: Hafiz Azmat, | RECEIVED BY: | RELINQUISHED BY: RECEIVED BY: |
| COC Emailed to ALS? ( YES / NO) - YES EDD FORMAT (or default): | | | |
| Email Reports to: andrew.reece@parklifejv.au, hafiz.azmat@parklifejv.au, imtiaz.risha@parklifejv.au | 31/07/2025 14:00 | DATE/TIME: | DATE/TIME: DATE/TIME: 31/7/25 1730 |
| Email Invoice to (will default to PM if no other addresses are listed): | | | |

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

| ALS USE ONLY | SAMPLE DETAILS MATRIX: Solid(S) Water(W) | | | CONTAINER INFORMATION | | ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required). | | | | | | | | Additional Information |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LAB ID | SAMPLE ID | DATE / TIME | MATRIX | TYPE & PRESERVATIVE (refer to codes below) | TOTAL BOTTLES | As per Surface Water Table | As per Groundwater Table | As per Dust Table | | HT | | | | Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc. **Please also test for total suspended solids** |
| 1 | 3401 | 31/07/2025 12:00 | | | 11 | | X | | | | | | | |
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| | | | | | | | | | | | | | | |
| | | | | TOTAL | 11 | | | | | | | | | |

Environmental Division
Sydney
Work Order Reference
ES2523490

Telephone : +61-2-8784 8555

Subcon / Forward Lab / Split WO:

Lab / Analysis:

Relinquished Date:

WO: ES2523494 - Arsenic speciation

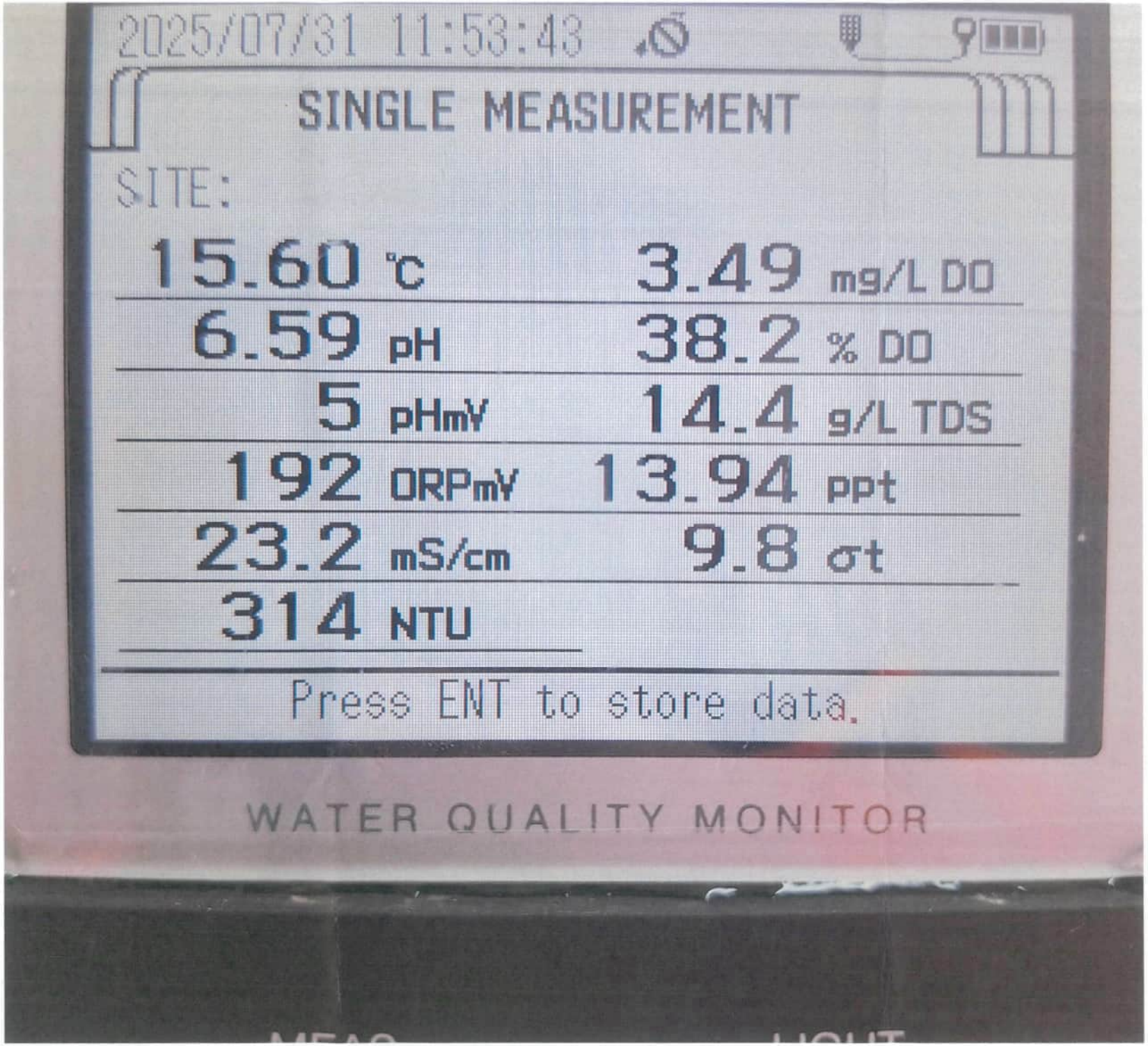
Additionally, please ensure the following metals are included in the analysis (if not already part of the standard groundwater suite):
Total Metals: Aluminium (Al), Copper (Cu), Iron (Fe), Manganese (Mn)

Dissolved Metals: Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni), Zinc (Zn), Aluminium (Al), Iron (Fe), Manganese (Mn)

No PFAS testing is required.

Rest of should be tested as per suite and above request.

*Water Container Codes:* P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.




Field data for 3401

# Appendix H – QA/QC Analysis

| | | Field ID | GW-1021 | BR_1 | | GW-1021 | SR_1 | |
|---|---|---|---|---|---|---|---|---|
| | | Date | 09 Jul 2025 | 09 Jul 2025 | | 09 Jul 2025 | 09 Jul 2025 | |
| | | Matrix Type | Water | Water | | Water | Water | |
| | | Lab Report Number | 386021 | 386021 | RPD | 386021 | ES2521809 | RPD |
| | Unit | EQL | | | | | | |
| **PFAS** | | | | | | | | |
| Sum of PFHxS and PFOS | µg/L | 0.0002 | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.0002 | - | - | - | - | - | - |
| Sum of PFAS (PFOS + PFOA) | µg/L | 0.0002 | - | - | - | - | - | - |
| **BTEX** | | | | | | | | |
| Naphthalene (VOC) | mg/L | 0.001 | - | - | - | - | - | - |
| Benzene | µg/L | 1 | - | - | - | - | - | - |
| Toluene | µg/L | 1 | - | - | - | - | - | - |
| Ethylbenzene | µg/L | 1 | - | - | - | - | - | - |
| Xylene (m & p) | µg/L | 2 | - | - | - | - | - | - |
| Xylene (o) | µg/L | 1 | - | - | - | - | - | - |
| **TRH** | | | | | | | | |
| C6-C10 Fraction (F1) | µg/L | 10 | - | - | - | - | - | - |
| C6-C10 | µg/L | 10 | - | - | - | - | - | - |
| >C10-C16 Fraction (F2) | µg/L | 50 | - | - | - | - | - | - |
| >C10-C16 Fraction (F2 minus Naphthalene) | µg/L | 50 | - | - | - | - | - | - |
| >C16-C34 Fraction (F3) | µg/L | 100 | - | - | - | - | - | - |
| >C34-C40 Fraction (F4) | µg/L | 100 | - | - | - | - | - | - |
| >C10-C40 Fraction (Sum) | µg/L | 50 | - | - | - | - | - | - |
| **Inorganics** | | | | | | | | |
| Hardness (filtered) | mg/L | 3 | 120 | 94 | 24 | 120 | - | - |
| Total Phosphorus as P (Organic Phosphate as P) | mg/L | 0.01 | - | - | - | - | 0.32 | - |
| Electrical Conductivity (Non Compensated) | µS/cm | 1 | 1,800 | 1,400 | 25 | 1,800 | - | - |
| Nitrite + Nitrate as N | mg/L | 0.01 | - | - | - | - | 4.10 | - |
| Alkalinity (Bicarbonate as CaCO3) | mg/L | 5 | <5 | 27 | 138 | <5 | - | - |
| Alkalinity (Carbonate as CaCO3) | mg/L | 5 | <5 | <5 | 0 | <5 | - | - |
| Alkalinity (Hydroxide) as CaCO3 | mg/L | 5 | <5 | <5 | 0 | <5 | - | - |
| Alkalinity (total) as CaCO3 | mg/L | 5 | <5 | 27 | 138 | <5 | - | - |
| Ammonia as N | mg/L | 0.005 | - | - | - | - | 0.16 | - |
| Ammonia as N (filtered) | mg/L | 0.005 | 0.19 | 0.13 | 38 | 0.19 | - | - |
| Chloride | mg/L | 1 | 64 | 56 | 13 | 64 | - | - |
| Electrical Conductivity (Lab) | µS/cm | 1 | - | - | - | - | 1,420 | - |
| Ionic Balance | % | | 15 | 12 | 22 | 15 | - | - |
| Kjeldahl Nitrogen Total | mg/L | 0.1 | 0.9 | 0.2 | 127 | 0.9 | 1.7 | 62 |
| Nitrate (as N) | mg/L | 0.005 | - | - | - | - | 4.10 | - |
| Nitrate (as N) (filtered) | mg/L | 0.005 | 0.68 | 4.9 | 151 | 0.68 | - | - |
| Nitrite (as N) | mg/L | 0.005 | - | - | - | - | <0.01 | - |
| Nitrite (as N) (filtered) | mg/L | 0.005 | <0.005 | <0.005 | 0 | <0.005 | - | - |
| Organic Nitrogen as N | mg/L | 0.2 | 0.7 | <0.2 | 111 | 0.7 | - | - |
| Nitrogen (Total Oxidised) | mg/L | 0.005 | 0.68 | 4.9 | 151 | 0.68 | - | - |
| Nitrogen (Total) | mg/L | 0.1 | 1.5 | 5.2 | 110 | 1.5 | 5.8 | 118 |
| pH (Lab) | - | 0.01 | 3.1 | 6.1 | 65 | 3.1 | 6.74 | 74 |
| Total Phosphorus (Organic Phosphate) | mg/L | 0.05 | 0.3 | 0.2 | 40 | 0.3 | - | - |
| Reactive Phosphorus as P (Orthophosphate as P) (filtered) | mg/L | 0.005 | 0.057 | 0.007 | 156 | 0.057 | <0.01 | 140 |
| Sodium (filtered) | mg/L | 0.5 | 340 | 250 | 31 | 340 | - | - |
| Sulphate | mg/L | 1 | 530 | 380 | 33 | 530 | - | - |
| Total Dissolved Solids (Lab) | mg/L | 5 | 990 | 1,000 | 1 | 990 | 1,040 | 5 |
| **Metals** | | | | | | | | |
| Aluminium | mg/L | 0.01 | 6.2 | 4.7 | 28 | 6.2 | 5.60 | 10 |
| Aluminium (filtered) | mg/L | 0.01 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 |
| Arsenic (filtered) | mg/L | 0.001 | 0.004 | 0.003 | 29 | 0.004 | 0.005 | 22 |
| Cadmium (filtered) | mg/L | 0.0001 | <0.0001 | <0.0001 | 0 | <0.0001 | <0.0001 | 0 |
| Calcium (filtered) | mg/L | 0.5 | 24 | 20 | 18 | 24 | - | - |
| Chromium (III+VI) (filtered) | mg/L | 0.001 | <0.001 | <0.001 | 0 | <0.001 | <0.001 | 0 |
| Cobalt | mg/L | 0.001 | 0.012 | 0.008 | 40 | 0.012 | 0.014 | 15 |
| Copper (filtered) | mg/L | 0.001 | <0.001 | <0.001 | 0 | <0.001 | <0.001 | 0 |
| Iron | mg/L | 0.01 | 23 | 15 | 42 | 23 | 23.2 | 1 |
| Iron (filtered) | mg/L | 0.01 | 2 | 1.3 | 42 | 2 | 1.71 | 16 |
| Lead (filtered) | ug/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 |
| Magnesium (filtered) | mg/L | 0.5 | 14 | 11 | 24 | 14 | - | - |
| Manganese | mg/L | 0.001 | 0.11 | 0.06 | 59 | 0.11 | 0.111 | 1 |
| Manganese (filtered) | mg/L | 0.001 | 0.078 | 0.045 | 54 | 0.078 | 0.050 | 44 |
| Mercury (filtered) | mg/L | 0.00005 | <0.00005 | <0.00005 | 0 | <0.00005 | <0.0001 | 0 |
| Nickel (filtered) | mg/L | 0.001 | 0.009 | 0.005 | 57 | 0.009 | 0.005 | 57 |
| Potassium (filtered) | mg/L | 0.5 | 7.4 | 6.5 | 13 | 7.4 | - | - |
| Zinc (filtered) | mg/L | 0.001 | 0.018 | 0.01 | 57 | 0.018 | 0.012 | 40 |

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 50 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 ( > 30 x EQL) )**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

| | | Field ID | GW-3022 | BR_2 | | GW-3022 | SR_2 | |
|---|---|---|---|---|---|---|---|---|
| | | Date | 11 Jul 2025 | 11 Jul 2025 | | 11 Jul 2025 | 09 Jul 2025 | |
| | | Matrix Type | Water | Water | | Water | Water | |
| | | Lab Report Number | 386021 | 386021 | RPD | 386021 | ES2521809 | RPD |
| | Unit | EQL | | | | | | |
| **PFAS** | | | | | | | | |
| Sum of PFHxS and PFOS | µg/L | 0.0002 | - | - | - | - | - | - |
| Sum of PFAS | µg/L | 0.0002 | - | - | - | - | - | - |
| Sum of PFAS (PFOS + PFOA) | µg/L | 0.0002 | - | - | - | - | - | - |
| **BTEX** | | | | | | | | |
| Naphthalene (VOC) | mg/L | 0.001 | - | - | - | - | - | - |
| Benzene | µg/L | 1 | - | - | - | - | - | - |
| Toluene | µg/L | 1 | - | - | - | - | - | - |
| Ethylbenzene | µg/L | 1 | - | - | - | - | - | - |
| Xylene (m & p) | µg/L | 2 | - | - | - | - | - | - |
| Xylene (o) | µg/L | 1 | - | - | - | - | - | - |
| **TRH** | | | | | | | | |
| C6-C10 Fraction (F1) | µg/L | 10 | <10 | - | - | <10 | - | - |
| C6-C10 | µg/L | 10 | - | - | - | - | - | - |
| >C10-C16 Fraction (F2) | µg/L | 50 | <50 | - | - | <50 | - | - |
| >C10-C16 Fraction (F2 minus Naphthalene) | µg/L | 50 | - | - | - | - | - | - |
| >C16-C34 Fraction (F3) | µg/L | 100 | <100 | - | - | <100 | - | - |
| >C34-C40 Fraction (F4) | µg/L | 100 | <100 | - | - | <100 | - | - |
| >C10-C40 Fraction (Sum) | µg/L | 50 | <50 | - | - | <50 | - | - |
| **Inorganics** | | | | | | | | |
| Hardness (filtered) | mg/L | 3 | 1,800 | 2,100 | 15 | 1,800 | - | - |
| Total Phosphorus as P (Organic Phosphate as P) | mg/L | 0.01 | - | - | - | - | 0.98 | - |
| Electrical Conductivity (Non Compensated) | µS/cm | 1 | 7,100 | 7,200 | 1 | 7,100 | - | - |
| Nitrite + Nitrate as N | mg/L | 0.01 | - | - | - | - | 1.48 | - |
| Alkalinity (Bicarbonate as CaCO3) | mg/L | 5 | 280 | 280 | 0 | 280 | - | - |
| Alkalinity (Carbonate as CaCO3) | mg/L | 5 | <5 | <5 | 0 | <5 | - | - |
| Alkalinity (Hydroxide) as CaCO3 | mg/L | 5 | <5 | <5 | 0 | <5 | - | - |
| Alkalinity (total) as CaCO3 | mg/L | 5 | 280 | 280 | 0 | 280 | - | - |
| Ammonia as N | mg/L | 0.005 | - | - | - | - | 0.08 | - |
| Ammonia as N (filtered) | mg/L | 0.005 | 0.078 | 0.063 | 21 | 0.078 | - | - |
| Chloride | mg/L | 1 | 1,500 | 1,600 | 6 | 1,500 | - | - |
| Electrical Conductivity (Lab) | µS/cm | 1 | - | - | - | - | 7,510 | - |
| Ionic Balance | % | | 41 | 44 | 7 | 41 | - | - |
| Kjeldahl Nitrogen Total | mg/L | 0.1 | 0.2 | <0.1 | 67 | 0.2 | <2.0 | 0 |
| Nitrate (as N) | mg/L | 0.005 | - | - | - | - | 1.46 | - |
| Nitrate (as N) (filtered) | mg/L | 0.005 | 1.5 | 1.5 | 0 | 1.5 | - | - |
| Nitrite (as N) | mg/L | 0.005 | - | - | - | - | 0.02 | - |
| Nitrite (as N) (filtered) | mg/L | 0.005 | 0.02 | 0.02 | 0 | 0.02 | - | - |
| Organic Nitrogen as N | mg/L | 0.2 | <0.2 | <0.2 | 0 | <0.2 | - | - |
| Nitrogen (Total Oxidised) | mg/L | 0.005 | 1.6 | 1.5 | 6 | 1.6 | - | - |
| Nitrogen (Total) | mg/L | 0.1 | 1.8 | 1.6 | 12 | 1.8 | <2.0 | 0 |
| pH (Lab) | - | 0.01 | 6.8 | 6.9 | 1 | 6.8 | 7.12 | 5 |
| Total Phosphorus (Organic Phosphate) | mg/L | 0.05 | 0.73 | 0.2 | 114 | 0.73 | - | - |
| Reactive Phosphorus as P (Orthophosphate as P) (filtered) | mg/L | 0.005 | <0.005 | 0.006 | 18 | <0.005 | <0.01 | 0 |
| Sodium (filtered) | mg/L | 0.5 | 2,400 | 2,700 | 12 | 2,400 | - | - |
| Sulphate | mg/L | 1 | 550 | 580 | 5 | 550 | - | - |
| Total Dissolved Solids (Lab) | mg/L | 5 | 4,600 | 4,600 | 0 | 4,600 | 4,540 | 1 |
| **Metals** | | | | | | | | |
| Aluminium | mg/L | 0.01 | 17 | 17 | 0 | 17 | 13.6 | 22 |
| Aluminium (filtered) | mg/L | 0.01 | <0.01 | <0.01 | 0 | <0.01 | <0.01 | 0 |
| Arsenic (filtered) | mg/L | 0.001 | <0.001 | <0.001 | 0 | <0.001 | <0.001 | 0 |
| Cadmium (filtered) | mg/L | 0.0001 | <0.0001 | <0.0001 | 0 | <0.0001 | <0.0001 | 0 |
| Calcium (filtered) | mg/L | 0.5 | 110 | 120 | 9 | 110 | - | - |
| Chromium (III+VI) (filtered) | mg/L | 0.001 | 0.005 | 0.007 | 33 | 0.005 | 0.002 | 86 |
| Cobalt | mg/L | 0.001 | 0.028 | 0.03 | 7 | 0.028 | 0.026 | 7 |
| Copper (filtered) | mg/L | 0.001 | 0.003 | 0.002 | 40 | 0.003 | 0.002 | 40 |
| Iron | mg/L | 0.01 | 46 | 46 | 0 | 46 | 44.3 | 4 |
| Iron (filtered) | mg/L | 0.01 | 0.11 | 0.12 | 9 | 0.11 | 0.06 | 59 |
| Lead (filtered) | ug/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 |
| Magnesium (filtered) | mg/L | 0.5 | 360 | 430 | 18 | 360 | - | - |
| Manganese | mg/L | 0.001 | 0.45 | 0.46 | 2 | 0.45 | 0.397 | 13 |
| Manganese (filtered) | mg/L | 0.001 | 0.13 | 0.097 | 29 | 0.13 | 0.094 | 32 |
| Mercury (filtered) | mg/L | 0.00005 | <0.00005 | <0.00005 | 0 | <0.00005 | <0.0001 | 0 |
| Nickel (filtered) | mg/L | 0.001 | 0.007 | 0.007 | 0 | 0.007 | 0.007 | 0 |
| Potassium (filtered) | mg/L | 0.5 | 30 | 32 | 6 | 30 | - | - |
| Zinc (filtered) | mg/L | 0.001 | 0.007 | 0.007 | 0 | 0.007 | 0.008 | 13 |

*RPDs have only been considered where a concentration is greater than 1 times
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs f
***Interlab Duplicates are matched on a per compound basis as methods vary b

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Field ID | SBT-GW-4017 | BR_30.07.25 | | SBT-GW-4017 | SR_30.07.25 | |
| | | Date | 30 Jul 2025 | 30 Jul 2025 | | 30 Jul 2025 | 30 Jul 2025 | |
| | | Matrix Type | Water | Water | | Water | Water | |
| | | Lab Report Number | 387359 | 387359 | RPD | 387359 | ES2523280 | RPD |
| | Unit | EQL | | | | | | |
| **PFAS** | | | | | | | | |
| Sum of PFHxS and PFOS | µg/L | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - |
| Sum of PFAS | µg/L | 0.0002 | 0.0046 | 0.0046 | 0 | 0.0046 | - | - |
| Sum of PFAS (PFOS + PFOA) | µg/L | 0.0002 | <0.0002 | <0.0002 | 0 | <0.0002 | - | - |
| **BTEX** | | | | | | | | |
| Naphthalene (VOC) | mg/L | 0.001 | <0.001 | <0.001 | 0 | <0.001 | - | - |
| Benzene | µg/L | 1 | <1 | <1 | 0 | <1 | - | - |
| Toluene | µg/L | 1 | <1 | <1 | 0 | <1 | - | - |
| Ethylbenzene | µg/L | 1 | <1 | <1 | 0 | <1 | - | - |
| Xylene (m & p) | µg/L | 2 | <2 | <2 | 0 | <2 | - | - |
| Xylene (o) | µg/L | 1 | <1 | <1 | 0 | <1 | - | - |
| **TRH** | | | | | | | | |
| C6-C10 Fraction (F1) | µg/L | 10 | <10 | <10 | 0 | <10 | - | - |
| C6-C10 | µg/L | 10 | <10 | <10 | 0 | <10 | - | - |
| >C10-C16 Fraction (F2) | µg/L | 50 | <50 | <50 | 0 | <50 | - | - |
| >C10-C16 Fraction (F2 minus Naphthalene) | µg/L | 50 | <50 | <50 | 0 | <50 | - | - |
| >C16-C34 Fraction (F3) | µg/L | 100 | <100 | <100 | 0 | <100 | - | - |
| >C34-C40 Fraction (F4) | µg/L | 100 | <100 | <100 | 0 | <100 | - | - |
| >C10-C40 Fraction (Sum) | µg/L | 50 | <50 | <50 | 0 | <50 | - | - |
| **Inorganics** | | | | | | | | |
| Hardness (filtered) | mg/L | 3 | 2,100 | 2,100 | 0 | 2,100 | - | - |
| Total Phosphorus as P (Organic Phosphate as P) | mg/L | 0.01 | - | - | - | - | 3.18 | - |
| Electrical Conductivity (Non Compensated) | µS/cm | 1 | 16,000 | 16,000 | 0 | 16,000 | - | - |
| Nitrite + Nitrate as N | mg/L | 0.01 | - | - | - | - | 0.02 | - |
| Alkalinity (Bicarbonate as CaCO3) | mg/L | 5 | 1,100 | 1,200 | 9 | 1,100 | - | - |
| Alkalinity (Carbonate as CaCO3) | mg/L | 5 | <5 | <5 | 0 | <5 | - | - |
| Alkalinity (Hydroxide) as CaCO3 | mg/L | 5 | <5 | <5 | 0 | <5 | - | - |
| Alkalinity (total) as CaCO3 | mg/L | 5 | 1,100 | 1,200 | 9 | 1,100 | - | - |
| Ammonia as N | mg/L | 0.005 | - | - | - | - | 3.06 | - |
| Ammonia as N (filtered) | mg/L | 0.005 | 1.2 | 3.3 | 93 | 1.2 | - | - |
| Chloride | mg/L | 1 | 5,100 | 5,000 | 2 | 5,100 | - | - |
| Electrical Conductivity (Lab) | µS/cm | 1 | - | - | - | - | 16,900 | - |
| Ionic Balance | % | | -1.0 | 0 | 200 | -1.0 | - | - |
| Kjeldahl Nitrogen Total | mg/L | 0.1 | 3.2 | 3.2 | 0 | 3.2 | 11.2 | 111 |
| Nitrate (as N) | mg/L | 0.005 | - | - | - | - | 0.02 | - |
| Nitrate (as N) (filtered) | mg/L | 0.005 | 0.02 | 0.005 | 120 | 0.02 | - | - |
| Nitrite (as N) | mg/L | 0.005 | - | - | - | - | <0.01 | - |
| Nitrite (as N) (filtered) | mg/L | 0.005 | 0.006 | 0.01 | 50 | 0.006 | - | - |
| Organic Nitrogen as N | mg/L | 0.2 | 2.0 | <0.2 | 164 | 2.0 | - | - |
| Nitrogen (Total Oxidised) | mg/L | 0.005 | 0.03 | 0.01 | 100 | 0.03 | - | - |
| Nitrogen (Total) | mg/L | 0.1 | 3.2 | 3.2 | 0 | 3.2 | 11.2 | 111 |
| pH (Lab) | - | 0.01 | 7.3 | 7.3 | 0 | 7.3 | 7.69 | 5 |
| Total Phosphorus (Organic Phosphate) | mg/L | 0.05 | 4.9 | 4.2 | 15 | 4.9 | - | - |
| Reactive Phosphorus as P (Orthophosphate as P) (filtered) | mg/L | 0.005 | <0.005 | 0.009 | 57 | <0.005 | <0.01 | 0 |
| Sodium (filtered) | mg/L | 0.5 | 3,000 | 3,000 | 0 | 3,000 | - | - |
| Sulphate | mg/L | 1 | 420 | 410 | 2 | 420 | - | - |
| Total Dissolved Solids (Lab) | mg/L | 5 | 11,000 | 11,000 | 0 | 11,000 | 11,900 | 8 |
| **Metals** | | | | | | | | |
| Aluminium | mg/L | 0.01 | 100 | 95 | 5 | 100 | 34.4 | 98 |
| Aluminium (filtered) | mg/L | 0.01 | <0.01 | <0.01 | 0 | <0.01 | 0.01 | 0 |
| Arsenic (filtered) | mg/L | 0.001 | <0.001 | <0.001 | 0 | <0.001 | <0.001 | 0 |
| Cadmium (filtered) | mg/L | 0.0001 | <0.0001 | <0.0001 | 0 | <0.0001 | <0.0001 | 0 |
| Calcium (filtered) | mg/L | 0.5 | 180 | 190 | 5 | 180 | - | - |
| Chromium (III+VI) (filtered) | mg/L | 0.001 | <0.001 | <0.001 | 0 | <0.001 | <0.001 | 0 |
| Cobalt | mg/L | 0.001 | 0.19 | 0.14 | 30 | 0.19 | 0.047 | 121 |
| Copper (filtered) | mg/L | 0.001 | <0.001 | <0.001 | 0 | <0.001 | <0.001 | 0 |
| Iron | mg/L | 0.01 | 300 | 270 | 11 | 300 | 83.9 | 113 |
| Iron (filtered) | mg/L | 0.01 | 0.42 | 0.49 | 15 | 0.42 | 0.28 | 40 |
| Lead (filtered) | ug/L | 1 | <1 | <1 | 0 | <1 | <1 | 0 |
| Magnesium (filtered) | mg/L | 0.5 | 400 | 400 | 0 | 400 | - | - |
| Manganese | mg/L | 0.001 | 6.2 | 5.2 | 18 | 6.2 | 1.61 | 118 |
| Manganese (filtered) | mg/L | 0.001 | 0.11 | 0.099 | 11 | 0.11 | 0.081 | 30 |
| Mercury (filtered) | mg/L | 0.00005 | <0.00005 | <0.00005 | 0 | <0.00005 | <0.0001 | 0 |
| Nickel (filtered) | mg/L | 0.001 | 0.003 | 0.002 | 40 | 0.003 | 0.002 | 40 |
| Potassium (filtered) | mg/L | 0.5 | 40 | 41 | 2 | 40 | - | - |
| Zinc (filtered) | mg/L | 0.001 | 0.002 | 0.002 | 0 | 0.002 | <0.005 | 0 |

*RPDs have only been considered where a concentration is greater than 1 times
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs f
***Interlab Duplicates are matched on a per compound basis as methods vary b

| | | | | BTEX | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Benzene | Toluene | Ethylbenzene | Xylene (m & p) | Xylene (o) |
| | | | | mg/L | mg/L | mg/L | mg/L | mg/L |
| **Field ID** | **Date** | **Sample Type** | **Lab Report Number** | | | | | |
| TB1_09/07/25 | 09 Jul 2025 | Normal | 389507 | <0.001 | <0.001 | <0.001 | <0.002 | <0.001 |
| TB2_14/07/25 | 14 Jul 2025 | Normal | 389507 | <0.001 | <0.001 | <0.001 | <0.002 | <0.001 |
| TB3_30/07/25 | 30 Jul 2025 | Normal | 389507 | <0.001 | <0.001 | <0.001 | <0.002 | <0.001 |
| TS1_09/07/25 | 09 Jul 2025 | Normal | 389507 | 0.022 | 0.022 | 0.023 | 0.043 | 0.023 |
| TS2_14/07/25 | 14 Jul 2025 | Normal | 389507 | 0.022 | 0.023 | 0.023 | 0.044 | 0.023 |
| TS3_30/07/25 | 30 Jul 2025 | Normal | 389507 | 0.024 | 0.024 | 0.025 | 0.047 | 0.025 |

**Statistics**

| | | | | | |
|---|---|---|---|---|---|
| Number of Results | 6 | 6 | 6 | 6 | 6 |
| Number of Detects | 3 | 3 | 3 | 3 | 3 |
| Minimum Concentration | <0.001 | <0.001 | <0.001 | <0.002 | <0.001 |
| Maximum Concentration | 0.024 | 0.024 | 0.025 | 0.047 | 0.025 |
| Average Concentration * | 0.012 | 0.012 | 0.012 | 0.023 | 0.012 |

* A Non Detect Multiplier of 0.5 has been applied.

ANZECC 2000, ANZG Freshwater 95%

[redacted]

| | | | | Inorganics | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Hardness (filtered) | Electrical Conductivity (Non Compensated) | Alkalinity (Bicarbonate as CaCO3) | Alkalinity (Carbonate as CaCO3) | Alkalinity (Hydroxide) as CaCO3 | Alkalinity (total) as CaCO3 | Ammonia as N (filtered) | Chloride | Ionic Balance | Kjeldahl Nitrogen Total | Nitrate (as N) (filtered) | Nitrite (as N) (filtered) | Organic Nitrogen as N | Nitrogen (Total Oxidised) | Nitrogen (Total) | pH (Lab) | Total Phosphorus (Organic Phosphate) |
| | | | | mg/L | dS/m | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | % | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | - | mg/L |
| EQL | | | | 3 | 0.001 | 5 | 5 | 5 | 5 | 0.005 | 1 | | 0.1 | 0.005 | 0.005 | 0.2 | 0.005 | 0.1 | | 0.05 |
| ANZECC 2000 MW 95% | | | | | | | | | | 0.91 | | | | | | | | | | |
| ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023) | | | | | | | | | | 0.9 | | | | | | | | | | |
| **Field ID** | **Date** | **Sample Type** | **Lab Report Number** | | | | | | | | | | | | | | | | | |
| **RIN1** | **13 Mar 2025** | **Rinsate** | **375663** | <3 | 0.048 | 9 | <5 | <5 | 9 | 0.091 | 6 | -11 | 0.1 | 0.20 | <0.005 | <0.2 | 0.2 | 0.3 | 8.0 | <0.05 |
| **RIN2** | **14 Mar 2025** | **Rinsate** | **375663** | <3 | 0.017 | <5 | <5 | <5 | <5 | <0.005 | <2 | - | <0.1 | <0.005 | <0.005 | <0.2 | <0.005 | <0.1 | 8.0 | <0.05 |
| **RIN_1** | **09 Jul 2025** | **Rinsate** | **386021** | <3 | 0.014 | <5 | <5 | <5 | <5 | 0.01 | 7 | -100 | <0.1 | 0.056 | 0.02 | <0.2 | 0.078 | <0.1 | 6.0 | <0.05 |
| **RIN_2** | **10 Jul 2025** | **Rinsate** | **386021** | <3 | 0.03 | 17 | <5 | <5 | 17 | 0.02 | 6 | -36 | <0.1 | 0.15 | 0.066 | <0.2 | 0.22 | 0.3 | 6.2 | <0.05 |
| **RIN_3** | **11 Jul 2025** | **Rinsate** | **386021** | <3 | 0.002 | 6 | <5 | <5 | 6 | <0.005 | 2 | -100 | <0.1 | <0.005 | <0.005 | <0.2 | <0.005 | <0.1 | 5.4 | <0.05 |
| **RIN_4** | **14 Jul 2025** | **Rinsate** | **386021** | <3 | 0.002 | <5 | <5 | <5 | <5 | <0.005 | <1 | - | <0.1 | <0.005 | <0.005 | <0.2 | <0.005 | <0.1 | 5.2 | <0.05 |
| **RIN_5** | **15 Jul 2025** | **Rinsate** | **386021** | <3 | 0.013 | <5 | <5 | <5 | <5 | <0.005 | <1 | - | <0.1 | 0.02 | <0.005 | <0.2 | 0.02 | <0.1 | 4.4 | <0.05 |
| **RIN_29.07.25** | **29 Jul 2025** | **Rinsate** | **387359** | <3 | 0.033 | 10 | <5 | <5 | 10 | 0.05 | 14 | -17 | <0.1 | 0.15 | 0.11 | <0.2 | 0.25 | 0.3 | 6.5 | <0.05 |
| **RIN_30.07.25** | **30 Jul 2025** | **Rinsate** | **387359** | <3 | 0.026 | 11 | <5 | <5 | 11 | 0.01 | 7 | -9.0 | <0.1 | 0.11 | 0.097 | <0.2 | 0.21 | 0.3 | 5.9 | <0.05 |
| **Statistics** | | | | | | | | | | | | | | | | | | | | |
| **Number of Results** | | | | **9** | **9** | **9** | **9** | **9** | **9** | **9** | **9** | **6** | **9** | **9** | **9** | **9** | **9** | **9** | **9** | **9** |
| **Number of Detects** | | | | **0** | **9** | **5** | **0** | **0** | **5** | **5** | **6** | **6** | **1** | **6** | **4** | **0** | **6** | **4** | **9** | **0** |
| **Minimum Concentration** | | | | **<3** | **0.002** | **<5** | **<5** | **<5** | **<5** | **<0.005** | **<1** | **-100** | **0.1** | **<0.005** | **<0.005** | **<0.2** | **<0.005** | **<0.1** | **4.4** | **<0.05** |
| **Maximum Concentration** | | | | **<3** | **0.048** | **17** | **<5** | **<5** | **17** | **0.091** | **14** | **-9** | **0.1** | **0.2** | **0.11** | **<0.2** | **0.25** | **0.3** | **8** | **<0.05** |

* A Non Detect Multiplier of 0.5 has been applied.

**Environmental Standards**

DoE, 2000, ANZECC 2000 MW 95%

ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)

ANZECC 2000, ANZG Freshwater 95%

[redacted]

| | | | | | | | | Metals | | | | | | | | BTEX | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Reactive Phosphorus as P (Orthophosphate as P) (filtered) | Sodium (filtered) | Sulphate | Total Dissolved Solids (Lab) | Arsenic (filtered) | Cadmium (filtered) | Chromium (III+VI) (filtered) | Copper (filtered) | Lead (filtered) | Mercury (filtered) | Nickel (filtered) | Zinc (filtered) | Benzene | Toluene | Ethylbenzene | Xylene (m & p) | Xylene (o) |
| | | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| EQL | | | | 0.005 | 0.5 | 1 | 5 | 0.001 | 0.0001 | 0.001 | 0.001 | 0.001 | 0.00005 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 |
| ANZECC 2000 MW 95% | | | | | | | | | 0.0055 | | 0.0013 | 0.0044 | 0.0004 | 0.07 | 0.015 | 0.7 | | | | |
| ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023) | | | | | | | | | 0.0002 | | 0.0014 | 0.0034 | 0.0006 | 0.011 | 0.008 | 0.95 | 0.18 | 0.08 | | 0.35 |
| **Field ID** | **Date** | **Sample Type** | **Lab Report Number** | | | | | | | | | | | | | | | | | |
| **RIN1** | **13 Mar 2025** | **Rinsate** | **375663** | 0.005 | 5.1 | <1 | 26 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **RIN2** | **14 Mar 2025** | **Rinsate** | **375663** | <0.005 | <0.5 | <2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **RIN_1** | **09 Jul 2025** | **Rinsate** | **386021** | <0.005 | <0.5 | 2 | 8 | <0.001 | <0.0001 | <0.001 | <0.001 | <0.001 | <0.00005 | <0.001 | <0.001 | - | - | - | - | - |
| **RIN_2** | **10 Jul 2025** | **Rinsate** | **386021** | <0.005 | 4 | <1 | 18 | <0.001 | <0.0001 | <0.001 | <0.001 | <0.001 | <0.00005 | <0.001 | <0.001 | - | - | - | - | - |
| **RIN_3** | **11 Jul 2025** | **Rinsate** | **386021** | <0.005 | <0.5 | <1 | <5 | <0.001 | <0.0001 | <0.001 | <0.001 | <0.001 | <0.00005 | <0.001 | 0.002 | - | - | - | - | - |
| **RIN_4** | **14 Jul 2025** | **Rinsate** | **386021** | <0.005 | <0.5 | <1 | <5 | <0.001 | <0.0001 | <0.001 | <0.001 | <0.001 | <0.00005 | <0.001 | <0.001 | - | - | - | - | - |
| **RIN_5** | **15 Jul 2025** | **Rinsate** | **386021** | <0.005 | <0.5 | <1 | 8 | <0.001 | <0.0001 | <0.001 | <0.001 | <0.001 | <0.00005 | <0.001 | <0.001 | - | - | - | - | - |
| **RIN_29.07.25** | **29 Jul 2025** | **Rinsate** | **387359** | 0.006 | 8.2 | <1 | <5 | <0.001 | <0.0001 | <0.001 | 0.002 | <0.001 | <0.00005 | <0.001 | <0.001 | - | - | - | - | - |
| **RIN_30.07.25** | **30 Jul 2025** | **Rinsate** | **387359** | 0.005 | 6.6 | <1 | <5 | <0.001 | <0.0001 | <0.001 | <0.001 | <0.001 | <0.00005 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.002 | <0.001 |
| **Statistics** | | | | | | | | | | | | | | | | | | | | |
| **Number of Results** | | | | **9** | **9** | **9** | **9** | **7** | **7** | **7** | **7** | **7** | **7** | **7** | **7** | **1** | **1** | **1** | **1** | **1** |
| **Number of Detects** | | | | **3** | **4** | **1** | **5** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** |
| **Minimum Concentration** | | | | **0.005** | **<0.5** | **<1** | **<5** | **<0.001** | **<0.0001** | **<0.001** | **<0.001** | **<0.001** | **<0.00005** | **<0.001** | **<0.001** | **<0.001** | **<0.001** | **<0.001** | **<0.002** | **<0.001** |
| **Maximum Concentration** | | | | **0.006** | **8.2** | **2** | **26** | **<0.001** | **<0.0001** | **<0.001** | **0.002** | **<0.001** | **<0.00005** | **<0.001** | **0.002** | **<0.001** | **<0.001** | **<0.001** | **<0.002** | **<0.001** |

* A Non Detect Multiplier of 0.5 has been applied.

**Environmental Standards**

DoE, 2000, ANZECC 2000 MW 95%

ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)

ANZECC 2000, ANZG Freshwater 95%

[redacted]

| | | | | | TPH | | | | | | TRH | | | | | | | Perfluoroalkane Sulfonic Acids | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Naphthalene (VOC) | C6-C9 Fraction | C10-C14 Fraction | C15-C28 Fraction | C29-C36 Fraction | C10-C36 Fraction (Sum) | C6-C10 Fraction (F1) | C6-C10 (F1 minus BTEX) | >C10-C16 Fraction (F2) | >C10-C16 Fraction (F2 minus Naphthalene) | >C16-C34 Fraction (F3) | >C34-C40 Fraction (F4) | >C10-C40 Fraction (Sum) | Perfluorobutane sulfonic acid (PFBS) | Perfluorohexane sulfonic acid (PFHxS) | Perfluorooctane sulfonic acid (PFOS) |
| | | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | µg/L | µg/L | µg/L |
| EQL | | | | 0.001 | 0.01 | 0.05 | 0.1 | 0.1 | 0.05 | 0.01 | 0.01 | 0.05 | 0.05 | 0.1 | 0.1 | 0.05 | 0.0004 | 0.0002 | 0.0002 |
| ANZECC 2000 MW 95% | | | | 0.07 | | | | | | | | | | | | | | | |
| ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023) | | | | 0.016 | | | | | | | | | | | | | | | |
| **Field ID** | **Date** | **Sample Type** | **Lab Report Number** | | | | | | | | | | | | | | | | |
| **RIN1** | **13 Mar 2025** | **Rinsate** | **375663** | - | <0.01 | 0.055 | 0.36 | <0.1 | 0.42 | <0.01 | - | 0.37 | - | <0.1 | <0.1 | 0.37 | - | - | - |
| **RIN2** | **14 Mar 2025** | **Rinsate** | **375663** | - | <0.01 | <0.05 | 0.83 | 1.6 | 2.4 | <0.01 | - | 0.27 | - | 1.8 | 0.54 | 2.6 | - | - | - |
| **RIN_1** | **09 Jul 2025** | **Rinsate** | **386021** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **RIN_2** | **10 Jul 2025** | **Rinsate** | **386021** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **RIN_3** | **11 Jul 2025** | **Rinsate** | **386021** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **RIN_4** | **14 Jul 2025** | **Rinsate** | **386021** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **RIN_5** | **15 Jul 2025** | **Rinsate** | **386021** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **RIN_29.07.25** | **29 Jul 2025** | **Rinsate** | **387359** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **RIN_30.07.25** | **30 Jul 2025** | **Rinsate** | **387359** | <0.001 | <0.01 | <0.05 | <0.1 | <0.1 | <0.05 | <0.01 | <0.01 | 0.053 | 0.053 | <0.1 | <0.1 | 0.05 | <0.0004 | <0.0002 | <0.0002 |
| **Statistics** | | | | | | | | | | | | | | | | | | | |
| **Number of Results** | | | | **1** | **3** | **3** | **3** | **3** | **3** | **3** | **1** | **3** | **1** | **3** | **3** | **3** | **1** | **1** | **1** |
| **Number of Detects** | | | | **0** | **0** | **1** | **2** | **1** | **2** | **0** | **0** | **3** | **1** | **1** | **1** | **3** | **0** | **0** | **0** |
| **Minimum Concentration** | | | | **<0.001** | **<0.01** | **<0.05** | **<0.1** | **<0.1** | **<0.05** | **<0.01** | **<0.01** | **0.053** | **0.053** | **<0.1** | **<0.1** | **0.05** | **<0.0004** | **<0.0002** | **<0.0002** |
| **Maximum Concentration** | | | | **<0.001** | **<0.01** | **0.055** | **0.83** | **1.6** | **2.4** | **<0.01** | **<0.01** | **0.37** | **0.053** | **1.8** | **0.54** | **2.6** | **<0.0004** | **<0.0002** | **<0.0002** |

* A Non Detect Multiplier of 0.5 has been applied.

**Environmental Standards**

DoE, 2000, ANZECC 2000 MW 95%

ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)

[redacted]

| | | | | Perfluoroalkane Carboxylic Acids | (n:2) Fluorotelomer Sulfonic Acids | | PFAS | | | Organic |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Perfluorooctanoic acid (PFOA) | 6:2 Fluorotelomer sulfonic acid (6:2 FTS) | 8:2 Fluorotelomer sulfonic acid (8:2 FTS) | Sum of PFHxS and PFOS | Sum of PFAS | Sum of PFAS (PFOS + PFOA) | Total Organic Carbon |
| | | | | µg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| EQL | | | | 0.0002 | 0.0000004 | 0.0000004 | 0.0000002 | 0.0000002 | 0.0000002 | 1 |
| ANZECC 2000 MW 95% | | | | | | | | | | |
| ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023) | | | | | | | | | | |
| **Field ID** | **Date** | **Sample Type** | **Lab Report Number** | | | | | | | |
| **RIN1** | **13 Mar 2025** | **Rinsate** | **375663** | - | - | - | - | - | - | <1 |
| **RIN2** | **14 Mar 2025** | **Rinsate** | **375663** | - | - | - | - | - | - | <1 |
| **RIN_1** | **09 Jul 2025** | **Rinsate** | **386021** | - | - | - | - | - | - | 1 |
| **RIN_2** | **10 Jul 2025** | **Rinsate** | **386021** | - | - | - | - | - | - | <1 |
| **RIN_3** | **11 Jul 2025** | **Rinsate** | **386021** | - | - | - | - | - | - | <1 |
| **RIN_4** | **14 Jul 2025** | **Rinsate** | **386021** | - | - | - | - | - | - | <1 |
| **RIN_5** | **15 Jul 2025** | **Rinsate** | **386021** | - | - | - | - | - | - | <1 |
| **RIN_29.07.25** | **29 Jul 2025** | **Rinsate** | **387359** | - | - | - | - | - | - | <1 |
| **RIN_30.07.25** | **30 Jul 2025** | **Rinsate** | **387359** | <0.0002 | <0.0000004 | <0.0000004 | <0.0000002 | <0.0000002 | <0.0000002 | 1 |
| **Statistics** | | | | | | | | | | |
| **Number of Results** | | | | **1** | **1** | **1** | **1** | **1** | **1** | **9** |
| **Number of Detects** | | | | **0** | **0** | **0** | **0** | **0** | **0** | **2** |
| **Minimum Concentration** | | | | **<0.0002** | **<0.0000004** | **<0.0000004** | **<0.0000002** | **<0.0000002** | **<0.0000002** | **1** |
| **Maximum Concentration** | | | | **<0.0002** | **<0.0000004** | **<0.0000004** | **<0.0000002** | **<0.0000002** | **<0.0000002** | **1** |

* A Non Detect Multiplier of 0.5 has been applied.

**Environmental Standards**

DoE, 2000, ANZECC 2000 MW 95%

ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 95% (July 2023)

# Data Quality Assessment - Batch No 386021 (09 July 2025)

To ensure the accuracy and reliability of data collected during the groundwater assessment, a range of quality assurance (QA) and quality control (QC) measures were implemented. These measures ensure that the collected data are at a standard and/or quality that is sufficient to meet project objectives and suitable to make decisions. The ASC NEPM (2013) outlines key QA/QC measures for environmental assessments, including proper sample collection and handling, and proposed measures for the collection and transportation of field duplicates, rinsate samples, trip blanks, trip spikes, and the review of laboratory QA/QC data. A summary of the QA/QC results for this investigation on 09 July 2025 is provided in **Table H1**, with further details presented in the associated QA/QC calculations/spreadsheets that have been provided.

**Table H1. Summary of implemented QA/QC analysis.**

| | | |
|---|---|---|
| **Was the sample collection & handling measures appropriate?** | | ☒ Yes<br>☐ No |
| **Field Procedures** | ADE provided the following suitably experienced and qualified environmental consultants to conduct the groundwater quality sampling at the site.<br>• Madison Torres – Environmental Consultant<br>• Misha Konarev – Environmental Consultant<br>Groundwater sampling was conducted using the Hydrasleeve™ method using ADE's standard water sampling protocols. Between sampling events sampling equipment was decontaminated by rinsing with reagent water supplied by the laboratory, cleaned using Liquinox and subsequently rinsed again with reagent water followed and allowed to air dry before reuse. The YSI water quality meter was calibrated by an external qualified technician before the sampling event. | ☒ Yes<br>☐ No |
| **Field QA/QC duplicate samples** | **Were the relative percent difference (RPD) values within acceptable tolerances?**<br>• The field QA/QC RPD acceptance criteria is:<br>  • 30 – 50% RPD for non-volatile and semi volatile analytes/contaminants<br>  • 50 – 100% RPD for volatile analytes/contaminants<br>• BR1 is an intra-laboratory duplicate of the primary sample GW-1021 collected for the sampling event undertaken on 09/07/2025 and submitted to the primary laboratory Envirolab.<br>• SR1is an inter-laboratory triplicate of the primary sample GW-1021 collected for the sampling event undertaken on 09/07/2025 and submitted to the secondary laboratory ALS.<br>• Yes. The RPDs calculated for the BR1 / GW-1021 / sample pair identified eighteen exceedances of the adopted criteria (for iron (total), iron (filtered), manganese (total), manganese (filtered), nickel (filtered), zinc (filtered), Alkalinity (Bicarbonate as CaCO3), Alkalinity (total) as CaCO3, Ammonia as N (filtered), Kjeldahl Nitrogen Total, Nitrate (as N) (filtered), Organic Nitrogen as N, Nitrogen (Total Oxidised), Nitrogen (Total), pH (Lab), Reactive Phosphorus as P (Orthophosphate as P) (filtered), Sodium (filtered), and Sulphate out of the 37 RPD values calculated, indicating 52% compliance. The RPD exceedances are for low level concentrations and are attributed to low concentration differences while small create a large %RPD difference. Consequently, it is considered the RPD values are within acceptable tolerances.<br>• Yes. The RPDs calculated for the SR1/ GW-1021 / sample pair identified six exceedances of the adopted criteria for Kjeldahl Nitrogen Total, Nitrogen (Total), pH (Lab), Reactive Phosphorus as P (Orthophosphate as P) (filtered), Manganese (filtered), and Nickel (filtered) out of the 20 RPD values calculated, | ☒ Yes<br>☐ No |

| | | |
|---|---|---|
| | indicating 70% compliance. Many of the %RPD exceedances are for total metals. The RPD exceedances are for low level concentrations and are attributed inhomogeneity within the unfiltered metal samples and to low concentration differences while small create a large %RPD difference. Consequently, it is considered the RPD values are within acceptable tolerances.<br><br>ADE considers that due to the inhomogeneity of the unfiltered water samples and low concentrations of the filtered samples the RPDs exceeding 50% are considered acceptable and are not considered to have an adverse impact on the overall quality of the dataset. | |
| Rinsate | What was analysed in the rinsate blank?<br><br>The rinsate blank was prepared in the field reagent water supplied by the laboratory by rinsing the equipment with Liquinox and then the rinsate water before collecting the rinsate sample.<br><br>RINSATE sample RIN1 was collected during this sampling event to demonstrate the equipment decontamination process was effective before sampling. The sample was analysed for metals (Al (total, filtered), As, Cd, Cr, Cu, Pb, Hg, Ni, Zn, Co (total), Fe(total and filtered), Mg (total and filtered), manganese (total and filtered), potassium), and inorganics.<br><br>Were the rinsate samples sufficient for QA/QC purposes? Contamination was detected in the rinsate sample for the following analytes:<br><br>Ammonia as N (filtered), Chloride, Nitrate (as N) (filtered), Nitrite (as N) (filtered), Nitrogen (Total Oxidised), Sulphate, and Total Dissolved Solids (Lab). These detections were low and marginally above their respective LORs.<br><br>These detections suggest that decontamination and rinsing of the equipment was not done thoroughly prior to collection of the sample. However, given that the concentrations of analytes detected in the collected groundwater sample were low these detections are not considered to compromise the quality of the overall dataset. | ☒ Yes<br>☐ No |
| Trip Blank and Trip Spike | TB (trip blank) and TS (trip spike) samples were prepared by the laboratory and included in the sample suite to assess for potential cross contamination during sample transport and handling for this sampling events.<br><br>Were the trip blank and trip spike samples sufficient for QA/QC purposes?<br>Yes. The trip blank (TB) was included in the 9th July sample suite did not contain any contamination, suggesting the field protocols did not cause any cross contamination.<br><br>Yes. The trip spike (TS) was included in the 9th July sample suite. The recovery percentages of TS sample were not determined as the TS was not prepared by Envirolab.<br><br>ADE considers the volatiles were not compromised during collection and transport to the laboratory satisfying the QA/QC requirements. | ☒ Yes<br>☐ No |
| Are the laboratory internal QA/QC results acceptable? | | |
| Matrix Spikes | Matrix spikes require samples submitted to the analytical laboratory to be spiked with a known concentration of a generally synthetic compound that is similar to those likely to be present within the sample to evaluate the matrix interference on the analyte recoveries. The laboratory limit of 70-130% for inorganics / metals, and 60-140% for organics was used to validate matrix spikes.<br><br>All surrogate recoveries were within the acceptable criteria. | ☒ Yes<br>☐ No |

| | | |
|---|---|---|
| Laboratory Control Spikes and Surrogates | Laboratory control spikes are similar to matrix spikes, however, utilise a matrix that is free from interference (e.g., other contaminants) to demonstrate that the analytical system is in control.<br>The laboratory limit of 70-130% for inorganics / metals, and 60-140% for organics was used to validate laboratory control samples. The laboratory limit of 50-150% was implemented to validate surrogate recoveries for organic analytes.<br>All laboratory control spikes and surrogates were within the acceptable limits. | ☒ Yes<br>☐ No |
| Method Blanks | Method blanks assess for false positives by analysing a blank sample and ensuring that the returned result is below the MDL. No contaminants were found in the blanks analysed by the laboratory.<br>All method blanks were below the LOR indicating there were no false positives. | ☒ Yes<br>☐ No |
| Field & laboratory data usable?<br>Does ADE consider that the analytical results are representative of the conditions of the sampling locations at the time of sampling and are directly usable for the purpose of this assessment. | | ☒ Yes<br>☐ No |

With reference to the QA/QC data summarised in **Table H1** above, ADE considers the results to meet the acceptable requirements in accordance with NEPM (2013) and associated/relevant guidelines. The implementation of adopted QA/QC measures demonstrate that the data collected during ADE's groundwater assessment is reliable, of a sufficient quality, and is suitable to be utilised for decision making

# Data Quality Assessment - Batch No 386021 (11 July 2025)

To ensure the accuracy and reliability of data collected during the groundwater assessment, a range of quality assurance (QA) and quality control (QC) measures were implemented. These measures ensure that the collected data are at a standard and/or quality that is sufficient to meet project objectives and suitable to make decisions. The ASC NEPM (2013) outlines key QA/QC measures for environmental assessments, including proper sample collection and handling, and proposed measures for the collection and transportation of field duplicates, rinsate samples, trip blanks, trip spikes, and the review of laboratory QA/QC data. A summary of the QA/QC results for this investigation on 11 July 2025 is provided in **Table H2**, with further details presented in the associated QA/QC calculations/spreadsheets that have been provided.

**Table H2. Summary of implemented QA/QC analysis.**

| | | |
|---|---|---|
| **Was the sample collection & handling measures appropriate?** | | ☒ Yes<br>☐ No |
| **Field Procedures** | ADE provided the following suitably experienced and qualified environmental consultants to conduct the groundwater quality sampling at the site.<br>• Madison Torres – Environmental Consultant<br>• Misha Konarev – Environmental Consultant<br>Groundwater sampling was conducted using the Hydrasleeve™ method using ADE's standard water sampling protocols. Between sampling events sampling equipment was decontaminated by rinsing with reagent water supplied by the laboratory, cleaned using Liquinox and subsequently rinsed again with reagent water followed and allowed to air dry before reuse. The YSI water quality meter was calibrated by an external qualified technician before the sampling event. | ☒ Yes<br>☐ No |
| **Field QA/QC duplicate samples** | **Were the relative percent difference (RPD) values within acceptable tolerances?**<br>• The field QA/QC RPD acceptance criteria is:<br>  • 30 – 50% RPD for non-volatile and semi volatile analytes/contaminants<br>  • 50 – 100% RPD for volatile analytes/contaminants<br>• BR2 is an intra-laboratory duplicate of the primary sample GW-3022 collected for the sampling event undertaken on 11/07/2025 and submitted to the primary laboratory Envirolab.<br>• SR2 is an inter-laboratory triplicate of the primary sample GW-3022 collected for the sampling event undertaken on 11/07/2025 and submitted to the secondary laboratory ALS.<br>• Yes. The RPDs calculated for the BR2 / GW-3022 / sample pair identified two exceedances of the adopted criteria for Kjeldahl Nitrogen Total, and Total Phosphorus (Organic Phosphate) out of the 39 RPD values calculated, indicating 94.9% compliance. The RPD exceedances are for low level concentrations and are attributed to low concentration differences while small create a large %RPD difference. Consequently, it is considered the RPD values are within acceptable tolerances.<br>• Yes. The RPDs calculated for the SR2 / GW-3022 / sample pair identified three exceedances of the adopted criteria for Chromium (III+VI) (filtered), Iron (filtered), and Manganese (filtered) out of the 20 RPD values calculated, indicating 85% compliance. The % RPD exceedances are for total metals. The RPD exceedances are for low level concentrations and are attributed inhomogeneity within the unfiltered metal samples and to low concentration differences while small create a large %RPD difference. Consequently, it is considered the RPD values are within acceptable tolerances. | ☒ Yes<br>☐ No |

| | | |
|---|---|---|
| | ADE considers that due to the inhomogeneity of the unfiltered water samples and low concentrations of the filtered samples the RPDs exceeding 50% are considered acceptable and are not considered to have an adverse impact on the overall quality of the dataset. | |
| Rinsate | What was analysed in the rinsate blank?<br>The rinsate blank was prepared in the field reagent water supplied by the laboratory by rinsing the equipment with Liquinox and then the rinsate water before collecting the rinsate sample.<br>RINSATE sample RIN3 was collected during this sampling event to demonstrate the equipment decontamination process was effective before sampling. The sample was analysed for metals (Al (total, filtered), As, Cd, Cr, Cu, Pb, Hg, Ni, Zn, Co (total), Fe(total and filtered), Mg (total and filtered), manganese (total and filtered), potassium), BTEX, PAH, TPH, TRH, perfluoroalkane sulfonic acids, PFAS suite., inorganics, TOC, sulfonic acids and carboxylic acids (PFOA).<br>Were the rinsate samples sufficient for QA/QC purposes?<br>Contamination was detected in the rinsate sample for the following analytes: Alkalinity (Bicarbonate as CaCO3), Alkalinity (total) as CaCO3, Chloride, Aluminium, Aluminium (filtered), Iron, Iron (filtered), and Zinc (filtered). These detections were low and marginally above their respective LORs.<br>These detections suggest that decontamination and rinsing of the equipment was not done thoroughly prior to collection of the sample. However, given that the concentrations of analytes detected in the collected groundwater sample were low these detections are not considered to compromise the quality of the overall dataset. | ☒ Yes<br>☐ No |
| Trip Blank and Trip Spike | TB (trip blank) and TS (trip spike) samples were prepared by the laboratory and included in the sample suite to assess for potential cross contamination during sample transport and handling for this sampling events.<br>Were the trip blank and trip spike samples sufficient for QA/QC purposes?<br>No trip blanks or trip spikes were submitted during this sampling event on 11th July. However, a trip blank and trip spike were submitted on 14th July during this monitoring program.<br>Yes. The trip blank (TB) from the 14th July sample suite did not contain any contamination, suggesting the field protocols did not cause any cross contamination.<br>Yes. The trip spike (TS) from the 14th July sample suite. The recovery percentages of TS sample were not determined as the TS was not prepared by Envirolab.<br>ADE considers the volatiles were not compromised during collection and transport to the laboratory satisfying the QA/QC requirements. | ☒ Yes<br>☐ No |
| Are the laboratory internal QA/QC results acceptable? | | |
| Matrix Spikes | Matrix spikes require samples submitted to the analytical laboratory to be spiked with a known concentration of a generally synthetic compound that is similar to those likely to be present within the sample to evaluate the matrix interference on the analyte recoveries. The laboratory limit of 70-130% for inorganics / metals, and 60-140% for organics was used to validate matrix spikes.<br>All surrogate recoveries were within the acceptable criteria. | ☒ Yes<br>☐ No |
| Laboratory Control Spikes and Surrogates | Laboratory control spikes are similar to matrix spikes, however, utilise a matrix that is free from interference (e.g., other contaminants) to demonstrate that the analytical system is in control. | ☒ Yes<br>☐ No |

| | | |
|---|---|---|
| | The laboratory limit of 70-130% for inorganics / metals, and 60-140% for organics was used to validate laboratory control samples. The laboratory limit of 50-150% was implemented to validate surrogate recoveries for organic analytes.<br>All laboratory control spikes and surrogates were within the acceptable limits. | |
| Method Blanks | Method blanks assess for false positives by analysing a blank sample and ensuring that the returned result is below the MDL. No contaminants were found in the blanks analysed by the laboratory.<br>All method blanks were below the LOR indicating there were no false positives. | ☒ Yes<br>☐ No |
| Field & laboratory data usable?<br>Does ADE consider that the analytical results are representative of the conditions of the sampling locations at the time of sampling and are directly usable for the purpose of this assessment. | | ☒ Yes<br>☐ No |

With reference to the QA/QC data summarised in **Table H2** above, ADE considers the results to meet the acceptable requirements in accordance with NEPM (2013) and associated/relevant guidelines. The implementation of adopted QA/QC measures demonstrate that the data collected during ADE's groundwater assessment is reliable, of a sufficient quality, and is suitable to be utilised for decision making

# Data Quality Assessment - Batch No 387359 (30 July 2025)

To ensure the accuracy and reliability of data collected during the groundwater assessment, a range of quality assurance (QA) and quality control (QC) measures were implemented. These measures ensure that the collected data are at a standard and/or quality that is sufficient to meet project objectives and suitable to make decisions. The ASC NEPM (2013) outlines key QA/QC measures for environmental assessments, including proper sample collection and handling, and proposed measures for the collection and transportation of field duplicates, rinsate samples, trip blanks, trip spikes, and the review of laboratory QA/QC data. A summary of the QA/QC results for this investigation on 30 July 2025 is provided in **Table H3**, with further details presented in the associated QA/QC calculations/spreadsheets that have been provided.

**Table H3. Summary of implemented QA/QC analysis.**

| | | |
|---|---|---|
| **Was the sample collection & handling measures appropriate?** | | ☒ Yes<br>☐ No |
| **Field Procedures** | ADE provided the following suitably experienced and qualified environmental consultants to conduct the groundwater quality sampling at the site.<br>• Madison Torres – Environmental Consultant<br>• Misha Konarev – Environmental Consultant<br>Groundwater sampling was conducted using the Hydrasleeve™ method using ADE's standard water sampling protocols. Between sampling events sampling equipment was decontaminated by rinsing with reagent water supplied by the laboratory, cleaned using Liquinox and subsequently rinsed again with reagent water followed and allowed to air dry before reuse. The YSI water quality meter was calibrated by an external qualified technician before the sampling event. | ☒ Yes<br>☐ No |
| **Field QA/QC duplicate samples** | **Were the relative percent difference (RPD) values within acceptable tolerances?**<br>• The field QA/QC RPD acceptance criteria is:<br>  • 30 – 50% RPD for non-volatile and semi volatile analytes/contaminants<br>  • 50 – 100% RPD for volatile analytes/contaminants<br>• BR is an intra-laboratory duplicate of the primary sample GW-4017 collected for the sampling event undertaken on 30/07/2025 and submitted to the primary laboratory Envirolab.<br>• SR is an inter-laboratory triplicate of the primary sample GW-4017 collected for the sampling event undertaken on 30/07/2025 and submitted to the secondary laboratory ALS.<br>• Yes. The RPDs calculated for the BR / GW-4017 / sample pair identified six exceedances of the adopted criteria for Ammonia as N (filtered), Ionic Balance, Nitrate (as N) (filtered), Organic Nitrogen as N, Nitrogen (Total Oxidised) and Reactive Phosphorus as P (Orthophosphate as P) (filtered) out of the 52 RPD values calculated, indicating 88.4% compliance. The RPD exceedances are for low level concentrations and are attributed to low concentration differences while small create a large %RPD difference. Consequently, it is considered the RPD values are within acceptable tolerances.<br>• Yes. The RPDs calculated for the SR / GW-4017 / sample pair identified seven exceedances of the adopted criteria for Kjeldahl Nitrogen Total, Nitrogen (Total), Aluminium, Cobalt, Iron, Iron (filtered), and Manganese out of the 20 RPD values calculated, indicating 65% compliance. The % RPD exceedances are for total metals. The RPD exceedances are for low level concentrations and are attributed inhomogeneity within the unfiltered metal samples and to low concentration differences while small create a large %RPD difference. | ☒ Yes<br>☐ No |

| | | |
|---|---|---|
| | Consequently, it is considered the RPD values are within acceptable tolerances.<br><br>ADE considers that due to the inhomogeneity of the unfiltered water samples and low concentrations of the filtered samples the RPDs exceeding 50% are considered acceptable and are not considered to have an adverse impact on the overall quality of the dataset. | |
| Rinsate | What was analysed in the rinsate blank?<br><br>The rinsate blank was prepared in the field reagent water supplied by the laboratory by rinsing the equipment with Liquinox and then the rinsate water before collecting the rinsate sample.<br><br>RINSATE sample RIN1_30.07.25 was collected during this sampling event to demonstrate the equipment decontamination process was effective before sampling. The sample was analysed for metals (Al (total, filtered), As, Cd, Cr, Cu, Pb, Hg, Ni, Zn, Co (total), Fe(total and filtered), Mg (total and filtered), manganese (total and filtered), potassium), BTEX, PAH, TPH, TRH, perfluoroalkane sulfonic acids, PFAS suite., inorganics, TOC, sulfonic acids and carboxylic acids (PFOA).<br><br>Were the rinsate samples sufficient for QA/QC purposes?<br>Contamination was detected in the rinsate sample for the following analytes: Alkalinity (Bicarbonate as CaCO3), Alkalinity (total) as CaCO3, Ammonia as N (filtered), Chloride, Nitrate (as N) (filtered), Nitrite (as N) (filtered), Nitrogen (Total Oxidised), Nitrogen (Total), Reactive Phosphorus as P (Orthophosphate as P) (filtered), Sodium (filtered), Sulphate, Total Dissolved Solids (Lab), TRH >C10-C16 Fraction (F2), TRH >C10-C16 Fraction (F2 minus Naphthalene), and TRH >C10-C40 Fraction (Sum). These detections were low and marginally above their respective LORs.<br><br>These detections suggest that decontamination and rinsing of the equipment was not done thoroughly prior to collection of the sample. However, given that the concentrations of analytes detected in the collected groundwater sample were low these detections are not considered to compromise the quality of the overall dataset. | ☒ Yes<br>☐ No |
| Trip Blank and Trip Spike | TB (trip blank) and TS (trip spike) samples were prepared by the laboratory and included in the sample suite to assess for potential cross contamination during sample transport and handling for this sampling events.<br><br>**Were the trip blank and trip spike samples sufficient for QA/QC purposes?**<br>Yes. The trip blank (TB) was included in the 30th July sample suite did not contain any contamination, suggesting the field protocols did not cause any cross contamination.<br><br>Yes. The trip spike (TS) was included in the 30th July sample suite. The recovery percentages of TS sample were not determined as the TS was not prepared by Envirolab.<br><br>ADE considers the volatiles were not compromised during collection and transport to the laboratory satisfying the QA/QC requirements. | ☒ Yes<br>☐ No |
| Are the laboratory internal QA/QC results acceptable? | | |
| Matrix Spikes | Matrix spikes require samples submitted to the analytical laboratory to be spiked with a known concentration of a generally synthetic compound that is similar to those likely to be present within the sample to evaluate the matrix interference on the analyte recoveries. The laboratory limit of 70-130% for inorganics / metals, and 60-140% for organics was used to validate matrix spikes. | ☒ Yes<br>☐ No |

| | | |
|---|---|---|
| | All surrogate recoveries were within the acceptable criteria. | |
| Laboratory Control Spikes and Surrogates | Laboratory control spikes are similar to matrix spikes, however, utilise a matrix that is free from interference (e.g., other contaminants) to demonstrate that the analytical system is in control.<br>The laboratory limit of 70-130% for inorganics / metals, and 60-140% for organics was used to validate laboratory control samples. The laboratory limit of 50-150% was implemented to validate surrogate recoveries for organic analytes.<br>All laboratory control spikes and surrogates were within the acceptable limits. | ☒ Yes<br>☐ No |
| Method Blanks | Method blanks assess for false positives by analysing a blank sample and ensuring that the returned result is below the MDL. No contaminants were found in the blanks analysed by the laboratory.<br>All method blanks were below the LOR indicating there were no false positives. | ☒ Yes<br>☐ No |
| Field & laboratory data usable?<br>Does ADE consider that the analytical results are representative of the conditions of the sampling locations at the time of sampling and are directly usable for the purpose of this assessment. | | ☒ Yes<br>☐ No |

With reference to the QA/QC data summarised in **Table H3** above, ADE considers the results to meet the acceptable requirements in accordance with NEPM (2013) and associated/relevant guidelines. The implementation of adopted QA/QC measures demonstrate that the data collected during ADE's groundwater assessment is reliable, of a sufficient quality, and is suitable to be utilised for decision making

# Appendix I – Orchard Hills Metro Station Vegetation Monitoring (AMBS, 2025)

# Orchard Hills Metro Station Vegetation Monitoring, Year 3: 5th Survey

Prepared by AMBS Ecology & Heritage
for Parklife Metro D&C

Final

August 2025

AMBS Reference: 25559

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# Executive Summary

AMBS Ecology & Heritage Pty Ltd has been commissioned by Parklife Metro D&C to undertake monitoring of the Groundwater Dependant Ecosystem (GDE) at Orchard Hills Metro Station identified in the Project Biodiversity Development and Assessment Report (BDAR). The monitoring is part of the Stations, Systems, Trains, Operations and Maintenance Works of the Sydney Metro Western Sydney Airport.

The monitoring program involves assessing canopy cover and shrub condition along three 100 metre transects. Transect 1 is situated within the study area of the GDE, Transect 2 is located in the control area, and Transect 3 extends across both the study and control areas.

The fifth round of monitoring within the longitudinal survey found little variation in canopy cover for Transect 1 and a slight increase for Transect 2. Shrub condition decreased slightly at Transect 1, and showed little change at Transect 2. Canopy cover in both areas of Transect 3 has remained relatively consistent across all five surveys. However, the monitored shrubs experienced significant damage from fire between Surveys 1 and 2, an event that is deemed unrelated to potential groundwater drawdown. These changes are likely within the range of natural climatic variation and are also considered unlikely to be attributed to groundwater drawdown.

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# 1 Introduction

Parklife Metro D&C have been engaged by Sydney Metro to undertake detailed design and construction of the Stations, Systems, Trains, Operations and Maintenance (SSTOM Project) of the Sydney Metro Western Sydney Airport (the Project). The Project forms part of the broader Sydney Metro network. It involves the construction and operation of a new 23 km metro rail line that extends from the existing Sydney Trains suburban T1 Western Line (at St Marys) in the north and the Aerotropolis (at Bringelly) in the south. The Project has been granted approval under section 5.19 of the *Environmental Planning and Assessment Act 1997* (EP&A Act) (CSSI 10051) and has an approved Flora and Fauna Management Plan (FFMP). Parklife Metro has appointed AMBS Ecology & Heritage Pty Ltd (AMBS) as the Project Ecologist for the SSTOM Project. This survey addresses the commitments made in Section 6.9 of the FFMP, 'Groundwater Dependant Ecosystem Management and Monitoring', in response to GW5 and GW6 of the Revised Environmental Mitigation Measures listed in the Revised Biodiversity Development Assessment Report (BDAR) (2021).

The FFMP notes that a Groundwater Dependant Ecosystem (GDE) was identified in the BDAR as occurring at the Orchard Hills box cut site. Modelled water table drawdown associated with construction of the Orchard Hills Metro Station was found to have the potential to impact areas of GDE outside of the approved Project Boundary. The FFMP defined a twice-yearly monitoring schedule to identify potential impacts of water drawdown associated with construction.

The Plant Community Type (PCT) of the site is mapped as PCT 724 *Castlereagh shale - gravel transition forest* (Parklife Metro D&C, 2023). This PCT has since been decommissioned and replaced with PCT 3320 *Cumberland Shale Plains Woodland* (DCCEEW, 2025) which is characterised by a canopy of *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus moluccana* (Grey Box), with Ironbarks *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Eucalyptus fibrosa* (Red Ironbark) occasionally present, although prominent in localised areas. This change of PCT does not impact the current or future study design or execution.

AMBS is pleased to provide the results of the fifth survey in the longitudinal vegetation monitoring for a GDE at Orchard Hills Metro Station. This survey will be compared to the data recorded in previous surveys and against future monitoring surveys.

# 2 Methods

Access issues during transect establishment and baseline surveys rendered the initially planned four transects north of Lansdowne Road inaccessible. Consequently, three alternative locations were selected. Two transects were located west of Kent Road, one located in the groundwater drawdown contour (study area, Transect 1) and the other transect located just outside the predicted drawdown area (control area, Transect 2), though in the same Plant Community Type (PCT) and within the construction area of impact (Appendix A). The third transect (Transect 3) spans both the groundwater drawdown area (study area) and the control area, south of the four incomplete draft transects (Appendix A).

For the fifth monitoring Survey, AMBS ecologist Mikayla Cashion visited Orchard Hills Metro Station on the 3rd of June, 2025. Surveys revisited the three transects previously established in the baseline survey (Appendix A).

Monitoring points were resurveyed at each treatment area, positioned 10 metres (m) apart within a 100 m Transect (Appendix A). At each canopy monitoring point, a fisheye lens camera on a tripod was used to take canopy photos aligned north-south. However, at Transect 3, the presence of a

fence obstructed the images, prompting the Surveyor to position the camera directly above the fence at an approximate 30-degree tilt. These canopy photos were subjected to analysis using the coveR R package (Chianucci et al. 2022) to determine percent canopy cover.

During the survey at each monitoring point, mature shrubs, if present, were methodically resurveyed, and observations of leaf condition, cover, disease prevalence, and flowering state were recorded. Leaf cover was assessed using four categories: good (>70%), moderate (40 – 70%), poor (10 – 40%) and very poor (<10%). Leaf condition was differentiated into these four qualitative categories, determined by how healthy in colour and shape the leaves appeared. For instance, shrubs with wilting and browning leaves were classed as being in very poor condition. Additional photographs were taken to facilitate a comparative assessment of shrub condition for baseline and subsequent surveys.

Both control and study transects will continue to be monitored concurrently every six months for the duration of the project in order to compare any changes observed at each site. If similar changes in canopy cover and vegetation health are recorded in both study and control sites, it is more likely due to climatic conditions than groundwater drawdown at Orchard Hills Metro Station.

A Linear Mixed-Effects Model (LME) was used to examine the relationship between Canopy Cover, Survey Time, and Group (Study Group, Control Group) while considering the potential variability associated with transect location as a random effect. For previous surveys the response variable, Canopy Cover, was square root transformed to meet the assumption of normality for residuals, however adjusting for additional data from Survey 5, this was no longer required. The analysis was conducted using R version 4.3.0 (R Core Team, 2025), utilising the *lme4* R package for fitting the LME model (Bates et al., 2015). To assess the significance of fixed effects, an analysis of variance (ANOVA) was conducted using the car R package (Fox and Weisberg, 2019). A Shapiro-Wilk test was conducted on the residuals to verify the assumption of normality. Post-hoc analysis involved a Tukey HSD test using the *emmeans* R package (Lenth et al., 2025).

# 3 Results

## 3.1 Canopy Cover

Statistical analysis indicated a significant difference in Canopy Cover between Survey times ($p$ = 0.019) and a highly significant difference between the Control and Study Groups ($p$ = < 0.001; Figure 3.1; Table 3.1). However, the interaction between Group and Survey time did not reach statistical significance, suggesting that the observed change in Canopy Cover did not significantly differ between the Control and Study Groups (Table 3.1).

Post hoc analysis using a Tukey HSD test found the Control group to be significantly higher than the Study group in Survey 1 ($t^{2,154}$ = 2.7, $p$ = 0.01), Survey 2 ($t^{2,154}$ = 3.7, $p$ = 0.003), Survey 3 ($t^{2,154}$ = 3.7, $p$ = 0.003), Survey 4 ($t^{2,154}$ = 3.31, $p$ = 0.001) and Survey 5 ($t^{2,154}$ = 4.0, $p$ = 0.0001) (Figure 3.1). No significant differences were found between Survey times within the Control group, nor within the Study group.

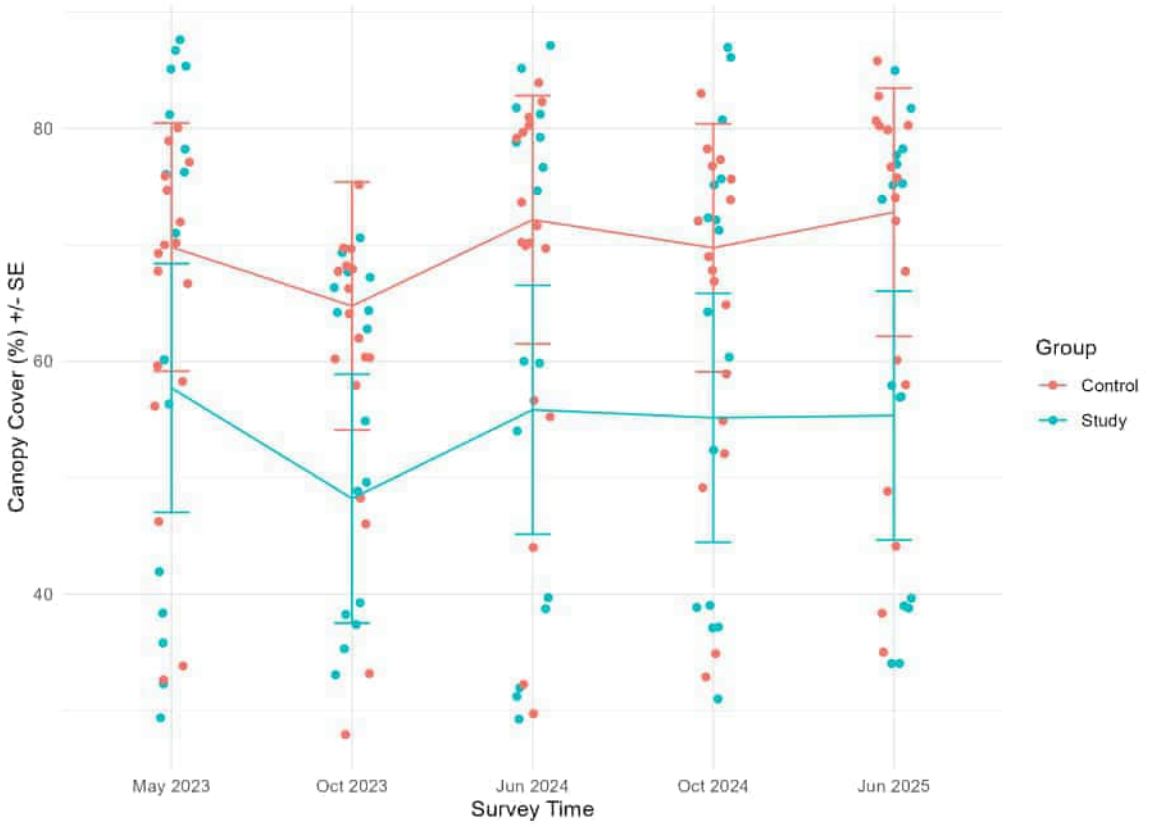


**Figure 3.1 Scatterplot of Canopy Cover +/- Standard Error by Survey Time and Group with Model Adjusted Mean in May 2023, October 2023, June 2024, October 2024 and June 2025.**

**Table 3.1. ANOVA for LME with square root transformed Canopy Cover.**

| Fixed Effects | F Statistic | Degrees of Freedom | P |
|---|---|---|---|
| Group | 28.12 | 1 | < 0.001 *** |
| Survey | 3.03 | 4 | 0.01939 * |
| Group:Survey | 0.33 | 4 | 0.86008 n.s. |

Following a decrease in mean canopy cover for Transect 1 (study) from 77% in Survey 1 to 62% in Survey 2, Survey 3 saw an increase to 75%, followed by a slight decrease to 73% in Survey 4 and to 72% in Survey 5 (Table 3.2). Transect 2 (control) followed a similar pattern, with a decrease in mean canopy cover between Survey 1 (70%) and Survey 2 (63%), followed by an increase to 74% in Survey 3 and a slight decrease to 71% in Survey 4, although increased to 76% in Survey 5 (Table 3.2) (Plate 1).

Mean canopy cover for Transect 3 has remained relatively consistent in the study area across Survey 1 (35%), Survey 2 (36%) and Survey 3 (34%), followed by a slight increase to 37% in Survey 4 which remained consistent in Survey 5 (37%) (Table 3.2). The control area also had little variation in mean canopy cover, with 53% in Survey 1, 51% in Survey 2, 52% in Survey 3, 52% in Survey 4 and 51% in Survey 5. Three outlier points in the Transect 3 control area (3.5, 3.8) for Survey 2 were deemed inaccurate and incomparable to Survey 1 due to the sun obscuring the images, or where angle of the photo was changed to avoid direct sunlight.

**Table 3.2 Percent canopy cover at canopy monitoring points.**

| Transect 1 (study area) | | | | | | Transect 2 (control) | | | | | | Transect 3 (study area & control) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Point | % Cover | | | | | Point | % Cover | | | | | Point | % Cover | | | | |
| | S1 | S2 | S3 | S4 | S5 | | S1 | S2 | S3 | S4 | S5 | | S1 | S2 | S3 | S4 | S5 |
| **1.0** | 76 | 64 | 75 | 75 | 78 | **2.0** | 56 | 48 | 57 | 52 | 58 | **3.0 (study area)** | 36 | 37 | 32 | 37 | 39 |
| **1.1** | 81 | 68 | 77 | 71 | 77 | **2.1** | 60 | 58 | 70 | 68 | 74 | **3.1 (study area)** | 38 | 38 | 39 | 39 | 40 |
| **1.2** | 85 | 67 | 81 | 72 | 75 | **2.2** | 70 | 66 | 81 | 74 | 80 | **3.2 (study area)** | 42 | 39 | 40 | 39 | 39 |
| **1.3** | 88 | 71 | 85 | 86 | 82 | **2.3** | 68 | 62 | 70 | 67 | 72 | **3.3 (study area)** | 32 | 33 | 29 | 31 | 34 |
| **1.4** | 87 | 69 | 87 | 87 | 85 | **2.4** | 77 | 68 | 82 | 77 | 83 | **3.4 (study area)** | 29 | 35 | 31 | 37 | 34 |
| | | | | | | | | | | | | **T3 Mean % cover (study area)** | **35** | **36** | **34** | **37** | **37** |
| **1.5** | 85 | 66 | 82 | 76 | 74 | **2.5** | 75 | 68 | 79 | 76 | 80 | **3.5 (control)** | 70 | 60* | 70 | 59 | 60 |
| **1.6** | 71 | 55 | 60 | 64 | 58 | **2.6** | 67 | 60 | 70 | 65 | 68 | **3.6 (control)** | 46 | 46 | 44 | 49 | 44 |
| **1.7** | 60 | 50 | 60 | 60 | 57 | **2.7** | 69 | 64 | 74 | 72 | 80 | **3.7 (control)** | 58 | 68* | 55 | 55 | 49 |
| **1.8** | 76 | 63 | 79 | 81 | 75 | **2.8** | 72 | 60 | 72 | 69 | 76 | **3.8 (control)** | 79 | 70* | 80 | 78 | 77 |
| **1.9** | 78 | 64 | 79 | 72 | 78 | **2.9** | 76 | 70 | 84 | 83 | 86 | **3.9 (control)** | 33 | 28 | 30 | 33 | 35 |
| **1.10** | 56 | 49 | 54 | 52 | 57 | **2.10** | 80 | 75 | 80 | 77 | 81 | **3.10 (control)** | 34 | 33 | 32 | 35 | 38 |
| **T1 Mean % Cover** | **77** | **62** | **75** | **73** | **72** | **T2 Mean % Cover** | **70** | **63** | **74** | **71** | **76** | **T3 Mean % cover (control)** | **53** | **51** | **52** | **52** | **51** |

* outlier canopy photo monitoring point due to distortion from direct sunlight

Canopy at all transects was observed to be in good condition. Some minor canopy dieback was observed at Transect 1 during Survey 2, though no canopy dieback was observed during all other surveys.

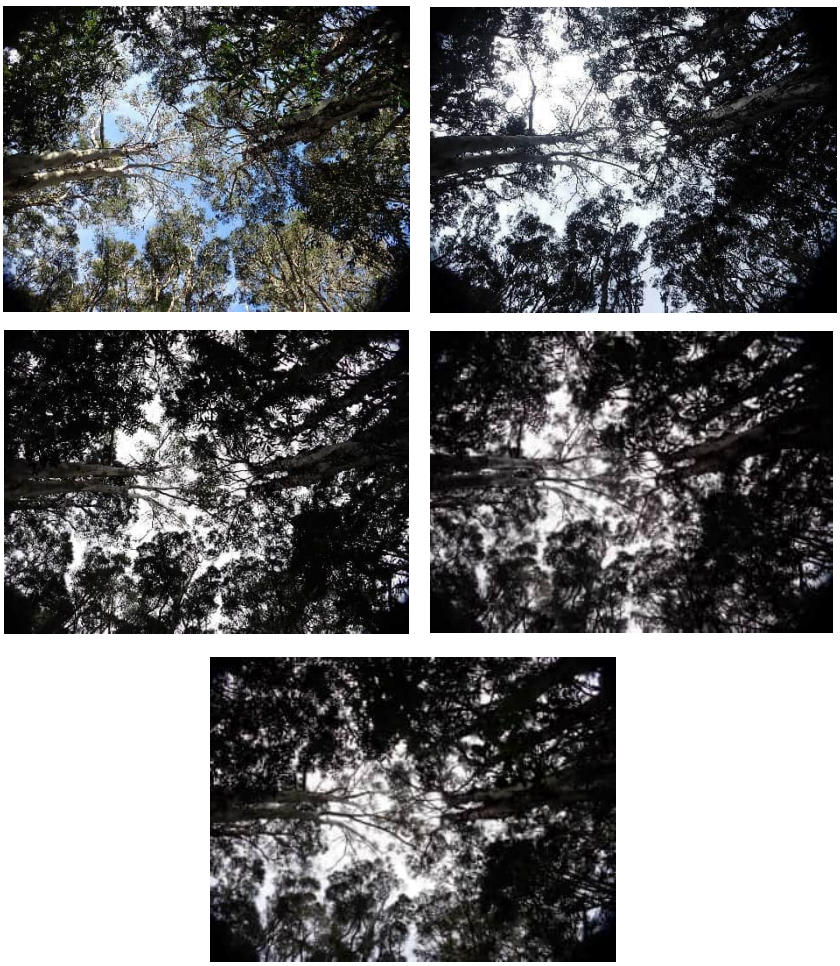

**Plate 1. Example canopy monitoring photograph from Transect point 1.4 during baseline Survey 1 (top-left, 87%) Survey 2 (top-right, 69% cover) Survey 3 (middle-left, 87% cover), Survey 4 (middle-right, 87%) and Survey 5 (bottom, 85%).**

## 3.2 Shrub Condition

Survey 2 recorded a decrease in leaf cover across most monitored shrubs at Transect 1, followed by a slight gradual increase in Surveys 3 and 4. Survey 5 observed a decrease in shrub cover, although this reduction was less notable than that observed in Survey 2. Leaf condition, however remained 'good' in most monitored shrubs. The shrub at location 1.10 was found with no leaf cover and likely to be dead in both Surveys 4 and 5, attributed to trampling by invasive climbers *Araujia sericifera* (Moth Vine) and *Rumex sagittatus* (Turkey Rhubarb). Survey 5 found one shrub had some signs of disease, consistent with Survey 4, and two shrubs were observed to be in bud, compared to three in Survey 4.

Most of the monitored shrubs at Transect 2 continued to have good to moderate leaf cover and condition in Survey 5 and little change can be seen between each survey (Table 3.3). Two shrubs (2.3 and 2.8) that were not located during Survey 3 were found during Survey 4 and 5, and leaf cover and condition have been generally consistent with their last observations during Survey 2.

Presence of disease and flowering status on Transects 1 & 2 were generally consistent across Surveys 1, 2, 3 and 4 (Table 3.3).

Transect 2 (control) consistently exhibits slightly higher average leaf cover than Transect 1 (study). In contrast, Transect 1 is higher in average leaf condition and has slightly fewer shrubs observed

with signs of disease, with one affected shrub observed at Transect 1 compared to three at Transect 2. Eight shrubs at Transect 2 had flowering characteristics, compared to two at Transect 1.

Transect 3 showed a large decrease in leaf cover and condition from Survey 1 to Survey 2, with all monitored shrubs having very few leaves or appearing completely dead due to a fire (Table 3.3; Plate 2). During Survey 3 some shrubs were observed with regrowth, while others remained completely dead. Survey 4 found two of these shrubs previously observed with regrowth had died, whilst others improved. Survey 5 found three additional shrubs had died, while two previously observed with regrowth had improved in leaf cover. These changes reveal no clear differences between shrub health in the study and control areas of Transect 3. The fence at Transect 3 limited the accuracy of assessing shrub condition due to separation from the monitored shrubs, and the lack of remaining plant material resulted in no disease or presence of flowering parts found on any of the monitored shrubs.

During surveys at Transect 2 several cow pats were seen. While no impacts from livestock to the monitored shrubs were observed, there is a risk of potential impacts to shrub health in the future due to herbivory and trampling.

**Table 3.3. Shrub condition monitoring notes.**

| Transect | Point | Species | Leaf cover (Good [G], Moderate [M], Poor [P], Very Poor [VP]) | | | | | Leaf condition (Good [G], Moderate [M], Poor [P], Very Poor [VP]) | | | | | Disease notes (Some Disease [SD], None [N]) | | | | | Flower status | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | S1 | S2 | S3 | S4 | S5 | S1 | S2 | S3 | S4 | S5 | S1 | S2 | S3 | S4 | S5 | S1 | S2 | S3 | S4 | S5 |
| 1 (study) | 1.0 | *Bursaria spinosa* | M | P | P | M | P | G | M | G | G | G | N | N | N | N | N | Buds | Buds | Buds | Buds | Buds |
| | 1.1 | *Bursaria spinosa* | G | M | P | M | M | M | M | G | G | G | SD | SD | N | N | SD | Buds | Buds | None | Buds | Buds |
| | 1.2 | *Bursaria spinosa* | M | P | M | M | P | M | M | G | G | G | N | N | N | N | N | None | None | None | None | None |
| | 1.3 | *Olea europea** | M | P | M | M | G | G | G | G | G | G | N | N | N | N | N | None | None | None | None | None |
| | 1.4 | *Bursaria spinosa* | G | M | M | G | G | G | G | G | G | G | N | N | N | N | N | None | None | None | None | None |
| | 1.5 | *Olea europea** | M | M | M | G | G | M | M | G | G | G | SD | SD | N | N | N | None | None | None | None | None |
| | 1.6 | *Bursaria spinosa* | G | M | G | G | G | M | M | G | G | M | N | N | N | N | N | None | Buds | None | Buds | None |
| | 1.7 | *Bursaria spinosa* | VP | VP | P | M | P | M | M | G | G | G | N | N | N | N | N | Buds | None | None | None | None |
| | 1.8 | *Bursaria spinosa* | P | P | M | M | P | G | G | G | G | G | N | N | N | N | N | None | None | None | None | None |
| | 1.9 | *Bursaria spinosa* | P | VP | P | P | P | M | VP | G | G | G | N | N | N | SD | N | Buds | None | None | None | None |
| | 1.10 | *Solanum nigrum** | G | VP | VP | VP-dead | VP-dead | M | P | VP | VP-dead | VP-dead | SD | N | N | N | N | Buds / Flowers/Fruit | None | None | None | None |
| | **Number "G"/ "N" (/11)** | | **4** | **0** | **1** | **3** | **4** | **4** | **3** | **10** | **10** | **9** | **8** | **9** | **11** | **10** | **10** | - | - | - | - | - |
| | 2.0 | *Bursaria spinosa* | M | M | G | G | G | G | G | G | G | G | N | N | N | N | N | None | Buds | Buds | Buds | Buds |

| Transect | Point | Species | Leaf cover (Good [G], Moderate [M], Poor [P], Very Poor [VP]) | | | | | Leaf condition (Good [G], Moderate [M], Poor [P], Very Poor [VP]) | | | | | Disease notes (Some Disease [SD], None [N]) | | | | | Flower status | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 (control) | 2.1 | *Bursaria spinosa* | G | G | G | G | G | G | G | G | G | G | N | N | N | N | N | Buds | Buds | Buds | Buds | Buds |
| | 2.2 | *Bursaria spinosa* | G | M | M | M | M | G | G | G | G | G | N | N | N | N | N | Buds | Buds | Buds | Buds | Buds |
| | 2.3 | *Ligustrum sinense* * | G | G | Not located ** | G | G | G | G | Not located ** | G | M | N | N | Not located ** | N | SD | Fruit | Flowers | Not located ** | Buds/ Flowers | Fruit |
| | 2.4 | *Olea europea* * | M | M | M | M | M | G | G | G | M | M | N | N | N | N | N | None | None | None | None | None |
| | 2.5 | *Olea europea* * | P | P | P | P | P | M | M | M | M | M | N | N | N | N | N | None | None | None | None | Fruit |
| | 2.6 | *Ligustrum sinense* * | G | G | G | G | G | M | M | M | M | M | N | SD | N | SD | SD | Fruit | Flowers. fruit | Fruit | Buds | Fruit |
| | 2.7 | *Olea europea* * | M | P | M | M | M | M | M | M | M | M | SD | SD | SD | SD | SD | None | None | None | None | None |
| | 2.8 | *Bursaria spinosa* | M | M | Not located ** | M | G | G | G | Not located ** | G | G | N | N | Not located ** | N | N | None | None | Not located ** | Buds | None |
| | 2.9 | *Olea europea* * | M | M | M | M | M | M | M | M | M | M | SD | SD | SD | SD | N | Fruit | None | None | None | Fruit |
| | 2.10 | *Bursaria spinosa* | G | G | G | G | G | G | G | M | M | M | N | N | N | N | N | Buds | Buds | Buds | Buds | Buds |
| | ***Number "G"/ "N" (/11)*** | | **5** | **4** | **4/9** ** | **5** | **6** | **7** | **7** | **4/9** ** | **5** | **4** | **9** | **8** | **8/9** ** | **8** | **8** | - | - | - | - | - |
| 3 | 3.0 (study area) | *Bursaria spinosa* | G | VP | P | P | P | G | M | G | G | G | N | N | N | N | N | None | None | None | None | None |

| Transect | Point | Species | Leaf cover (Good [G], Moderate [M], Poor [P], Very Poor [VP]) | | | | | Leaf condition (Good [G], Moderate [M], Poor [P], Very Poor [VP]) | | | | | Disease notes (Some Disease [SD], None [N]) | | | | | Flower status | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3.1 (study area) | *Acacia elongata* | G | VP-dead | VP-dead | VP-dead | VP-dead | G | VP-none | VP-dead | VP-dead | VP-dead | N | N | N | N | N | Buds | None | None | None | None |
| | 3.2 (study area) | *Bursaria spinosa* | M | VP | VP-dead | P | VP-dead | G | M | VP-dead | G | VP-dead | N | N | N | N | N | None | None | None | None | None |
| | 3.3 (study area) | No shrub recorded | | | | | | | | | | | | | | | | | | | | |
| | 3.4 (study area) | *Melaleuca decora* | G | VP | P | VP | G | G | M | G | P | G | N | N | N | N | N | None | None | None | None | None |
| | **Study: Number "G"/ "N" (/4)** | | **3** | **0** | **0** | **0** | **1** | **4** | **0** | **2** | **2** | **2** | **4** | **4** | **4** | **4** | **4** | **-** | **-** | **-** | **-** | **-** |
| | 3.5 (control) | *Bursaria spinosa* | M | VP | VP | VP | VP-dead | G | M | G | VP | VP-dead | N | N | N | N | N | None | None | None | None | None |
| | 3.6 (control) | *Bursaria spinosa* | M | VP | VP | P | VP-dead | G | P | G | G | VP-dead | N | N | N | N | N | None | None | None | None | None |
| | 3.7 (control) | No shrub recorded | | | | | | | | | | | | | | | | | | | | |
| | 3.8 (control) | *Bursaria spinosa* | VP | VP-dead | VP-dead | P | M | G | VP-none | VP-dead | G | G | N | N | N | N | N | None | None | None | None | None |
| | 3.9 (control) | *Bursaria spinosa* | M | VP-dead | VP | VP-dead | VP-dead | G | VP-none | G | VP (dead) | VP-dead | N | N | N | N | N | None | None | None | None | None |
| | 3.10 (control) | No shrub recorded | | | | | | | | | | | | | | | | | | | | |

| Transect | Point | Species | Leaf cover (Good [G], Moderate [M], Poor [P], Very Poor [VP]) | | | | | Leaf condition (Good [G], Moderate [M], Poor [P], Very Poor [VP]) | | | | | Disease notes (Some Disease [SD], None [N]) | | | | | Flower status | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Control: Number "G"/ "N" (/4)** | | **0** | **0** | **0** | **0** | **0** | **4** | **0** | **3** | **2** | **1** | **4** | **4** | **4** | **4** | **4** | - | - | - | - | - |

* denotes an introduced species ** shrub/s not located during survey and therefore not assessed

**Plate 2 Melaleuca decora (Transect 3 (study area), point 3.4) in good leaf cover and condition during baseline Survey 1 (left), in very poor leaf cover and condition in Survey 2 (top-middle) in poor leaf cover and good condition in Survey 3 (top-right), in very poor leaf cover and poor condition in Survey 4 (bottom-left) and good leaf cover and leaf condition in Survey 5 (bottom-right). No signs of disease or flowering characteristics were observed in all five surveys.**

# 4 Discussion

Fire, an increase in temperature, and a decrease in rainfall between Surveys 1 and 2 likely contributed to a dieback in canopy and shrubs on all three transects. The initial baseline surveys were performed in May and June of 2023. BOM station number 67113 (Penrith Lakes AWS) recorded a mean maximum monthly temperature respectively of 20.7°C and 18.9°C. Survey 2, conducted in October 2023, recorded an increased mean maximum monthly temperature of 28.3°C (BOM, 2025). Survey 3 was performed in June 2024, recording a decreased mean maximum monthly temperature of 17.5°C (BOM, 2025). Survey 4 was performed in October 2024, and September recorded a mean maximum monthly temperature of 24.2°C (BOM, 2025). Survey 5 was performed in June 2025, and May recorded a mean maximum temperature of 21.2°C (BOM, 2025).

BOM station number 67084 (Orchard Hills Treatment Works) recorded monthly rainfall totals of 13.6 mm and 17.1 mm for May and June 2023 respectively, compared to 18.2 mm in October 2023. Although there was a slight increase between these two periods, monthly rainfall in 2022 was considerably higher. Average rainfall reduced from a combined monthly total of from 655.8 mm from May to October of 2022, to 126 mm within that same period in 2023. BOM station number 67113 (Penrith Lakes AWS) recorded an increased monthly rainfall total of 67.2mm in June 2024,

which decreased to 25.4mm in September 2024 and increased to 149.2mm in June 2025 (BOM, 2025).

The large reduction in rainfall and increase in temperature that occurred between Surveys 1 and 2 likely resulted in a dieback of shrubs and canopy. This was followed by an increase in rainfall and a decrease in temperature between Surveys 2 and 3, which resulted in an increase in canopy and shrub cover, as well as regrowth of the burnt shrubs at Transect 3. Variation in shrub and canopy cover is also expected due to the time of year the surveys were completed. Following this pattern, a slight reduction in canopy cover at Transects 1 and 2 between Surveys 3 and 4 can be attributed to slight decrease in rainfall and increase in mean temperature. Survey 5 had an increase in rainfall and a decrease in temperature, following the seasonal pattern, and recorded an increase in canopy cover for Transect 2, and little variation at Transect 1 and both areas of Transect 3.

While shrub cover has impacted average canopy cover in Transects 1 and 2, it has had very little impact on Transect 3 as the positioning of the camera excluded shrubs from the frame.

While monitored shrubs at Transect 2 (control) continue to exhibit slightly higher average leaf cover compared to those at Transect 1 (study) during Survey 5, this disparity occurred during the baseline survey and is likely due to Transect 2's location in a wetter area with a creek line intersecting the transect. Further, species composition of the monitored shrubs is different across Transects 1 and 2, contributing to differences in flowering observations.

# 5 Conclusion

Transects 1 and 2 saw a decrease in canopy cover between Surveys 1 and 2, followed by an increase at Survey 3 and a decrease at Survey 4. Survey 5 found a little variation in canopy cover for Transect 1 and an increase in canopy cover for Transect 2. Canopy cover at Transect 3 has remained relatively consistent across all five surveys. Statistical analysis revealed average canopy cover did not significantly vary between study and control results for all three transects. Changes in canopy cover are likely to be within natural variation of the climate and unlikely to be a result of potential groundwater drawdown.

Shrub condition at Transects 1 and 2 followed a similar pattern to canopy cover over the five surveys, and can be attributed to changes in rainfall, temperature and seasonal weather patterns. Monitored shrubs at Transect 3 were severely damaged by heat and fire between Surveys 1 and 2, an event that is unrelated to any potential groundwater drawdown. Five shrubs were recorded as dead in Survey 5, while most remaining shrubs continued to improve in leaf cover with regrowth post-fire. Changes in shrub condition revealed no strong observable difference between study and control areas between the three transects.

Future monitoring visits will be required to detect whether there are significant changes in canopy cover and/or shrub condition indicative of impacts to the GDE study area. Monitoring visits will continue to occur every six months, until the end of 2028.

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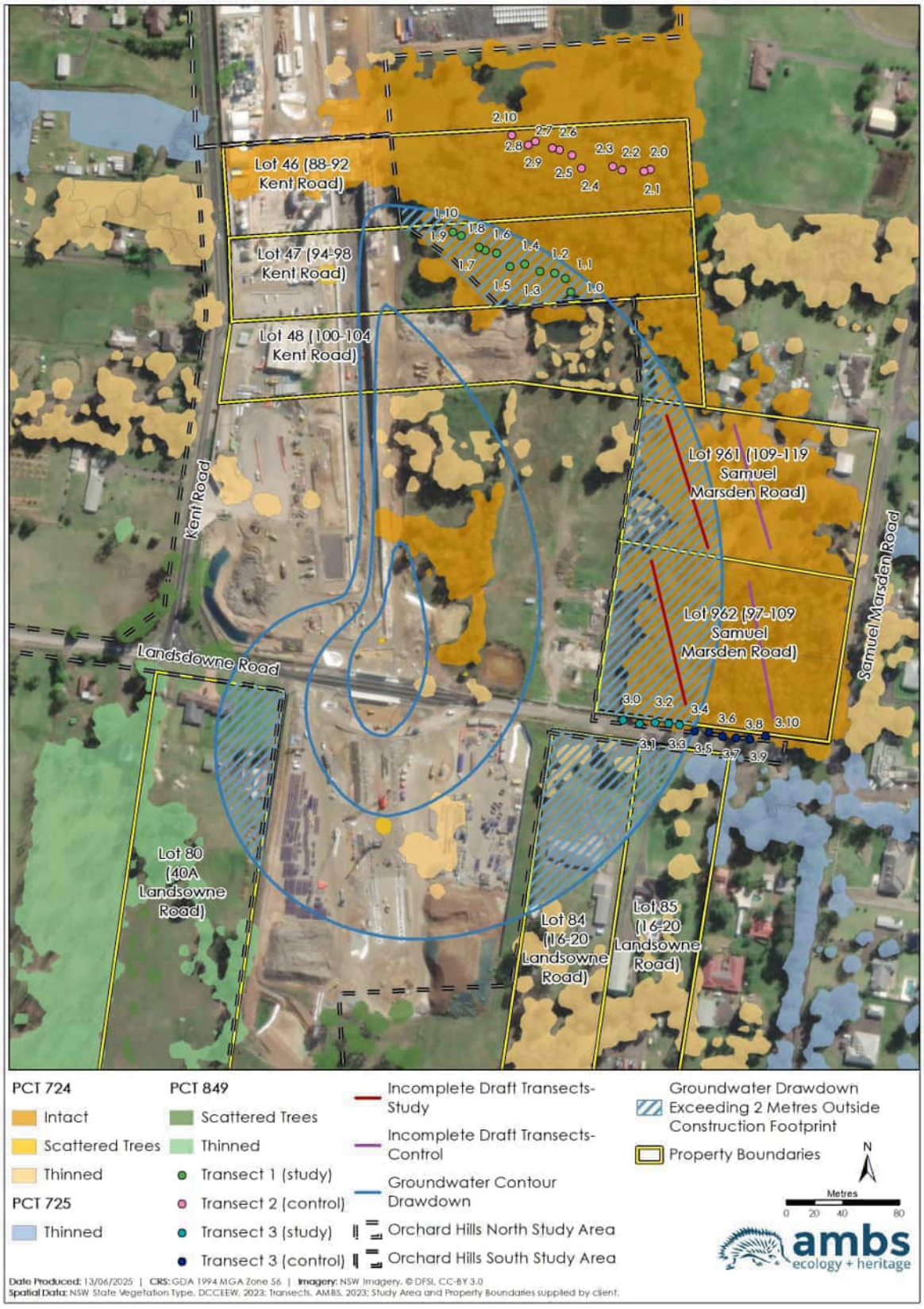
Sydney Metro – Western Sydney Airport (2021) Biodiversity Development Assessment Report

# Appendix

**Appendix A: Potential Groundwater Drawdown Impact Area and Monitoring Points at Orchard Hills Metro Station**



# Appendix J – Groundwater Monitoring Well Installation Report (Tetratech, 2025b)

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05 September 2025

Our ref: 754-SYDEN374937-L01-Rev1

Webuild S.p.A
Level 19, 99 Walker Street
North Sydney NSW 2060

Attention: Tristan McCormick

Dear Tristan,

**Groundwater Monitoring Well Installation Letter, Sydney Metro Western Sydney Airport SSTOM Project Sites**

# 1. INTRODUCTION

Sydney Metro has engaged Webuild S.p.A (Webuild) for the Stations, Systems, Trains, Operations and Maintenance (SSTOM) Package of the Sydney Metro Western Sydney Airport project (the 'Project').

Tetra Tech Coffey Pty Ltd (Coffey) was commissioned by Webuild to replace and/or rectify fourteen groundwater monitoring wells across the project alignment. The monitoring wells are intended to replace damaged groundwater monitoring bores required to be monitored throughout the duration of the Project to comply with the Groundwater Monitoring Program (GMP).

This letter report summarises monitoring well installation works undertaken by Coffey. The works were carried out in accordance with Coffey's proposal dated 19 June 2025 (ref: SYDEN374937-P03) and the Minimum Construction Requirements for Water Bores in Australia 2012.

# 2. OBJECTIVES

The objective of works undertaken during this investigation were to:

- Drill eleven (11x) boreholes and convert these to groundwater monitoring wells in accordance with the GMP and the Soil and Water Management Plan (SWMP).
- Supply and install continuous groundwater level and electrical conductivity data loggers within six (6x) selected replacement monitoring bores.
- Undertake well rectification and well development at three (3x) monitoring well locations.
- Installation of hydrasleeves at each monitoring well location following well development.
- Preparation of this factual letter report detailing the groundwater well replacement and logger installation methodology, groundwater monitoring well construction details and calibration parameters associated with the logger installations.

# 3. METHODOLOGY

## 3.1 PRELIMINARIES AND PROJECT MANAGEMENT

The proposed scope of work was to install and rectify groundwater monitoring wells at various sites across the project alignment. Details of the works completed at each site is presented in Table 1 below.

**Table 1: Summary of completed works**

| SSTOM Project Site | Monitoring well drilling and installation | Monitoring well rectification/development | Continuous logger installation |
|---|---|---|---|
| **Orchard Hills** | SMGW-BH-A315<br>SBT-GW-1048 | SBT-GW-1806 | SMGW-BH-A315 |
| **Airport Portal Dive Structure** | SBT-GW-3003-A<br>SBT-GW-3003-B<br>SBT-GW-3003-C<br>SBT-VWP-3401 | - | SBT-GW-3003-A<br>SBT-GW-3003-B<br>SBT-GW-3003-C |
| **Airport Terminal** | SBT-GW-3006 | - | SBT-GW-3006 |
| **Bradfield** | SBT-GW-4803<br>SBT-GW-4014<br>SBT-GW-4017<br>SBT-VWP-4401 | - | SBT-VWP-4403 |
| **Claremont Meadows** | - | SBT-GW-1024<br>SBT-GW-1805 | - |

The general tasks completed for preliminary activities included:

- Engagement of a licenced drilling subcontractor.
- Review and update of the project's existing health, site safety and environmental plan (HSSEP), including Environmental Safe Work Method Statements (ESWMS) for all work tasks to be completed.
- Liaison with relevant staff from Webuild to facilitate site access and induction requirements.

## 3.2 BOREHOLE DRILLING AND INSTALLATION

A Coffey environmental scientist attended site between 8 and 21 July 2025, to supervise and monitor the borehole drilling and well installation works. Fieldwork methodology for borehole advancement included the following:

- Mobilisation to the site, completion of relevant inductions and liaison with site specific supervisors.
- Selection of investigation locations with direction from Webuild.
- Service clearance and approval to drill was provided by Webuild.
- Drilling of 125 mm diameter boreholes utilising a track mounted Commacchio GEO305 drilling rig. Each borehole was advanced using a solid-stem flight auger attachment until target depth or practical refusal. Where the borehole was required to be further extended, wash bore drilling methodology was utilised. Environmental borehole logs for encountered ground conditions are provided in Attachment A.

- Logging of borehole soil returns in accordance with Coffey's relevant Standard Operating Practice (SOP), which is based on AS 1726-2017.

## 3.3 MONITORING WELL INSTALLATION

Groundwater monitoring wells were installed in accordance with the minimum construction requirements for water bores in Australia (2012). Monitoring wells were installed in accordance with historical borehole logs and information provided by Webuild. The general construction of the monitoring wells included the following:

- Monitoring wells were lined with Class 18 PVC piping, with a PVC machine slotted screen placed adjacent to the targeted water bearing formation. A sump of approximately 1 m length was installed below the slotted screen at each monitoring well.
- Boreholes were backfilled using uniform graded, coarse sand to approximately 100 mm above the top of the screened portion of the well. A minimum 500 mm bentonite plug was installed over the sand pack, to isolate the targeted water bearing zone from other formations and prevent transfer of water between zones.
- Boreholes were backfilled to surface level using a cement/bentonite grout mix. Flush-mounted gatic covers were installed at most locations. Monitoring location SBT-BH-3006 was installed as a PVC standpipe stickup as per instruction from Webuild.

Monitoring well locations were surveyed by Webuild with GPS coordinates provided on each borehole log.

## 3.4 WELL DEVELOPMENT AND HYDRASLEEVE DEPLOYMENT

Following well installation, each groundwater well was gauged prior to being developed and included the following:

- Wells were gauged to measure depth to groundwater from the top of the well PVC casing.
- Wells were then developed using either a disposable bailer or a Waterra footvalve and disposable LDPE tubing by removing a minimum of three well volumes, or until the purged groundwater had visibly cleared.

A HDPE hydrasleeve was installed within the screened interval of each well following well development.

The groundwater level and volume of purged water removed at each monitoring well location is detailed in the well development forms provided in Attachment B.

## 3.5 WELL RECTIFICATION

Monitoring well rectification and development was carried out at three existing monitoring well locations at the Orchard Hills and Claremont Meadows SSTOM project sites. These works comprised the following:

- As SBT-GW-1024 was located in an existing bund and contained a PVC standpipe that was below the level of the bund, surface water was ponding within the top of the monitoring well resulting in potential water ingress into annulus of the well and also making it difficult to access and sample following rain. As a result, the bund was removed and a new flush mounted gatic was installed flush with the ground level.
- Well development was undertaken at SBT-GW-1806, SBT-GW-1805 and SBT-GW-1024 via the process described in Section 3.4 at the request of Webuild. A new HDPE hydrasleeve was installed at each location.

## 3.6 CONTINUOUS DATA LOGGER INSTALLATION

A set of groundwater monitoring instruments comprising a strain gauge sensor (piezometer), an electrical conductivity (EC) sensor, and a datalogger were installed in designated standpipes, as detailed in Table 1. Both sensors produce a current output between 4 and 20 mA. The output current is proportional to the water pressure on the instrument and the electrical conductivity of the water for the piezometer and the EC sensor, respectively. In addition, a thermistor within the piezometer was also used to collect water temperature data. This output comes in the form of an electrical resistance. The data logger was set up to capture a reading of the sensors' current output at an hourly interval. While the datalogger has telemetry capabilities, these were not enabled during installation, as per directions from Webuild.

In general, the EC sensor was installed at a depth where its bottom was kept at approximately 1 m above the bottom of the standpipe. For the piezometer, this distance was approximately 2 m. The data logger channels were set up as follows:

- Channel 1: EC sensor current (mA) – Electrical conductivity
- Channel 2: Piezometer current (mA) – Water pressure
- Channel 3: Piezometer thermistor (Ohm) – Temperature

Further installation details including serial numbers, calibration records, and installed depths can be found in the installation sheets provided in Attachment C.

The sensor outputs can be converted to conductivity, water level, and temperature with the following equations:

- Electrical conductivity = Gauge factor × (Current Reading – Zero reading)
- Water RL = $\text{Ground Water RL when installed} + \left(\left(\text{Gauge factor} \times (\text{Current Reading} - \text{Base reading})\right)/(\rho g)\right)$, where $\rho$ and $g$ are density of water (≈1000 kg/m$^3$) and gravity (≈10 m/s$^2$).
- Temperature = $\frac{1}{A+B\left(Ln(R)\right)+C\left(Ln(R)\right)^3} - 273.2$ , where Ln is natural logarithm and
  - $A = 1.4051 \times 10^{-3}$,
  - $B = 2.369 \times 10^{-4}$,
  - $C = 1.019 \times 10^{-7}$, as stated in the Instruction Manual for the instrument, authored by Geosense, and
  - $R$ = Thermistor reading.

An example calculation for each of these equations is shown below.

For well SMGW-BH-A315:

- EC sensor
  - Gauge factor ((µS/cm)/mA) = $1875$
  - Zero reading (mA) = 4.088695
  - Current reading (mA) = 5
- Piezometer
  - Ground water RL when installed (m) = 38.887
  - Gauge factor (kPa/mA) = 21.87869756
  - Base reading (mA) = 6.564556
  - Current reading (mA) = 7
- Thermistor

- R (Ohm) = 3650

Then,

- Electrical conductivity = $1875 \frac{\mu S/cm}{mA} \times (5\text{mA} - 4.088695\text{mA}) = 1708.70\ \mu\text{S/cm}$
- Current Water RL = $38.887\ \text{m} + \left(\left(21.87869756 \frac{\text{kPa}}{\text{mA}} \times 1000 \frac{Pa}{kPa} \times (7\ \text{mA} - 6.564556\ \text{mA})\right) / (1000 \frac{kg}{m^3} \times 10\ m/s^2)\right) = 39.84\ m$
- Temperature = $\left(1/1.4051 \times 10^{-3} + 2.369 \times 10^{-4} \times \left(Ln(3650)\right) + 1.019 \times 10^{-7} \times \left(Ln(3650)\right)^3\right) - 273.2 = 20.53\ °C$

# 4. MONITORING WELL INSTALLATION SUMMARY

Eleven monitoring wells were installed at depths between 6.3 and 36 mbgl across four SSTOM project sites. A summary of monitoring well construction details is shown in Table 2 below.

**Table 2 – Summary of monitoring well construction details**

| Field ID | Estimated depth to bedrock (m) | Installed screen depth interval (m bgl) |
|---|---|---|
| SMGW-BH-A315 | 6.5 | 3.0 – 9.0 |
| SBT-GW-1048 | 8.7 | 2.0 – 8.5 |
| SBT-GW-3003-A | N/A | 2.0 – 5.0 |
| SBT-GW-3003-B | 7.0 | 10.0 – 13.0 |
| SBT-GW-3003-C | 7.5 | 19.0 – 22.0 |
| SBT-VWP-3401 | 10.0 | 11.5 – 16.5 |
| SBT-BH-3006 | 14.5 | 29.0 – 35.0 |
| SBT-GW-4803 | 5.0 | 5.0 – 11.0 |
| BH-4014_S | 1.5 | 5.0 – 14.0 |
| SBT-GW-4017 | 2.5 | 2.0 – 12.0 |
| SBT-VWP-4403 | 3.0 | 12.0 – 17.0 |

# 5. CLOSURE

Groundwater monitoring well installation and rectification works were completed at various sites across the SSTOM project alignment to reinstate damaged groundwater monitoring wells and enable groundwater monitoring in compliance with the GMP.

For and on behalf of Tetra Tech Coffey Pty Ltd,

[redacted]

[redacted]
Environmental Scientist

[redacted]
Principal Environmental Consultant

**Attachments**

Please note: This report must be read in the context of the attached limitations.

Attachment A – Borehole and Well Construction Logs

Attachment B – Well Development Forms

Attachment C – Logger Calibration Certificates

# IMPORTANT INFORMATION ABOUT YOUR TETRA TECH COFFEY ENVIRONMENTAL REPORT

## Introduction

This report has been prepared by Tetra Tech Coffey for you, as Tetra Tech Coffey'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. Tetra Tech Coffey may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Tetra Tech Coffey 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.

## Your report has been written for a specific purpose

Your report has been developed for a specific purpose as agreed by us and applies only to the site or area investigated. Unless otherwise stated in the report, this report cannot be applied to an adjacent site or area, nor can it be used when the nature of the specific purpose changes from that which we agreed.

For each purpose, a tailored approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible quantify, risks that both recognised and potential contamination pose in the context of the agreed purpose. Such risks may be financial (for example, clean up costs or constraints on site use) and/or physical (for example, potential health risks to users of the site or the general public).

## Limitations of the Report

The work was conducted, and the report has been prepared, in response to an agreed purpose and scope, within time and budgetary constraints, and in reliance on certain data and information made available to Tetra Tech Coffey.

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.

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. Tetra Tech Coffey 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.

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.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

## Interpretation of factual data

Environmental site assessments identify actual conditions only at those points where samples are taken and on the date collected. Data derived from indirect field measurements, and sometimes other reports on the site, are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions.

Variations in soil and groundwater conditions may occur between test or sample locations and actual conditions may differ from those inferred to exist. No environmental assessment program, no matter how comprehensive, can reveal all subsurface details and anomalies. Similarly, no professional, no matter how well qualified, can reveal what is hidden by earth, rock or changed through time.

The actual interface between different materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions.

For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of a suitably qualified and experienced environmental consultant through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other unrecognised features encountered on site. Tetra Tech Coffey would be pleased to assist with any investigation or advice in such circumstances.

## Recommendations in this report

This report assumes, in accordance with industry practice, that the site conditions recognised through discrete sampling are representative of actual conditions throughout the investigation area. Recommendations are based on the resulting interpretation.

Should further data be obtained that differs from the data on which the report recommendations are based (such as through excavation or other additional assessment), then the recommendations would need to be reviewed and may need to be revised.

## Report for benefit of client

Unless otherwise agreed between us, the report has been prepared for your benefit and no other party. Other parties should not rely upon the report or the accuracy or completeness of any recommendation and should make their own enquiries and obtain independent advice in relation to such matters.

Tetra Tech Coffey assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report.

To avoid misuse of the information presented in your report, we recommend that Tetra Tech Coffey be consulted before the report is provided to another party who may not be familiar with the background and the purpose of the report. In particular, an environmental disclosure report for a property vendor may not be suitable for satisfying the needs of that property's purchaser. This report should not be applied for any purpose other than that stated in the report.

## Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, a suitably qualified and experienced environmental consultant should be retained to explain the implications of the report to other professionals referring to the report and then review plans and specifications produced to see how other professionals have incorporated the report findings.

Given Tetra Tech Coffey prepared the report and has familiarity with the site, Tetra Tech Coffey is well placed to provide such assistance. If another party is engaged to interpret the recommendations of the report, there is a risk that the contents of the report may be misinterpreted and Tetra Tech Coffey disowns any responsibility for such misinterpretation.

## 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. This has often resulted in claims being lodged against consultants, which are unfounded. 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.

# ATTACHEMENT A: BOREHOLE AND WELL CONSTRUCTION LOGS

TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***BH-4014_S*** |
| sheet: | 1 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***18 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***18 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Bradfield*** |
| checked by: | ***SG*** |

position: E: 290624; N: 290624 (Datum Not Specified) | surface elevation: 73.98 m (AHD) | angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted | drilling fluid: | hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | BH-4014_S | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | | | | | 0.0 | | GP | **ASPHALT**: 0.1m thickness. | | | **ASPHALT** |
| | | | | | | | | **FILL: GRAVEL**: poorly graded, dark grey/brown, gravels are sub angular, medium to coarse grained, with some clay, intermixed with medium to coarse grained sand, siltstone and sandstone rock fragments. | =Wp | | **FILL (PAVEMENT BASE)** |
| | | | | | | | CL-CH | **SILTY CLAY**: medium to high plasticity, brown mottled dark red, trace of siltstone fragments. | <Wp | | **RESIDUAL** |
| | | | | | 1.0 | | | **SILTSTONE**: grey, extremely weathered. | D | | **EXTREMELY WEATHERED BEDROCK** |
| | | | | | 2.0 | | | Becoming pale grey mottled red at approximately 2.0m | | | |
| | | | | | 3.0 | | | | | | |
| | | | | | 4.0 | | | **SILTSTONE**: grey to dark grey, highly weathered. | D | | **HIGHLY WEATHERED BEDROCK** |
| | | | | | 5.0 | | | | | | |
| | | | | | 6.0 | | | | | | |
| | | | | | 7.0 | | | **SILTSTONE**: dark grey mottled red, moderately to highly weathered. | D | | **BEDROCK** |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**

| | |
|---|---|
| VS | very soft |
| S | soft |
| F | firm |
| St | stiff |
| VSt | very stiff |
| H | hard |
| Fb | friable |
| VL | very loose |
| L | loose |
| MD | medium dense |
| D | dense |
| VD | very dense |

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***BH-4014_S*** |
| sheet: | 2 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***18 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***18 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Bradfield*** |
| checked by: | ***SG*** |

position: E: 290624; N: 290624 (Datum Not Specified) | surface elevation: 73.98 m (AHD) | angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted | drilling fluid: | hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | 21/07/25 13:30 | | | | 9.0<br>10.0<br>11.0<br>12.0<br>13.0<br>14.0<br>15.0 | | | **SILTSTONE**: dark grey mottled red, moderately to highly weathered. *(continued)* | D | | **BEDROCK** |
| | | | | | | | | Monitoring Well BH-4014_S terminated at 14.00 m<br>Target depth | | | **well details:**<br>drilling company: Terratest Australia<br>driller: Mark Murray<br>**standpipe piezometer BH-4014_S details:**<br>5.0-14.0m: screen |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-BH-3006*** |
| sheet: | 1 of 4 |
| project no. | ***754-SYDEN374937*** |
| client: ***Webuild S.p.A*** | date started: ***15 Jul 2025*** |
| principal: ***Sydney Metro*** | date completed: ***16 Jul 2025*** |
| project: ***Groundwater Monitoring Wells Replacement Installation Works*** | logged by: ***KT*** |
| location: ***Airport Terminal*** | checked by: ***SG*** |

position: E: 289353; N: 6247826 (Datum Not Specified) surface elevation: 84.38 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | SBT-BH-3006 | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | 16/07/25 16:35 | | | | 1.0<br>2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>7.0<br>8.0<br>9.0 | | SW | **FILL: GRAVELLY SAND**: fine to coarse grained, well graded, grey, gravels are medium to coarse grained and comprise shale and siltstone, some sandstone and siltstone rock fragments are intermixed, trace of low plasticity silt. | M | | **FILL** |
| | | | | | | | CI-CH | **SILTY CLAY**: medium to high plasticity, orange and pale grey mottled red, trace of siltstone fragments. | <Wp | | **RESIDUAL** |
| | | | | | | | | **SHALE**: grey to dark grey, extremely weathered. | D | | |
| | | | | | | | CI-CH | **SILTY CLAY**: medium to high plasticity, pale grey mottled red, trace of siltstone and highly weathered shale fragments. | <Wp | | |
| | | | | | | | | Trace of highly weathered shale from approximately 6.0m | | | |
| | | | | | | | CL-CH | **CLAY**: medium to high plasticity, pale grey mottled red and orange, trace of highly weathered shale and ironstone gravels. | <Wp | | |
| | | | | | | | CL-CH | **SILTY CLAY**: medium to high plasticity, dark brown mottled orange, trace of ironstone gravels. | <Wp | | |

**method**

| | |
|---|---|
| AD | auger drilling* |
| HA | hand auger |
| MR | mud rotary |
| W | washbore |
| PT | push tube |
| HS | hollow stem |
| SS | solid stem |
| SD | sonic drilling |
| * | bit shown by suffix |
| e.g. | AD/T |
| B | blank bit |
| T | TC bit |
| V | V bit |

**support**

| | |
|---|---|
| M | mud |
| C | casing |
| N | nill |

**water**

10-Oct-12 water level on date shown
water inflow
water outflow

**samples & field tests**

| | |
|---|---|
| B | bulk disturbed sample |
| D | disturbed sample |
| E | environmental sample |
| SS | split spoon sample |
| U## | undisturbed sample ##mm diameter |
| WS | water sample |
| HB | hammer bouncing |
| N | standard penetration test (SPT) |
| N* | SPT - sample recovered |
| Nc | SPT with solid cone |
| R | refusal |

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**

| | |
|---|---|
| D | dry |
| M | moist |
| W | wet |
| Wp | plastic limit |
| Wl | liquid limit |

**consistency / relative density**

| | |
|---|---|
| VS | very soft |
| S | soft |
| F | firm |
| St | stiff |
| VSt | very stiff |
| H | hard |
| Fb | friable |
| VL | very loose |
| L | loose |
| MD | medium dense |
| D | dense |
| VD | very dense |

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-BH-3006*** |
| sheet: | 2 of 4 |
| project no. | ***754-SYDEN374937*** |
| client: ***Webuild S.p.A*** | date started: ***15 Jul 2025*** |
| principal: ***Sydney Metro*** | date completed: ***16 Jul 2025*** |
| project: ***Groundwater Monitoring Wells Replacement Installation Works*** | logged by: ***KT*** |
| location: ***Airport Terminal*** | checked by: ***SG*** |

position: E: 289353; N: 6247826 (Datum Not Specified) surface elevation: 84.38 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING<br>W | | | | | 11.0<br>12.0<br>13.0<br>14.0<br>15.0<br>16.0<br>17.0<br>18.0<br>19.0 | | CL-CH<br>CI<br>CL-CH | **CLAY**: medium to high plasticity, dark red/brown.<br>**CLAY**: medium plasticity, pale grey mottled dark red and orange, trace of siltstone fragments.<br>**CLAY**: medium to high plasticity, brown/grey, some highly weathered siltstone fragments intermixed.<br>**SANDSTONE**: dark grey.<br>**SILTSTONE**: dark grey.<br>**SANDSTONE**: grey. | =Wp<br>=Wp<br>=Wp | | **RESIDUAL**<br>**BEDROCK** |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-BH-3006*** |
| sheet: | 3 of 4 |
| project no. | ***754-SYDEN374937*** |
| client: ***Webuild S.p.A*** | date started: ***15 Jul 2025*** |
| principal: ***Sydney Metro*** | date completed: ***16 Jul 2025*** |
| project: ***Groundwater Monitoring Wells Replacement Installation Works*** | logged by: ***KT*** |
| location: ***Airport Terminal*** | checked by: ***SG*** |

position: E: 289353; N: 6247826 (Datum Not Specified) surface elevation: 84.38 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| W<br>CASING | | | | | 21.0<br>22.0<br>23.0<br>24.0<br>25.0<br>26.0<br>27.0<br>28.0<br>29.0 | | | **SILTSTONE**: dark grey. | | | **BEDROCK** |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-BH-3006*** |
| sheet: | 4 of 4 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***15 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***16 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Airport Terminal*** |
| checked by: | ***SG*** |

position: E: 289353; N: 6247826 (Datum Not Specified) surface elevation: 84.38 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| W<br>CASING | | | | | 31.0<br>32.0<br>33.0<br>34.0<br>35.0<br>36.0<br>37.0<br>38.0<br>39.0 | | | **SANDSTONE**: grey.<br>**SILTSTONE**: dark grey.<br>Monitoring Well SBT-BH-3006 terminated at 36.00 m<br>Target depth | | | **BEDROCK**<br>**well details:**<br>drilling company: Terratest Australia<br>driller: Mark Murray<br>**standpipe piezometer**<br>**SBT-BH-3006 details:**<br>29.0-35.0m: screen |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-1048*** |
| sheet: | 1 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***09 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***09 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Orchard Hills*** |
| checked by: | ***SG*** |

position: E: 291938; N: 6258987 (Datum Not Specified) | surface elevation: 39.97 m (AHD) | angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted | drilling fluid: | hole diameter : 125 mm

**drilling information** | **well details** | **material substance**

| method & support | water | samples & field tests | photoionization detector (ppmv) | SBT-GW-1048 | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SS<br>CASING | | | | | | | SP | **FILL: GRAVELLY SAND**: fine to medium grained, poorly graded, dark grey, siltstone gravels. | D | | **FILL** |
| | | | | | | | CL | **FILL: CLAY**: low plasticity, orange-brown. | <Wp | | |
| | | | | | | | | **CONCRETE**: 0.2m thick. | D | | **CONCRETE** |
| | | | | | 1.0 | | SW | **FILL: GRAVELLY SAND**: fine to coarse grained, well graded, pale grey, trace low plasticity clay. | D | | **FILL** |
| | | | | | 2.0 | | | **SILTSTONE**: dark grey mottled red, extremely weathered. | | | **RESIDUAL** |
| | | | | | 3.0 | | CI-CH | **CLAY**: medium to high plasticity, dark red mottled pale grey, trace of siltstone fragments. | <Wp | | |
| | | | | | 4.0 | | | Becoming pale grey and low to medium plasticity, with trace of fine to medium grained sand from approximately 4.3m | | | |
| | | | | | 5.0 | | | Becoming pale grey mottled dark red from approximately 5.4m | | | |
| | 22/07/25 13:00 | | | | 6.0 | | CI-CH | **CLAY**: medium to high plasticity, pale grey, trace of highly weathered siltstone fragments. | <Wp | | |
| | | | | | 7.0 | | CL-CI | **SANDY SILTY CLAY**: low to medium plasticity, pale brown/grey, sand is fine to medium grained, trace of siltstone fragments. | <Wp | | |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**

| | |
|---|---|
| VS | very soft |
| S | soft |
| F | firm |
| St | stiff |
| VSt | very stiff |
| H | hard |
| Fb | friable |
| VL | very loose |
| L | loose |
| MD | medium dense |
| D | dense |
| VD | very dense |

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-1048*** |
| sheet: | 2 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| principal: | ***Sydney Metro*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| location: | ***Orchard Hills*** |
| date started: | ***09 Jul 2025*** |
| date completed: | ***09 Jul 2025*** |
| logged by: | ***KT*** |
| checked by: | ***SG*** |

position: E: 291938; N: 6258987 (Datum Not Specified) surface elevation: 39.97 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | ▼ | | | | | | CL-CI | **SANDY SILTY CLAY**: low to medium plasticity, pale brown/grey, sand is fine to medium grained, trace of siltstone fragments. *(continued)*<br>Becoming darker grey/brown from approximately 8.0m | <Wp | | **RESIDUAL** |
| | | | | | 9.0 | | | **SILTSTONE**: dark grey, highly weathered. | D | | **HIGHLY WEATHERED BEDROCK** |
| | | | | | | | | Monitoring Well SBT-GW-1048 terminated at 9.50 m<br>Target depth | | | **well details:**<br>drilling company: Terratest Australia<br>driller: Mark Murray<br>**standpipe piezometer**<br>**SBT-GW-1048 details:**<br>2.0-8.5m: screen |
| | | | | | 10.0 | | | | | | |
| | | | | | 11.0 | | | | | | |
| | | | | | 12.0 | | | | | | |
| | | | | | 13.0 | | | | | | |
| | | | | | 14.0 | | | | | | |
| | | | | | 15.0 | | | | | | |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**

| | |
|---|---|
| VS | very soft |
| S | soft |
| F | firm |
| St | stiff |
| VSt | very stiff |
| H | hard |
| Fb | friable |
| VL | very loose |
| L | loose |
| MD | medium dense |
| D | dense |
| VD | very dense |

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-3003-A*** |
| sheet: | 1 of 1 |
| project no. | ***754-SYDEN374937*** |
| client: ***Webuild S.p.A*** | date started: ***10 Jul 2025*** |
| principal: ***Sydney Metro*** | date completed: ***10 Jul 2025*** |
| project: ***Groundwater Monitoring Wells Replacement Installation Works*** | logged by: ***KT*** |
| location: ***Airport Portal Dive Structure*** | checked by: ***SG*** |

position: E: 290426; N: 6248383 (Datum Not Specified) surface elevation: 67.85 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | SBT-GW-3003-A | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | | | | | 1.0<br>2.0<br>3.0<br>4.0<br>5.0<br>6.0<br>7.0 | | GP<br>CH | **FILL: SANDY GRAVEL**: medium to coarse grained, poorly graded, grey, gravels comprise sandstone and blue metal, sand is fine to coarse grained.<br>**FILL: CLAY**: high plasticity, dark red/brown, trace of fine to medium grained sand, shale gravels and cobbles. | D<br><Wp | | **FILL** |
| | | | | | | | CH | **SILTY CLAY**: high plasticity, orange-brown mottled dark red. | <Wp | | **RESIDUAL** |
| | | | | | | | | Monitoring Well SBT-GW-3003-A terminated at 6.30 m<br>Target depth | | | **well details:**<br>drilling company: Terratest Australia<br>driller: Mark Murray<br>**standpipe piezometer**<br>**SBT-GW-3003-A details:**<br>2.0-5.0m: screen |

**method**
AD auger drilling*
HA hand auger
MR mud rotary
W washbore
PT push tube
HS hollow stem
SS solid stem
SD sonic drilling
* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

**support**
M mud
C casing
N nill

**water**
10-Oct-12 water level on date shown
water inflow
water outflow

**samples & field tests**
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
WS water sample
HB hammer bouncing
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

**consistency / relative density**
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-3003-B*** |
| sheet: | 1 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: ***Webuild S.p.A*** | date started: ***10 Jul 2025*** |
| principal: ***Sydney Metro*** | date completed: ***10 Jul 2025*** |
| project: ***Groundwater Monitoring Wells Replacement Installation Works*** | logged by: ***KT*** |
| location: ***Airport Portal Dive Structure*** | checked by: ***SG*** |

position: E: 290426; N: 6248383 (Datum Not Specified) surface elevation: 67.74 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | SBT-GW-3003-B | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | 15/07/25 10:50 | | | | 0.0 | | GP | **FILL: SANDY GRAVEL**: medium to coarse grained, poorly graded, grey, gravels comprise sandstone and blue metal, sand is fine to coarse grained. | D | | **FILL** |
| | | | | | | | CH | **FILL: CLAY**: high plasticity, dark red/brown, trace of fine grained sand, siltstone and sandstone gravels. | <Wp | | |
| | | | | | 1.0 | | | | | | |
| | | | | | 2.0 | | | | | | |
| | | | | | 3.0 | | | Trace low plasticity silt from approximately 3.0m | | | |
| | | | | | 4.0 | | | | | | |
| | | | | | 5.0 | | CH | **SILTY CLAY**: high plasticity, orange/brown mottled red, trace fine to coarse grained sand. | ~Wp | | **RESIDUAL** |
| | | | | | 6.0 | | | Trace of extremely weathered shale from approximately 6.5m | | | |
| | | | | | 7.0 | | | **SHALE**: grey to dark grey, extremely weathered. | D | | **EXTREMELY WEATHERED BEDROCK** |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-3003-B*** |
| sheet: | 2 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: ***Webuild S.p.A*** | date started: ***10 Jul 2025*** |
| principal: ***Sydney Metro*** | date completed: ***10 Jul 2025*** |
| project: ***Groundwater Monitoring Wells Replacement Installation Works*** | logged by: ***KT*** |
| location: ***Airport Portal Dive Structure*** | checked by: ***SG*** |

position: E: 290426; N: 6248383 (Datum Not Specified) surface elevation: 67.74 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | | | | | 9.0<br>10.0<br>11.0<br>12.0<br>13.0<br>14.0 | | | **SHALE**: grey to dark grey, extremely weathered. *(continued)* | D | | **EXTREMELY WEATHERED BEDROCK** |
| | | | | | 15.0 | | | Monitoring Well SBT-GW-3003-B terminated at 14.50 m<br>Target depth | | | **well details:**<br>drilling company: Terratest Australia<br>driller: Mark Murray<br>**standpipe piezometer**<br>**SBT-GW-3003-B details:**<br>10.0-13.0m: screen |

**method**
AD auger drilling*
HA hand auger
MR mud rotary
W washbore
PT push tube
HS hollow stem
SS solid stem
SD sonic drilling
* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

**support**
M mud
C casing
N nill

**water**
10-Oct-12 water level on date shown
water inflow
water outflow

**samples & field tests**
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
WS water sample
HB hammer bouncing
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

**consistency / relative density**
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-3003-C*** |
| sheet: | 1 of 3 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***14 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***14 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Airport Portal Dive Structure*** |
| checked by: | ***SG*** |

position: E: 290426; N: 6248383 (Datum Not Specified) surface elevation: 67.64 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | SBT-GW-3003-C | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS | | | | | 0.0 | | GP | **FILL: SANDY GRAVEL**: medium to coarse grained, poorly graded, grey to dark grey, gravels comprise sandstone and blue metal, sand is fine to coarse grained. | D | | **FILL** |
| | | | | | | | CL-CH | **FILL: CLAY**: medium to high plasticity, dark red/brown, trace of siltstone gravels. | <Wp | | |
| | | | | | 1.0 | | | | | | |
| | | | | | 2.0 | | | Trace of shale and siltstone fragments from approximately 2.0m | | | |
| | | | | | 3.0 | | | | | | |
| | | | | | 4.0 | | | | | | |
| | | | | | 5.0 | | CL-CH | **SILTY CLAY**: medium to high plasticity, dark grey mottled orange and brown, silt is low plasticity, trace of highly weathered shale. | <Wp | | **RESIDUAL** |
| | | | | | 6.0 | | CH | **CLAY**: high plasticity, orange-brown, trace of highly weathered shale. | <Wp | | |
| CASING | | | | | 7.0 | | | | | | |
| W | | | | | 7.6 | | | **SHALE**: grey to dark grey, extremely weathered. | D | | **EXTREMELY WEATHERED BEDROCK** |
| | | | | | 8.0 | | | **SILTSTONE**: dark grey. | | | **BEDROCK** |
| | | | | | 9.0 | | | | | | |

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**method**

| | |
|---|---|
| AD | auger drilling* |
| HA | hand auger |
| MR | mud rotary |
| W | washbore |
| PT | push tube |
| HS | hollow stem |
| SS | solid stem |
| SD | sonic drilling |
| * | bit shown by suffix |
| e.g. | AD/T |
| B | blank bit |
| T | TC bit |
| V | V bit |

**support**

| | |
|---|---|
| M | mud |
| C | casing |
| N | nill |

**water**

10-Oct-12 water level on date shown
water inflow
water outflow

**samples & field tests**

| | |
|---|---|
| B | bulk disturbed sample |
| D | disturbed sample |
| E | environmental sample |
| SS | split spoon sample |
| U## | undisturbed sample ##mm diameter |
| WS | water sample |
| HB | hammer bouncing |
| N | standard penetration test (SPT) |
| N* | SPT - sample recovered |
| Nc | SPT with solid cone |
| R | refusal |

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**

| | |
|---|---|
| D | dry |
| M | moist |
| W | wet |
| Wp | plastic limit |
| Wl | liquid limit |

**consistency / relative density**

| | |
|---|---|
| VS | very soft |
| S | soft |
| F | firm |
| St | stiff |
| VSt | very stiff |
| H | hard |
| Fb | friable |
| VL | very loose |
| L | loose |
| MD | medium dense |
| D | dense |
| VD | very dense |

TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-3003-C*** |
| sheet: | 2 of 3 |
| project no. | ***754-SYDEN374937*** |
| client: ***Webuild S.p.A*** | date started: ***14 Jul 2025*** |
| principal: ***Sydney Metro*** | date completed: ***14 Jul 2025*** |
| project: ***Groundwater Monitoring Wells Replacement Installation Works*** | logged by: ***KT*** |
| location: ***Airport Portal Dive Structure*** | checked by: ***SG*** |

position: E: 290426; N: 6248383 (Datum Not Specified) surface elevation: 67.64 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

**drilling information** | **well details** | **material substance**

| method & support | water | samples & field tests | photoionization detector (ppmv) | depth (m) | graphic log | soil group symbol | material description (SOIL NAME: plasticity or particle characteristics, colour, secondary and minor components) | moisture condition | consistency / relative density | soil origin, structure and additional observations |
|---|---|---|---|---|---|---|---|---|---|---|
| W CASING | 14/07/25 10:20 | | | 11.0 | | | **SILTSTONE**: dark grey. *(continued)* | | | **BEDROCK** |
| | | | | 12.0 | | | | | | |
| | | | | 13.0 | | | | | | |
| | | | | 14.0 | | | **SANDSTONE**: fine to medium grained, grey. | | | |
| | | | | 15.0 | | | **SILTSTONE**: dark grey. | | | |
| | | | | 16.0 | | | | | | |
| | | | | 17.0 | | | **SANDSTONE**: grey. | | | |
| | | | | 18.0 | | | **SILTSTONE**: grey. | | | |
| | | | | 19.0 | | | | | | |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-3003-C*** |
| sheet: | 3 of 3 |
| project no. | ***754-SYDEN374937*** |
| client: ***Webuild S.p.A*** | date started: ***14 Jul 2025*** |
| principal: ***Sydney Metro*** | date completed: ***14 Jul 2025*** |
| project: ***Groundwater Monitoring Wells Replacement Installation Works*** | logged by: ***KT*** |
| location: ***Airport Portal Dive Structure*** | checked by: ***SG*** |

position: E: 290426; N: 6248383 (Datum Not Specified) surface elevation: 67.64 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| W<br>CASING | | | | | | | | **SILTSTONE**: grey. *(continued)* | | | **BEDROCK** |
| | | | | | 21.0 | | | **SANDSTONE**: grey. | | | |
| | | | | | 22.0 | | | **SILTSTONE**: grey. | | | |
| | | | | | 23.0 | | | | | | |
| | | | | | | | | Monitoring Well SBT-GW-3003-C terminated at 23.50 m Target depth | | | **well details:** drilling company: Terratest Australia driller: Mark Murray **standpipe piezometer** **SBT-GW-3003-c details:** 19.0-22.0m: screen |
| | | | | | 24.0 | | | | | | |
| | | | | | 25.0 | | | | | | |
| | | | | | 26.0 | | | | | | |
| | | | | | 27.0 | | | | | | |
| | | | | | 28.0 | | | | | | |
| | | | | | 29.0 | | | | | | |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-4017*** |
| sheet: | 1 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***18 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***21 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Bradfield*** |
| checked by: | ***SG*** |

position: E: 290770; N: 6243851 (Datum Not Specified) surface elevation: 71.91 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

**drilling information** | **well details** | **material substance**

| method & support | water | samples & field tests | photoionization detector (ppmv) | SBT-GW-4017 | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SS<br>CASING | | | | | 0.0 | | SW | **FILL: GRAVELLY SAND**: fine to coarse grained, well graded, grey, gravels comprise blue metal. | D | | **FILL** |
| | | | | | | | CL-CI | **CLAY**: low to medium plasticity, red mottled orange and brown.<br><br>Becoming brown mottled grey and orange from approximately 1.0m | <Wp | | **RESIDUAL** |
| | | | | | 1.0 | | | | | | |
| | | | | | | | CI | **SILTY CLAY**: medium plasticity, pale grey mottled red, trace of extremely weathered siltstone. | <Wp | | |
| | | | | | 2.0 | | | | | | |
| | | | | | | | | **SILTSTONE**: pale grey mottled red, extremely weathered. | D | | **EXTREMELY WEATHERED BEDROCK** |
| | | | | | 3.0 | | | | | | |
| | | | | | | | | **SILTSTONE**: dark grey, extremely weathered. | D | | |
| | | | | | 4.0 | | | | | | |
| | | | | | 5.0 | | | | | | |
| | | | | | 6.0 | | | **SHALE**: dark grey, extremely weathered. | D | | |
| | | | | | 7.0 | | | **SILTSTONE**: dark grey, highly weathered. | D | | **HIGHLY WEATHERED BEDROCK** |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-4017*** |
| sheet: | 2 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***18 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***21 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Bradfield*** |
| checked by: | ***SG*** |

position: E: 290770; N: 6243851 (Datum Not Specified) surface elevation: 71.91 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | 18/07/25 16:10 | | | | 9.0<br>10.0<br>11.0<br>12.0<br>13.0 | | | **SILTSTONE**: dark grey, highly weathered. *(continued)* | D<br>W | | **HIGHLY WEATHERED BEDROCK** |
| | | | | | 14.0<br>15.0 | | | Monitoring Well SBT-GW-4017 terminated at 13.50 m<br>Target depth | | | **well details:**<br>drilling company: Terratest Australia<br>driller: Mark Murray<br>**standpipe piezometer SBT-GW-4017 details:**<br>2.0-12.0m: screen |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-4803*** |
| sheet: | 1 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***17 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***17 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Bradfield*** |
| checked by: | ***SG*** |

position: E: 290621; N: 6244163 (Datum Not Specified) | surface elevation: 74.21 m (AHD) | angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted | drilling fluid: | hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | SBT-GW-4803 | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | | | | | 0.0 | | SW | **FILL: GRAVELLY SAND**: fine to coarse grained, well graded, dark grey, gravels comprise siltstone, trace of asphalt fragments. | M | | **FILL** |
| | | | | | | | CI-CH | **CLAY**: medium to high plasticity, dark red/brown. | =Wp | | **RESIDUAL** |
| | | | | | 1.0 | | | | | | |
| | | | | | 2.0 | | | Becoming dark red and stiffer from approximately 2.0m | | | |
| | | | | | | | CL-CH | **SILTY CLAY**: low to medium plasticity, pale grey mottled red and orange. | <Wp | | |
| | | | | | 3.0 | | | | | | |
| | | | | | 4.0 | | | Trace extremely weathered shale from approximately 4.5m | | | |
| | | | | | 5.0 | | | **SHALE**: dark grey, highly weathered. | D | | **HIGHLY WEATHERED BEDROCK** |
| | | | | | 6.0 | | | | | | |
| | | | | | 7.0 | | | | | | |
| | | | | | | | | **SILTSTONE**: dark grey, moderately to highly weathered. | D | | **BEDROCK** |

**method**

| | |
|---|---|
| AD | auger drilling* |
| HA | hand auger |
| MR | mud rotary |
| W | washbore |
| PT | push tube |
| HS | hollow stem |
| SS | solid stem |
| SD | sonic drilling |
| * | bit shown by suffix |
| e.g. | AD/T |
| B | blank bit |
| T | TC bit |
| V | V bit |

**support**

| | |
|---|---|
| M | mud |
| C | casing |
| N | nill |

**water**

10-Oct-12 water level on date shown
water inflow
water outflow

**samples & field tests**

| | |
|---|---|
| B | bulk disturbed sample |
| D | disturbed sample |
| E | environmental sample |
| SS | split spoon sample |
| U## | undisturbed sample ##mm diameter |
| WS | water sample |
| HB | hammer bouncing |
| N | standard penetration test (SPT) |
| N* | SPT - sample recovered |
| Nc | SPT with solid cone |
| R | refusal |

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**

| | |
|---|---|
| D | dry |
| M | moist |
| W | wet |
| Wp | plastic limit |
| Wl | liquid limit |

**consistency / relative density**

| | |
|---|---|
| VS | very soft |
| S | soft |
| F | firm |
| St | stiff |
| VSt | very stiff |
| H | hard |
| Fb | friable |
| VL | very loose |
| L | loose |
| MD | medium dense |
| D | dense |
| VD | very dense |

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-GW-4803*** |
| sheet: | 2 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***17 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***17 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Bradfield*** |
| checked by: | ***SG*** |

position: E: 290621; N: 6244163 (Datum Not Specified) surface elevation: 74.21 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | 18/07/25 10:50 | | | | 9.0<br>10.0<br>11.0<br>12.0<br>13.0<br>14.0<br>15.0 | | | **SILTSTONE**: dark grey, moderately to highly weathered. *(continued)*<br><br>Becoming brown-orange from approximately 9.0m<br><br>Bedrock becoming softer from approximately 11.6m<br><br>Monitoring Well SBT-GW-4803 terminated at 12.00 m<br>Target depth | D | | **BEDROCK**<br><br>**well details:**<br>drilling company: Terratest Australia<br>driller: Mark Murray<br>**standpipe piezometer**<br>**SBT-GW-4803 details:**<br>5.0-11.0m: screen |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-VWP-3401*** |
| sheet: | 1 of 2 |
| project no. | ***754-SYDEN374937*** |
| date started: | ***11 Jul 2025*** |
| date completed: | ***11 Jul 2025*** |
| logged by: | ***KT*** |
| checked by: | ***SG*** |

client: ***Webuild S.p.A***

principal: ***Sydney Metro***

project: ***Groundwater Monitoring Wells Replacement Installation Works***

location: ***Airport Portal Dive Structure***

position: E: 290583; N: 6248505 (Datum Not Specified) surface elevation: 65.02 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | SBT-VWP-3401 | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS | 14/07/25 10:18 | | | | 0.0 | | CL | **FILL: GRAVELLY CLAY**: low plasticity, dark grey, gravels are medium to coarse grained and comprise siltstone, trace of shale fragments. | <Wp | | **FILL** |
| | | | | | 1.0 | | | Becoming low to medium plasticity from approximately 1.0m | | | |
| | | | | | 2.0 | | | | | | |
| | | | | | 3.0 | | | | | | |
| | | | | | 4.0 | | | | | | |
| | | | | | 5.0 | | | | | | |
| | | | | | 5.5 | | CI-CH | **FILL: SILTY CLAY**: medium to high plasticity, dark red mottled dark brown. | <Wp | | |
| | | | | | 6.0 | | | Trace of sandstone fragments from approximately 6.5m | | | |
| CASING | | | | | 7.0 | | CI-CH | **SILTY CLAY**: medium to high plasticity, orange-brown mottled pale grey, some highly weathered shale fragments intermixed. | =Wp | | **RESIDUAL** |
| W | | | | | 8.0 | | | | | | |
| | | | | | 9.0 | | | | | | |

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**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**

| | |
|---|---|
| VS | very soft |
| S | soft |
| F | firm |
| St | stiff |
| VSt | very stiff |
| H | hard |
| Fb | friable |
| VL | very loose |
| L | loose |
| MD | medium dense |
| D | dense |
| VD | very dense |

TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-VWP-3401*** |
| sheet: | 2 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***11 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***11 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Airport Portal Dive Structure*** |
| checked by: | ***SG*** |

position: E: 290583; N: 6248505 (Datum Not Specified) surface elevation: 65.02 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| W<br>CASING | | | | | 11.0 | | | **SHALE**: dark grey-brown, highly weathered. | | | **BEDROCK** |
| | | | | | 12.0 | | | | | | |
| | | | | | 13.0 | | | | | | |
| | | | | | 14.0 | | | | | | |
| | | | | | 15.0 | | | Becoming denser from approximately 15.0m | | | |
| | | | | | 16.0 | | | | | | |
| | | | | | 17.0 | | | | | | |
| | | | | | 18.0 | | | Monitoring Well SBT-VWP-3401 terminated at 17.40 m<br>Target depth | | | **well details:**<br>drilling company: Terratest Australia<br>driller: Mark Murray<br>**standpipe piezometer**<br>**SBT-VWP-3401 details:**<br>11.5-16.5m: screen |
| | | | | | 19.0 | | | | | | |

**method**

| | |
|---|---|
| AD | auger drilling* |
| HA | hand auger |
| MR | mud rotary |
| W | washbore |
| PT | push tube |
| HS | hollow stem |
| SS | solid stem |
| SD | sonic drilling |
| * | bit shown by suffix |
| e.g. | AD/T |
| B | blank bit |
| T | TC bit |
| V | V bit |

**support**

| | |
|---|---|
| M | mud |
| C | casing |
| N | nill |

**water**

10-Oct-12 water level on date shown
water inflow
water outflow

**samples & field tests**

| | |
|---|---|
| B | bulk disturbed sample |
| D | disturbed sample |
| E | environmental sample |
| SS | split spoon sample |
| U## | undisturbed sample ##mm diameter |
| WS | water sample |
| HB | hammer bouncing |
| N | standard penetration test (SPT) |
| N* | SPT - sample recovered |
| Nc | SPT with solid cone |
| R | refusal |

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**

| | |
|---|---|
| D | dry |
| M | moist |
| W | wet |
| Wp | plastic limit |
| Wl | liquid limit |

**consistency / relative density**

| | |
|---|---|
| VS | very soft |
| S | soft |
| F | firm |
| St | stiff |
| VSt | very stiff |
| H | hard |
| Fb | friable |
| VL | very loose |
| L | loose |
| MD | medium dense |
| D | dense |
| VD | very dense |

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-VWP-4403*** |
| sheet: | 1 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| principal: | ***Sydney Metro*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| location: | ***Bradfield*** |
| date started: | ***21 Jul 2025*** |
| date completed: | ***21 Jul 2025*** |
| logged by: | ***KT*** |
| checked by: | ***SG*** |

position: E: 290677; N: 6244222 (Datum Not Specified) surface elevation: 73.23 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | SBT-VWP-4403 | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | 23/07/25 15:25 | | | | 0.0 | | CL-CH | **FILL: GRAVELLY CLAY**: medium to high plasticity, brown mottled pale grey and orange, gravels are medium to coarse grained and comprise siltstone and blue metal, some fine to medium grained sand. | =Wp | | **FILL** |
| | | | | | 1.0 | | CH | **FILL: CLAY**: high plasticity, pale grey and brown mottled orange, some fine to coarse grained siltstone and ironstone gravels intermixed. | <Wp | | |
| | | | | | | | CH | **SILTY CLAY**: high plasticity, dark red. | =Wp | | **RESIDUAL** |
| | | | | | 2.0 | | | Some extremely weathered siltstone from approximately 2.5m | | | |
| | | | | | 3.0 | | | **SILTSTONE**: pale grey, extremely weathered. | | | **EXTREMELY WEATHERED BEDROCK** |
| | | | | | | | | **SHALE**: dark grey, highly weathered. | | | **HIGHLY WEATHERED BEDROCK** |
| | | | | | 4.0 | | | **SILTSTONE**: dark grey, highly weathered. | | | |
| | | | | | 5.0 | | | | | | |
| | | | | | 6.0 | | | **SILTSTONE**: grey to dark grey, moderately weathered. | | | **BEDROCK** |
| | | | | | 7.0 | | | | | | |
| | | | | | 8.0 | | | | | | |
| | | | | | 9.0 | | | | | | |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SBT-VWP-4403*** |
| sheet: | 2 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: ***Webuild S.p.A*** | date started: ***21 Jul 2025*** |
| principal: ***Sydney Metro*** | date completed: ***21 Jul 2025*** |
| project: ***Groundwater Monitoring Wells Replacement Installation Works*** | logged by: ***KT*** |
| location: ***Bradfield*** | checked by: ***SG*** |

position: E: 290677; N: 6244222 (Datum Not Specified) surface elevation: 73.23 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| W<br>CASING | | | | | 11.0 | | | **SILTSTONE**: grey to dark grey, moderately weathered. *(continued)* | =Wp | | **BEDROCK** |
| | | | | | 12.0 | | | | | | |
| | | | | | 13.0 | | | **SANDSTONE**: dark grey. | | | |
| | | | | | 14.0 | | | | | | |
| | | | | | 15.0 | | | | | | |
| | | | | | 16.0 | | | | | | |
| | | | | | 17.0 | | | | | | |
| | | | | | 18.0 | | | Monitoring Well SBT-VWP-4403 terminated at 18.00 m<br>Target depth | | | **well details:**<br>drilling company: Terratest Australia<br>driller: Mark Murray<br>**standpipe piezometer**<br>**SBT-VWP-4403 details:**<br>12.0-17.0m: screen |
| | | | | | 19.0 | | | | | | |

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**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SMGW-BH-A315*** |
| sheet: | 1 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***08 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***08 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Orchard Hills*** |
| checked by: | ***SG*** |

position: E: 291755; N: 6258871 (Datum Not Specified) surface elevation: 41.76 m (AHD) angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted drilling fluid: hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | SMGW-BH-A315 | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | | | | | 0.0 | | SP | **ASPHALT**: 0.1m thickness. | M | | **ASPHALT** |
| | | | | | | | CL | **FILL: SILTY SAND**: medium to coarse grained, poorly graded, grey-brown, with low plasticity silt, trace of rock fragments. | <Wp | | **FILL** |
| | | | | | 1.0 | | | **SILTY CLAY**: low plasticity, red mottled pale grey and orange. | | | **RESIDUAL** |
| | | | | | 2.0 | | | | | | |
| | | | | | | | CI-CH | **CLAY**: medium to high plasticity, dark red mottled pale grey. | <Wp | | |
| | | | | | 3.0 | | | | | | |
| | | | | | 4.0 | | | | | | |
| | | | | | | | CI-CH | **SANDY CLAY**: medium to high plasticity, pale grey mottled dark red, sand is fine grained. | <Wp | | |
| | | | | | 5.0 | | | | | | |
| | | | | | 6.0 | | | | | | |
| | | | | | | | | **SILTSTONE**: pale grey, extremely weathered, with some medium to high plasticity clay intermixed. | D | | **EXTREMELY WEATHERED BEDROCK** |
| | | | | | 7.0 | | | | | | |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description** based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**

| | |
|---|---|
| VS | very soft |
| S | soft |
| F | firm |
| St | stiff |
| VSt | very stiff |
| H | hard |
| Fb | friable |
| VL | very loose |
| L | loose |
| MD | medium dense |
| D | dense |
| VD | very dense |

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TETRA TECH COFFEY

# Environmental Log - Monitoring Well

| | |
|---|---|
| Hole ID. | ***SMGW-BH-A315*** |
| sheet: | 2 of 2 |
| project no. | ***754-SYDEN374937*** |
| client: | ***Webuild S.p.A*** |
| date started: | ***08 Jul 2025*** |
| principal: | ***Sydney Metro*** |
| date completed: | ***08 Jul 2025*** |
| project: | ***Groundwater Monitoring Wells Replacement Installation Works*** |
| logged by: | ***KT*** |
| location: | ***Orchard Hills*** |
| checked by: | ***SG*** |

position: E: 291755; N: 6258871 (Datum Not Specified) | surface elevation: 41.76 m (AHD) | angle from horizontal: 90°

equipment type: Commachio GEO305, Track mounted | drilling fluid: | hole diameter : 125 mm

| drilling information | | | | well details | material substance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| method & support | water | samples & field tests | photoionization detector (ppmv) | | depth (m) | graphic log | soil group symbol | material description<br>**SOIL NAME**: plasticity or particle characteristics, colour, secondary and minor components | moisture condition | consistency / relative density | soil origin, structure and additional observations |
| SS<br>CASING | 08/07/25 12:15 | | | | 9.0 | | | **SANDSTONE**: fine grained, brown-grey, interbedded with some high weathered siltstone. | D<br>W | | **EXTREMELY WEATHERED BEDROCK** |
| | | | | | 10.0 | | | Monitoring Well SMGW-BH-A315 terminated at 10.00 m<br>Target depth | | | **well details:**<br>drilling company: Terratest Australia<br>driller: Mark Murray<br>**standpipe piezometer**<br>**SMGW-BH-A315 details:**<br>3.0-9.0m: screen |
| | | | | | 11.0 | | | | | | |
| | | | | | 12.0 | | | | | | |
| | | | | | 13.0 | | | | | | |
| | | | | | 14.0 | | | | | | |
| | | | | | 15.0 | | | | | | |

**method**
- AD auger drilling*
- HA hand auger
- MR mud rotary
- W washbore
- PT push tube
- HS hollow stem
- SS solid stem
- SD sonic drilling
- * bit shown by suffix
- e.g. AD/T
- B blank bit
- T TC bit
- V V bit

**support**
- M mud
- C casing
- N nill

**water**
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

**samples & field tests**
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- WS water sample
- HB hammer bouncing
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- R refusal

**soil group symbol & material description**
based on AS 1726:2017

**moisture condition**
- D dry
- M moist
- W wet
- Wp plastic limit
- Wl liquid limit

**consistency / relative density**
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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# ATTACHEMENT B: WELL DEVELOPMENT FORMS

TETRA TECH COFFEY

# Well Development Form

| | | | |
|---|---|---|---|
| PROJECT NAME | WSA SSTOM Redrill | DATE | 22/7/25 |
| PROJECT NUMBER | 374937 | WELL ID | SMGW-BH-A315 |
| FIELD PERSONNEL | KT | PAGE | 1 of 1 |
| WELL INFORMATION PRE-DEVELOPMENT | | | |
| Depth to water (mbtoc) | 6.83 | Total well depth (mbtoc) | 9.95 |
| Well diameter (mm) | 50 | Depth to top of screen (m) | 3.0 |
| Casing stick up (mm) | Static | Length of screened interval (m) | 3.0 - 9.0 |
| Development method (pumps, bailer etc) | Bailer | | |
| Equipment type (IP, WQM): | IP | Equipment type (IP, WQM): | |
| Equipment serial number: | 485315 | Equipment serial number: | |

OBSERVATIONS DURING DEVELOPMENT

| Date | Time of Day | Depth to water (mbtoc) | Fluid Removed | | Electrical Conductivity (mS or µS/cm) | pH (pH units) | Temperature (°C) | CLARITY – tick one | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Litres | Total | | | | Clear | Slightly Cloudy | Cloudy | Turbid | ODOUR, COLOUR, SEDIMENT, SHEEN |
| 22/7 | 7:30 | ~~5.41~~ NM | 10 | 10 | – | – | – | | | ✓ | | Brown, no odour |
| | 7:50 | ~~9.83~~ | 21 | 31 | | | | | | | ✓ | " |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| WELL INFORMATION – POST DEVELOPMENT | |
|---|---|
| **Total well depth (mbtoc)** | 9.95 |
| **Depth to water (mbtoc)** | 9.83 |

Hs installed @ 8.0m bTOC

TETRA TECH COFFEY

# Well Development Form

| | | | |
|---|---|---|---|
| PROJECT NAME | WSA SSTOM Redrill | DATE | 22/7/25 |
| PROJECT NUMBER | 374937 | WELL ID | SBT-GW-1048 |
| FIELD PERSONNEL | KT | PAGE | 1 of 1 |
| WELL INFORMATION PRE-DEVELOPMENT | | | |
| Depth to water (mbtoc) | 6.44 | Total well depth (mbtoc) | 9.54 |
| Well diameter (mm) | 50 | Depth to top of screen (m) | 2.0 |
| Casing stick up (mm) | Gatic | Length of screened interval (m) | 2.0-8.5 |
| Development method (pumps, bailer etc) | Bailer | | |
| Equipment type (IP, WQM): | IP | Equipment type (IP, WQM): | |
| Equipment serial number: | 485315 | Equipment serial number: | |

OBSERVATIONS DURING DEVELOPMENT

| Date | Time of Day | Depth to water (mbtoc) | Fluid Removed | | Electrical Conductivity (mS or µS/cm) | pH (pH units) | Temperature (°C) | CLARITY – tick one | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Litres | Total | | | | Clear | Slightly Cloudy | Cloudy | Turbid | ODOUR, COLOUR, SEDIMENT, SHEEN |
| 22/7 | 13:10 | 8.9 | 10 | 10 | - | - | - | | ✓ | | | Pale brown, no odour |
| | 13:20 | 9.5 | 8 | 18 | - | - | - | | | | ✓ | Brown, no odour |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| WELL INFORMATION – POST DEVELOPMENT | |
|---|---|
| **Total well depth (mbtoc)** | 9.54 |
| **Depth to water (mbtoc)** | 9.5 |

HS installed @ 8.0m

TETRA TECH COFFEY

# Well Development Form

| | | | |
|---|---|---|---|
| PROJECT NAME | WSA SSTOM Redrill | DATE | 8/7/25 |
| PROJECT NUMBER | 374937 | WELL ID | SST-GW-1806 |
| FIELD PERSONNEL | VT | PAGE | 1 of 1 |
| WELL INFORMATION PRE-DEVELOPMENT | | | |
| Depth to water (mbtoc) | Dry - | Total well depth (mbtoc) | 25.0 |
| Well diameter (mm) | 50 | Depth to top of screen (m) | 15.0 |
| Casing stick up (mm) | aatic | Length of screened interval (m) | 15 - 24 |
| Development method (pumps, bailer etc) | Whale pump | | |
| Equipment type (IP, WQM): | - | Equipment type (IP, WQM): | No IP at time of development (Day 1) |
| Equipment serial number: | - | Equipment serial number: | |

OBSERVATIONS DURING DEVELOPMENT

| Date | Time of Day | Depth to water (mbtoc) | Fluid Removed | | Electrical Conductivity (mS or µS/cm) | pH (pH units) | Temperature (°C) | CLARITY – tick one | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Litres | Total | | | | Clear | Slightly Cloudy | Cloudy | Turbid | ODOUR, COLOUR, SEDIMENT, SHEEN |
| 8/7 | 14:30 | - | 15 | 15 | - | - | - | | | ✓ | | Pale brown, no odour |
| 9/7 | 7:30 | - | 30 | 45 | - | - | - | | | | ✓ | Brown, no odour |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| WELL INFORMATION – POST DEVELOPMENT | |
|---|---|
| **Total well depth (mbtoc)** | 25.0 |
| **Depth to water (mbtoc)** | - |

TETRA TECH COFFEY

# Well Development Form

| | | | |
|---|---|---|---|
| PROJECT NAME | WSA SSTOM Redrill | DATE | 15/7/25 |
| PROJECT NUMBER | 374937 | WELL ID | SBT-GW-3003-B |
| FIELD PERSONNEL | KT | PAGE | 1 of 1 |
| WELL INFORMATION PRE-DEVELOPMENT | | | |
| Depth to water (mbtoc) | 6.49 | Total well depth (mbtoc) | 14.57 |
| Well diameter (mm) | 50 | Depth to top of screen (m) | 10.0 |
| Casing stick up (mm) | Gatic | Length of screened interval (m) | 10-13 |
| Development method (pumps, bailer etc) | Bailer | | |
| Equipment type (IP, WQM): | IP | Equipment type (IP, WQM): | |
| Equipment serial number: | 485315 | Equipment serial number: | |

OBSERVATIONS DURING DEVELOPMENT

| Date | Time of Day | Depth to water (mbtoc) | Fluid Removed | | Electrical Conductivity (mS or µS/cm) | pH (pH units) | Temperature (°C) | CLARITY – tick one | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Litres | Total | | | | Clear | Slightly Cloudy | Cloudy | Turbid | ODOUR, COLOUR, SEDIMENT, SHEEN |
| 15/7 | 11:00 | 10.64 | 10 | 10 | - | - | - | | | ✓ | | Pale brown |
| | 11:10 | 13.02 | 10 | 20 | | | | | | | ✓ | Brown |
| | 11:20 | 14.15 | 4 | 24 | | | | | | | ✓ | " |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| WELL INFORMATION – POST DEVELOPMENT | |
|---|---|
| **Total well depth (mbtoc)** | 14.57 |
| **Depth to water (mbtoc)** | 14.15 |

HS installed @ 11:0M

TETRA TECH COFFEY

# Well Development Form

| | | | |
|---|---|---|---|
| PROJECT NAME | WSA SSTOM Redrill | DATE | 14/7/25 + 23/7 |
| PROJECT NUMBER | 374937 | WELL ID | SBT-GW-3003-C |
| FIELD PERSONNEL | VT | PAGE | 1 of 1 |
| WELL INFORMATION PRE-DEVELOPMENT | | | |
| Depth to water (mbtoc) | 15.0 | Total well depth (mbtoc) | 23.5 |
| Well diameter (mm) | 50 | Depth to top of screen (m) | 19 |
| Casing stick up (mm) | Gatic | Length of screened interval (m) | 19-22 |
| Development method (pumps, bailer etc) | Whale Pump / Bailer | | |
| Equipment type (IP, WQM): | IP | Equipment type (IP, WQM): | |
| Equipment serial number: | 485315 | Equipment serial number: | |

OBSERVATIONS DURING DEVELOPMENT

| Date | Time of Day | Depth to water (mbtoc) | Fluid Removed | | Electrical Conductivity (mS or µS/cm) | pH (pH units) | Temperature (°C) | CLARITY – tick one | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Litres | Total | | | | Clear | Slightly Cloudy | Cloudy | Turbid | ODOUR, COLOUR, SEDIMENT, SHEEN |
| 14/7 | 10:30 | 15.0 | 40 | 40 | – | – | – | | | | ✓ | Brown |
| 23/7 | 11:30 | 23.0 | 30 | 70 | | | | | | | ✓ | " |
| | | | | | | | | | | | | |
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| WELL INFORMATION – POST DEVELOPMENT | |
|---|---|
| **Total well depth (mbtoc)** | 23.5 |
| **Depth to water (mbtoc)** | 23.0 |

HS installed @ 22.0m

TETRA TECH COFFEY

# Well Development Form

| | | | |
|---|---|---|---|
| PROJECT NAME | NSA SSTOM Redrill | DATE | 14/7/25 |
| PROJECT NUMBER | 374937 | WELL ID | SBT-VWP-3401 |
| FIELD PERSONNEL | V-T | PAGE | 1 of 1 |
| WELL INFORMATION PRE-DEVELOPMENT | | | |
| Depth to water (mbtoc) | 2.51 | Total well depth (mbtoc) | 17.51 |
| Well diameter (mm) | 50 | Depth to top of screen (m) | 11.5 |
| Casing stick up (mm) | Gatic | Length of screened interval (m) | 11.5-16.5 |
| Development method (pumps, bailer etc) | Bailer | | |
| Equipment type (IP, WQM): | IP | Equipment type (IP, WQM): | |
| Equipment serial number: | 485315 | Equipment serial number: | |

OBSERVATIONS DURING DEVELOPMENT

| Date | Time of Day | Depth to water (mbtoc) | Fluid Removed | | Electrical Conductivity (mS or µS/cm) | pH (pH units) | Temperature (°C) | CLARITY – tick one | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Litres | Total | | | | Clear | Slightly Cloudy | Cloudy | Turbid | ODOUR, COLOUR, SEDIMENT, SHEEN |
| 14/7 | 10:20 | 7.66 | 10 | 10 | ~ | ~ | ~ | | ✓ | | | Pale brown |
| | 10:28 | 11.87 | 10 | 20 | | | | | | ✓ | | Brown |
| | 10:43 | 14.22 | 10 | 30 | | | | | | | ✓ | Brown, sandy |
| | 10:54 | 16.39 | 10 | 40 | | | | | | | ✓ | " |
| | 10:59 | 17.13 | 3 | 43 | | | | | | | ✓ | " |
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| WELL INFORMATION – POST DEVELOPMENT | |
|---|---|
| **Total well depth (mbtoc)** | 17.51 |
| **Depth to water (mbtoc)** | 17.13 |

HS installed @ 15.0m

TETRA TECH COFFEY

# Well Development Form

| | | | |
|---|---|---|---|
| PROJECT NAME | WSA SSTOM Redrill | DATE | 16/7/25 |
| PROJECT NUMBER | 374937 | WELL ID | SBT-GW-3006 |
| FIELD PERSONNEL | KT | PAGE | 1 of 1 |
| WELL INFORMATION PRE-DEVELOPMENT | | | |
| Depth to water (mbtoc) | 3.25 | Total well depth (mbtoc) | 36 |
| Well diameter (mm) | 50 | Depth to top of screen (m) | 29 |
| Casing stick up (mm) | ~~Ground~~ ~1.0m | Length of screened interval (m) | 29-35 |
| Development method (pumps, bailer etc) | Waterra footvalve / bailer✓ | | |
| Equipment type (IP, WQM): | IP | Equipment type (IP, WQM): | |
| Equipment serial number: | 485315 | Equipment serial number: | |

OBSERVATIONS DURING DEVELOPMENT

| Date | Time of Day | Depth to water (mbtoc) | Fluid Removed | | Electrical Conductivity (mS or µS/cm) | pH (pH units) | Temperature (°C) | CLARITY – tick one | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Litres | Total | | | | Clear | Slightly Cloudy | Cloudy | Turbid | ODOUR, COLOUR, SEDIMENT, SHEEN |
| 16/7 | 16:40 | 14.14 | 50 | 50 | - | - | - | | | ✓ | | Brown |
| 25/7 | 12:00 | 35.96 | 50 | 100 | | | | | | | ✓ | " |
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| WELL INFORMATION – POST DEVELOPMENT | |
|---|---|
| **Total well depth (mbtoc)** | 36.0 |
| **Depth to water (mbtoc)** | 35.96 |

TETRA TECH COFFEY

# Well Development Form

| | | | |
|---|---|---|---|
| PROJECT NAME | WSA SSTOM Redrill | DATE | 18/7/25 |
| PROJECT NUMBER | 374937 | WELL ID | SBT-GW-4803 |
| FIELD PERSONNEL | VT | PAGE | 1 of 1 |
| WELL INFORMATION PRE-DEVELOPMENT | | | |
| Depth to water (mbtoc) | 10.42 | Total well depth (mbtoc) | 11.94 |
| Well diameter (mm) | 50 | Depth to top of screen (m) | 5.0 |
| Casing stick up (mm) | Gatic | Length of screened interval (m) | 5-11 |
| Development method (pumps, bailer etc) | Bailer | | |
| Equipment type (IP, WQM): | IP | Equipment type (IP, WQM): | |
| Equipment serial number: | 485315 | Equipment serial number: | |

OBSERVATIONS DURING DEVELOPMENT

| Date | Time of Day | Depth to water (mbtoc) | Fluid Removed | | Electrical Conductivity (mS or µS/cm) | pH (pH units) | Temperature (°C) | CLARITY – tick one | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Litres | Total | | | | Clear | Slightly Cloudy | Cloudy | Turbid | ODOUR, COLOUR, SEDIMENT, SHEEN |
| 18/7 | 11:00 | 11.75 | 5 | 5 | - | - | - | | | | ✓ | Brown |
| | | Dry | | | | | | | | | | |
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| WELL INFORMATION – POST DEVELOPMENT | |
|---|---|
| **Total well depth (mbtoc)** | 11.94 |
| **Depth to water (mbtoc)** | 11.75 |

HS installed @ 10.5m

TETRA TECH COFFEY

# Well Development Form

| | | | |
|---|---|---|---|
| PROJECT NAME | WSA SSTOM Redrill | DATE | 21/7/25 |
| PROJECT NUMBER | 374937 | WELL ID | BH24MW-4014_S |
| FIELD PERSONNEL | KT | PAGE | 1 of 1 |
| WELL INFORMATION PRE-DEVELOPMENT | | | |
| Depth to water (mbtoc) | 12.47 | Total well depth (mbtoc) | 14.0 |
| Well diameter (mm) | 50 | Depth to top of screen (m) | 5.0 |
| Casing stick up (mm) | Gatic | Length of screened interval (m) | 5 - 14 |
| Development method (pumps, bailer etc) | Bailer | | |
| Equipment type (IP, WQM): | IP | Equipment type (IP, WQM): | |
| Equipment serial number: | 485315 | Equipment serial number: | |

OBSERVATIONS DURING DEVELOPMENT

| Date | Time of Day | Depth to water (mbtoc) | Fluid Removed | | Electrical Conductivity (mS or µS/cm) | pH (pH units) | Temperature (°C) | CLARITY – tick one | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Litres | Total | | | | Clear | Slightly Cloudy | Cloudy | Turbid | ODOUR, COLOUR, SEDIMENT, SHEEN |
| 21/7 | 8.19 | 13.35 | 10 | 10 | - | - | - | | | | ✓ | Brown |
| | | Dry | | | | | | | | | | |
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| WELL INFORMATION – POST DEVELOPMENT | |
|---|---|
| **Total well depth (mbtoc)** | 14.0 |
| **Depth to water (mbtoc)** | 13.35 |

HS installed @ 10.5m

TETRA TECH COFFEY

# Well Development Form

| | | | |
|---|---|---|---|
| PROJECT NAME | WSA SSTOM Redrill | DATE | 23/7/25 |
| PROJECT NUMBER | 374937 | WELL ID | SBT-VWP-4401 |
| FIELD PERSONNEL | KT | PAGE | 1 of 1 |
| WELL INFORMATION PRE-DEVELOPMENT | | | |
| Depth to water (mbtoc) | 0.4 | Total well depth (mbtoc) | 18.0 |
| Well diameter (mm) | 50 | Depth to top of screen (m) | 12.0 |
| Casing stick up (mm) | Gatic | Length of screened interval (m) | 12 - 17 |
| Development method (pumps, bailer etc) | Bailer / waterra footvalve | | |
| Equipment type (IP, WQM): | IP | Equipment type (IP, WQM): | |
| Equipment serial number: | 485315 | Equipment serial number: | |

OBSERVATIONS DURING DEVELOPMENT

| Date | Time of Day | Depth to water (mbtoc) | Fluid Removed | | Electrical Conductivity (mS or µS/cm) | pH (pH units) | Temperature (°C) | CLARITY – tick one | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Litres | Total | | | | Clear | Slightly Cloudy | Cloudy | Turbid | ODOUR, COLOUR, SEDIMENT, SHEEN |
| 23/7 | 15:30 | 17.4 | 30 | 30 | – | – | – | | | | ✓ | Brown, no odour |
| | | Dry | | | | | | | | | | |
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| WELL INFORMATION – POST DEVELOPMENT | |
|---|---|
| **Total well depth (mbtoc)** | 18.0 |
| **Depth to water (mbtoc)** | 17.4 |

HS installed @ 15.0m

TETRA TECH COFFEY

# Well Development Form

| | | | |
|---|---|---|---|
| PROJECT NAME | WSA SSTOM Redmill | DATE | 21/7/25 |
| PROJECT NUMBER | 374937 | WELL ID | ~~BH~~ ~~GW~~ SST-GW-9017 |
| FIELD PERSONNEL | KT | PAGE | 1 of 1 |
| WELL INFORMATION PRE-DEVELOPMENT | | | |
| Depth to water (mbtoc) | 2.66 | Total well depth (mbtoc) | 13.5m |
| Well diameter (mm) | 50 | Depth to top of screen (m) | 2.0 |
| Casing stick up (mm) | Static | Length of screened interval (m) | 2 - 12.0 |
| Development method (pumps, bailer etc) | Bailer | | |
| Equipment type (IP, WQM): | IP | Equipment type (IP, WQM): | |
| Equipment serial number: | 485315 | Equipment serial number: | |

OBSERVATIONS DURING DEVELOPMENT

| Date | Time of Day | Depth to water (mbtoc) | Fluid Removed | | Electrical Conductivity (mS or µS/cm) | pH (pH units) | Temperature (°C) | CLARITY – tick one | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Litres | Total | | | | Clear | Slightly Cloudy | Cloudy | Turbid | ODOUR, COLOUR, SEDIMENT, SHEEN |
| 21/7 | 12:00 | ~~12.96~~ | 50 | 50 | – | – | – | | | | ✓ | Brown, no odour |
| | | | | | | | | | | | | |
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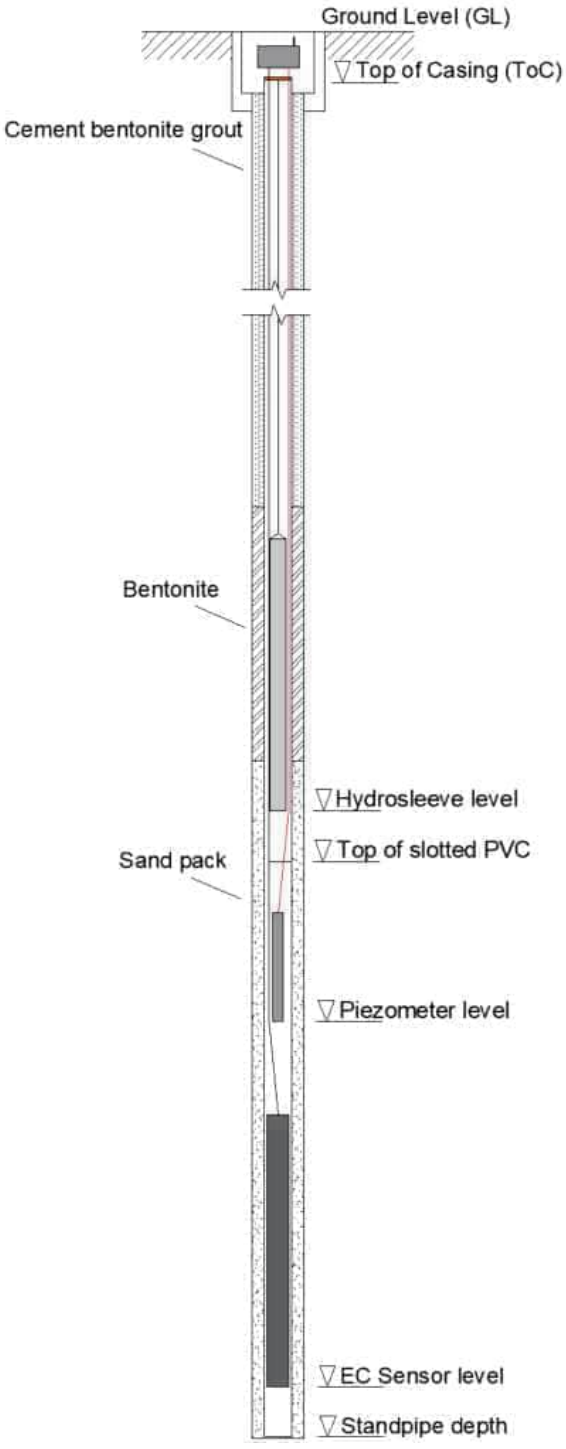
| WELL INFORMATION – POST DEVELOPMENT | |
|---|---|
| **Total well depth (mbtoc)** | 13.5 |
| **Depth to water (mbtoc)** | 12.96 |

# ATTACHMENT C: LOGGER CALIBRATION CERTIFICATES

# STANDPIPE INSTALLATION SHEET

| | | | |
|---|---|---|---|
| **Project number:** | 754-SYDEN374937 | **Project name:** | Parklife Metro |
| **Borehole ID:** | ABP-SBT-GW-3003/A | **Installation Date:** | 08/08/2025, 27/08/2025 |
| **Location:** | ABP/APDS | **Ground RL:** | 67.846 |
| **Gatic Diameter (mm)** | 300 | **Easting:** | 290425.98 |
| **Borehole Diameter (mm):** | 96 | **Northing:** | 6248383.21 |
| **Borehole Depth (m below GL):** | 6.3 | **Borehole Bottom RL (m):** | 31.942 |

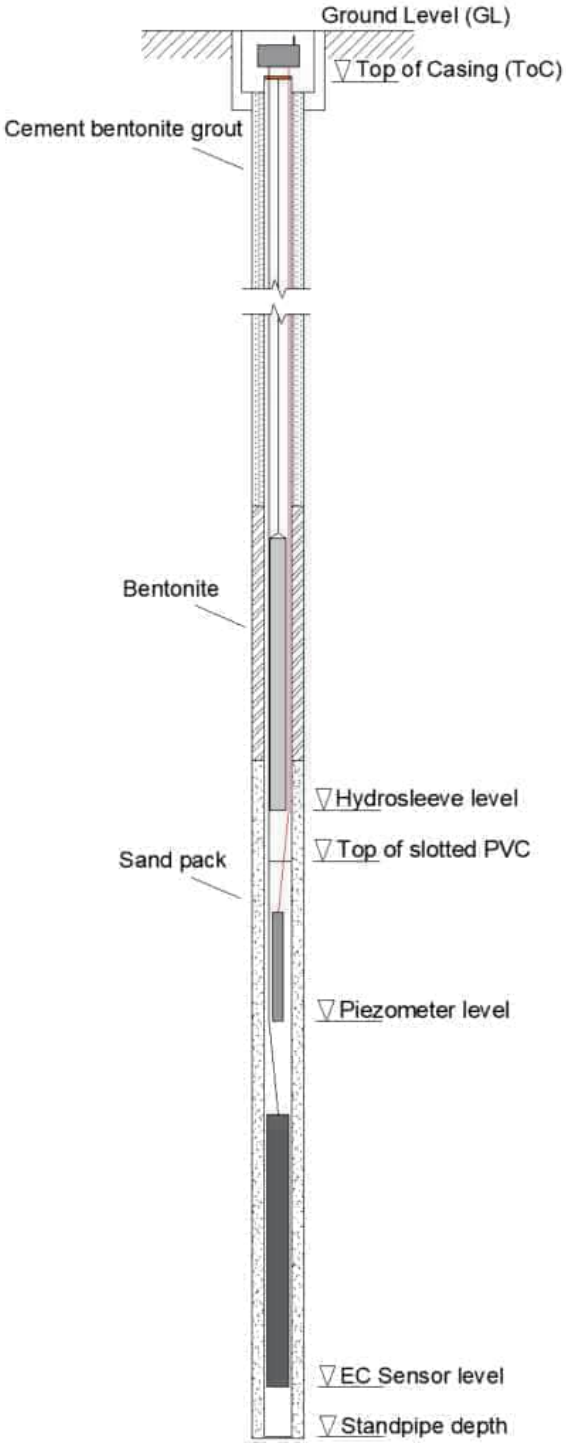
| | | |
|---|---|---|
| **Ground level (GL) to top of casing (ToC) (m)** | | 0.22 |
| **Top of Casing RL (m)** | | 67.626 |
| **Ground Water depth from ToC (m) (08/08/25 @8:41 am)** | | Not observed |
| **Ground Water RL (m)** | | Not observed |
| **Piezometer Serial Number** | | SG02290 |
| **Piezometer Pressure Range (kPa)** | | 0 – 350 |
| **Piezometer Gauge Factor (kPa/mA)** | | 21.8862253 |
| **Piezometer Depth from ToC (m)** | | 4.4 |
| **Piezometer RL (m)** | | 63.226 |
| **Electrical conductivity (EC) sensor serial number** | | 31165 |
| **EC sensor range ($\mu$S/cm)** | | 0 – 30,000 |
| **EC sensor Gauge Factor (($\mu$S/cm)/mA)** | | 1875 |
| **EC sensor depth form ToC (m)** | | 5.4 |
| **EC sensor RL (m)** | | 62.226 |
| **Hydrosleeve depth from ToC (m)** | | 3.7 |
| **Hydrosleeve RL (m)** | | 63.926 |
| **Top of slotted PVC from ToC (m)** | | 1.78 |
| **Top of slotted PVC RL (m)** | | 65.846 |
| **Bottom of slotted PVC from ToC (m)** | | 4.78 |
| **Bottom of slotted PVC RL (m)** | | 62.846 |
| **Zero Reading (In tap water)** | **EC sensor current (mA)** | 4.019123 |
| | **Piezometer current (mA)** | 4.341748 |
| | **Temperature (°C)** | 16.20 |
| **Base reading (In Standpipe)** | **EC sensor current (mA)** | N/A |
| | **Piezometer current (mA)** | N/A |
| | **Temperature (°C)** | N/A |
| **Logger Serial Number** | | 151788 |
| **Gateway Serial Number** | | N/A |



# STANDPIPE INSTALLATION SHEET

| | | | |
|---|---|---|---|
| **Project number:** | 754-SYDEN374937 | **Project name:** | Parklife Metro |
| **Borehole ID:** | ABP-SBT-GW-3003/B | **Installation Date:** | 08/08/2025 |
| **Location:** | ABP/APDS | **Ground RL:** | 67.735 |
| **Gatic Diameter (mm)** | 300 | **Easting:** | 290425.98 |
| **Borehole Diameter (mm):** | 96 | **Northing:** | 6248383.21 |
| **Borehole Depth (m below GL):** | 14.5 | **Borehole Bottom RL (m):** | 31.942 |

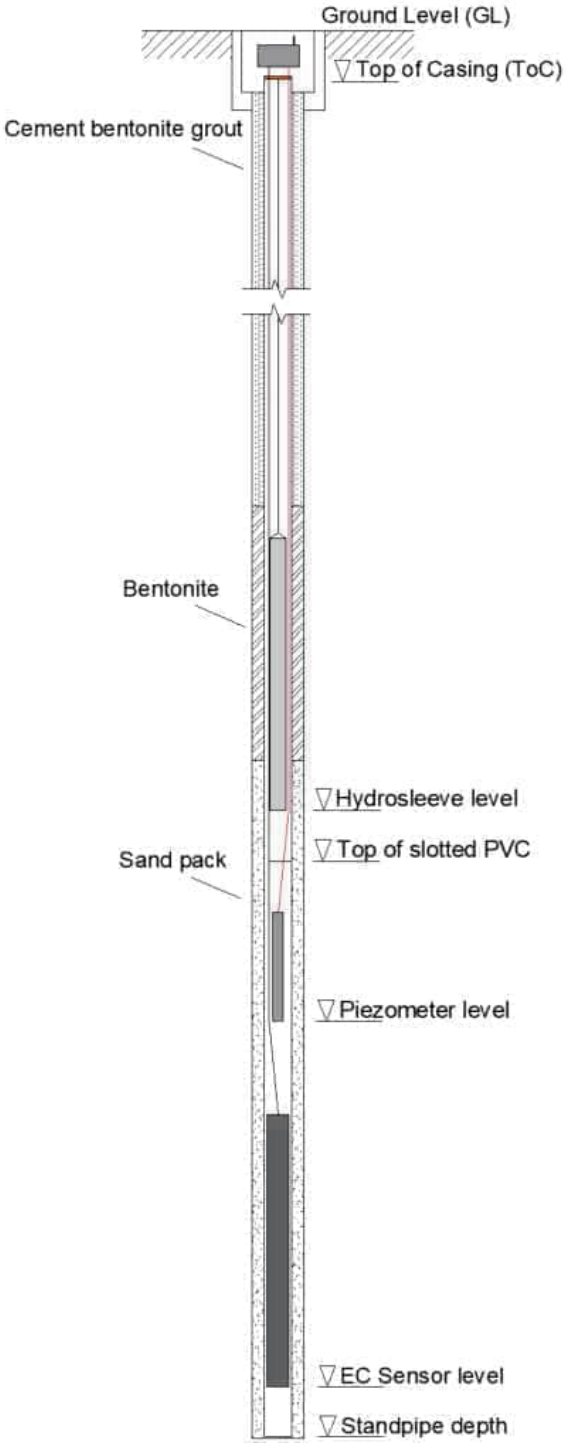
| | | |
|---|---|---|
| **Ground level (GL) to top of casing (ToC) (m)** | | 0.17 |
| **Top of Casing RL (m)** | | 67.565 |
| **Ground Water depth from ToC (m) (08/08/25 @1:37 pm)** | | 8.53 |
| **Ground Water RL (m)** | | 59.035 |
| **Piezometer Serial Number** | | SG02279 |
| **Piezometer Pressure Range (kPa)** | | 0 – 350 |
| **Piezometer Gauge Factor (kPa/mA)** | | 21.87235917 |
| **Piezometer Depth from ToC (m)** | | 12.9 |
| **Piezometer RL (m)** | | 54.665 |
| **Electrical conductivity (EC) sensor serial number** | | 31164 |
| **EC sensor range ($\mu$S/cm)** | | 0 – 30,000 |
| **EC sensor Gauge Factor (($\mu$S/cm)/mA)** | | 1875 |
| **EC sensor depth form ToC (m)** | | 13.9 |
| **EC sensor RL (m)** | | 53.665 |
| **Hydrosleeve depth from ToC (m)** | | 12.2 |
| **Hydrosleeve RL (m)** | | 55.365 |
| **Top of slotted PVC from ToC (m)** | | 9.83 |
| **Top of slotted PVC RL (m)** | | 57.735 |
| **Bottom of slotted PVC from ToC (m)** | | 12.83 |
| **Bottom of slotted PVC RL (m)** | | 54.735 |
| **Zero Reading (In tap water)** | **EC sensor current (mA)** | 4.06048 |
| | **Piezometer current (mA)** | 4.256601 |
| | **Temperature (°C)** | 19.53 |
| **Base reading (In Standpipe)** | **EC sensor current (mA)** | 14.068611 |
| | **Piezometer current (mA)** | 6.189549 |
| | **Temperature (°C)** | 19.25 |
| **Logger Serial Number** | | 151776 |
| **Gateway Serial Number** | | N/A |



# STANDPIPE INSTALLATION SHEET

| | | | |
|---|---|---|---|
| **Project number:** | 754-SYDEN374937 | **Project name:** | Parklife Metro |
| **Borehole ID:** | ABP-SBT-GW-3003/C | **Installation Date:** | 08/08/2025 |
| **Location:** | ABP/APDS | **Ground RL:** | 67.637 |
| **Gatic Diameter (mm)** | 300 | **Easting:** | 290425.98 |
| **Borehole Diameter (mm):** | 96 | **Northing:** | 6248383.21 |
| **Borehole Depth (m below GL):** | 23.5 | **Borehole Bottom RL (m):** | 31.942 |

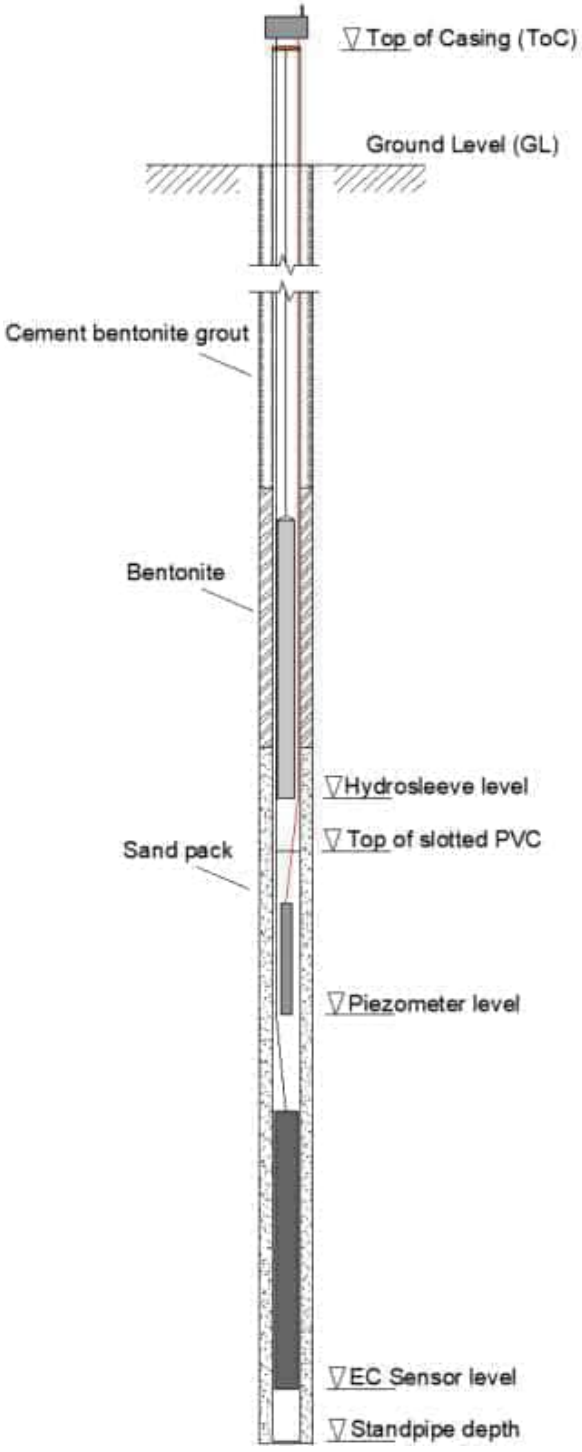
| | | |
|---|---|---|
| **Ground level (GL) to top of casing (ToC) (m)** | | 0.24 |
| **Top of Casing RL (m)** | | 67.397 |
| **Ground Water depth from ToC (m) (08/08/25 @3:19 pm)** | | 11.81 |
| **Ground Water RL (m)** | | 55.587 |
| **Piezometer Serial Number** | | SG02280 |
| **Piezometer Pressure Range (kPa)** | | 0 – 350 |
| **Piezometer Gauge Factor (kPa/mA)** | | 21.87665139 |
| **Piezometer Depth from ToC (m)** | | 21.8 |
| **Piezometer RL (m)** | | 45.597 |
| **Electrical conductivity (EC) sensor serial number** | | 31161 |
| **EC sensor range ($\mu$S/cm)** | | 0 – 30,000 |
| **EC sensor Gauge Factor (($\mu$S/cm)/mA)** | | 1875 |
| **EC sensor depth form ToC (m)** | | 22.8 |
| **EC sensor RL (m)** | | 44.597 |
| **Hydrosleeve depth from ToC (m)** | | 21.1 |
| **Hydrosleeve RL (m)** | | 46.297 |
| **Top of slotted PVC from ToC (m)** | | 18.76 |
| **Top of slotted PVC RL (m)** | | 48.637 |
| **Bottom of slotted PVC from ToC (m)** | | 21.76 |
| **Bottom of slotted PVC RL (m)** | | 45.637 |
| **Zero Reading (In tap water)** | **EC sensor current (mA)** | 4.083152 |
| | **Piezometer current (mA)** | 4.23483 |
| | **Temperature (°C)** | 19.09 |
| **Base reading (In Standpipe)** | **EC sensor current (mA)** | 13.668488 |
| | **Piezometer current (mA)** | 8.709082 |
| | **Temperature (°C)** | 18.77 |
| **Logger Serial Number** | | 151868 |
| **Gateway Serial Number** | | N/A |



# STANDPIPE INSTALLATION SHEET

| | | | |
|---|---|---|---|
| **Project number:** | 754-SYDEN374937 | **Project name:** | Parklife Metro |
| **Borehole ID:** | SBT-BH-3006 | **Installation Date:** | 11/08/2025, 27/08/2025 |
| **Location:** | ATL | **Ground RL:** | 84.384 |
| **Gatic Diameter (mm)** | 300 | **Easting:** | 289353.19 |
| **Borehole Diameter (mm):** | 96 | **Northing:** | 6247825.68 |
| **Borehole Depth (m below GL):** | 36 | **Borehole Bottom RL (m):** | 31.942 |

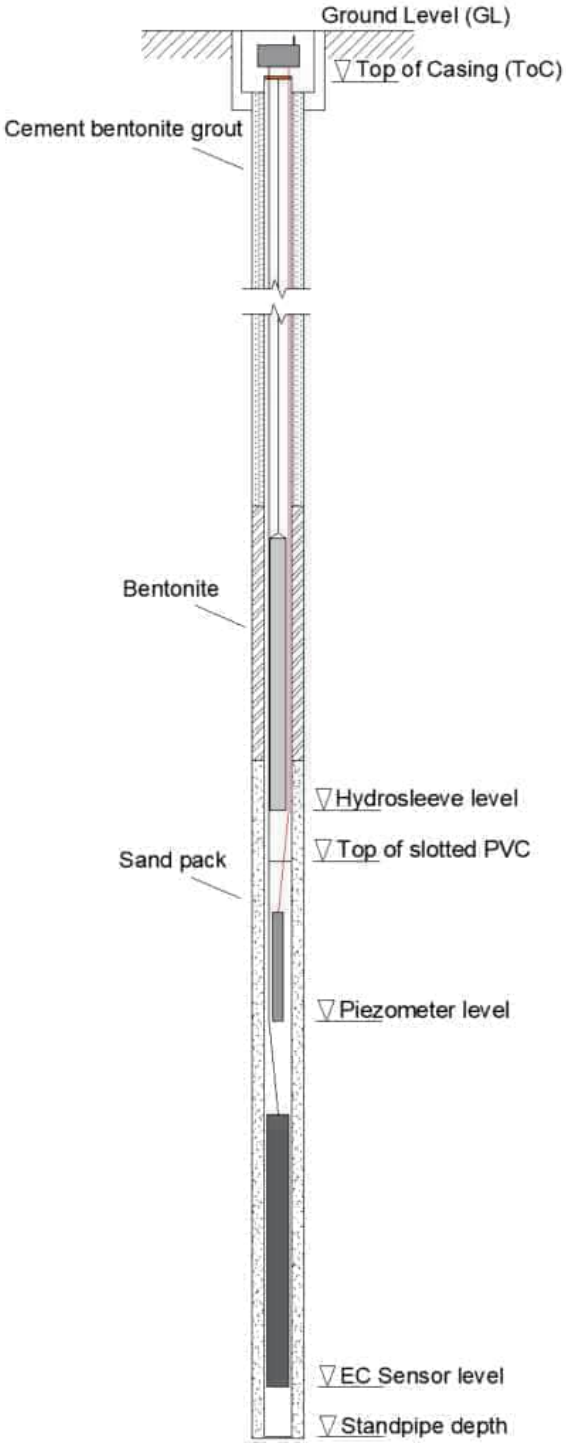
| | | |
|---|---|---|
| **Ground level (GL) to top of casing (ToC) (m)** | | 1.01 |
| **Top of Casing RL (m)** | | 85.394 |
| **Ground Water depth from ToC (m) (11/08/25 @11:15 am)** | | 21.91 |
| **Ground Water RL (m)** | | 63.484 |
| **Piezometer Serial Number** | | SG02287 |
| **Piezometer Pressure Range (kPa)** | | 0 – 350 |
| **Piezometer Gauge Factor (kPa/mA)** | | 21.86279166 |
| **Piezometer Depth from ToC (m)** | | 35 |
| **Piezometer RL (m)** | | 50.394 |
| **Electrical conductivity (EC) sensor serial number** | | 31160 |
| **EC sensor range ($\mu$S/cm)** | | 0 – 30,000 |
| **EC sensor Gauge Factor (($\mu$S/cm)/mA)** | | 1875 |
| **EC sensor depth form ToC (m)** | | 36 |
| **EC sensor RL (m)** | | 49.394 |
| **Hydrosleeve depth from ToC (m)** | | 34 |
| **Hydrosleeve RL (m)** | | 51.394 |
| **Top of slotted PVC from ToC (m)** | | 30.01 |
| **Top of slotted PVC RL (m)** | | 55.384 |
| **Bottom of slotted PVC from ToC (m)** | | 36.01 |
| **Bottom of slotted PVC RL (m)** | | 49.384 |
| **Zero Reading (In tap water)** | **EC sensor current (mA)** | 4.045017 |
| | **Piezometer current (mA)** | 4.049579 |
| | **Temperature (°C)** | 18.86 |
| **Base reading (In Standpipe)** | **EC sensor current (mA)** | 10.217936 |
| | **Piezometer current (mA)** | 9.872894 |
| | **Temperature (°C)** | 19.28 |
| **Logger Serial Number** | | 151808 |
| **Gateway Serial Number** | | N/A |



# STANDPIPE INSTALLATION SHEET

| | | | |
|---|---|---|---|
| **Project number:** | 754-SYDEN374937 | **Project name:** | Parklife Metro |
| **Borehole ID:** | SBT-VWP-4403 | **Installation Date:** | 11/08/2025 |
| **Location:** | Bradfield | **Ground RL:** | 73.228 |
| **Gatic Diameter (mm)** | 300 | **Easting:** | 290677.02 |
| **Borehole Diameter (mm):** | 96 | **Northing:** | 6244222.32 |
| **Borehole Depth (m below GL):** | 18 | **Borehole Bottom RL (m):** | 31.942 |

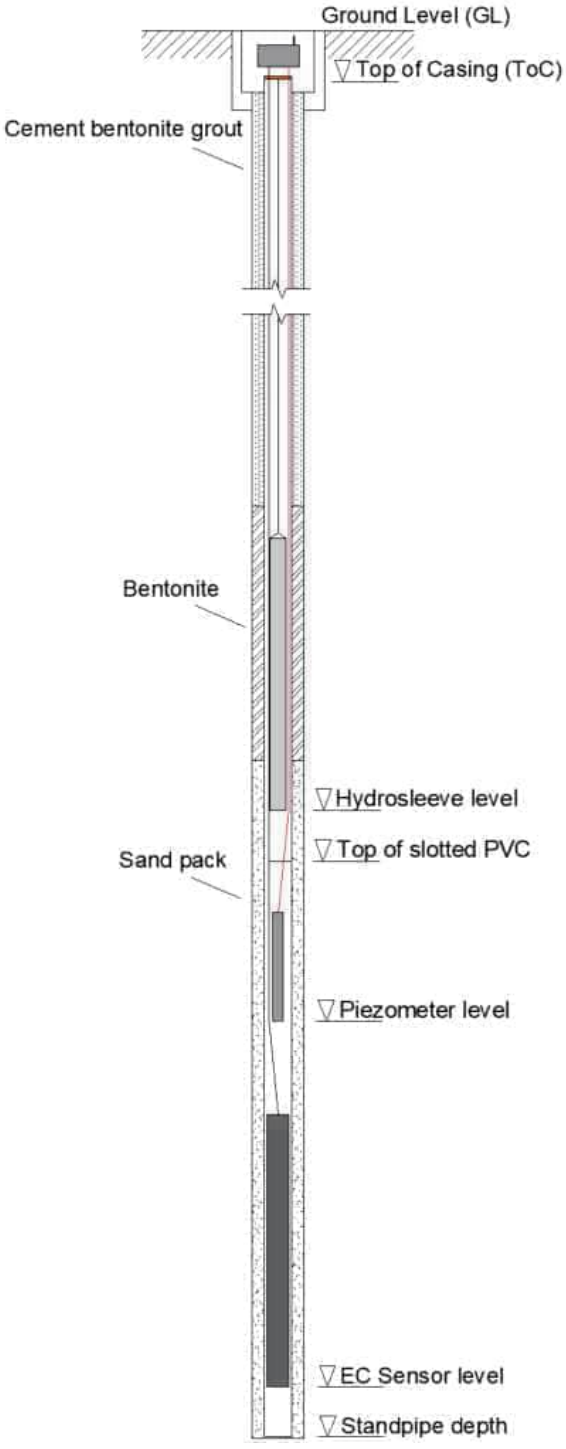
| | | |
|---|---|---|
| **Ground level (GL) to top of casing (ToC) (m)** | | 0.15 |
| **Top of Casing RL (m)** | | 73.078 |
| **Ground Water depth from ToC (m) (11/08/25 @10:10 am)** | | 13.825 |
| **Ground Water RL (m)** | | 59.253 |
| **Piezometer Serial Number** | | SG02285 |
| **Piezometer Pressure Range (kPa)** | | 0 – 350 |
| **Piezometer Gauge Factor (kPa/mA)** | | 21.87019792 |
| **Piezometer Depth from ToC (m)** | | 16 |
| **Piezometer RL (m)** | | 57.078 |
| **Electrical conductivity (EC) sensor serial number** | | 31162 |
| **EC sensor range ($\mu$S/cm)** | | 0 – 30,000 |
| **EC sensor Gauge Factor (($\mu$S/cm)/mA)** | | 1875 |
| **EC sensor depth form ToC (m)** | | 17 |
| **EC sensor RL (m)** | | 56.078 |
| **Hydrosleeve depth from ToC (m)** | | 15.3 |
| **Hydrosleeve RL (m)** | | 57.778 |
| **Top of slotted PVC from ToC (m)** | | 11.85 |
| **Top of slotted PVC RL (m)** | | 61.228 |
| **Bottom of slotted PVC from ToC (m)** | | 16.85 |
| **Bottom of slotted PVC RL (m)** | | 56.228 |
| **Zero Reading (In tap water)** | **EC sensor current (mA)** | 4.061735 |
| | **Piezometer current (mA)** | 4.331717 |
| | **Temperature (°C)** | 16.93 |
| **Base reading (In Standpipe)** | **EC sensor current (mA)** | 7.244884 |
| | **Piezometer current (mA)** | 5.177276 |
| | **Temperature (°C)** | 18.72 |
| **Logger Serial Number** | | 168422 |
| **Gateway Serial Number** | | N/A |



# STANDPIPE INSTALLATION SHEET

| | | | |
|---|---|---|---|
| **Project number:** | 754-SYDEN374937 | **Project name:** | Parklife Metro |
| **Borehole ID:** | SMGW-BH-A315 | **Installation Date:** | 08/08/2025 |
| **Location:** | Orchard Hills | **Ground RL:** | 41.957 |
| **Gatic Diameter (mm)** | 300 | **Easting:** | 291750.4 |
| **Borehole Diameter (mm):** | 96 | **Northing:** | 6258871.4 |
| **Borehole Depth (m below GL):** | 10.015 | **Borehole Bottom RL (m):** | 31.942 |

| | | |
|---|---|---|
| **Ground level (GL) to top of casing (ToC) (m)** | | 0.2 |
| **Top of Casing RL (m)** | | 41.757 |
| **Ground Water depth from ToC (m) (08/08/25 @2:42 pm)** | | 2.87 |
| **Ground Water RL (m)** | | 38.887 |
| **Piezometer Serial Number** | | SG02284 |
| **Piezometer Pressure Range (kPa)** | | 0 – 350 |
| **Piezometer Gauge Factor (kPa/mA)** | | 21.87869756 |
| **Piezometer Depth from ToC (m)** | | 8.5 |
| **Piezometer RL (m)** | | 33.257 |
| **Electrical conductivity (EC) sensor serial number** | | 31163 |
| **EC sensor range ($\mu$S/cm)** | | 0 – 30,000 |
| **EC sensor Gauge Factor (($\mu$S/cm)/mA)** | | 1875 |
| **EC sensor depth form ToC (m)** | | 9.5 |
| **EC sensor RL (m)** | | 32.257 |
| **Hydrosleeve depth from ToC (m)** | | 7.8 |
| **Hydrosleeve RL (m)** | | 33.957 |
| **Top of slotted PVC from ToC (m)** | | 2.8 |
| **Top of slotted PVC RL (m)** | | 38.957 |
| **Bottom of slotted PVC from ToC (m)** | | 9.815 |
| **Bottom of slotted PVC RL (m)** | | 31.942 |
| **Zero Reading (In tap water)** | **EC sensor current (mA)** | 4.088695 |
| | **Piezometer current (mA)** | 4.103206 |
| | **Temperature (°C)** | 18.33 |
| **Base reading (In Standpipe)** | **EC sensor current (mA)** | 10.565974 |
| | **Piezometer current (mA)** | 6.564556 |
| | **Temperature (°C)** | 20.57 |
| **Logger Serial Number** | | 26483 |
| **Gateway Serial Number** | | N/A |



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