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AECOM

Ongoing Monitoring Report - 2023

PFAS OMP - Wide Bay Training Area

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Client: Department of Defence

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Abbreviations

Abbreviation	
AFFF	Aqueous film forming foam
AHD	Australian height datum
AIR	Annual Interpretive Report
ANZECC	Australia New Zealand Environmental Conservation Council
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure 1999 (as amended 2013)
COC	Chain of custody
CSM	Conceptual site model
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved oxygen
DQI	Data quality indicators
DQO	Data quality objectives
DSI	Detailed site investigation
EC	Electrical conductivity
HEPA	Heads of Environmental Protection Agencies
LOR	Limit of reporting
MA	Management Area
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environment Protection Council
NHMRC	National Health and Medical Research Council
ORP	Oxidation reduction potential
OMIR	Ongoing Monitoring Interpretive Report
OMR	Ongoing Monitoring Report
OMP	Ongoing Monitoring Plan
PFAS	Per- and poly-fluorinated alkyl substances
PFHxA	Perfluorohexanoic acid
PFHxS	Perfluorohexane sulfonate
PFOA	Perflurooctanoic acid
PFOS	Perflurooctanesulfonic acid
PMAP	PFAS management area plan
POL	Petroleum, oils and lubricants
PSI	Preliminary site investigation
QA/QC	Quality assurance / quality control
SAQP	Sampling and analysis quality plan

Abbreviation	
SPR	Source-pathway-receptor
TSS	Total suspended solids
US EPA	US Environmental Protection Agency
WBTA	Wide Bay Training Area
WTP	Water treatment plant
WWTP	Wastewater treatment plant

Units

Abbreviation	Term	Abbreviation	Term
GWE	Groundwater Elevation	°C	Degrees Celsius
kg	Kilogram	m AHD	Metres Australian Height Datum
km	Kilometre	m bTOC	Metres below Top of Casing
km^2	Kilometre squared	mg	Milligram
mV	Millivolt	mg/L	Milligram per litre
L	Litres	mbgl	Metres below ground level
m	Metre	µS/cm	Micro-Siemens per centimetre
mm	Millimetre	SWL	Standing Water Level
cm	Centimetre	µg	Microgram
Ha	Hectare	µg/L	Microgram per litre

Executive Summary

Background

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) to implement the Ongoing Monitoring Plan (OMP) (Defence, 2020) for monitoring of per- and poly-fluorinated alkyl substances (PFAS) at Wide Bay Training Area (WBTA) (Base ID: 0224) (the 'Base') located to the west of Tin Can Bay, approximately 50 km to the south-east of Maryborough, Queensland. The residential suburbs, Wallu and Wallu Heights, are located adjacent to the southern WBTA boundary.

The objective of the monitoring was to continue to assess changes in the nature and extent of PFAS within the environment, where Defence's historical use of legacy aqueous film-forming foam (AFFF) has led to an identified potentially elevated risk or potential future risk to a receptor. A receptor is something that could be adversely affected by the contaminant of potential concern (PFAS) such as a person or an ecosystem.

This Ongoing Monitoring Report (OMR) provides an interpretation of the results from the monitoring data collected in 2023 and has been prepared in accordance with the Defence (2022) *PFAS OMP Annual Interpretive Report Guidance* (Version 0.4) issued in October 2022.

Monitoring Program

In February 2023, an OMP Review Report (AECOM, 2023a) was completed which evaluated the program and made recommendations for updates to the OMP. The revised program reduced the number of groundwater and surface water/sediment sampling locations to optimise the program and focus on sampling locations where PFAS have been detected. The sampling and analysis quality plan (SAQP) (AECOM, 2023b) was updated to reflect the amended program.

In accordance with the SAQP, AECOM completed monitoring of groundwater, surface water and sediment from selected locations in the WBTA Management Area (MA) in April 2023 and October / November 2023. The MA includes the Base and the residential suburb of Wallu, refer to **Figure 1**, **Appendix A**. Monitoring results indicated that the concentrations of PFAS in groundwater, surface water and sediment were similar to previous results.

Interpretive Assessment

<u>Groundwater</u>

Sum of perfluorohexane sulfonate (PFHxS) and perflurooctanesulfonic acid (PFOS) concentrations exceeded human health drinking water guideline values (HEPA, 2020) at two monitoring wells (MW121 and MW122) in the eastern portion of Camp Kerr, close to the Base entrance road during both sampling events in 2023. The concentrations were consistent with historical results for these wells. PFHxS and PFOS were not detected in any other monitoring well in the eastern portion of Camp Kerr. The non-detection of PFAS in monitoring wells down- and cross-gradient of MW121 and MW122 indicates the extent of PFAS in groundwater is localised and that the PFAS concentrations are stable and unlikely to be migrating off-Base. The source of the PFAS in groundwater at this location is not known but could be related to historical irrigation of the ground close to monitoring wells with treated water (potentially containing PFAS) from the wastewater treatment plant (WWTP). Two samples of treated water were collected during the 2023 monitoring period and analysed for PFAS. The sample collected in April 2023 reported concentrations of PFHxS in April 2023 close to the limit of reporting. PFAS were not detected above the limit of reporting in the sample collected in October / November 2023. The results indicate treated water is not currently a PFAS source.

Groundwater in the western portion of Camp Kerr flows from east to west towards Wallu. The non-detection of PFAS in groundwater samples collected from off-Base monitoring wells located beyond the western Base boundary shows that PFAS is not migrating in groundwater off-Base to the west towards Wallu. PFAS were detected in groundwater samples collected from a monitoring well adjacent to the southern Base boundary (MW118) in both sampling events, however, the concentration of sum of PFHxS and PFOS did not exceed the drinking water guideline (HEPA, 2020) and concentrations were within the historical range. The detected concentrations may reflect ongoing dispersion of residual PFAS in groundwater.

PFAS were not detected in groundwater samples from two wells located in the southern portion of the MA at areas where landfilling has occurred and down-gradient of the Multi User Firing Point. This indicates source areas of PFAS are unlikely to be present in these areas. The non-detection of PFAS in the southern portion of the MA during the monitoring period is consistent with historical results reported during the detailed site investigation (DSI) (AECOM 2020), 2021 Annual Interpretive Report (AECOM, 2022a) and 2022 Ongoing Monitoring Interpretive Report (AECOM, 2023c).

Surface Water and Sediment

PFAS concentrations in surface water and sediment samples collected from on-Base drainage channels, on-Base creeks and off-Base drainage features and off-Base dams were consistent with historical data. In Camp Kerr and Wallu area, PFAS were detected in on-Base drainage features and off-Base dams and ephemeral watercourses. This indicates a line of evidence for the presence of an overland flow pathway for PFAS in surface water on-Base to migrate to surface water features in Wallu. Concentrations detected during the monitoring period did not exceed human health guideline values (HEPA, 2020).

Two surface water samples from the estuarine Snapper Creek in the southern portion of the Base (SW014 and SW016) reported detectable concentrations of PFOS in the monitoring period, which exceeded the ecological guideline for freshwater 99% species protection (HEPA, 2020). These concentrations may indicate the potential for relatively minor source(s) of PFAS in the eastern portion of the Base. The presence of potential off-Base PFAS sources near Tin Can Bay include the waste transfer station, sewage treatment works and fire station. These are located east of the eastern Base boundary and are considered to have the potential to contribute PFAS to the environment in the estuarine Snapper Creek system and Ramsar area.

Conceptual Site Model and Risk Profile

The conceptual site model for WBTA presented in the detailed site investigation (DSI) (AECOM, 2020) was reviewed and no changes were identified to the sources, pathways or receptors.

Based on the 2023 results, the risk profile to human health, within the MA, is unchanged, based on the following conclusions of the data assessment:

- The extent of PFAS in groundwater is similar to that presented in the DSI (AECOM, 2020).
- PFAS concentrations in groundwater from individual wells were in accordance with historical ranges.
- PFAS concentrations in surface water locations were generally consistent with historical results. There were no first-time detections and no new exceedances of human health guideline values (HEPA, 2020) during the monitoring period.
- PFAS were not detected at concentrations exceeding the laboratory limit of reporting in sediment samples collected from sampling locations in the MA in 2023, except for two locations. PFAS concentrations in these samples were consistent with historical data.

Conclusions

Following a review of the data collected during the 2023 monitoring period, there have been no significant changes to the understanding of risks associated with PFAS in the WBTA MA and distribution of PFAS.

The program includes off-Base groundwater sampling locations beyond the Base’s western boundary to monitoring the potential migration of PFAS in groundwater towards Wallu. The program also includes monitoring of PFAS migrating in surface water flowing overland in the Camp Kerr area and entering surface water bodies in Wallu. Continued monitoring of these locations will provide information on the risk to down-gradient receptors.

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) to implement the Ongoing Monitoring Plan (OMP) (Defence, 2020) for monitoring of per- and poly-fluorinated alkyl substances (PFAS) at Wide Bay Training Area (WBTA) (Base ID: 0224) (the 'Base'), located to the west of Tin Can Bay, approximately 50 kilometres (km) to the south-east of Maryborough, Queensland. The location of the Base and the Management Area (MA) is shown in **Figure 1** in **Appendix A**. The residential suburbs Wallu and Wallu Heights are located adjacent to the southern WBTA boundary. The monitoring targeted PFAS in a range of environmental media at selected locations on-Base and in surrounding off-Base areas within the WBTA MA.

To meet the objectives of the OMP, the monitoring was undertaken in accordance with the sampling and analysis quality plan (SAQP) (AECOM, 2023b and **Appendix E**). This report has been prepared in accordance with the Defence (2022) *PFAS OMP Annual Interpretive Report Guidance* (Version 0.4) issued in October 2022.

A review of the OMP was completed in February 2023 (AECOM, 2023a). The review recommended the removal of six groundwater monitoring wells and six surface water and sediment sampling locations to optimise the program and focus on sampling locations where PFAS have been detected. The SAQP (AECOM, 2023b, **Appendix E**) was revised with the updated program implemented for the 2023 monitoring events presented in this report.

1.1 Purpose and Objectives

The objective of the OMP is to set out a program of monitoring to assess the changes in the nature and extent of PFAS within the environment, where Defence's historical use of legacy aqueous film forming foam (AFFF) has led to an identified potentially elevated risk to a receptor, or potential future risk to a receptor.

Assessing changes in the distribution, concentration, and transport pathways of the contaminants against appropriate guideline values provides:

- An evidence base for targeted and effective risk management decision making to protect human health and environmental receptors.
- An early warning that additional management of PFAS contamination may be warranted in areas not currently understood to be affected by PFAS where PFAS are detected for the first time.

These data will be evaluated to determine environmental variability and significant trends in PFAS concentrations. This will inform any changes to the known risk profile and recommendations for triggers to review the PFAS Management Area Plan (PMAP) (Defence, 2020), if required.

1.2 Scope of Work

The scope of works for this interpretive report included assessing changes to the distribution of PFAS over the preceding 12-month period (inclusive of two monitoring events in April 2023 and October / November 2023) and how these change the understanding of the conceptual site model (CSM) and risk profile for PFAS. This includes evaluation of data reported in the 2023 factual reports as well as data from historical reports, as follows:

- *Sampling Event Factual Report, April 2023, PFAS OMP, Wide Bay Training Area* (AECOM, 2023d)
- *Sampling Event Factual Report, October / November 2023, PFAS OMP, Wide Bay Training Area* (AECOM, 2023e)
- *Ongoing Monitoring Interpretive Report – 2022, PFAS OMP, Wide Bay Training Area* (AECOM, 2023c)
- *Annual Interpretive Report – 2021, PFAS OMP, Wide Bay Training Area* (AECOM, 2022a)
- *PFAS Detailed Site Investigation, Wide Bay Training Area*, (AECOM, 2020)
- *PFAS Management Area Plan, Wide Bay Training Area* (Defence, 2020).

2.0 Site Setting

The subsections below describe the site and environmental setting for WBTA.

2.1 Base Description

Table 1 summarises the Base identification and setting presented in the PMAP (Defence, 2020) for WBTA.

Table 1 WBTA Identification and Setting Summary

Element	Description
Base ID	0224
Location	The MA is located on Tin Can Bay Road, Tin Can Bay, Queensland, 4580, approximately 50 km south-east of Maryborough, see **Figure 1**, **Appendix A**. The MA comprises WBTA (on-Base) and the small residential area of Wallu located adjacent to the south-west corner of the Base (off-Base). Base features are shown in **Figure 2**, **Appendix A**. WBTA covers approximately 19,100 hectares of remnant bush and coastal to sub-coastal wetland.
Regional meteorology	The region experiences warm wet summers and mild winters. Based on climate data from Rainbow Beach (040856) the region has a mean maximum temperature in January of 28.9 degrees Celsius (°C) and a mean minimum temperature in July of 10.4°C (Bureau of Meteorology, 2024). The region experiences an annual mean rainfall of 1457.9 millimetres (mm). On average, February experiences the highest mean rainfall of 208.1 mm, whereas September experiences the lowest monthly mean rainfall of 55.6 mm.
Topography	The detailed site investigation (DSI) (AECOM, 2020) reported that the western margin of the WBTA comprises undulating to strongly undulating old coastal plain, about 90 metres (m) above Australian Height Datum (AHD). The central and south-eastern parts of WBTA comprise gently to strongly undulating portions of old dissected coastal plain, while the north-eastern part of the area is coastal plain with low sandy banks and weakly defined drainage lines. Based on a 25 m-resolution digital elevation model of the WBTA, total relief is 112 m (from sea level), and slopes range from 0° to 10°. Nearly the entire area (97.2%) comprises slopes <5°, with the remainder being 5–10°. Wallu, located 100 m to the west of Camp Kerr, is flat (approximately 65 mAHD) and at a slightly lower elevation (approximately 10 m) than Camp Kerr (approximately 75 mAHD). There are a number of surface water bodies (dams) at Wallu which appear to be mainly fed from an unnamed creek to the west. The creek has multiple tributaries that drain areas of higher ground (elevations of over 100 mAHD) to the north, west and south-west of Wallu. Surface water flows out of Wallu to the south-east via an ephemeral waterway that crosses under Clyde Road and Tin Can Bay Road and discharges into a dam in the eastern portion of Wallu, following the natural topography.
Geology and hydrogeology	The MA is underlain by the Late Triassic to Early Jurassic Duckinwilla Group and Grahams Creek Formation. The Duckinwilla Group comprises feldspathic and quartzose sandstone, shale, siltstone and coal. The Grahams Creek Formation comprises intermediate to acidic lava flows and pyroclastics, tuffaceous sandstone and siltstone. The marine transgressive sequence of the Duckinwilla Group comprises almost 70% of the total area. This sequence is capped in places with Oligocene to Miocene duricrusted old land surfaces comprised of ferricrete, silcrete and indurated paleosols. These deposits comprise almost 10% of the area. Gully systems draining the marine transgressive sequence and duricrusted areas are filled with Quaternary undifferentiated alluvial plains comprised of sand, silt, clay, and gravel.

Element	Description
	Groundwater beneath WBTA is semi-confined within the sandstone of the Tertiary Duckinwilla Group, with flow likely to occur as fracture flow. Measurements of the physicochemical parameters during the preliminary site investigation (PSI) (AECOM, 2019) and DSI (AECOM, 2020) indicated the groundwater was slightly acidic to neutral and fresh [<500 milligrams per litre (mg/L) total dissolved solids] and suitable for most purposes (including drinking water and irrigation). The DSI reported that a shallow groundwater aquifer was present beneath the Base with groundwater encountered between 1.7 and 14.7 m below top of casing (mbtoc). Groundwater is extracted in Camp Kerr for drinking water and domestic purposes from two bores. Bore 1 (POT001) is screened between 18 and 78.4 metres below ground level (mbgl) and Bore 2 (POT005) is screened between 30 and 51.5 mbgl. They are screened at deeper depth compared to the groundwater monitoring wells (the deepest screened section in the monitoring wells is 16 to 20.5 mbgl) and are either screened in a deeper section of the aquifer or in a deeper aquifer. Due to the length of the screened sections, there is potential for connection between different sections of the aquifer or separate aquifers. Treated water from the wastewater treatment plant (WWTP) in Camp Kerr is irrigated to ground at three locations: • west of the WWTP • immediately south of the main entrance road • immediately north of the main entrance road.
Surface water	WBTA is located within the Mary River Basin. There are seven main creek catchments on-Base (refer to the DSI, AECOM, 2020): • Mosquito Creek and its tributaries drain the western part of WBTA into the Kauri Creek Inlet • Kauri Creek in the central part of WTBA, flows in a northerly direction through the centre of the Base to the Kauri Creek Inlet and east to Tin Can Inlet • Kangaroo Creek in the central southern portion of WBTA, flows into the Kauri Creek • Snapper Creek in the south-east, flows east into Tin Can Inlet • Griffen Creek in the east, flows east into Tin Can Inlet • Teebar Creek in the east, flows east into Tin Can Inlet • Little Stony Creek in the north-west, flows north into Kauri Creek. Kauri Creek is the main draining watercourse at the WBTA. Tributaries that flow into Kauri Creek include Mosquito Creek, Kangaroo Creek, and Little Stony Creek. Kauri Creek flows from south to north across the Base, then east to the Great Sandy Strait. The Teebar Creek, Snapper Creek and Griffen Creek catchments occupy the eastern portion of the Base and drain to the east into Tin Can Inlet. The Teebar Creek, Griffen Creek and Snapper Creeks are located in the lower lying areas of the Base and are seasonally and/or tidally influenced depending on their location. The headwaters of Mosquito, Kangaroo and Kauri Creeks rise to the south and south-west beyond the boundary of WBTA, indicating off-Base surface water flows onto the Base. The suburb of Wallu, located adjacent south-west of the Base has several surface water dams and an unnamed waterway that flows from Wallu to the south-east.
Current and previous land use on-Base	WBTA has been in use by Defence since 1958. Prior to 1958, the area comprising WBTA was likely used for timber logging.

Element	Description
Land uses surrounding the Base	The surrounding land use is predominantly State Forest with some small residential settlements to the south-west and south and the larger residential area of Tin Can Bay to the east and south-east. Identified land uses in each direction from WBTA are summarised below. • North: Toolara State Forest and Great Sandy Strait. • East: Tin Can Bay waste transfer station and sewage treatment plant, township of Tin Can Bay (residential) and Great Sandy Strait. • South: Township of Wallu west of Camp Kerr (residential), township of Wallu Heights east of Camp Kerr (residential), Tin Can Bay Road and Toolara State Forest. • West: Maryborough Cooloola Road and Toolara State Forest. The PSI (AECOM, 2019) identified that there is significant commercial and recreational fishing activity in waters surrounding the Base. Waterways at and downstream of WBTA are listed as important wetlands under the Ramsar Convention (The Convention on Wetlands of International Importance). The Great Sandy Strait Ramsar area includes Tin Can Inlet and tidal sections of creeks in the northern and eastern portions of the Base. A land and water use survey for residents in Wallu was completed in 2019 and reported in the DSI (AECOM, 2020). Based on the responses, the private dams in Wallu are used for recreational purposes at six of the properties. At three properties, dam water was used for irrigating crops or watering livestock (details in the surveys indicate water is used for irrigation of vegetable gardens). Two of the upstream dams were used infrequently to catch yabbies.

2.2 WBTA Management Area

The MA comprises WBTA (on-Base) and the small residential area of Wallu located adjacent to the south-west corner of the Base (off-Base). Refer to **Figure 1**, **Appendix A**.

2.3 Source Areas

Interviews conducted during the PSI (AECOM, 2019) did not identify specific information regarding the potential use of firefighting foams containing PFAS on-Base and the types of AFFF potentially used are not known. No specific information was obtained on the potential for sources of PFAS other than firefighting foams at the Base.

No primary PFAS source areas were identified in the investigations [PSI (AECOM, 2019) and DSI (AECOM, 2020)] completed to date. The investigations have identified the presence of PFAS in on-Base groundwater and surface water, indicating that AFFF may have historically been used on-Base. The PSI and DSI identified the potential storage and use (for emergency and demonstration purposes) of small AFFF fire extinguishers at the petroleum, oil and lubricants (POL) store and refuelling area, in the caretaker’s residence area and at the demonstration area north of Camp Kerr, refer to **Figure 3**, **Appendix A**. The PSI and DSI also identified the potential for wash down of liquids containing PFAS at the vehicle wash point. PFAS is also present in the treated effluent which has been historically irrigated to ground in the area of the WWTP and adjacent to the Camp Kerr entrance road. Historically, PFAS in effluent may have been discharged to creeks.

Potential off-Base sources of PFAS include the Tin Can Bay waste transfer station and sewage treatment works, fire station, areas of infilling which may include waste containing PFAS and areas where historical bushfires may have been suppressed using firefighting foam containing PFAS.

3.0 Sampling and Analytical Methodology

3.1 Sampling Locations

The sampling events conducted in April 2023 and October / November 2023 included the collection of selected groundwater, surface water and sediment samples from across the MA. Sampling locations at WBTA are shown in **Figure 2** and **Figure 3** in **Appendix A**.

3.2 Summary of OMP works 2023

A summary of the monitoring works implemented as part of the SAQP (**Appendix E**) in 2023 is summarised below:

3.2.1 April 2023 Sampling Event

- Monitoring was undertaken between 03 and 05 April 2023.
- Groundwater sampling of 11 monitoring wells on-Base and five monitoring wells off-Base in the shallow aquifer.
- Groundwater sampling of two abstraction bores at tap outlets. These bores are screened in a deeper section of the aquifer, or potentially, in a deeper aquifer, for more information refer to **Table** 1.
- Surface water sampling of seven on-Base locations and five off-Base locations.
- Sampling of the outlet of the WWTP.
- Sediment sampling at 14 locations (co-located with surface water samples).

3.2.2 October / November 2023 Sampling Event

- Monitoring works undertaken between 30 October and 1 November 2023.
- Groundwater sampling of 11 monitoring wells on-Base and five monitoring wells off-Base in the shallow aquifer.
- Groundwater sampling of two abstraction bores at tap outlets.
- Surface water sampling of six on-Base locations and five off-Base locations.
- Sampling of the outlet of the WWTP.

3.3 Sampling Methodology and Laboratory Analysis

Refer to the SAQP (AECOM, 2023b, **Appendix E**) for the sampling methodology, data quality objectives (DQOs) including quality assurance (QA) and quality control (QC) parameters for field and laboratory analysis programs. Refer to the factual reports (**Appendix D**) for QA/QC discussion and fit for purpose data.

3.4 SAQP Deviations

The works undertaken over the monitoring period complied with the SAQP (AECOM, 2023b), with some minor exceptions discussed in **Section 3.4.1** and **3.4.2**.

3.4.1 April 2023 Sampling Event

Surface water samples were collected from 12 of 14 locations with two locations dry (SW017 and SW018). Sediment samples were collected from all 14 locations. The non-sampling of these locations means there are no data available in April 2023 to evaluate the trend in PFAS concentrations.

3.4.2 October / November 2023 Sampling Event

Surface water samples were collected from 11 of 14 locations. Three locations were dry and so samples could not be collected (SW017, SW018, SW019). The non-sampling of these locations means there are no data available for the October / November 2023 period to evaluate the trend in PFAS concentrations.

3.5 Quality Assurance and Quality Control

Data validation pertaining to the data in this report was completed and is discussed in the factual reports listed below, which are presented in **Appendix D**:

- *Sampling Event Factual Report, April 2023, PFAS OMP, Wide Bay Training Area (AECOM, 2023d)*
- *Sampling Event Factual Report, October / November 2023, PFAS OMP, Wide Bay Training Area (AECOM, 2023e)*

Data validation procedures used in the assessment of the field and laboratory QA/QC data indicate that the reported field and analytical results in the sampling events (April 2023 and October / November 2023) are representative of the sample locations. The overall quality of the analytical data produced is acceptably reliable for the purpose of the factual and interpretive reports.

4.0 Assessment Criteria

Adopted screening criteria references national guidance in the form of the PFAS National Environmental Management Plan (NEMP) (HEPA, 2020), Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. This report was prepared using the following guidance documents:

- Heads of Environmental Protection Agencies (HEPA), 2020. PFAS National Environmental Management Plan (NEMP), version 2.0 January 2020.
- Department of Health, 2019. Health Based Guidance Values for PFAS for use in site investigations in Australia. September 2019 (Department of Health, 2019).
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC 2019).
- National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM, 2013).

The adopted PFAS screening criteria used to assess the data generated as part of the OMP are presented in **Table 2** below.

Table 2 Summary of Adopted Screening Criteria

<table>
<tr><th>Pathway</th><th>Compound</th><th>Criteria</th><th>Comment / Reference</th></tr>
<tr><td colspan="4">Human Health Receptors</td></tr>
<tr><td rowspan="2">Drinking water - groundwater</td><td>PFOS + PFHxS</td><td>0.07 µg/L</td><td rowspan="2">The values are from the PFAS NEMP (HEPA, 2020).

All groundwater results were compared to these criteria.</td></tr>
<tr><td>PFOA</td><td>0.56 µg/L</td></tr>
<tr><td rowspan="2">Recreational use – surface water</td><td>PFOS + PFHxS</td><td>2 µg/L</td><td rowspan="2">The values are from PFAS NEMP (2020), which are from NHMRC, 2019).

All surface water results were compared to these criteria.</td></tr>
<tr><td>PFOA</td><td>10 µg/L</td></tr>
<tr><td colspan="4">Ecological Receptors</td></tr>
<tr><td rowspan="2">Freshwater (99% species protection values)</td><td>PFOS</td><td>0.00023 µg/L</td><td rowspan="2">The values are from the PFAS NEMP (HEPA, 2020).

For the purposes of preliminary screening of analytical water results, the laboratory limit of reporting (LOR) was adopted rather than sole use of the criteria value.
Where results exceeded the LOR, the 99% level of protection for slightly to moderately disturbed ecosystems was applied. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife.

All surface water and groundwater results were compared to these criteria.</td></tr>
<tr><td>PFOA</td><td>19 µg/L</td></tr>
<tr><td rowspan="2">Freshwater (95% species protection values)</td><td>PFOS</td><td>0.13 µg/L</td><td rowspan="2">Surface water results from the ephemeral waterway south of Clyde Road (SW025) were screened against freshwater ecological guidelines for slightly to moderately disturbed ecosystems (95% species protection) (HEPA, 2020). This was due to the ephemeral nature of this waterway, where aquatic ecosystems are likely to be temporary.</td></tr>
<tr><td>PFOA</td><td>220 µg/L</td></tr>
</table>

At the time of report preparation, no HEPA (2020) endorsed criteria were available for PFAS in sediment.

5.0 Contextual and Ancillary Information

The development of the PMAP (Defence, 2020) involved a review of the key migration pathways and consideration of available management options. Following this review, no specific management options were considered necessary based on the following aspects:

- The identified nature and extent of PFAS contamination was limited
- Exposure risks to human health were low
- The net benefit of source, pathway or exposure/receptor management and resultant risk reduction was considered marginal.

The OMP provides data for ongoing assessment of the potential changes in the nature and extent of PFAS in groundwater and surface water systems.

Events that have occurred within the MA which may affect the outcomes of the sampling are summarised in **Sections 5.1** to **5.3**.

5.1 Remediation Projects

No remediation projects were undertaken on-Base during the 2023 monitoring period and there are no planned remediation activities for the future.

5.2 Infrastructure Projects

A summary of recent and planned infrastructure projects on-Base (provided by the Environment and Sustainability Manager for WBTA in January 2023) are summarised in **Appendix C**. These projects included repairs to roads and fencing, demolition of buildings, replenishment of firing range mounds at two ranges, and various flood repair works to causeways along major roads and the demolitions range biobasin.

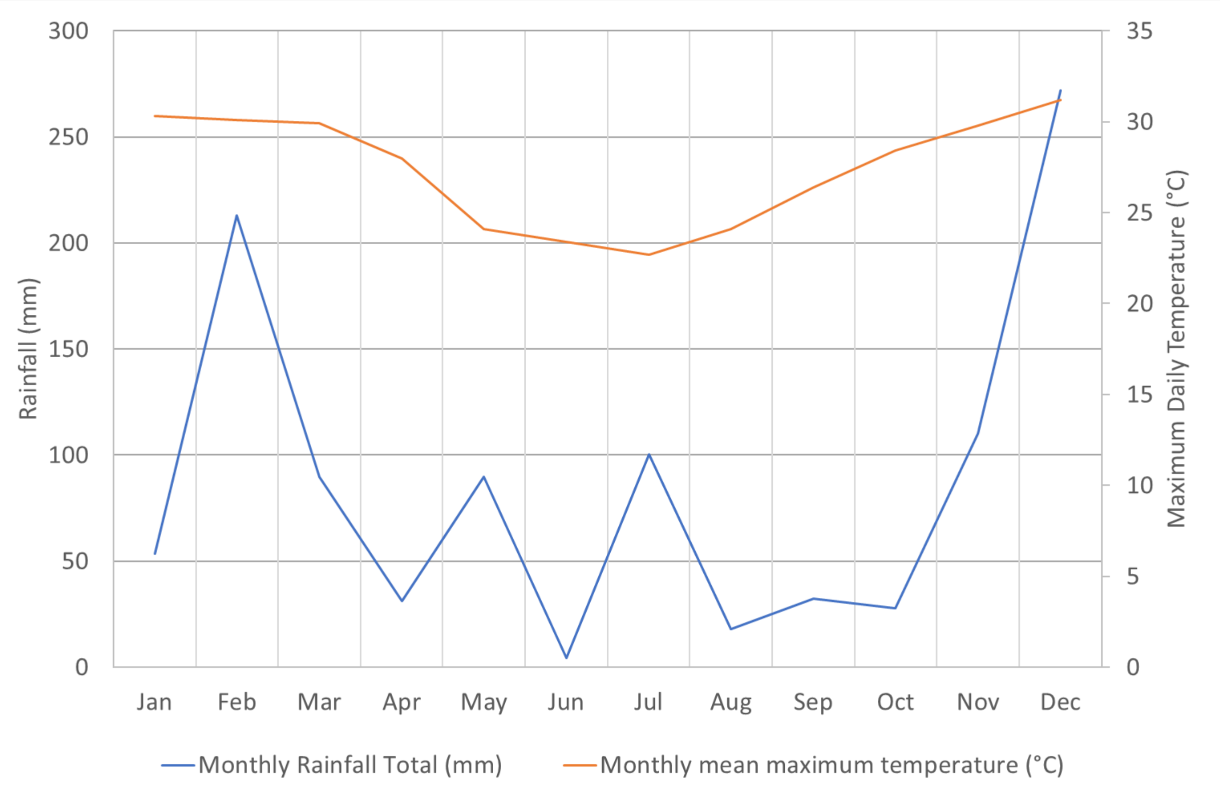
The infrastructure projects are considered unlikely to have disturbed or excavated PFAS-contaminated soil as there are no known on or off-Base PFAS in soils source areas. The infrastructure projects are unlikely to have affected groundwater or surface water results.

5.3 Weather Conditions in 2023

Chart 1 presents rainfall and temperature data recorded at the weather station at Tin Can Bay (Defence) (Station ID 140010). During 2023, there was a total of 1041.2 mm of rainfall at this weather station. This is approximately 28% lower than the mean rainfall for this area, which is 1,457.9 mm based on the 1992 to 2023 dataset from Rainbow Beach weather station (040856) located 9.1 km away (Bureau of Meteorology, 2023)[1]. The drier weather during 2023 has the potential to decrease surface water flow conditions.

[1] The weather station at WBTA (140010) is relatively new and only has data for the period 2018 to 2023, therefore the mean rainfall for Rainbow Beach has been used for comparison.

Chart 1 Monthly Rainfall and Mean Maximum Temperature at Station 140010 during 2023



6.0 Monitoring Data Summary

6.1 Groundwater

6.1.1 Groundwater Elevations

All wells (except one) are located in the southwestern portion of the MA within, or near, Camp Kerr where the ground elevation ranges between approximately 65 mAHD and 79 mAHD. Monitoring well MW109, located on the southeastern boundary of the MA in the coastal plain, has a ground elevation of 9.2 mAHD.

Groundwater elevations calculated from the monitoring well gauging for each sampling event are summarised in **Table 3** below. The range in groundwater elevations in the shallow sandstone aquifer in the April and October / November 2023 sampling events were similar.

Table 3 Depth to Groundwater and Groundwater Elevation

Date	Number of wells	Range in hydraulic head (mAHD)
April 2023	16	58.858 to 73.418 mAHD at wells at or near Camp Kerr including MW106. 8.372 mAHD at MW109.
October / November 2023	16	56.974 to 70.742 m AHD at wells at or near Camp Kerr including MW106. 6.636 m AHD at MW109.

Depth to water is not able to be measured from the two extraction bores (POT001 and POT005) due to the presence of pumping infrastructure.

6.1.2 Groundwater Flow Directions

Inferred groundwater contour maps for WBTA for the April 2023 and October / November 2023 monitoring periods are presented in **Figure 4** and **Figure 5**, respectively, in **Appendix A**. Groundwater flow at Camp Kerr, located in the southeastern portion of the Base, is inferred to be radial. Groundwater flow direction is discussed further in **Section 7.1**. The inferred flow directions in 2023 are consistent with previous sampling events since 2019.

Due to the removal of monitoring locations from the program, there is only one well in the southeastern portion of the MA, which is at a much lower elevation. Previous monitoring events (AECOM, 2023c) identified that regional groundwater flow is from west to north-east towards Tin Can Inlet.

6.1.3 Groundwater Quality Parameter Field Measurements

A summary of the groundwater quality parameters, measured in the shallow sandstone aquifer, at WBTA in April and October / November 2023, is presented in **Table 4**. Results are also presented in **Table T1**, **Appendix B**. The groundwater was generally clear with no odours or sheens observed in any wells. Groundwater quality parameters recorded during the two sampling events are similar. The only minor difference was that the groundwater in October / November 2023 was slightly more reducing compared to the April 2023 sampling event.

Table 4 Water Quality Parameter Field Measurements in Groundwater from the 2023 Sampling Events

Field Parameter		Number of wells / bores	Minimum	Maximum	Mean
DO (mg/L)	April-23	18	0.61	3.43	1.48
	Oct / Nov-23	18	0.63	3.27	1.89
EC (µS/cm)	April-23	18	15.2	498.0	212.9
	Oct / Nov-23	18	50.6	1549.0	263.3
pH	April-23	18	4.20	6.91	5.37
	Oct / Nov-23	18	4.44	6.90	5.34
ORP (mV)	April-23	18	265.0	340.2	301.0
	Oct / Nov-23	18	-10.9	372.8	178.8
Temp (°C)	April-23	18	20.6	27.2	24.4
	Oct / Nov-23	18	21.8	38.1	25.2

Note: DO is dissolved oxygen, EC is electrical conductivity, ORP is oxidation reduction potential, Temp is temperature.

Based on the mean groundwater parameter results over the sampling period, the aquifer unit at WBTA can be characterised as slightly acidic, mildly oxygenated, mildly to moderately reducing and fresh.

6.2 Groundwater Analytical Results

The groundwater laboratory PFAS analytical results are presented in **Table T2** in **Appendix B**. **Table 5** summarises the 2023 laboratory results for PFAS in groundwater. Groundwater sample results for sum of PFHxS and PFOS in groundwater in 2023 are presented in the following figures:

- **Figure 6A Appendix A** for April 2023 for MA
- **Figure 6B Appendix A** for April 2023 for Camp Kerr
- **Figure 7A Appendix A** for October / November 2023 for MA
- **Figure 7B Appendix A** for October / November 2023 for Camp Kerr

As PFOA was not detected in any of the groundwater samples in 2023, no figures showing PFOA results have been included.

There were no first-time detections or new exceedances of guideline values in groundwater samples collected in April and October / November 2023 and results are consistent with historical data. The interpretation of the results is discussed in **Section 7.2**.

Table 5 Summary of PFAS in Groundwater in 2023

Event	No. of Locations Analysed	Compound	Concentration Range (µg/L)	No. of Sample Locations >LOR	First-time detections	New exceedance of drinking water guidelines	New minimum	New maximum
April 2023	18	PFOS	<0.01 – 0.05	3	None	None	None	None
		PFOA	<0.01	0	None	None	None	None
		PFOS+ PFHxS	<0.01 – 0.2	5	None	None	None	None
October / November 2023	18	PFOS	<0.01 – 0.04	3	None	None	None	None
		PFOA	<0.01	0	None	None	None	None
		PFOS+ PFHxS	<0.01 – 0.15	4	None	None	None	None

6.3 Surface Water Results

6.3.1 Surface Water Quality Parameter Field Measurement

Water quality parameters, measured prior to collecting surface water samples, are presented in **Table T3**, **Appendix B** and in the sampling event factual reports (**Appendix D**) and are summarised in **Table 6** (for April 2023) and **Table 7** (for October / November 2023).

Table 6 Summary of Surface Water Quality Parameter Field Measurement Results: April 2023

Parameter	Units	April 2023 Estuarine location (1 sample at SW013)	April 2023 Freshwater locations (11 samples from other locations)	
			Range	Mean
pH	-	6.99	5.45 – 7.16	6.10
Temperature	ºC	29.3	21.1 – 27.1	23.6
DO	mg/L	3.91	0.43 – 6.96	2.61
ORP	mV	335	241 – 302	279
EC	µS/cm	45,517	66.7 – 444	190

Table 7 Summary of Surface Water Quality Parameter Field Measurement Results: October / November 2023

Parameter	Units	October / November 2023 Estuarine location (1 sample from SW013)	October / November 2023 Freshwater locations (10 samples from other locations)	
			Range	Mean
pH	-	7.37	5.71 – 6.97	6.30
Temperature	ºC	26.5	21.3 – 29.0	25.4
DO	mg/L	3.75	1.09 – 5.61	3.38
ORP	mV	363	70.7 – 325	209
EC	µS/cm	58,560	88.4 – 308	195

Based on the averaged results the freshwater can be characterised as near neutral, moderately oxygenated, mildly reducing and fresh. The estuarine water is similar with the exception of being saline. These results are consistent with previous results (AECOM, 2020, AECOM 2022a, AECOM, 2023c).

6.3.2 Surface Water Observations

Observations recorded during sample collection are presented in **Table T3**, **Appendix A.** No odours or sheens were observed. Flow observations at overland flow locations (SW019, SW025, SW027) and drain sampling locations (SW017, SW018) are summarised in **Table 8**. Refer to **Figure 3**, **Appendix A** for sampling locations. Flowing water was present at creek sampling locations (SW004, SW005, SW006, SW007, SW008, SW009, SW012, SW013, SW014 and SW016), refer to **Figure 2, Appendix A** for sampling locations. Still water was present at dam sampling locations (SW021, SW022, SW023).

Table 8 Summary of Surface Water Flow Observations

Sampling Event	Sampling Location	Observation
April 2023	SW017	No water present.
	SW018	No water present.
	SW019	Pooled water was present.
	SW025	Water was flowing through the drainage channel from the dam into the waterway.
	SW027	Water was flowing through the channel.
October / November 2023	SW017	No water present.
	SW018	No water present.
	SW019	No water present.
	SW025	Water was flowing through the drainage channel from the dam into the waterway.
	SW027	Pooled water was present. When precipitation events occur, the water drains through a pipe under Clyde Road and into a dam on 17 Clyde Road.

6.3.3 Surface Water Analytical Results

Surface water analytical results are presented in **Table T4** in **Appendix B.** Monitoring activities are summarised in the sampling event factual reports in **Appendix D**. Surface water results for sum of PFHxS and PFOS are presented in **Figure 6A** and **B**, **Appendix A** for April 2023 for Greater WBTA and Camp Kerr, respectively, and **Figure 7A** and **B** for October / November 2023. Note that surface water sampling locations SW021 to SW023 are not shown on these plans for privacy reasons.

A summary of surface water analytical results is provided in **Table 9** below. There were no first-time detections or new exceedances of guideline values in surface water samples collected in April and October / November 2023.

Table 9 Summary of PFAS in Surface Water in 2023

Event	No. of Samples	Compound	Concentration Range (µg/L)	No. of Sample Locations with > LOR	New maximum (µg/L)
April 2023	12	PFOS	<LOR – 0.0698	7	0.0698 µg/L (SW019)
		PFOA	<LOR – 0.0014	1	None
		PFOS+PFHxS	<LOR – 0.161	9	0.161 µg/L (SW019) 0.0309 µg/L (SW027)
October / November 2023	11	PFOS	<LOR – 0.0031	2	None
		PFOA	<LOR	0	None
		PFOS+PFHxS	<LOR– 0.0031	5	None

New maximum sum of PFHxS and PFOS concentrations were recorded in April 2023 at SW019 and SW027. There were no new maximum concentrations recorded in October / November 2023. Overall, the 2023 dataset is generally consistent with historical data. The interpretation of the results is discussed in **Section 7.4**.

6.4 Sediment Analytical Results

PFAS were not detected in any sediment sample collected and analysed during the April 2023 sampling event except for two locations SD018 and SD019, refer to **Table T5**, **Appendix B**. A summary of the results is presented in **Table 10**. Location SD018 detected PFHxA at a concentration (0.0003 mg/kg) slightly above the laboratory LOR. Location SD019 detected concentrations of PFHxS (0.0005 mg/kg) and PFOS (0.0032 mg/kg) above the laboratory LOR, which were new maximum concentrations. Sum of PFHxS and PFOS concentrations in sediment samples in April 2023 are presented in **Figure 8**, **Appendix A**. PFAS has been historically detected at both SD018 and SD019.

Table 10 Summary of PFAS in Sediment in 2023

Event	No. of Samples	Compound	Concentration Range (µg/L)	No. of Sample Locations with > LOR	New maximum (µg/L)
April 2023	14	PFOS	<LOR – 0.0032	1	0.0032 mg/kg (SD019)
		PFOA	<LOR	0	None
		PFOS+PFHxS	<LOR – 0.0037	1	0.0037 mg/kg (SD019)
		PFHxA	<LOR – 0.0004	1	0.0004 mg/kg

6.5 Wastewater Results

6.5.1 Wastewater Quality Parameter Field Measurement

Wastewater quality parameters were measured prior to collecting samples. The readings from the April and October / November 2023 sampling events are presented in the sampling event factual reports (**Appendix D**) and in **Table T6**, **Appendix B**. A summary of the water quality parameters in the sampling events is presented in **Table 11**.

Table 11 Summary of Wastewater Quality Parameter Field Measurement Results: April and October / November 2023

Parameter	Units	April 2023	October / November 2023
pH	-	7.02	7.18
Temperature	ºC	22.1	38.0
DO	mg/L	3.57	2.20
ORP	mV	301	85.3
EC	µS/cm	502	464

Based on the results the wastewater can be characterised as near neutral, moderately oxygenated, mildly to moderately reducing and fresh. These results are consistent with previous results (AECOM, 2020, AECOM 2022a, AECOM, 2023c).

6.5.2 Wastewater Analytical Results

Wastewater analytical results are presented in **Table T7** in **Appendix B** and monitoring activities are summarised in the sampling event factual reports in **Appendix D**. A summary of wastewater analytical results is provided in **Table 12** below.

Table 12 Summary of PFAS in Wastewater in 2023

Event	No. of samples	Compound	Concentration (mg/kg)	Locations with > LOR	New minimum	New maximum
April 2023	1	PFOS	<0.01	0	None	None
		PFOA	<0.01	0	None	None
		PFOS+PFHxS	0.02	1	None	None
October / November 2023	1	PFOS	<0.01	0	None	None
		PFOA	<0.01	0	None	None
		PFOS+PFHxS	<0.01	0	None	None

Overall, the 2023 dataset was consistent with historical data. No new minimum or maximum concentrations were recorded.

7.0 Discussion / Interpretive Analysis

7.1 Hydrogeology

The majority of monitoring wells sampled were located in the southwestern portion of the Base within, or close to, Camp Kerr. One monitoring well was located adjacent to Snapper Creek / Tin Can Inlet (WBTA's eastern boundary).

The inferred groundwater flow directions for the Camp Kerr area in April 2023 and October / November 2023 were consistent with the previously inferred groundwater flow directions (AECOM, 2020, AECOM 2022a, AECOM, 2023c). Previous monitoring events (AECOM, 2023c) identified that regional groundwater flow is from west to north-east towards Tin Can Inlet.

The groundwater elevation data indicates a groundwater divide situated in the centre of Camp Kerr that affects the local groundwater flow directions. The divide is likely to reflect the topography of the area with Camp Kerr located at a topographic high point. Groundwater flow in the eastern portion of Camp Kerr (i.e. in the vicinity of the caretaker's residence) has been inferred to be towards the east (i.e. on-Base). Groundwater in the western portion of Camp Kerr (i.e. around the WWTP and POL) appears to flow to the west or south-west towards Wallu. This indicates that the township of Wallu is hydraulically down-gradient of the western portion of the Camp Kerr. Local groundwater flow in the southern portion of Camp Kerr is inferred to be towards the south.

7.2 Groundwater Results

PFAS concentrations in 2023 were generally similar to previous (historical) results presented in the DSI (AECOM, 2020) and monitoring results from 2020 to 2022 (AECOM, 2022a, AECOM, 2023c). Sum of PFHxS and PFOS in groundwater in 2023 are shown in **Figure 6A** and **B** and **Figure 7A** and **B** in **Appendix A**. The groundwater results have been broken down into the following four discrete areas for further discussion:

- Eastern portion of Camp Kerr
- Western portion of Camp Kerr
- Deeper extraction bores at Camp Kerr
- Remaining Base area.

7.2.1 Eastern Portion of Camp Kerr

Elevated PFAS concentrations were detected in groundwater in the eastern portion of Camp Kerr in the vicinity of the caretaker's residence with sum of PFHxS and PFOS concentrations exceeding the drinking water guideline value (HEPA, 2020) in two monitoring wells (MW121 and MW122) in both April and October / November 2023 sampling events. Sum of PFHxS and PFOS was not detected in any other monitoring well in the eastern portion of Camp Kerr. The non-detection of PFAS in monitoring wells down- and cross-gradient of MW121 and MW122 indicates the extent of PFAS in groundwater is localised, relatively stable and unlikely to be migrating off-Base. The potential for unacceptable off-Base risks to human health from localised PFAS concentrations in the eastern portion of Camp Kerr is considered low and the risk profile is unchanged.

The historical source of the PFAS in groundwater at this area is not known. The DSI (AECOM, 2020) identified one possible source to be the historical irrigation of treated water containing PFAS, from the WWTP. Water from the WWTP is irrigated to ground at three areas at Camp Kerr: a location adjacent to the WWTP and two areas close to the entrance road where MW121 and MW122 are located (refer to **Section 2.1**). During the monitoring period, analytical results from samples of treated water (OTH001) indicated PFOS or PFHxS concentrations close to, or below, the limit of reporting. The results do not indicate a significant source of PFHxS and PFOS is present in the water irrigated to ground.

7.2.2 Western Portion of Camp Kerr

PFAS were not detected in groundwater in the western portion of Camp Kerr. Sum of PFHxS and PFOS in off-Base monitoring well MW118, located within the MA, to the south of Camp Kerr, was reported at 0.04 µg/L in both April 2023 and October / November 2023 sampling events. Since the first-time exceedance of the human health guideline values for drinking water (HEPA, 2020) in May 2022 at MW118, the results in October 2022 and both sampling events in 2023 have been consistent with historical results and below the drinking water guidelines. Therefore, there is no change in the risk profile.

PFAS were not detected in groundwater samples collected from off-Base wells (MW116 and MW117), located beyond the western Base boundary. PFAS has not been detected at these wells since their installation in 2019 indicating that PFAS in groundwater is not migrating off-Base to the west towards Wallu.

As PFAS was not detected in groundwater in the monitoring wells between Camp Kerr and Wallu or in wells located along the western Base boundary in Camp Kerr, the off-Base risk to human health from the detections of PFAS at MW118 remains low and the risk profile is unchanged.

7.2.3 Deeper Extraction Bores at Camp Kerr

Two on-Base water supply bores were sampled. Bore 1 (POT001) is screened between 18 and 78.4 mbgl and Bore 2 (POT005) is screened between 30 and 51.5 mbgl. PFAS were detected in groundwater from both bores in 2023. PFHxS was detected in POT001 at 0.03 µg/L in both April and October / November 2023 events and in POT005 in April 2023 (at 0.01 µg/L). Historically, PFAS have been detected at various times in both wells since 2018 at concentrations close to the limit of reporting. This indicates residual PFAS concentrations are present in the aquifer at these locations. Due to the length of the screened section in Bore 1, there is the potential for different sections of the aquifer to be connected or connection between different aquifers, if present. There is no change to the risk profile.

7.2.4 Remaining Base Area

PFAS were not detected in groundwater samples from monitoring well MW109 located in the southeastern portion of the MA or monitoring well MW106 located in the southern central area of the Base. This is consistent with previous results and indicates source areas of PFAS are unlikely to be present in these areas.

7.3 Groundwater Temporal Analysis

A graph showing the historical results for sum of PFHxS and PFOS in groundwater from selected monitoring wells from the Camp Kerr area and the southeastern portion of the MA is shown in **Chart 1**. The graph includes all monitoring wells that have recorded detectable concentrations of PFAS since monitoring commenced in 2018. The graph indicates groundwater concentrations show steady or slightly decreasing concentrations, which suggests ongoing attenuation of PFAS concentrations.

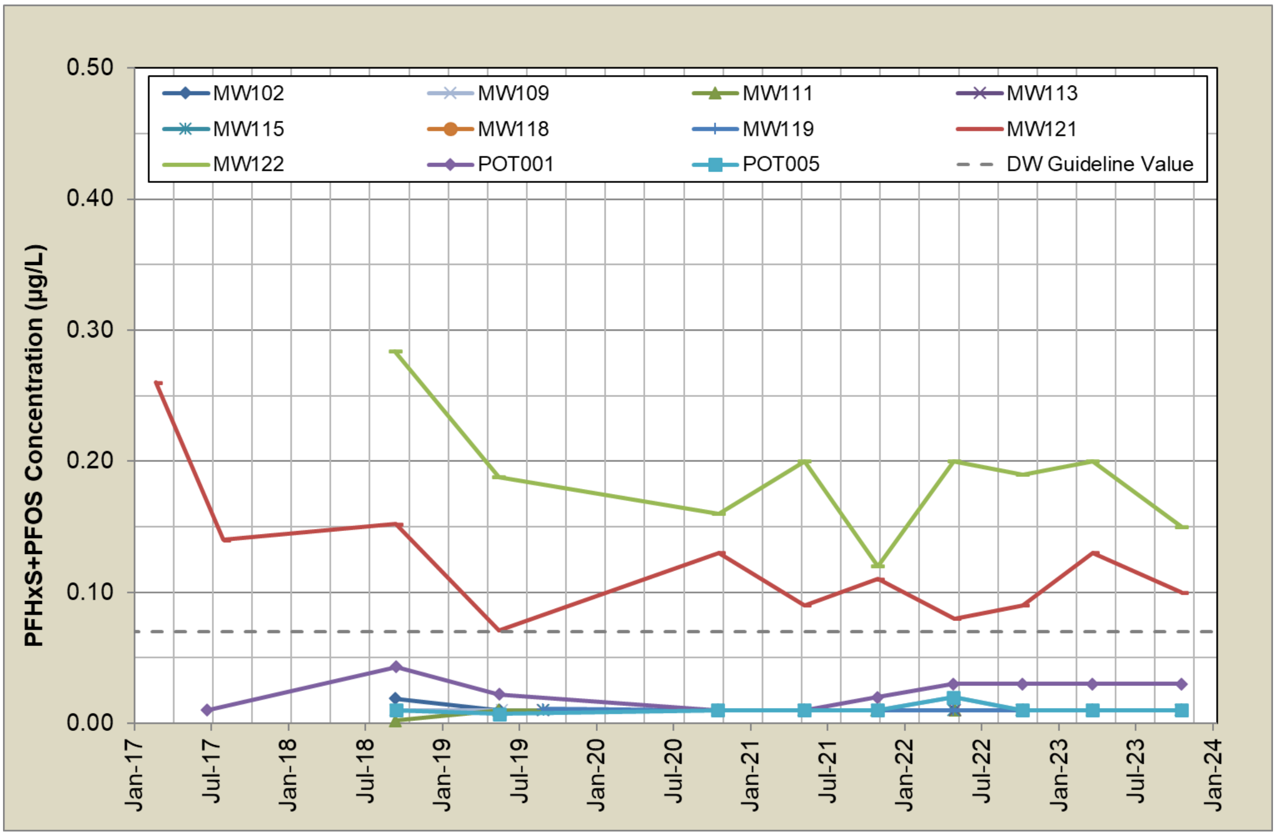


Chart 2 **Sum of PFHxS and PFOS in selected monitoring wells: 2017 to 2023**

7.4 Surface Water Results

Surface water results for sum of PFHxS and PFOS in April 2023 and October / November 2023 are provided in **Figure 6A** and **B** and **Figure 7A** and **B**, respectively, in **Appendix A**.

7.4.1 Drainage features around Camp Kerr

Two drainage features were sampled during the monitoring events including:

- Ponded water and sediment along the perimeter track immediately adjacent to the Base's western boundary (SW019/SD019) sampled in April 2023 and was dry in October / November 2023 event. The water in April 2023 event was considered likely to be sourced from overland flow from Camp Kerr.
- Ponded water and sediment at an off-Base sampling location adjacent to Clyde Road at the base of the slope prior to the water discharging into a private dam (SW027/SD027).

PFAS has been consistently detected at the on-Base ponded water sample location SW019, located along the western Base boundary perimeter track. A new maximum concentration of sum of PFHxS and PFOS was detected in the April 2023 event (0.161 µg/L) which was in the same order of magnitude as the historical concentration of 0.116 µg/L, recorded in 2019. A sample was not collected from SW019 in October / November 2023 as no water was present.

Sampling location, SW027, is downstream of SW019. PFAS was detected in April 2023 (0.031 µg/L sum of PFHxS and PFOS) but PFAS were not detected above the LOR in November 2023. The sum of PFHxS and PFOS concentration detected in April 2023 was a new maximum and correlates with the new maximum detected in upstream location, SW019. The detection of PFAS in ponded water at SW019 and SW027 indicates the potential presence of an overland flow pathway for the migration of PFAS from Camp Kerr to beyond the western Base boundary during precipitation events.

The new maximum concentration of sum of PFHxS and PFOS at SW027 in April 2023 is consistent with and in the same order of magnitude as the historical concentration of 0.0202 µg/L, recorded in 2021.

On-Base stormwater channel locations (SW017 and SW018) were dry during both the 2023 events and were not sampled. Historically, PFAS has not been detected in surface water samples from either location since May 2021.

7.4.2 Surface Water Bodies in Wallu

During the monitoring period, PFAS were detected in three surface water samples (SW021 to SW023) collected from two off-Base private dams in the eastern portion of Wallu (i.e. west of Camp Kerr) and in the surface water sample collected from the ephemeral waterway (SW025), which is connected to, and drains some of the dams. Similar sum of PFHxS and PFOS concentrations were detected, in the range <0.001 to 0.0047 µg/L.

Historically, PFAS have been infrequently detected in water from the off-Base private dams and SW025, which indicates a potential PFAS migration pathway from the Base into off-Base surface water features. The possibility of unknown off-Base sources affecting off-Base areas (e.g. use of foam for bushfires) cannot be discounted.

7.4.3 Creeks on the Base

Sampling locations SW013, SW014 and SW016 are located along a tributary of Snapper Creek upstream of the Ramsar area and are representative of water entering the Ramsar area from the Base. Detected concentrations of PFOS at these sampling locations in the 2023 events ranged from <0.0003 µg/L to 0.0011 µg/L. These concentrations in SW014 (0.0008 µg/L) and SW016 (0.0011 µg/L) slightly exceeded the HEPA (2020) ecological guideline value for 99% species protection (0.00023 µg/L).

SW006, located along Kangaroo Creek detected PFHxS in both the 2023 sampling events, while SW007 and SW009, also located along Kangaroo Creek reported concentrations of all PFAS below the laboratory LOR. The concentration of PFHxS at SW006 was consistent with historical concentrations.

The detectable PFAS concentrations in Snapper Creek (SW013, SW014 and SW016) may indicate the potential for relatively minor source(s) of PFAS in the eastern portion of the Base, however no primary sources of PFAS have been identified in these areas. The presence of off-Base PFAS sources near Tin Can Bay including the waste transfer station, sewage treatment works and fire station, which are located on the eastern side of Snapper Creek, have the potential to contribute PFAS to the environment in the estuarine Snapper Creek system (at SW013 and SW014) and the Ramsar area.

7.5 Surface water - Temporal Trends

Chart 3 shows the change in sum of PFHxS and PFOS concentration in surface water in the on-Base drainage features, on-Base creeks and off-Base dams and waterways. Only sampling locations that have recorded one or more detectable concentration have been included[2]. Overall, sum of PFHxS and PFOS concentrations are steady to decreasing. Higher variability is present at SW019, which is a sampling location of ponded water along the western Base boundary with lower sum of PFHxS and PFOS concentrations detected from 2020 to 2022 compared to 2019 and 2023. There does not appear to be any seasonal changes or changes in response to rainfall in the dataset. Higher variability would be expected to occur in pooled water compared to flowing water due to the potential for accumulation of PFAS in stagnant water.

[2] As discussed in the DSI (AECOM, 2020), PFAS concentrations reported in a monitoring event conducted in March 2017 by a Defence contractor (Golder, 2017) have been discounted as they are considered anomalous and not representative of PFAS concentrations. Only results obtained during the environmental investigations (AECOM, 2019, AECOM, 2020) and OMP sampling events (AECOM, 2021b,c) have been considered.

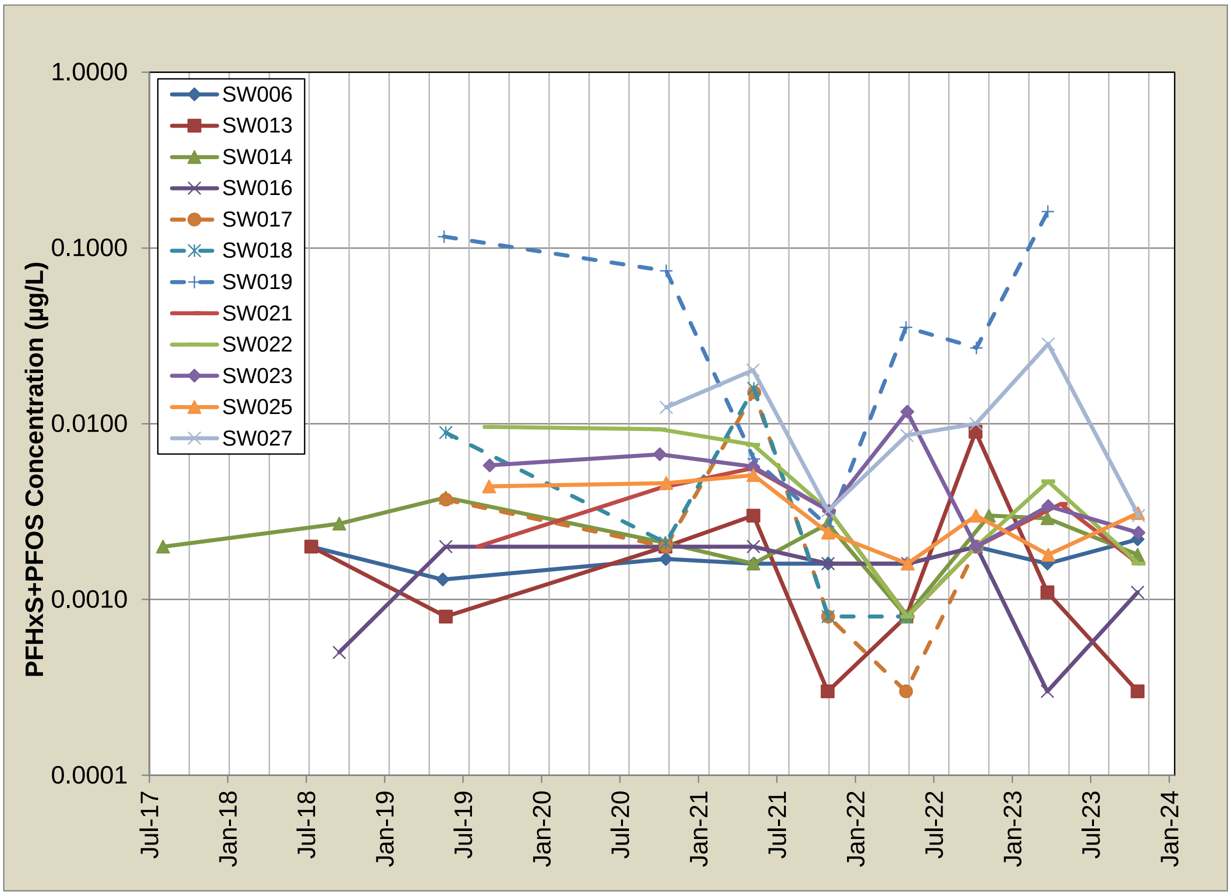


Chart 3 Sum of PFHxS and PFOS in selected sampling locations: 2017 to 2023

All sum of PFHxS and PFOS concentrations are more than one order of magnitude below the recreational water guideline value (HEPA, 2020) indicating there are no unacceptable risks to human health. The ecological guideline value for PFOS for the protection freshwater species was exceeded in seven surface water samples as follows:

- SW014 and SW016 (Snapper Creek)
- SW021, SW022 and SW023 (private dam in Wallu)
- SW019 and SW027 (overland flow locations)

As results are within, or close to, the historical range at these locations, there is no change to the risk profile.

7.6 Sediment Results

For the period from 2017 to 2023, eight sediment samples out of a total of 72 samples analysed have reported detectable concentrations of PFHxS and PFOS. A summary of sum of PFHxS and PFOS results for the different surface water features for the period 2018 to 2023 is shown in **Table 13**.

Table 13 Summary of Sediment Results: 2017 to 2023

Location	2017 to 2023		Number of samples exceeding the limit of reporting
	Sample numbers	Range of sum of PFHxS+PFOS (mg/kg)	
On-Base Drainage Channels (Camp Kerr)	10	<0.0002 to 0.0037	2
Off-Base dams/waterways	17	<0.0002 to 0.0012	4
On-Base Creeks	45	<0.002 to 0.0003	2

The rare detection of PFAS in sediment samples reflect the low PFAS concentrations detected in surface water samples. The new maximum sum of PFHxS and PFOS concentrations detected in SD019 in April 2023 corresponds with the occurrence of a new maximum sum of PFHxS and PFOS detected in the co-located surface sample (SW019) during the same monitoring event. No guideline values are available for sediment, but the frequent non-detection of PFAS suggests a low risk to freshwater ecosystems.

8.0 Discussion

8.1 Conceptual Site Model

The CSM was developed during the investigation stages (AECOM, 2020) and summarises the linkages between the sources, exposure pathways and receptors.

The seven OMP sampling events completed since the DSI have provided additional data to further understand the changing PFAS in groundwater conditions (concentration and shape) of the area of groundwater impacted by PFAS within the WBTA MA.

The data presented in this report on the primary and secondary PFAS sources, pathways and receptors does not change the understanding of the CSM and therefore no updates to the CSM are required. Future monitoring will be used to re-evaluate and identify potential changes to the CSM understanding as more data becomes available.

8.2 Risk Profile

The data collected to date suggest that the risk profile to human health within the WBTA MA is unchanged, based on the following conclusions of the data assessment:

- The extent of PFAS in groundwater is similar to that presented in the DSI (AECOM, 2020).There were no first-time detections or new exceedances of the groundwater human health guideline values (HEPA, 2020).
- PFAS concentrations from surface water samples were generally similar to previous (historical) results. There were no first-time PFAS detections or new exceedances of human health or ecological values guideline (HEPA, 2020) in surface water samples during 2023.
- PFAS were not detected at concentrations exceeding the laboratory limit of reporting in sediment samples collected from sampling locations in the MA in 2023 except for locations SD018 and SD019 which have previously detected PFAS at similar concentrations.

Based on the data, AECOM considers that the conclusions made regarding risk in the DSI (AECOM, 2020) are unchanged.

9.0 Conclusions

Groundwater, surface water and sediment sampling was completed as part of the OMP between April and November 2023.

Concentrations of PFAS in groundwater were consistent with historical results. In particular:

- In the eastern portion of Camp Kerr, elevated PFAS concentrations (exceeding human health guideline values [HEPA, 2020)) were detected at two monitoring wells (MW121 and MW122) close to the Base entrance road. The non-detection of PFAS in monitoring wells down- and cross-gradient of MW121 and MW122 indicates the extent of PFAS in groundwater is localised and that the PFAS concentrations are stable and unlikely to be migrating off-Base.
- In the western portion of Camp Kerr, the non-detection of PFAS in wells on-Base and off-Base beyond the western Base boundary shows that PFAS is not migrating in groundwater to the west towards Wallu. PFAS have been consistently detected in an off-Base monitoring well adjacent to the southern boundary (MW118). In 2023, concentrations of sum of PFHxS and PFOS did not exceed the drinking water guideline value (HEPA, 2020) and were within the historical range. Overall, the results do not indicate the risk profile has changed.
- Following the optimisation of the monitoring program in February 2023, only two groundwater monitoring wells are sampled outside of the Camp Kerr area. Both are located in the southern portion of the WBTA MA with one located near landfilling areas and the other down-gradient of the Multi User Firing Point. PFAS were not detected at either location in 2023 indicating source areas of PFAS are unlikely to be present in these areas.

Concentrations of PFAS in surface water and sediment were generally consistent with historical results. The key conclusions are as follows:

- In the Camp Kerr and Wallu area, PFAS were detected in on-Base drainage features and off-Base dams and ephemeral watercourses indicating a line of evidence for the presence of an overland flow pathway for PFAS in surface water on-Base to migrate to surface features in Wallu. Concentrations detected during the monitoring period did not exceed human health guideline values (HEPA, 2020) and therefore the results do not indicate the risk profile has changed.
- A new maximum sum of PFHxS and PFOS concentrations was recorded at SW019 in April 2023 (0.161 µg/L), which monitors water flowing overland along the western Base boundary near Camp Kerr. The concentration was slightly higher than the previous maximum concentration (0.116 µg/L in May 2019). A new maximum of sum of PFHxS and PFOS was detected in the downstream sample SW027 in April 2023, which suggests that PFAS detected at SW027 is transported in water overland from SW019. In October / November 2023 surface water was not present at SW019 and PFAS were not detected in the downstream surface water sample SW027. The source of PFAS at SW019 is likely to be from overland flow from Camp Kerr, although the exact source is not known.
- Two surface water samples collected from a tributary of Snapper Creek in the southeastern portion of the Base reported detectable concentrations of PFOS in the monitoring period, which exceeded the ecological guideline for freshwater 99% species protection (HEPA, 2020). These concentrations may indicate the potential for relatively minor source(s) of PFAS in the eastern portion of the Base. The presence of potential off-Base PFAS sources near Tin Can Bay including the waste transfer station, sewage treatment works and fire station, which are located to the east of the eastern Base boundary are considered to have the potential to contribute PFAS to the environment in the estuarine Snapper Creek system and Ramsar area. Concentrations were consistent with historical results and do not indicate the risk profile has changed.
- With two exceptions, PFAS were not detected in sediment samples collected from the MA in 2023. The detectable PFAS concentrations in SD018 and SD019 were generally consistent with historical results.

The CSM for WBTA MA was reviewed and no changes were identified to sources, pathways or receptors. Based on the data, no changes to the risk profile are recommended.

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List of Appendices

Appendix A

Figures

Appendix A Figures

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 0.5 1 2 3

km

1:80,000 (when printed at A3)

LEGEND

- Watercourse
- Road
- Major Road
- ManagementArea
- WBTA Property Boundary

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

LOCATION OF WBTA AND MANAGEMENT AREA

Ongoing Monitoring Report 2023

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

1

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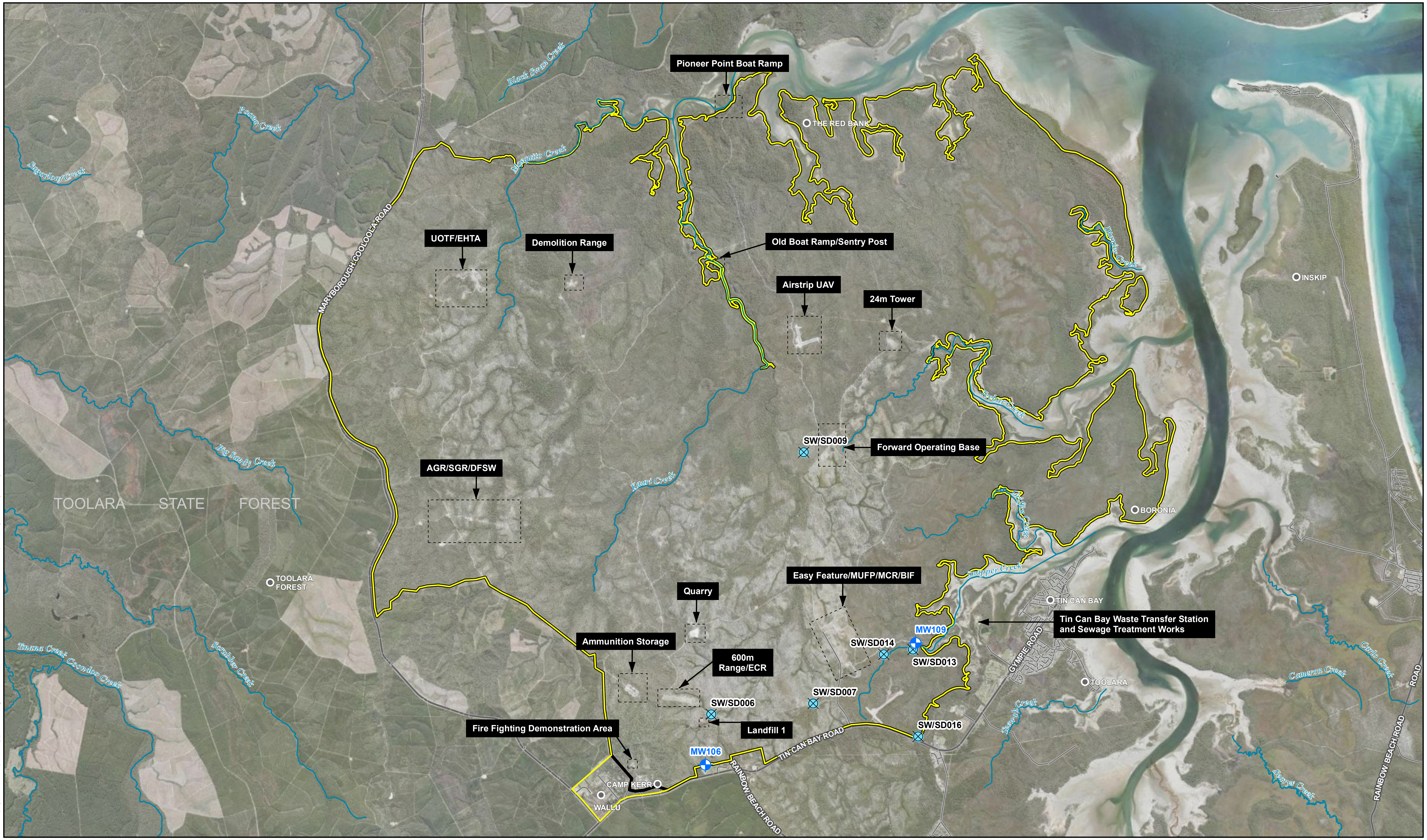

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 0.5 1 2 3

km

1:80,000 (when printed at A3)

LEGEND

- Groundwater sampling location
- Sediment / surface water sampling location
- Watercourse
- Road
- Major Road
- ManagementArea
- WBTA Property Boundary

UOTF - Urban Operations Training Facility
AGR - Assault Grenade Range
SGR - Standard Grenade Range
MUFP - Multi User Firing Point
MCR - Multi Classification Range
ECR - Electronic Classification Range
BIF - Battle Inoculation Facility
EHTA - Explosive Handling Training Area
UAV - Unmanned Aerial Vehicle

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SAMPLE LOCATIONS (GREATER WBTA)

Ongoing Monitoring Report 2023

PROJECT ID 60612563
CREATED BY PeacheyJ
LAST MODIFIED SCS- 25/06/21
VERSION: 1

Figure 2

A3 size

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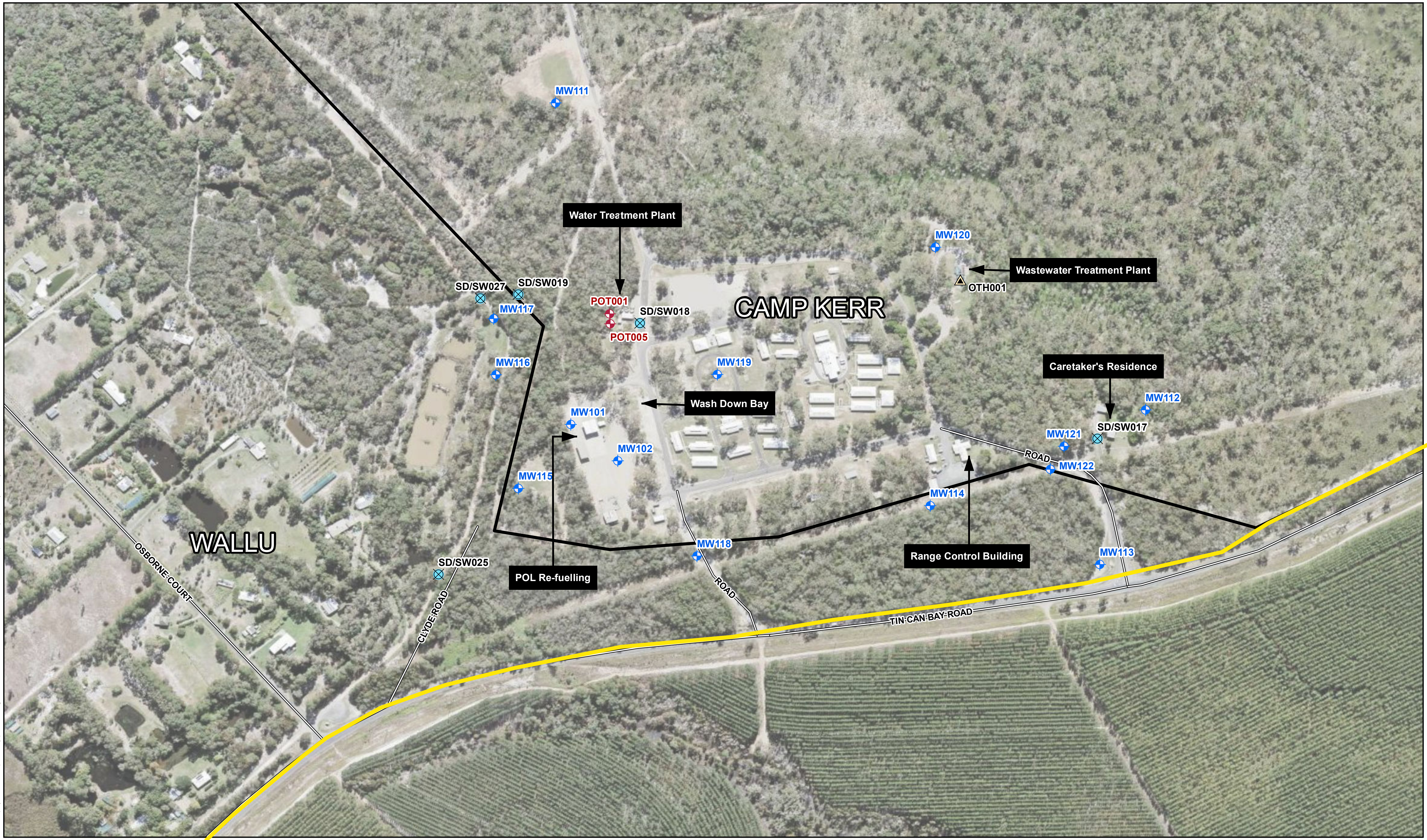

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 50 100 200

metres

1:4,500 (when printed at A3)

LEGEND

- Wastewater treatment plant sampling location
- Abstraction bore
- Groundwater sampling location
- Sediment / surface water sampling location
- Road
- WBTA Property Boundary
- WBTA Management Area

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SAMPLING LOCATIONS (CAMP KERR)

Ongoing Monitoring Report 2023

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

3

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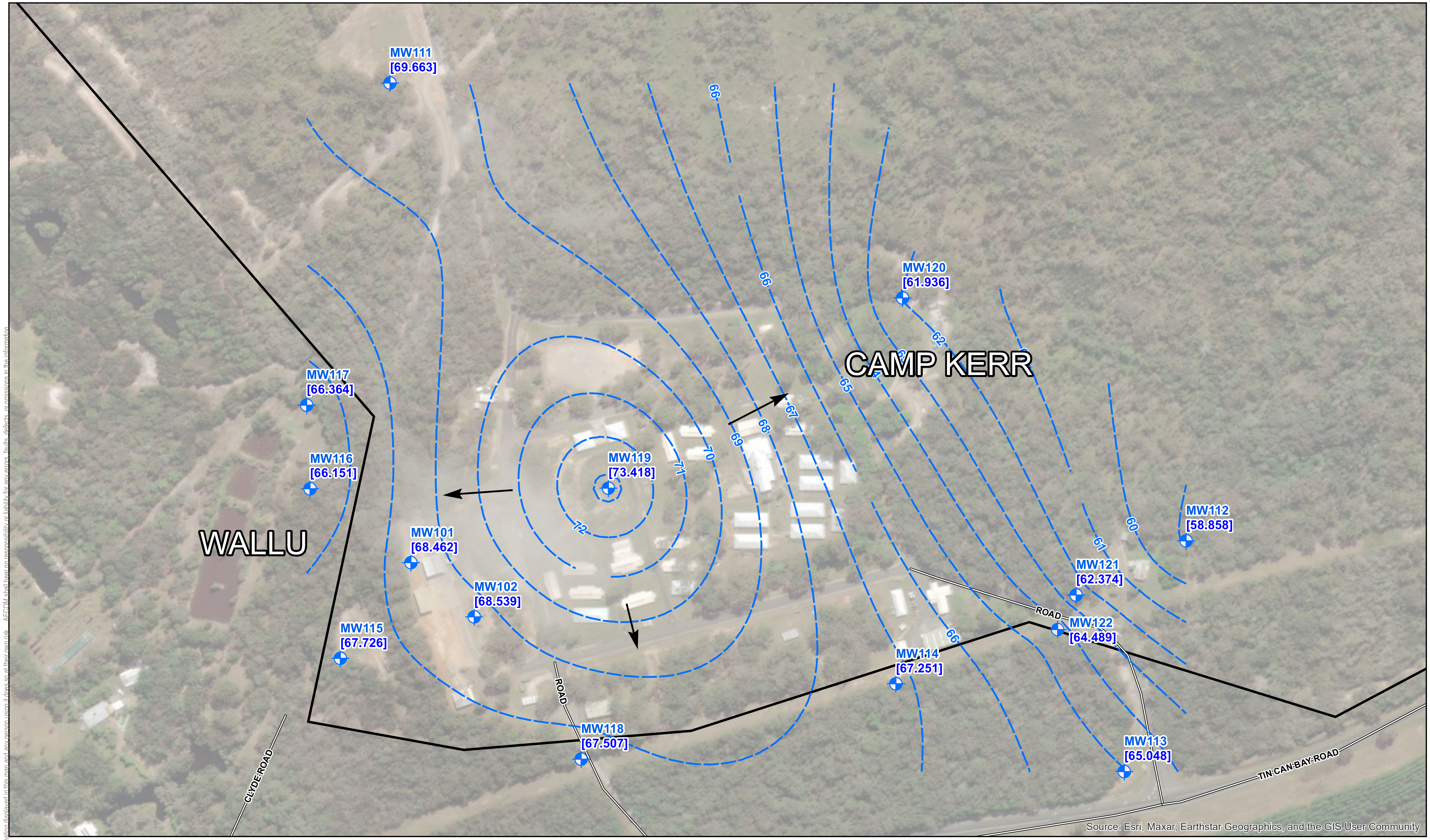

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DATUM GDA 1994, PROJECTION MGA ZONE XX

0 35 70 140

metres

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LEGEND

- Groundwater Elevation (mAHD)
- Inferred Groundwater Flow Direction
- Inferred Groundwater Contours (mAHD)
- WBTA Property Boundary

Data sources:

Base Data: (c) 20XX (data source) (additional data)

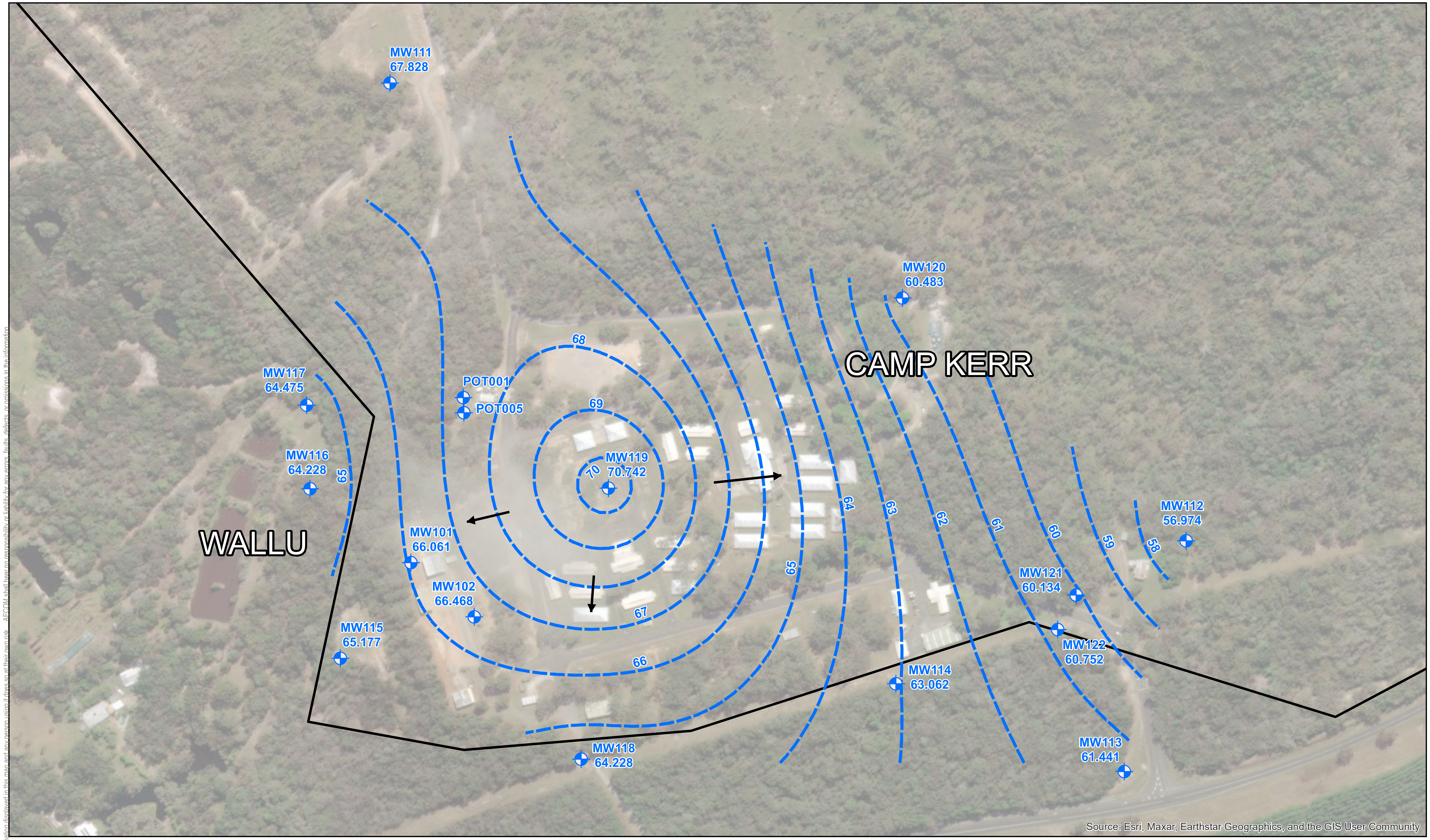
Wide Bay Training Area, Queensland

INFERRED GROUNDWATER CONTOURS (CAMP KERR) 5 MAY 2023

Ongoing Monitoring Report 2023

PROJECT ID	60612563
CREATED BY	ScottA3
LAST MODIFIED	SCS- 26/06/21
VERSION:	3

Figure 4



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N

DATUM GDA 1994, PROJECTION MGA ZONE XX

0 35 70 140
metres

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LEGEND

- Groundwater Elevation (mAHD)
- Inferred Groundwater Contours (mAHD)
- Inferred Groundwater Flow Direction
- WBTA Property Boundary

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

INFERRED GROUNDWATER CONTOURS (CAMP KERR) 30-31 Oct 2023

Ongoing Monitoring Report 2023

PROJECT ID	60612563
CREATED BY	ScottA3
LAST MODIFIED	SCS- 26/06/21
VERSION:	3

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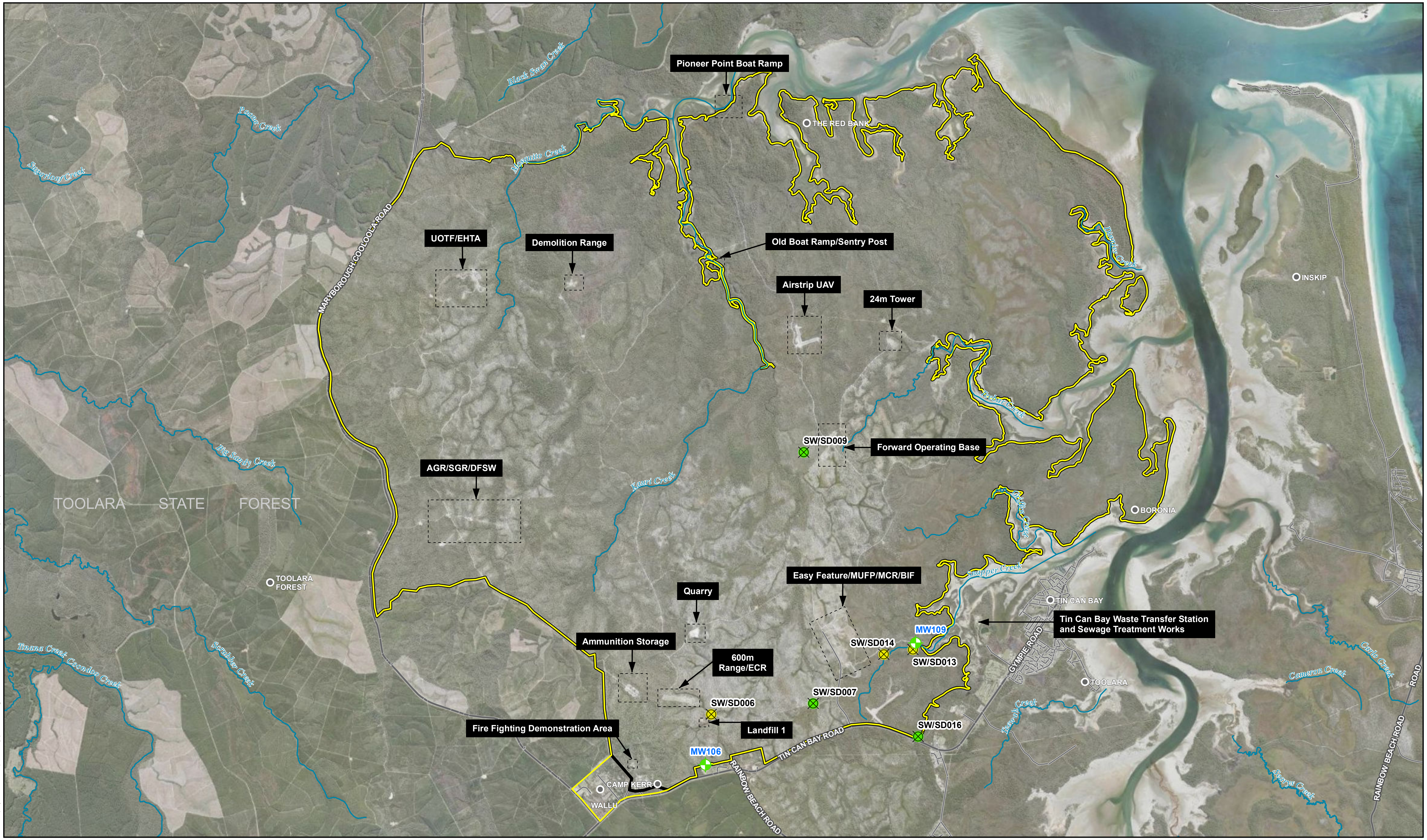

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 0.5 1 2 3

km

1:80,000 (when printed at A3)

LEGEND

- Groundwater sampling location
- Surface water sampling location
- Watercourse
- Road
- Major Road
- ManagementArea
- WBTA Property Boundary

Water Analytical Results Sum of PFHxS and PFOS (µg/L)

- >0.07
- LOR - 0.07
- <LOR
- Not sampled as dry

UOTF - Urban Operations Training Facility
AGR - Assault Grenade Range
SGR - Standard Grenade Range
MUFP - Multi User Firing Point
MCR - Multi Classification Range
ECR - Electronic Classification Range
BIF - Battle Inoculation Facility
EHTA - Explosive Handling Training Area
UAV - Unmanned Aerial Vehicle

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SUM OF PFHxS AND PFOS IN WATER APRIL 2023 (GREATER WBTA)

Ongoing Monitoring Report 2023

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

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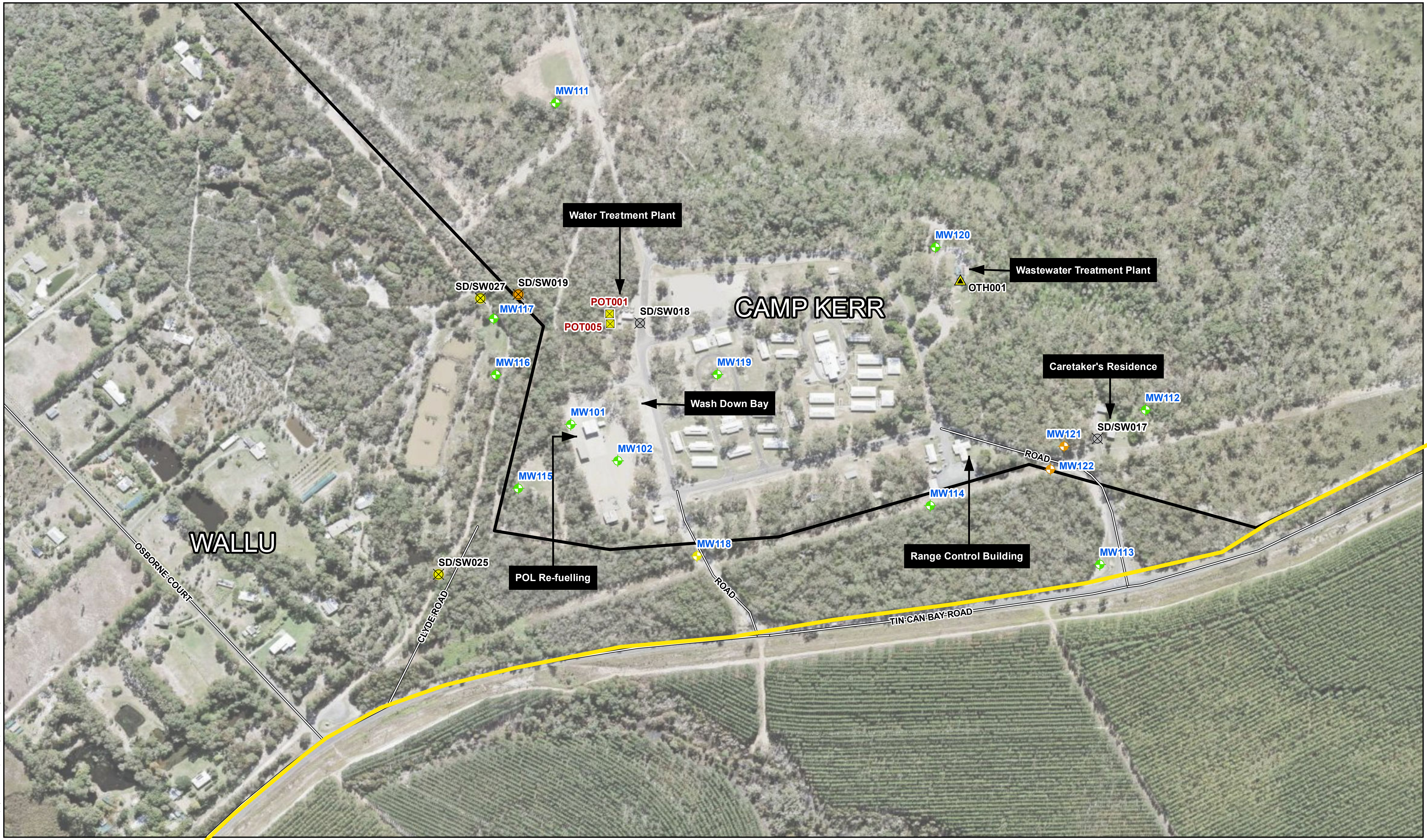

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 50 100 200

metres

1:4,500 (when printed at A3)

LEGEND

- Wastewater treatment plant sampling location
- Abstraction bore
- Groundwater sampling location
- Surface water sampling location
- Road
- WBTA Property Boundary
- WBTA Management Area

Water Analytical Results Sum of PFHxS and PFOS (µg/L)

- >0.07
- LOR - 0.07
- <LOR
- Not sampled as dry

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SUM OF PFHxS AND PFOS IN WATER APRIL 2023 (CAMP KERR)

Ongoing Monitoring Report 2023

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

6B

A3 size

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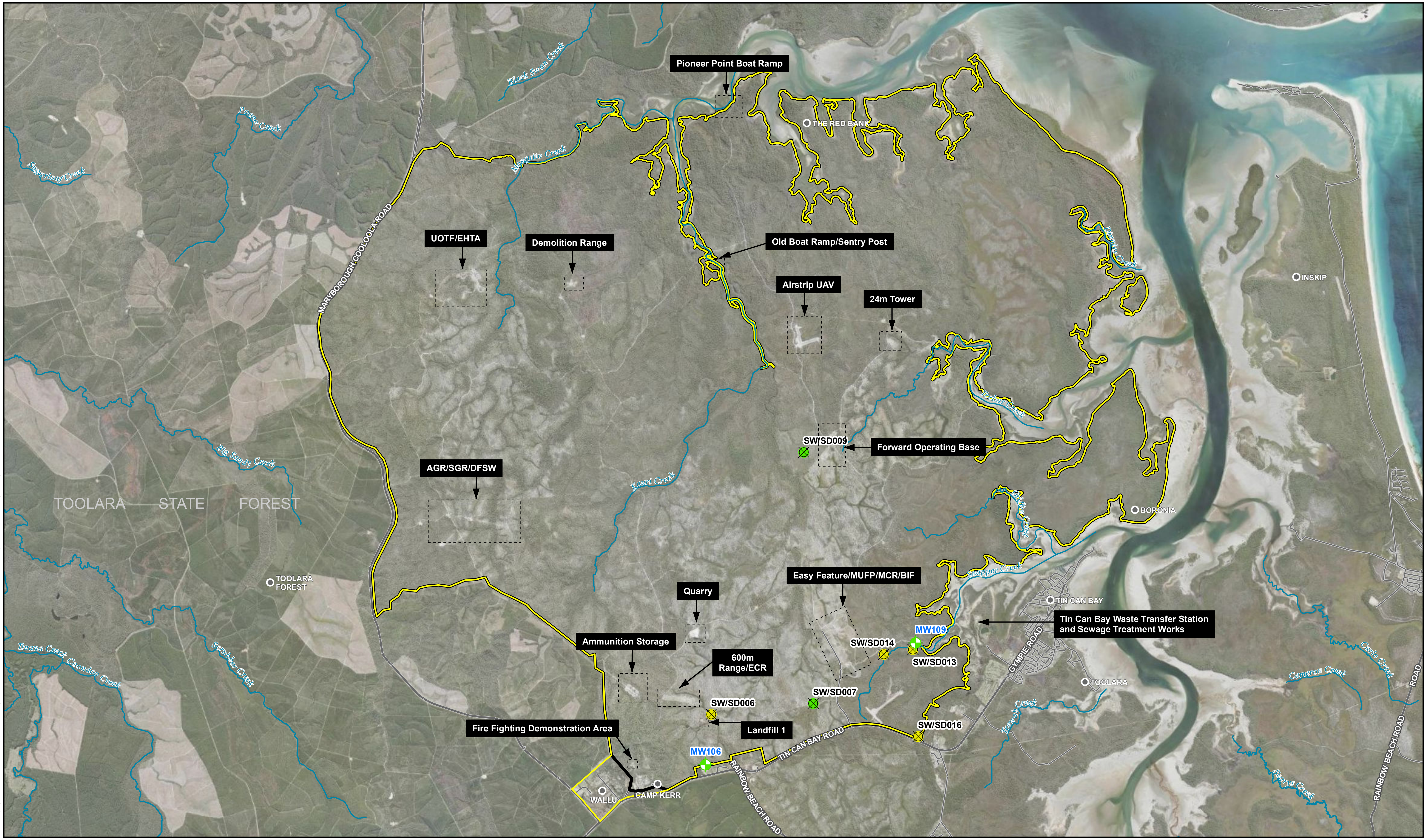

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 0.5 1 2 3
km

1:80,000 (when printed at A3)

LEGEND

- Groundwater sampling location
- Surface water sampling location
- Watercourse
- Road
- Major Road
- ManagementArea
- WBTA Property Boundary

Water Analytical Results Sum of PFHxS and PFOS (µg/L)

- >0.07
- LOR - 0.07
- <LOR
- Not sampled as dry

UOTF - Urban Operations Training Facility
AGR - Assault Grenade Range
SGR - Standard Grenade Range
MUFP - Multi User Firing Point
MCR - Multi Classification Range
ECR - Electronic Classification Range
BIF - Battle Inoculation Facility
EHTA - Explosive Handling Training Area
UAV - Unmanned Aerial Vehicle

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SUM OF PFHxS AND PFOS IN WATER OCTOBER / NOVEMBER 2023 (MANAGEMENT AREA)

Ongoing Monitoring Report 2023

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure **7A**

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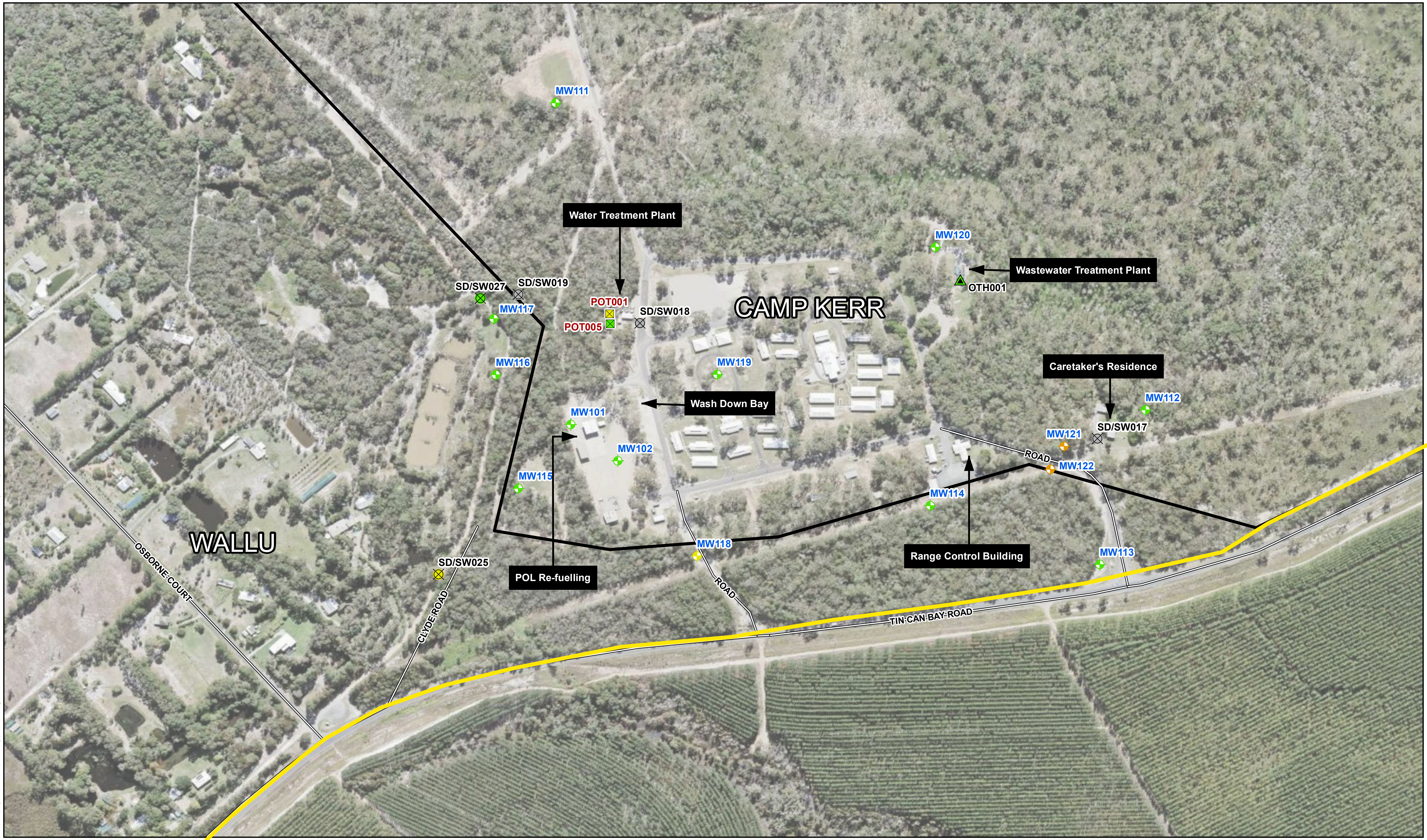

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 50 100 200

metres

1:4,500 (when printed at A3)

LEGEND

- Wastewater treatment plant sampling location
- Abstraction bore
- Groundwater sampling location
- Surface water sampling location
- Road
- WBTA Property Boundary
- WBTA Management Area

Water Analytical Results Sum of PFHxS and PFOS (µg/L)

- >0.07
- LOR - 0.07
- <LOR
- Not sampled as dry

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SUM OF PFHxS AND PFOS IN WATER OCTOBER / NOVEMBER 2023 (CAMP KERR)

Ongoing Monitoring Report 2023

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

7B

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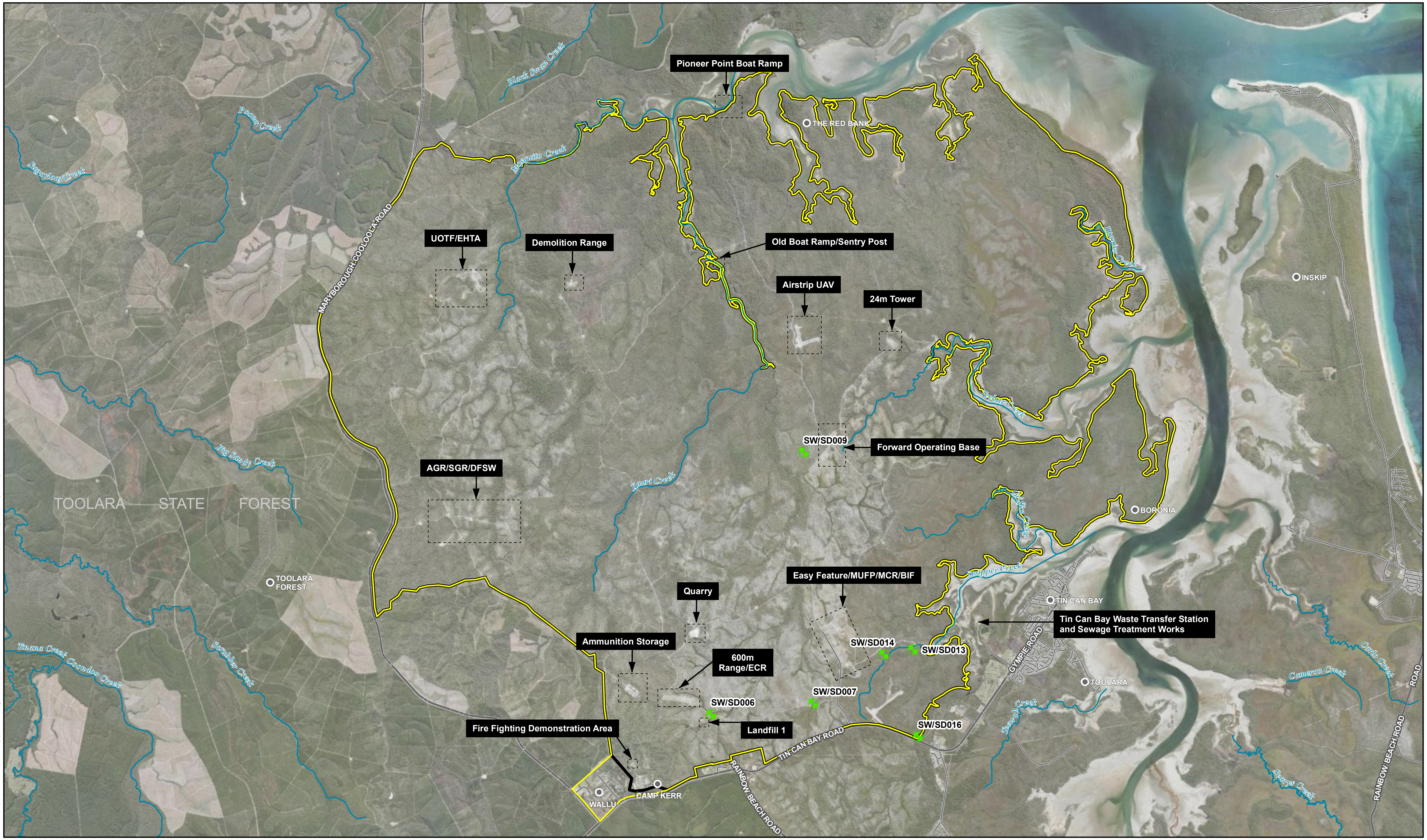

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 0.5 1 2 3
km

1:80,000 (when printed at A3)

LEGEND

- Sediment sampling location
- Watercourse
- Road
- Major Road
- ManagementArea
- WBTA Property Boundary

Sediment Analytical Results Sum of PFHxS and PFOS (mg/kg)

- >0.07
- LOR - 0.07
- <LOR

UOTF - Urban Operations Training Facility
AGR - Assault Grenade Range
SGR - Standard Grenade Range
MUFP - Multi User Firing Point
MCR - Multi Classification Range
ECR - Electronic Classification Range
BIF - Battle Inoculation Facility
EHTA - Explosive Handling Training Area
UAV - Unmanned Aerial Vehicle

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SUM OF PFHxS AND PFOS IN SEDIMENT APRIL 2023 (MANAGEMENT AREA)

Ongoing Monitoring Report 2023

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

8A

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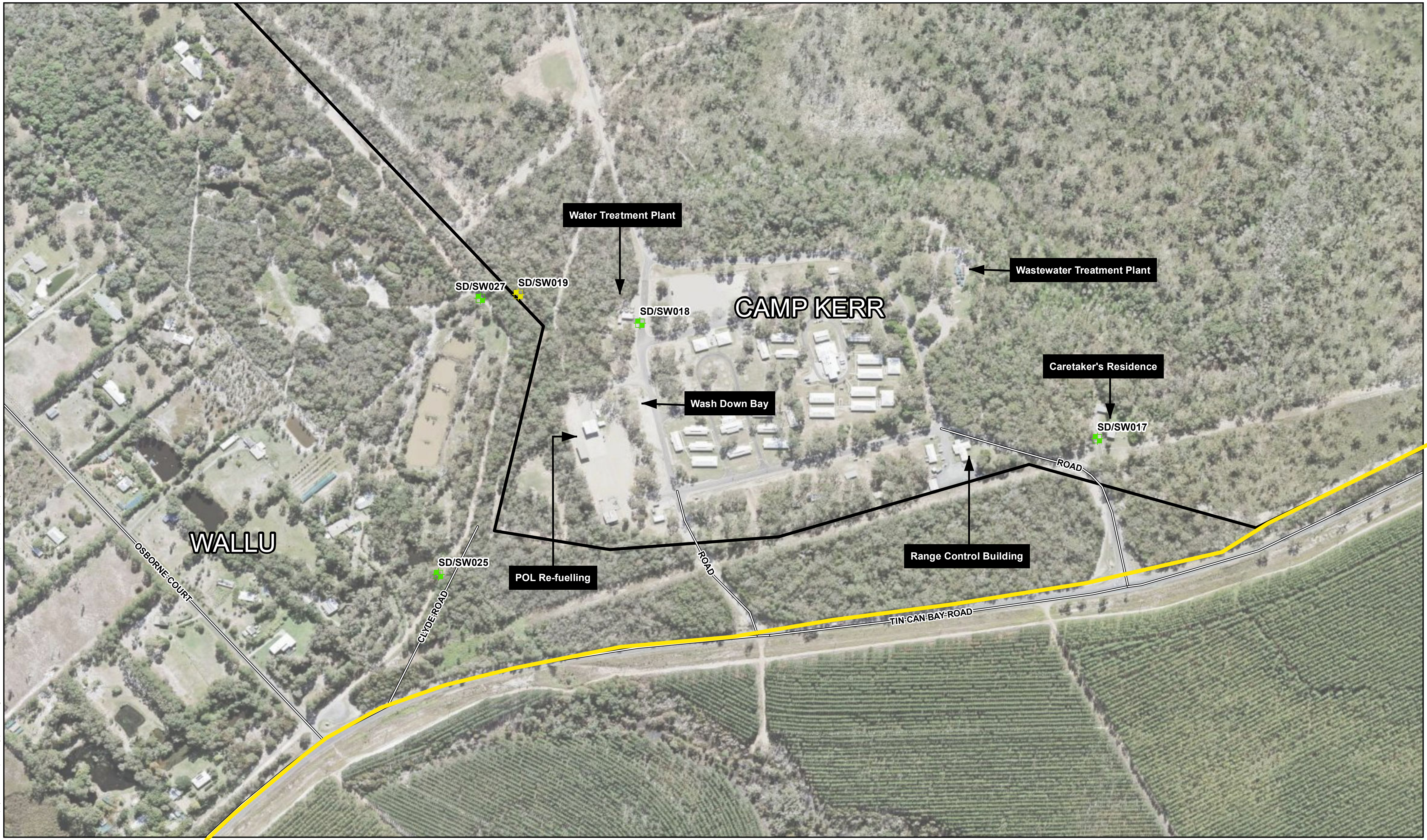

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 50 100 200

metres

1:4,500 (when printed at A3)

LEGEND

- Sediment sampling location
- Road
- WBTA Property Boundary
- WBTA Management Area

Sediment Analytical Results Sum of PFHxS and PFOS (mg/kg)

- >0.07
- LOR - 0.07
- <LOR

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SUM OF PFHxS AND PFOS IN SEDIMENT APRIL 2023 (CAMP KERR)

Ongoing Monitoring Report 2023

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

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A3 size

Appendix B

Tables

Appendix B Tables

Well ID	Sample Date	Screened Interval depth (mbgs)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Well Depth (mbtoc)	Condition of Stand up cover / Gatic	DO (mg/L)	EC (µS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method / Comments
MW101	29/10/2020	11 to 15	16.06	14.324	79.264	64.940	Good	1.47	167	4.53	205.1	410.1	24.2	Medium	Other	No odour	No sheen	Hydrasleeve
MW101	20/05/2021	11 - 15	16.2	14.112	79.264	65.152	Good	1.92	133	4.3	239	444	21.6	Clear	Clear	No odour	No sheen	Hydrasleeve
MW101	10/11/2021	11 - 15	15.655	79.264	63.609	16.08	Good	2.38	140	6.74	102.5	307.5	23.7	Turbid	Red	No odour	No sheen	Hydrasleeve
MW101	10/05/2022	11 - 15	11.507	79.264	67.757	16.08	Good	1.01	211	5.54	212	417	20.9	Medium	Clear	No odour	No sheen	Hydrasleeve
MW101	21/10/2022	11 - 15	10.589	79.264	68.675	16.08	Good	2.48	235.2	5.43	93.9	298.9	22.3	Slightly turbid	Cloudy, brown sediment	No odour	No sheen	Hydrasleeve
MW101	04/04/2023	11 - 16	10.802	79.264	68.462	16.073	Good	0.79	178.6	4.74	88.6	293.6	26.1	Low turbid	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW101	31/10/2023	11 - 16	13.203	79.264	66.061	16.05	Good	1.31	151.4	4.72	-110.3	94.7	24.2	med	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW102	28/10/2020	14 to 20	-	-	78.564	-	Not found	-	-	-	-	-	-	-	-	-	-	Unable to be located
MW102	21/05/2021	14-20	-	-	78.564	-	Not found	-	-	-	-	-	-	-	-	-	-	Unable to be located
MW102	09/11/2021	14-20	14.171	78.564	64.393	19.91	Good	1.86	114.7	7.19	95.1	300.1	24.3	Clear	Clear	No odour	No sheen	Hydrasleeve
MW102	10/05/2022	14-20	10.615	78.564	67.949	19.91	Good	1.6	115	4.37	242	447	22	Slightly turbid	Clear	No odour	No sheen	Hydrasleeve
MW102	21/10/2022	14-20	9.696	78.564	68.868	19.91	Good	3.9	131.8	5.03	103.7	308.7	23.8	Slightly turbid	Cloudy, brown sediment	No odour	No sheen	Hydrasleeve
MW102	04/04/2023	14-20	10.025	78.564	68.539	19.551	Good	1.67	117.8	4.91	100.6	305.6	23.5	Medium turbid	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW102	31/10/2023	14-20	12.096	78.564	66.468	19.84	Good	2.97	106.4	4.55	-77.8	127.2	27.9	Medium turbid	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW103	30/10/2020	7.5 to 10.5	11.63	4.232	33.239	29.007	Good	3.2	157	5.58	157.8	362.8	23.5	Low	Clear	No odour	No sheen	Hydrasleeve
MW103	19/05/2021	7.5 - 10.5	10.85	2.958	33.239	30.281	Good	4.52	94.8	5.77	200.6	405.6	23.4	Clear	Clear	No odour	No sheen	Hydrasleeve
MW103	09/11/2021	7.5 - 10.5	6.167	33.239	27.072	11.6	Good	3.93	119.3	8.01	105.1	310.1	23.8	Low	Clear	No odour	No sheen	Hydrasleeve
MW103	10/05/2022	7.5 - 10.5	2.081	33.239	31.158	11.6	Good	3.77	116	5.25	165	370	22.6	Medium	Clear	No odour	No sheen	Hydrasleeve
MW103	18/10/2022	7.5 - 10.5	2.544	33.239	30.695	11.6	Good	3.95	99	5.55	110.2	315.2	22.7	Low	Clear, fine brown sediment	No odour	No sheen	Hydrasleeve
MW104	30/10/2020	8 to 11	12.045	4.332	20.815	16.483	Good	2.04	154.9	5.04	178	383	24.8	Low	Clear	No odour	No sheen	Hydrasleeve
MW104	19/05/2021	8 - 11	10.84	3.468	20.815	17.347	Good	2.39	112.9	5.68	213	418	24.8	Clear	Clear	No odour	No sheen	Hydrasleeve
MW104	09/11/2021	8 - 11	5.073	20.815	15.742	12.035	Good	2.35	127.8	4.33	107.4	312.4	24.7	Low	Clear	No odour	No sheen	Hydrasleeve
MW104	10/05/2022	8 - 11	3.043	20.815	17.772	12.035	Good	2.2	128	4.71	199	404	22.7	Slightly turbid	Clear	No odour	No sheen	Hydrasleeve
MW104	18/10/2022	8 - 11	3.609	20.815	17.206	12.035	Good	2.72	109.4	5.08	114.8	319.8	23.6	Low	Clear, red/orange sediment	No odour	No sheen	Hydrasleeve
MW105	30/10/2020	4.2 to 7.2	8.33	1.987	27.603	25.616	Good	0.3	611	5.97	121.4	326.4	23.1	Clear	Clear	No odour	No sheen	Hydrasleeve
MW105	20/05/2021	4.2 - 7.2	8.38	1.845	27.603	25.758	Good	1.76	541	6.18	169	374	22.5	Clear	Clear	No odour	No sheen	Hydrasleeve
MW105	09/11/2021	4.2 - 7.2	2.229	27.603	25.374	8.35	Good	0.14	659	9.44	85	290	23.4	Low	Clear	No odour	No sheen	Hydrasleeve
MW105	10/05/2022	4.2 - 7.2	1.748	27.603	25.855	8.35	Good	1.8	572	6.14	98	303	22.6	Medium	Clear	No odour	No sheen	Hydrasleeve
MW105	19/10/2022	4.2 - 7.2	1.546	27.603	26.057	8.35	Good	1.77	621	6.45	59.3	264.3	21.4	Low	Clear, brown sediment	No odour	No sheen	Hydrasleeve
MW106	29/10/2020	4 to 10	11.095	4.101	69.468	65.367	Good	2.5	126.3	4.47	239	444	21.1	Medium	Other	No odour	No sheen	Hydrasleeve
MW106	20/05/2021	4 - 10	10.08	3.707	69.468	65.761	Good	4	81.1	4.26	284	489	21.9	Clear	Clear	No odour	No sheen	Hydrasleeve
MW106	09/11/2021	4 - 10	4.635	69.468	64.833	11.05	Good	2.94	90.7	7.95	146.7	351.7	22.4	Medium	Light brown	No odour	No sheen	Hydrasleeve
MW106	12/05/2022	4 - 10	2.017	69.468	67.451	11.05	Good	3.81	93.4	4.32	168	373	23.1	Medium	Clear	No odour	No sheen	Hydrasleeve
MW106	19/10/2022	4 - 10	2.512	69.468	66.956	11.05	Good	2.94	110.8	5.18	102	307	20.4	Medium-High	Cloudy, brown sediment	No odour	No sheen	Hydrasleeve, rootlets in hydrasleeve
MW106	04/04/2023	4 - 10	3.087	69.468	66.381	11.006	Good	2.87	113.2	4.75	78.6	283.6	24.9	Medium turbid	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™, rootlets present
MW106	31/10/2023	4 - 10	4.631	69.468	64.837	11.002	Good	3.07	96.9	4.68	105.8	310.8	21.8	Medium turbid	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™, rootlets present
MW107	29/10/2020	2.8 to 5.8	6.8	2.165	37.789	35.624	Good	0.55	215.3	4.82	231.4	436.4	24.7	Clear	Clear	No odour	No sheen	Hydrasleeve
MW107	20/05/2021	2.8 - 5.8	5.66	1.813	37.789	35.976	Good	1.2	195	5.54	161	366	23.2	Clear	Clear	No odour	No sheen	Hydrasleeve
MW107	09/11/2021	2.8 - 5.8	1.833	37.789	35.956	6.31	Good	0.83	214.8	4.87	68.9	273.9	26.8	Low	Clear	No odour	No sheen	Hydrasleeve
MW107	12/05/2022	2.8 - 5.8	1.425	37.789	36.364	6.31	Good	0.87	227	5.37	105	310	22.8	Medium	Clear	No odour	No sheen	Hydrasleeve
MW107	19/10/2022	2.8 - 5.8	2.654	37.789	35.135	6.31	Good	1.55	211.2	5.48	62.2	267.2	-	Low-Medium	Cloudy, red/orange sediment	No odour	No sheen	Hydrasleeve
MW108	29/10/2020	14.5 to 17.5	18.48	5.935	39.99	34.055	Good	0.36	517	6.34	157	362	24.9	Clear	Clear	No odour	No sheen	Hydrasleeve
MW108	20/05/2021	14.5 - 17.5	17.85	4.005	39.99	35.985	Good	0.38	448	6.94	-149	56	22.1	Clear	Clear	No odour	No sheen	Hydrasleeve
MW108	09/11/2021	14.5 - 17.5	5.798	39.99	34.192	18.475	Good	0.62	543	14.32	-15.6	189.4	23.7	Low	Light grey	No odour	No sheen	Hydrasleeve
MW108	12/05/2022	14.5 - 17.5	2.822	39.99	37.168	18.475	Good	0.33	474	6.72	-88.9	116.1	23.5	Medium	Clear, grey sediment	Septic odour	No sheen	Hydrasleeve
MW108	19/10/2022	14.5 - 17.5	5.083	39.99	34.907	18.475	Good	1.24	506	7.1	46.2	251.2	22	Medium-High	Clear, Black/grey sediment	No odour	No sheen	Hydrasleeve
MW109	28/10/2020	7 to 10	11.07	1.829	9.207	7.378	Good	0.34	214.5	5.6	159.3	364.3	22.8	Low	Other	No odour	No sheen	Hydrasleeve
MW109	19/05/2021	7 - 10	9.97	1.075	9.207	8.132	Good	0.55	292.3	7.1	116.5	321.5	21.8	Clear	Light Brown	No odour	No sheen	Hydrasleeve
MW109	08/11/2021	7 - 10	3.091	9.207	6.116	11.06	Good	0.89	180.6	6.73	75.9	280.9	23.6	Low	Clear	No odour	No sheen	Hydrasleeve
MW109	10/05/2022	7 - 10	0.457	9.207	8.750	11.06	Good	0.48	209	5.48	152	357	21.8	Medium	Clear	No odour	No sheen	Hydrasleeve
MW109	18/10/2022	7 - 10	0.778	9.207	8.429	11.06	Good	0.95	250.8	6.02	93.8	298.8	23.6	Low	Clear/Cloudy, Brown Sediment	No odour	No sheen	Hydrasleeve
MW109	03/04/2022	7 - 10	0.835	9.207	8.372	11.26	Good	3.43	277.6	5.64	60	265	24.9	Low	Cloudy, Brown Sediment	No odour	No sheen	HydraSleeve™
MW109	30/10/2023	7 - 10	2.571	9.207	6.636	11.006	Good	1.43	1549	5.93	-21.1	183.9	24	Low	Cloudy, Brown Sediment	No odour	No sheen	HydraSleeve™
MW110	28/10/2020	0.5 to 4	4.54	1.043	17.967	16.924	Good	1.37	256.1	5.68	155.2	360.2	22.6	Low	Other	No odour	No sheen	Hydrasleeve
MW110	19/05/2021	0.5 - 4	3.45	1.17	17.967	16.797	Good	1.83	208.3	5.69	238	443	21.7	Clear	Clear	No odour	No sheen	Hydrasleeve
MW110	08/11/2021	0.5 - 4	1.29	17.967	16.677	4.535	Good	1.85	146.7	3.64	172.2	377.2	24.2	Low	Clear	No odour	No sheen	Hydrasleeve
MW110	10/05/2022	0.5 - 4	1	17.967	16.967	4.535	Good	0.97	227	4.5	214	419	22.5	Medium	Clear	No odour	No sheen	Hydrasleeve
MW110	18/10/2022	0.5 - 4	1.251	17.967	16.716	4.535	Good	1.73	155.6	5.41	102.2	307.2	22	Low	Clear, brown sediment	No odour	No sheen	Hydrasleeve
MW111	29/10/2020	16.5 to 20.5	21.52	11.806	78.952	67.146	Good	0.16	256.9	5.41	167.2	372.2	24.3	Clear	Clear	No odour	No sheen	Hydrasleeve
MW111	20/05/2021	16.5 - 20.5	20.8	11.383	78.952	67.569	Good	0.77	229.5	6.23	-102	103	21.4	Clear	Clear	No odour	No sheen	Hydrasleeve
MW111	09/11/2021	16.5 - 20.5	12.093	78.952	66.859	21.535	Good	0.79	235.3	8.08	118.2	323.2	22.5	Low	Clear	No odour	No sheen	Hydrasleeve
MW111	12/05/2022	16.5 - 20.5	9.429	78.952	69.523	21.535	Good	0.32	221	4.95	125.6	330.6	22.9	Medium	Clear	No odour	No sheen	Hydrasleeve

Well ID	Sample Date	Screened Interval depth (mbgs)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Well Depth (mbtoc)	Condition of Stand up cover / Gatic	DO (mg/L)	EC (µS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method / Comments
MW111	19/10/2022	16.5 - 20.5	9.086	78.952	69.866	21.535	Good	1.55	236.8	5.68	60.7	265.7	21.4	Medium	Cloudy, brown sediment	No odour	No sheen	Hydrasleeve
MW111	03/04/2022	16.5 - 20.5	9.289	78.952	69.663	21.625	Good	1.09	218.6	5.38	96.3	301.3	23.6	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW111	30/10/2023	16.5 - 20.5	11.124	78.952	67.828	21.51	Good	1.72	249.9	5.36	29.5	234.5	23.3	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW112	29/10/2020	6 to 9	9.86	8.188	65.183	56.995	Good	0.63	155	4.53	230.5	435.5	22.7	Medium	Yellow / Brown	No odour	No sheen	Hydrasleeve
MW112	20/05/2021	6 - 9	8.865	8.504	65.183	56.679	Good	2.02	157	5.51	212	417	21.2	Clear	Clear	No odour	No sheen	Hydrasleeve
MW112	10/11/2021	6 - 9	9.04	65.183	56.143	9.87	Good	0.53	146.2	12.15	142	347	22.7	Turbid	Yellow / brown	No odour	No sheen	Hydrasleeve.
MW112	12/05/2022	6 - 9	6.212	65.183	58.971	9.87	Good	0.29	67	4.87	150	355	22.6	Medium	Clear	No odour	No sheen	Hydrasleeve.
MW112	20/10/202	6 - 9	5.862	65.183	59.321	9.87	Good	1.05	164.8	5.16	130.6	335.6	21.1	Medium	Cloudy	No odour	No sheen	Hydrasleeve
MW112	04/04/2023	6 - 9	6.325	65.183	58.858	9.842	Good	0.89	166.1	5.29	90.9	295.9	23.9	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW112	31/10/2023	6 - 9	8.209	65.183	56.974	9.88	Good	1.8	140.6	5.4	81	286	23.4	High	Brown/orange with briwn sed	No odour	No sheen	HydraSleeve™
MW113	28/10/2020	6 to 9	9.07	5.496	67.717	62.221	Good	1.32	161.1	4.67	218.4	423.4	22.4	Clear	Clear	No odour	No sheen	Hydrasleeve
MW113	21/05/2021	6 - 9	7.81	4.298	67.717	63.419	Good	1.5	167	5.59	195	400	23.6	Clear	Clear	No odour	No sheen	Hydrasleeve
MW113	10/11/2021	6 - 9	5.389	67.717	62.328	9.015	Good	1.14	131.8	9.33	66	271	23.6	Low	Clear	No odour	No sheen	Hydrasleeve
MW113	12/05/2022	6 - 9	1.051	67.717	66.666	9.015	Good	1.1	162	4.84	164	369	23	Medium	Clear	No odour	No sheen	Hydrasleeve
MW113	20/10/2022	6 - 9	2.013	67.717	65.704	9.015	Good	0.6	153.9	4.9	136.9	341.9	20.8	Low-Medium	Clear, brown sediment	No odour	No sheen	Hydrasleeve
MW113	04/04/2023	6 - 9	2.669	67.717	65.048	8.965	Good	0.77	15.2	4.96	105.2	310.2	22.4	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW113	31/10/2023	6 - 9	6.276	67.717	61.441	8.97	Good	1.11	124	4.44	61.8	266.8	24.7	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW114	28/10/2020	8.5 to 11.5	12.505	9.2	73.016	63.816	Good	2.54	93.2	4.66	221	426	22.4	Clear	Clear	No odour	No sheen	Hydrasleeve
MW114	21/05/2021	8.5 - 11.5	11.41	8.156	73.016	64.860	Good	2.34	67.3	4.9	230	435	24.3	Clear	Clear	No odour	No sheen	Hydrasleeve
MW114	10/11/2021	8.5 - 11.5	10.108	73.016	62.908	12.52	Good	1.91	53.9	8.29	76.8	281.8	24	Low	Clear	No odour	No sheen	Hydrasleeve
MW114	12/05/2022	8.5 - 11.5	3.494	73.016	69.522	12.52	Good	1.94	80.3	5.18	158	363	22.8	Medium	Clear	No odour	No sheen	Hydrasleeve
MW114	20/10/2022	8.5 - 11.5	4.235	73.016	68.781	12.52	Good	2.34	72.5	5.49	129.4	334.4	21	Clear	Clear, brown sediment	No odour	No sheen	Hydrasleeve
MW114	05/04/2023	8.5 - 11.5	5.765	73.016	67.251	12.516	Good	1.65	58.1	5.21	84.6	289.6	21.2	Low	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW114	31/10/2023	8.5 - 11.5	9.954	73.016	63.062	12.51	Good	3.27	50.6	5.02	-28.8	176.2	24	Low	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW115	29/10/2020	13 to 16	17.045	11.3	76.659	65.359	Good	0.39	188.2	5.07	162.4	367.4	23.9	Low	Clear	No odour	No sheen	Hydrasleeve
MW115	20/05/2021	13 - 16	16.05	10.356	76.659	66.303	Good	0.69	133	4.97	227.2	432.2	22	Clear	Clear	No odour	No sheen	Hydrasleeve
MW115	10/11/2021	13 - 16	12.259	76.659	64.400	17.065	Good	0.89	146.8	9.76	126.6	331.6	23.8	Medium	Yellow / brown	No odour	No sheen	Hydrasleeve
MW115	09/05/2022	13 - 16	9.075	76.659	67.584	17.065	Good	1.19	186.5	5.1	180	385	21.2	Medium	Clear	No odour	No sheen	Hydrasleeve
MW115	17/10/2022	13 - 16	8.597	76.659	68.062	17.065	Good	3.28	252	6.06	85.2	290.2	21.2	Low	Clear, Brown Sediment	No odour	No sheen	Hydrasleeve
MW115	06/04/2023	13 - 16	8.933	76.659	67.726	17.041	Good	1.1	161.5	5.36	105.1	310.1	27.2	Medium	Cloudy	No odour	No sheen	HydraSleeve™
MW115	30/10/2023	13 - 16	11.482	76.659	65.177	17.004	Good	1.04	200.1	5.33	82.8	287.8	22.2	Low	Cloudy	No odour	No sheen	HydraSleeve™
MW116	28/10/2020	8 to 11	11.77	6.543	69.815	63.272	Good	0.72	444	6.18	136	341	23.5	Clear	Clear	No odour	No sheen	Hydrasleeve
MW116	19/05/2021	8 - 11	10.74	6.695	69.815	63.120	Good	0.6	394	6.07	138	343	21.9	Clear	Clear	No odour	No sheen	Hydrasleeve
MW116	10/11/2021	8 - 11	7.582	69.815	62.233	11.795	Good	0.63	468	9.53	11.6	216.6	23.1	Medium	Light yellow	No odour	No sheen	Hydrasleeve
MW116	12/05/2022	8 - 11	4.704	69.815	65.111	11.795	Good	0.54	419	5.97	73	278	22.4	Medium	Clear	No odour	No sheen	Hydrasleeve
MW116	19/10/2022	8 - 11	3.976	69.815	65.839	11.795	Good	1.88	545.3	6.45	55	260	20.5	Medium	Cloudy, brown sediment	No odour	No sheen	Hydrasleeve
MW116	05/04/2023	8 - 11	3.664	69.815	66.151	11.766	Good	0.84	441.6	6.42	98.2	303.2	26.9	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW116	31/10/2023	8 - 11	5.587	69.815	64.228	11.77	Good	1.22	392.9	6.19	-82.5	122.5	22.9	low	clear	No odour	No sheen	HydraSleeve™
MW117	28/10/2020	7 to 10	11.02	5.129	68.914	63.785	Good	0.98	450	6.11	129.6	334.6	24.5	Low	Light brown	No odour	No sheen	Hydrasleeve
MW117	18/05/2021	7 - 10	11.02	5.57	68.914	63.344	Good	1.85	379	6.34	20.5	225.5	19.6	Medium	Light Brown	No odour	No sheen	Hydrasleeve
MW117	10/11/2021	7 - 10	6.063	68.914	62.851	11.01	Good	0.83	454.8	9.72	12.7	217.7	22.1	Medium	Yellow / brown	No odour	No sheen	Hydrasleeve
MW117	12/05/2022	7 - 10	3.335	68.914	65.579	11.01	Good	0.22	416	5.31	85	290	22.4	Medium	Clear	No odour	No sheen	Hydrasleeve
MW117	19/10/2022	7 - 10	2.915	68.914	65.999	11.01	Good	1.54	451.3	6.43	51.7	256.7	19.4	Medium	Cloudy, brown sediment	No odour	No sheen	Hydrasleeve
MW117	05/04/2023	7 - 10	2.55	68.914	66.364	10.961	Good	0.76	436.3	6.38	98.5	303.5	22.6	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW117	31/10/2023	7 - 10	4.439	68.914	64.475	10.98	Good	1.99	102.6	6.24	-209.3	-4.3	22.5	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW118	28/10/2020	10 to 13	13.69	11.165	76.154	64.989	Good	3.71	144.5	4.84	187.3	392.3	22.7	Low	Clear	No odour	No sheen	Hydrasleeve
MW118	21/05/2021	10 - 13	12.35	10.139	76.154	66.015	Good	3.14	94	4.67	252	457	22.1	Clear	Clear	No odour	No sheen	Hydrasleeve
MW118	10/11/2021	10 - 13	12.376	76.154	63.778	13.59	Good	2.56	114.1	8.25	74.4	279.4	23.7	Medium	Pale red	No odour	No sheen	Hydrasleeve
MW118	12/05/2022	10 - 13	6.028	76.154	70.126	13.59	Good	2.37	100	4.54	168	373	22.2	Medium	Clear	No odour	No sheen	Hydrasleeve.
MW118	18/10/2022	10 - 13	7.621	76.154	68.533	13.59	Good	2.67	120.5	4.97	116.3	321.3	21.2	Medium-high	Cloudy/Brownish, red/orange sediment	No odour	No sheen	Hydrasleeve. Rootlets sitting in top of hydrasleeve
MW118	05/04/2023	10 - 13	8.647	76.154	67.507	13.55	Good	3.07	136.9	5.06	88.7	293.7	20.6	Low	Clear, brown sediment	No odour	No sheen	HydraSleeve™
MW118	31/10/2023	10 - 13	11.816	76.154	64.338	13.57	Good	3.15	120.9	4.78	167.8	372.8	-	Low	Clear, brown sediment	No odour	No sheen	HydraSleeve™
MW119	29/10/2020	13 to 16	15.765	8.546	79.546	71.000	Good	2.68	269.5	5.09	167.1	372.1	25.1	Low	Clear	No odour	No sheen	Hydrasleeve
MW119	20/05/2021	13 - 16	14.8	6.625	79.546	72.921	Good	1.78	207	4.63	260	465	23.6	Clear	Clear	No odour	No sheen	Hydrasleeve
MW119	10/11/2021	13 - 16	9.251	79.546	70.295	15.76	Good	2.74	227	9.28	125.1	330.1	24.2	Medium	Other	No odour	No sheen	Hydrasleeve
MW119	09/05/2022	13 - 16	6.216	79.546	73.330	15.76	Good	2.4	227	4.6	211	416	20.9	Medium	Clear	No odour	No sheen	Hydrasleeve
MW119	20/10/2022	13 - 16	6.055	79.546	73.491	15.76	Good	3.63	244.8	5.41	134.3	339.3	22.1	Medium	Cloudy, red sediment	No odour	No sheen	Hydrasleeve
MW119	04/04/2023	13 - 16	6.128	79.546	73.418	15.722	Good	2.29	208	4.77	109.2	314.2	24.3	Low	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW119	31/10/2023	13 - 16	8.804	79.546	70.742	15.71	Good	2.74	223.7	4.96	38.9	243.9	23	Med	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW120	29/10/2020	Not known	13.735	10.745	71.332	60.587	Good	0.76	177.3	4.37	213.4	418.4	25	Clear	Clear	No odour	No sheen	Hydrasleeve
MW120	20/05/2021	Not known	13.85	10.727	71.332	60.605	Good	0.93	237	4.81	228	433	21	Clear	Clear	No odour	No sheen	Hydrasleeve
MW120	09/11/2021	Not known	11.294	71.332	60.038	14.5	Good	0.82	216.6	6.78	63.2	268.2	22.9	Clear	Clear	No odour	No sheen	Hydrasleeve
MW120	10/05/2022	Unknown	9.035	71.332	62.297	14.5	Good	0.38	122	4.72	212.7	417.7	21.6	Clear	Clear	No odour	No sheen	Hydrasleeve
MW120	20/10/2022	Unknown	8.867	71.332	62.465	14.5	Good	1.301	132.1	5.01	112.3	317.3	22.1	Med	Cloudy, brown sediment	No odour	No sheen	Hydrasleeve
MW120	04/04/2023	Unknown	9.396	71.332	61.936	13.659	Good	0.61	117.3	4.63	88.2	293.2	25.2	Med	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
MW120	31/10/2023	Unknown	10.849	71.332	60.483	13.61	Good	1.75	136.4	5.01	2.8	207.8	25.6	Med	clerish/brown	No odour	No sheen	HydraSleeve™
MW121	29/10/2020	Not known	15.07	9.972	70.405	60.433	Good	1.05	140.5	4.69	199.3	404.3	23.4	Clear	Clear	No odour	No sheen	Hydrasleeve
MW121	20/05/2021	Not known	15.2	9.72	70.405	60.685	Good	1.05	193	6.1	166	371	20.6	Clear	Clear	No odour	No sheen	Hydrasleeve
MW121	09/11/2021	Not known	10.762	70.405	59.643	14.4	Good	1.23	111.9	10.75	106.2	311.2	23.3	Clear	Clear	No odour	No sheen	Hydrasleeve
MW121	11/05/2022	Unknown	7.489	70.405	62.916	14.4	Good	0.8	181	4.53	156	361	22	Clear	Clear	No odour	No sheen	Hydrasleeve
MW121	20/10/2022	Unknown	7.306	70.405	63.099	14.4	Good	0.94	234.2	4.87	137.5	342.5	21.5	Clear	Low, brown sediment	No odour	No sheen	Hydrasleeve
MW121	04/04/2023	Unknown	8.031	70.405	62.374	15.023	Good	1.12	142	5.24	93.3	298.3	24.9	Clear	Brown sediment	No odour	No sheen	HydraSleeve™
MW121	31/10/2023	Unknown	10.271	70.405	60.134	15	Good	1.56	106.4	5.11	-8.5	196.5	23.8	Clear	Brown sediment	No odour	No sheen	HydraSleeve™
MW122	29/10/2020	Not known	20.1	9.373	70.575	61.202	Good	0.69	105.6	4.38	189.6	394.6	24.5	Medium	Other	No odour	No sheen	Hydrasleeve
MW122	20/05/2021	Not known	20.04	8.91	70.575	61.665	Good	0.85	69.4	4.84	230	435	21.5	Clear	Clear	No odour	No sheen	Hydrasleeve
MW122	09/11/2021	Not known	10.351	70.575	60.224	19.4	Good	0.96	74.9	8.17	73.9	278.9	24.2	Clear	Clear	No odour	No sheen	Hydrasleeve
MW122	10/05/2022	Unknown	5.005	70.575	65.570	19.4	Good	1.6	115	4.39	272	477	22	Clear	Clear	No odour	No sheen	Hydrasleeve
MW122	20/10/2022	Unknown	5.136	70.575	65.439	19.4	Good	1	98.6	4.84	136.6	341.6	22.1	Clear	Clear, brown sediment	No odour	No sheen	Hydrasleeve

Well ID	Sample Date	Screened Interval depth (mbgs)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Well Depth (mbtoc)	Condition of Stand up cover / Gatic	DO (mg/L)	EC (μS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method / Comments
MW122	04/04/2023	Unknown	6.086	70.575	64.489	19.912	Good	0.77	90.5	4.2	97.4	302.4	24	Low	Clear	No odour	No sheen	HydraSleeve™
MW122	31/10/2023	Unknown	9.823	70.575	60.752	19.98	Good	0.63	69.9	4.72	-92.7	112.3	24	Low	Clear	No odour	No sheen	HydraSleeve™
POT001	28/10/2020	18 to 78.4	-	-	-	-	-	2.03	593	6.39	117.2	322.2	24.2	Clear	Clear	No odour	No sheen	Tap
POT001	20/05/2021	18 - 78.4	-	-	-	-	-	1.16	498	6.55	77	282	22.9	Clear	Clear	No odour	No sheen	Tap
POT001	10/11/2021	18 - 78.4	-	-	-	-	-	3.77	576	8.76	71.6	276.6	26.1	Clear	Clear	No odour	No sheen	Tap
POT001	09/05/2022	18 - 78.4	-	-	-	-	-	2.8	453	6.8	148	353	19.5	Clear	Clear	No odour	No sheen	Tap
POT001	20/10/2022	18 - 78.4	-	-	-	-	-	3.01	517	6.7	135	340	21.4	Clear	Clear	No odour	No sheen	Tap
POT001	04/04/2023	18 - 78.4	-	-	-	-	-	1.83	498	6.91	135.2	340.2	26.6	Clear	Clear	No odour	No sheen	Tap
POT001	31/10/2023	18 - 78.4	-	-	-	-	-	1.58	471	6.76	-195.3	9.7	38.1	Clear	Clear	No odour	No sheen	Tap
POT005	28/10/2020	30 to 51.5	-	-	-	-	-	1.79	481.3	6.67	79.1	284.1	24.1	Clear	Clear	No odour	No sheen	Tap
POT005	20/05/2021	30 - 51.5	-	-	-	-	-	3.05	440	6.72	87	292	22.1	Clear	Clear	No odour	No sheen	Tap
POT005	10/11/2021	30 - 51.5	-	-	-	-	-	0.53	545	6.22	-3.4	201.6	27	Clear	Clear	No odour	No sheen	Tap
POT005	09/05/2022	30 - 51.5	-	-	-	-	-	2.5	484	6.7	151	356	21	Clear	Clear	No odour	No sheen	Tap
POT005	20/10/2022	30 - 51.5	-	-	-	-	-	1.76	480.5	6.9	119.3	324.3	22	Clear	Clear	No odour	No sheen	Tap
POT005	04/04/2023	30 - 51.5	-	-	-	-	-	1.01	455.3	6.8	109.3	314.3	26.9	Clear	Clear	No odour	No sheen	Tap
POT005	31/10/2023	30 - 51.5	-	-	-	-	-	1.59	447	6.9	-215.9	-10.9	33.5	Clear	Clear	No odour	No sheen	Tap

Notes
mbgs is metres below ground surface
mbtoc is metres below top of casing
mAHD is metres above Australian height datum
DO is dissolved oxygen
EC is electrical conductivity
E_h is oxidation reduction potential
Oxidation reducation potential (E_r) measured with a platinum electrode and a silver/silver chloride reference electrode (E_r) and converted to E_h by E_h = E_r + 205 mV (based on a groundwater temperature of 21°C)
Temp is Temperature
μS/cm is microsiemens per centrimetre
ºC is degrees Celcius
mV is millivolts
` - No data

							Perfluoroalkyl Sulfonic Acids						Perfluoroalkyl Carbonic Acids											Perfluoroalkyl Sulfonamides							Fluorotelomer Sulfonic Acids				
						Sum of PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSA	EtFOSA	MeFOSE	EtFOSE	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FtS	8:2 FTS	10:2 FTS	Sum of PFAS
					Unit	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	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	µg/L	µg/L
					LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.005	0.005	0.005	0.005	0.002	0.002	0.005	0.005	0.005	0.005	0.002
NEMP (HEPA, 2020) Human Health Drinking Water						0.07											0.56																		
NHMRC (HEPA, 2020) Human Health Recreational Water						**2.0**											**10**																		
NEMP (HEPA, 2020) Ecological Freshwater 99% Species Protection											0.00023						19																		
Location	Alt ID	Sample	Date	Lab Report	Type																														
MW101	MW101	0224_MW101_180924	24/09/2018	EB1823571	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW101	MW101	0224_MW101_190604	4/06/2019	EB1914500	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW101	MW101	0224_MW101_201029	29/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW101	MW101	0224_MW101_210521	21/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW101	MW101	0224_MW101_211111	11/11/2021	EB2132641	Normal	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.4	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.22	<0.09	<0.22	<0.22	<0.22	<0.22	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09
MW101	MW101	0224_MW101_220510	10/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW101	MW101	0224_MW101_221022	22/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW101	MW101	0224_MW101_230404	4/04/2023	EB2310490001	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW101	MW101	0224_MW101_231031	31/10/2023	EB2334187001	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW102	MW102	0224_MW102_180924	24/09/2018	EB1823571	Normal	0.019	<0.002	<0.002	0.007	<0.002	0.012	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.019
MW102	MW102	0224_QC115_190529	28/05/2019	EB1913917	Field_D	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW102	MW102	0224_QC215_190529	29/05/2019	RN1235762	Interlab_D	<0.002	<0.001	<0.001	<0.01	<0.001	<0.002	<0.001	0.0053	0.005	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.001	<0.01	<0.001	<0.001	<0.002
MW102	MW102	0224_MW102_190529	29/05/2019	EB1913917	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW102	MW102	0224_MW102_211110	11/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW102	MW102	0224_MW102_220510	10/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW102	MW102	0224_MW102_221021	21/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW102	MW102	0224_MW102_230404	4/04/2023	EB2310490002	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW102	MW102	0224_MW102_231031	31/10/2023	EB2334187002	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW103	MW103	0224_MW103_180925	25/09/2018	EB1823571	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW103	MW103	0224_MW103_190530	30/05/2019	EB1913917	Normal	0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.002
MW103	MW103	0224_MW103_201030	30/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW103	MW103	0224_MW103_210519	19/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW103	MW103	0224_MW103_211109	9/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW103	MW103	0224_MW103_220510	10/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW103	MW103	0224_MW103_221018	18/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW104	MW104	0224_MW104_180925	25/09/2018	EB1823571	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW104	MW104	0224_MW104_190530	30/05/2019	EB1913917	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW104	MW104	0224_MW104_201030	30/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW104	MW104	0224_MW104_210519	19/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW104	MW104	0224_MW104_211109	9/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW104	MW104	0224_MW104_220510	10/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW104	MW104	0224_MW104_221018	18/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW105	MW105	0224_MW105_180925	25/09/2018	EB1823571	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW105	MW105	0224_MW105_190530	30/05/2019	EB1913917	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW105	MW105	0224_MW105_201030	30/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW105	MW105	0224_MW105_210520	20/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW105	MW105	0224_MW105_211110	10/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW105	MW105	0224_MW105_220510	10/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW105	MW105	0224_MW105_221019	19/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW106	MW106	0224_MW106_180926	26/09/2018	EB1823571	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW106	MW106	0224_MW106_190528	28/05/2019	EB1913917	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW106	MW106	0224_MW106_201029	29/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW106	MW106	0224_MW106_210520	20/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW106	MW106	0224_MW106_211109	9/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW106	MW106	0224_MW106_220512	12/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW106	MW106	0224_MW106_221019	19/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW106	MW106	0224_MW106_230403	3/04/2023	EB2310490003	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW106	MW106	0224_MW106_231031	31/10/2023	EB2334187003	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW107	MW107	0224_MW107_180926	26/09/2018	EB1823571	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW107	MW107	0224_MW107_190527	27/05/2019	EB1913917	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW107	MW107	0224_MW107_201029	29/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW107	MW107	0224_MW107_210520	20/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW107	MW107	0224_MW107_211109	9/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW107	MW107	0224_MW107_220512	12/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW107	MW107	0224_MW107_221019	19/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW108	MW108	0224_MW108_180926	26/09/2018	EB1823571	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW108	MW108	0224_MW108_190527	27/05/2019	EB1913917	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW108	MW108	0224_MW108_201029	29/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW108	MW108	0224_MW108_210520	20/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW108	MW108	0224_MW108_211109	9/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW108	MW108	0224_MW108_220512	12/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW108	MW108	0224_MW108_221019	19/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW109	MW109	0224_MW109_180925	25/09/2018	EB1823571	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW109	MW109	0224_MW109_190604	4/06/2019	EB1914500	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW109	MW109	0224_MW109_201028	28/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW109	MW109	0224_MW109_210519	19/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW109	MW109	0224_MW109_211108	8/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW109	MW109	0224_MW109_220510	10/05/2022	EB2213545	Normal	0.02	<0.02	<0.02	<0.01	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02
MW109	MW109	0224_MW109_221018	18/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW109	MW109	0224_MW109_230403	3/04/2023	EB2310490004	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW109	MW109	0224_MW109_231031	31/10/2023	EB2334187004	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW110	MW110	0224_QC108_180925	25/09/2018	EB1823571	Field_D	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW110	MW110	0224_QC208_180925	25/09/2018	RN1210825	Interlab_D	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW110	MW110	0224_MW110_180925	25/09/2018	EB1823571	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW110	MW110	0224_MW110_190604	4/06/2019	EB1914500	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	0.026	<0.005	<0.005	0.026
MW110	MW110	0224_MW110_201028	28/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW110	MW110	0224_MW110_210519	19/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW110	MW110	0224_MW110_211108	8/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW110	MW110	0224_MW110_220510	10/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW110	MW110	0224_MW110_221018	18/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW111	MW111	0224_MW111_180925	25/09/2018	EB1823571	Normal	0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.002
MW111	MW111	0224_MW111_190528	28/05/2019	EB1913917	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW111	MW111	0224_MW111_201029	29/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW111	MW111	0224_MW111_210520	20/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW111	MW111	0224_MW111_211108	8/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW111	MW111	0224_MW111_220512	12/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01

							Perfluoroalkyl Sulfonic Acids						Perfluoroalkyl Carbonic Acids											Perfluoroalkyl Sulfonamides							Fluorotelomer Sulfonic Acids				
						Sum of PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSA	EtFOSA	MeFOSE	EtFOSE	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FtS	8:2 FTS	10:2 FTS	Sum of PFAS
					Unit	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	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	µg/L	µg/L
					LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.005	0.005	0.005	0.005	0.002	0.002	0.005	0.005	0.005	0.005	0.002
NEMP (HEPA, 2020) Human Health Drinking Water						0.07											0.56																		
NHMRC (HEPA, 2020) Human Health Recreational Water						2.0											10																		
NEMP (HEPA, 2020) Ecological Freshwater 99% Species Protection											0.00023						19																		
Location	Alt ID	Sample	Date	Lab Report	Type																														
MW111	MW111	0224_MW111_221019	19/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW111	MW111	0224_MW111_230404	4/04/2023	EB2310490005	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW111	MW111	0224_MW111_231031	31/10/2023	EB2334187005	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW112	MW112	0224_MW112_190909	9/09/2019	EB1924154	Normal	0.004	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.004
MW112	MW112	0224_MW112_201029	29/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW112	MW112	0224_MW112_210520	20/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW112	MW112	0224_MW112_211110	10/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW112	MW112	0224_MW112_220512	12/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW112	MW112	0224_MW112_221020	20/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW112	MW112	0224_MW112_230404	4/04/2023	EB2310490006	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW112	MW112	0224_MW112_231031	31/10/2023	EB2334187006	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW113	MW113	0224_MW113_190909	9/09/2019	EB1924154	Normal	0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.002
MW113	MW113	0224_MW113_201028	28/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW113	MW113	0224_MW113_210521	21/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW113	MW113	0224_MW113_211110	10/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW113	MW113	0224_MW113_220512	12/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW113	MW113	0224_MW113_221020	20/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW113	MW113	0224_MW113_230404	4/04/2023	EB2310490007	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW113	MW113	0224_MW113_231031	31/10/2023	EB2334187007	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW114	MW114	0224_MW114_190911	11/09/2019	EB1924154	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW114	MW114	0224_MW114_201028	28/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW114	MW114	0224_MW114_210521	21/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW114	MW114	0224_MW114_211110	10/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW114	MW114	0224_MW114_220512	12/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW114	MW114	0224_MW114_221020	20/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW114	MW114	0224_MW114_230405	5/04/2023	EB2310490008	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW114	MW114	0224_MW114_231031	31/10/2023	EB2334187008	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW115	MW115	0224_MW115_190910	10/09/2019	EB1924154	Normal	0.01	<0.002	<0.002	0.005	<0.002	0.005	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.01
MW115	MW115	0224_MW115_201029	29/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW115	MW115	0224_MW115_210520	20/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW115	MW115	0224_MW115_211110	10/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW115	MW115	0224_MW115_220509	9/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW115	MW115	0224_MW115_221017	17/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW115	MW115	0224_MW115_230404	4/04/2023	EB2310490009	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW115	MW115	0224_MW115_231030	30/10/2023	EB2334187009	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW116	MW116	0224_MW116_190910	10/09/2019	EB1924154	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW116	MW116	0224_MW116_201028	28/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW116	MW116	0224_MW116_210519	19/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW116	MW116	0224_MW116_211110	10/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW116	MW116	0224_MW116_220512	12/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW116	MW116	0224_MW116_221019	19/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW116	MW116	0224_MW116_230405	5/04/2023	EB2310490010	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW116	MW116	0224_MW116_231031	31/10/2023	EB2334187010	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW117	MW117	0224_MW117_190910	10/09/2019	EB1924154	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW117	MW117	0224_MW117_201028	28/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW117	MW117	0224_MW117_210518	18/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW117	MW117	0224_MW117_211110	10/11/2021	EB2132641	Normal	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.06	<0.06	<0.06	<0.06	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02
MW117	MW117	0224_MW117_220512	12/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW117	MW117	0224_MW117_221019	19/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW117	MW117	0224_MW117_230405	5/04/2023	EB2310490011	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW117	MW117	0224_MW117_231031	31/10/2023	EB2334187011	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW118	MW118	0224_MW118_190910	10/09/2019	EB1924154	Normal	0.021	<0.002	<0.002	0.012	<0.002	0.009	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.021
MW118	MW118	0224_MW118_201028	28/10/2020	EB2028561	Normal	0.01	<0.02	<0.02	<0.02	<0.02	0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01
MW118	MW118	0224_MW118_210521	21/05/2021	EB2114447	Normal	0.03	<0.02	<0.02	0.02	<0.02	0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03
MW118	MW118	0224_MW118_211110	10/11/2021	EB2132641	Normal	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.06	<0.06	<0.06	<0.06	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02
MW118	MW118	0224_MW118_211110	10/11/2021	EB2132641	Field_D	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.06	<0.06	<0.06	<0.06	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02
MW118	MW118	0224_MW118_211110	10/11/2021	RN1335135	Interlab_D	0.019	<0.01	<0.01	0.019	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.019
MW118	MW118	0224_MW118_220512	12/05/2022	EB2213545	Normal	0.09	<0.02	<0.02	0.06	<0.02	0.03	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09
MW118	MW118	0224_QC129_220512	12/05/2022	EB2213545	Field_D	0.07	<0.02	<0.02	0.05	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.07
MW118	MW118	0224_QC229_220512	12/05/2022	AECO06_220517	Interlab_D	0.038	<0.01	<0.01	0.038	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.038
MW118	MW118	0224_MW118_221018	18/10/2022	EB221148	Normal	0.02	<0.02	<0.02	0.01	<0.02	0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02
MW118	MW118	0224_QC131_221018	18/10/2022	EB221148	Field_D	0.04	<0.02	<0.02	0.02	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04
MW118	MW118	0224_QC231_221018	18/10/2022	AECO06_221026	Interlab_D	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW118	MW118	0224_MW118_230405	5/04/2023	EB2310490012	Normal	0.04	<0.02	<0.02	0.02	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04
MW118	MW118	0224_MW118_231031	31/10/2023	EB2334187012	Normal	0.04	<0.02	<0.02	0.02	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04
MW119	MW119	0224_MW119_190909	9/09/2019	EB1924154	Normal	0.011	<0.002	<0.002	<0.002	<0.002	0.011	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.011
MW119	MW119	0224_QC123_190909	9/09/2019	EB1924154	Field_D	0.012	<0.002	<0.002	<0.002	<0.002	0.012	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.012
MW119	MW119	0224_QC223_190909	9/09/2019	RN1247904	Interlab_D	0.0116	<0.001	<0.001	0.0021	<0.001	0.0095	<0.001	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	0.0116
MW119	MW119	0224_MW119_201029	29/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW119	MW119	0224_MW119_210520	20/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW119	MW119	0224_MW119_211110	10/11/2021	EB2132641	Normal	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.06	<0.02	<0.06	<0.06	<0.06	<0.06	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02
MW119	MW119	0224_MW119_220509	9/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW119	MW119	0224_MW119_221020	20/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW119	MW119	0224_MW119_230404	4/04/2023	EB2310490013	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW119	MW119	0224_MW119_231031	31/10/2023	EB2334187013	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW120	MB1.1	0224_MB01.1_170814	14/08/2017	EB1716701	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	-	-	-	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
MW120	MB1.1	0224_MB01.1_180926	26/09/2018	EB1823571	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	-	-	<0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002
MW120	MB1.1	0224_MB01.1_190528	28/05/2019	EB1913917	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
MW120	MB1.1	0224_MW120_201029	29/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	***<0.01***	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW120	MB1.1	0224_MW120_210521	21/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW120	MB1.1	0224_MW120_210521	11/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW120	MB1.1	0224_MW120_220510	10/05/2022	EB2213545	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW120	MB1.1	0224_MW120_221020	20/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW120	MB1.1	0224_MW120_230404	4/04/2023	EB2310490014	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW120	MB1.1	0224_MW120_231031	31/10/2023	EB2334187014	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW121	MB2.1	0224_MB02.1_170307	7/03/2017	EB1704612	Normal	0.26	<0.02	<0.02	0.18	<0.02	<0.01	-	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.26
MW121	MB2.1	0224_MB02.1_170814	14/08/2017	EB1716701	Normal	0.14	<0.02	<0.02	0.08	<0.02	0.06	-	-	-	<0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.14
MW121	MB2.1	0224_MB02.1_180926	26/09/2018	EB1823571	Normal	0.152	0.013	0.013	0.107	0.006	0.045	-	-	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.188
MW121	MB2.1	0224_MB02.1_190528	28/05/2019	EB1913917	Normal	0.071	0.007	0.006	0.056	0.002	0.015	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.086
MW121	MB2.1	0224_MW121_201029	29/10/2020	EB2028561	Normal	0.13	<0.02	<0.02	0.09	<0.02	0.04	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13
MW121	MB2.1	0224_MW121_210521	21/05/2021	EB2114447	Normal	0.09	<0.02	<0.02	0.07	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09
MW121	MB2.1	0224_MW121_211111	11/11/2021	EB2132641	Field_D	0.1	<0.02	<0.02	0.07	<0.02	0.03	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.1
MW121	MB2.1	0224_MW121_211111	11/11/2021	EB2132641	Normal	0.11	<0.02	<0.02	0.07	<0.02	0.04	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.11

						Sum of PFHxS and PFOS	Perfluoroalkyl Sulfonic Acids						Perfluoroalkyl Carbonic Acids													Perfluoroalkyl Sulfonamides							Fluorotelomer Sulfonic Acids				Sum of PFAS
							PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSA	EtFOSA	MeFOSE	EtFOSE	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FtS	8:2 FTS	10:2 FTS	
					Unit	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	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	µg/L	µg/L
					LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.005	0.005	0.005	0.005	0.002	0.002	0.005	0.005	0.005	0.005	0.002
NEMP (HEPA, 2020) Human Health Drinking Water						0.07											0.56																		
NHMRC (HEPA, 2020) Human Health Recreational Water						**2.0**											**10**																		
NEMP (HEPA, 2020) Ecological Freshwater 99% Species Protection											0.00023						19																		
Location	**Alt ID**	**Sample**	**Date**	**Lab Report**	**Type**																														
MW121	MB2.1	0224_MW121_211111	11/11/2021	RN1335135	Interlab_D	0.112	<0.01	<0.01	0.081	<0.01	0.031	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.112
MW121	MB2.1	0224_MW121_220511	11/05/2022	EB2213545	Normal	0.08	<0.02	<0.02	0.06	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08
MW121	MB2.1	0224_QC123_220511	11/05/2022	EB2213545	Field_D	0.08	<0.02	<0.02	0.06	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.08
MW121	MB2.1	0224_QC223_220511	11/05/2022	AECO06_220517	Interlab_D	0.044	<0.01	<0.01	0.044	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.044
MW121	MB2.1	0224_MW121_221020	20/10/2022	EB221148	Normal	0.09	<0.02	<0.02	0.06	<0.02	0.03	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09
MW121	MB2.1	0224_QC134_221020	20/10/2022	EB221148	Field_D	0.09	<0.02	<0.02	0.06	<0.02	0.03	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09
MW121	MB2.1	0224_QC234_221020	20/10/2022	AECO06_221026	Interlab_D	0.036	<0.01	<0.01	0.036	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.036
MW121	MB2.1	0224_QC100_230404	4/04/2023	EB2310490020	Duplicate	0.13	<0.02	<0.02	0.09	<0.02	0.04	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13
MW121	MB2.1	0224_QC200_230404	4/04/2023	AECO06_230412	Triplicate	0.102	<0.01	<0.01	0.076	<0.01	0.026	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.102
MW121	MB2.1	0224_MW121_230404	4/04/2023	EB2310490015	Normal	0.13	<0.02	<0.02	0.09	<0.02	0.04	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13
MW121	MB2.1	0224_QC100_231031	31/10/2023	EB2334187020	Duplicate	0.09	<0.02	<0.02	0.06	<0.02	0.03	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09
MW121	MB2.1	0224_QC200_231031	31/10/2023	RN1410641	Triplicate	0.092	<0.01	<0.01	0.065	<0.01	0.027	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.09
MW121	MB2.1	0224_MW121_231031	31/10/2023	EB2334187015	Normal	0.1	<0.02	<0.02	0.06	<0.02	0.04	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.1
MW122	MB3.1	0224_MB03.1_180924	24/09/2018	EB1823571	Normal	0.284	0.028	0.031	0.252	0.01	0.032	-	-	-	<0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.353
MW122	MB3.1	0224_MB03.1_190528	28/05/2019	EB1914877	Normal	0.188	0.017	0.021	0.169	0.008	0.019	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.234
MW122	MB3.1	0224_MW122_201029	29/10/2020	EB2028561	Normal	0.16	0.02	<0.02	0.16	<0.02	<0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.18
MW122	MB3.1	0224_MW122_210521	21/05/2021	EB2114447	Normal	0.2	<0.02	<0.02	0.17	<0.02	0.03	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.2
MW122	MB3.1	0224_MW122_211111	11/11/2021	EB2132641	Normal	0.12	<0.02	<0.02	0.1	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.12
MW122	MB3.1	0224_MW122_211111	11/11/2021	EB2132641	Field_D	0.14	<0.02	<0.02	0.12	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.14
MW122	MB3.1	0224_MW122_211111	11/11/2021	RN1335135	Interlab_D	0.11	0.011	0.011	0.11	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.132
MW122	MB3.1	0224_MW122_220510	10/05/2022	EB2213545	Normal	0.2	<0.02	<0.02	0.16	<0.02	0.04	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.2
MW122	MB3.1	0224_QC124_220510	10/05/2022	EB2213545	Duplicate	0.17	<0.02	<0.02	0.13	<0.02	0.04	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.17
MW122	MB3.1	0224_QC224_220510	10/05/2022	AECO06_220517	Interlab_D	0.133	<0.01	0.011	0.11	<0.01	0.023	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.144
MW122	MB3.1	0224_MW122_221020	20/10/2022	EB221148	Normal	0.19	<0.02	<0.02	0.13	<0.02	0.06	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.19
MW122	MB3.1	0224_QC135_221020	20/10/2022	EB221148	Field_D	0.17	<0.02	<0.02	0.12	<0.02	0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.17
MW122	MB3.1	0224_QC235_221020	20/10/2022	AECO06_221026	Interlab_D	0.109	<0.01	<0.02	0.085	<0.01	0.024	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.109
MW122	MB3.1	0224_MW122_230404	4/04/2023	EB2310490016	Normal	0.2	<0.02	<0.02	0.15	<0.02	0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.2
MW122	MB3.1	0224_QC101_230404	4/04/2023	EB2310490021	Duplicate	0.2	<0.02	<0.02	0.15	<0.02	0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.2
MW122	MB3.1	0224_QC201_230404	4/04/2023	AECO06_230412	Triplicate	0.166	0.011	0.012	0.13	<0.01	0.036	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.109
MW122	MB3.1	0224_MW122_231031	31/10/2023	EB2334187016	Normal	0.15	<0.02	<0.02	0.12	<0.02	0.03	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15
MW122	MB3.1	0224_QC101_231031	31/10/2023	EB2334187021	Duplicate	0.15	<0.02	<0.02	0.13	<0.02	0.02	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15
MW122	MB3.1	0224_QC201_231031	31/10/2023	RN1410641	Triplicate	0.141	<0.02	0.012	0.13	<0.01	0.011	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.14

							Perfluoroalkyl Sulfonic Acids						Perfluoroalkyl Carbonic Acids											Perfluoroalkyl Sulfonamides							Fluorotelomer Sulfonic Acids				
						Sum of PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSA	EtFOSA	MeFOSE	EtFOSE	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FtS	8:2 FTS	10:2 FTS	Sum of PFAS
					Unit	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	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	µg/L	µg/L
					LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.005	0.005	0.005	0.005	0.002	0.002	0.005	0.005	0.005	0.005	0.002
NEMP (HEPA, 2020) Human Health Drinking Water						0.07											0.56																		
NHMRC (HEPA, 2020) Human Health Recreational Water						**2.0**											**10**																		
NEMP (HEPA, 2020) Ecological Freshwater 99% Species Protection											0.00023						19																		
Location	**Alt ID**	**Sample**	**Date**	**Lab Report**	**Type**																														
POT001	WS01	WS01	6/07/2017	EB1713783	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
POT001	WS01	0224_WS01_180927	27/09/2018	EB1823571	Normal	0.043	0.004	0.004	0.037	<0.002	0.006	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.051
POT001	WS01	0224_WS01_190529	29/05/2019	EB1913917	Normal	0.022	0.002	<0.002	0.022	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.024
POT001	WS01	0224_POT001_201028	28/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
POT001	WS01	0224_POT001_210520	20/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
POT001	WS01	0224_POT001_211110	10/11/2021	EB2132641	Normal	0.02	<0.02	<0.02	0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02
POT001	WS01	0224_POT001_220509	9/05/2022	EB2213545	Normal	0.03	<0.02	<0.02	0.03	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03
POT001	WS01	0224_POT001_221020	20/10/2022	EB221148	Normal	0.03	<0.02	<0.02	0.03	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03
POT001	WS01	0224_POT001_230404	4/04/2023	EB2310490017	Normal	0.03	<0.02	<0.02	0.03	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03
POT001	WS01	0224_POT001_231031	31/10/2023	EB2334187017	Normal	0.03	<0.02	<0.02	0.03	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03
POT002	WS02	WS01	6/07/2017	EB1713783	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
POT002	WS02	0224_WS02_180927	27/09/2018	EB1823571	Normal	0.02	<0.002	0.002	0.018	<0.002	0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.022
POT002	WS02	0224_WS02_190529	29/05/2019	EB1913917	Normal	0.01	<0.002	<0.002	0.01	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.01
POT002	WS02	0224_WS02_190529	29/05/2019	EB1913917	Normal	0.01	<0.002	<0.002	0.01	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.01
POT003	WS03	WS01	6/07/2017	EB1713783	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
POT003	WS03	0224_WS03_190605	27/09/2018	EB1823571	Normal	0.014	<0.002	<0.002	0.014	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.014
POT003	WS03	0224_QC116_190605	5/06/2019	EB1914500	Field_D	0.008	<0.002	<0.002	0.008	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.008
POT003	WS03	0224_QC216_190605	5/06/2019	RN1235906	Interlab_D	0.0087	<0.001	<0.001	0.0087	<0.001	<0.002	<0.001	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	0.0087
POT003	WS03	0224_WS03_190605	5/06/2019	EB1914500	Normal	0.008	<0.002	<0.002	0.008	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.008
POT004	WS04	WS01	6/07/2017	EB1713783	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
POT004	WS04	0224_WS03_190605	27/09/2018	EB1823571	Normal	0.013	<0.002	<0.002	0.013	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.013
POT004	WS04	0224_WS04_190529	29/05/2019	EB1913917	Normal	0.01	<0.002	<0.002	0.01	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.010
POT005	WS05	0224_WS04_190529	27/09/2018	EB1823571	Normal	0.01	<0.002	<0.002	0.01	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.013
POT005	WS05	0224_WS05_190529	29/05/2019	EB1913917	Normal	0.007	<0.002	<0.002	0.007	<0.002	<0.002	<0.002	<0.01	<0.002	0.009	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	0.01	<0.005	<0.005	0.026
POT005	WS05	0224_POT005_201028	28/10/2020	EB2028561	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
POT005	WS05	0224_POT005_210520	20/05/2021	EB2114447	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
POT005	WS05	0224_POT005_2101110	10/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
POT005	WS05	0224_POT005_220509	9/05/2022	EB2213545	Normal	0.02	<0.02	<0.02	0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02
POT005	WS05	0224_POT005_221020	22/10/2022	EB221148	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
POT005	WS05	0224_POT005_230404	4/04/2023	EB2310490018	Normal	0.01	<0.02	<0.02	0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01
POT005	WS05	0224_POT005_231031	31/10/2023	EB2334187018	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
POT006	RN156623	0224_RN156623_190529	29/05/2019	EB1913917	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
POT101	GW01	0224_GW01_190815	15/08/2019	EB1921486	Normal	<0.002	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.006
POT102	GW02	0224_GW02_190815	15/08/2019	EB1921486	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
POT103	GW03	0224_GW03_190815	15/08/2019	EB1921486	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
POT104	GW04	0224_GW04_190913	13/09/2019	EB1924153	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
POT105	GW05	0224_GW05_190913	13/09/2019	EB1924164	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
POT106	GW06	0224_GW06_190913	13/09/2019	EB1924163	Normal	0.004	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.004
POT107	GW07	0224_GW07_190913	13/09/2019	EB1924162	Normal	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
POT108	GW08	0224_GW08_191024	24/10/2019	EB1928343	Normal	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003
POT108	GW08	0224_QC125_191024	24/10/2019	EB1928343	Field_D	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003
POT108	GW08	0224_QC225_191024	24/10/2019	RN1251547	Interlab_D	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002

LOR is limit of reporting
µg/L is micrograms per litre
-' denotes no analysis undertaken
<' denotes concentration is less than

Location ID	Sample Date	DO (mg/L)	EC (µS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Turbidity	Odour	Sheen
SW004	27/10/2020	4.75	253.9	7.51	79.4	284.4	25.1	Clear	No odour	No sheen
SW004	19/05/2021	7.01	155.5	5.35	201	406	17.9	Clear	No odour	No sheen
SW004	10/11/2021	6.13	103.4	4.73	70.9	275.9	23.8	Medium	No odour	No sheen
SW004	11/05/2022	5.07	136	5.08	168	373	21.4	Clear	No odour	No sheen
SW004	18/10/2022	3.99	172.8	6.07	108.8	313.8	22.7	Clear	No odour	No sheen
SW005	27/10/2020	3.13	232.4	6.17	74.9	279.9	24.6	Clear	No odour	Slight organic sheen
SW005	19/05/2021	5.68	132.7	5.85	108.5	313.5	18.8	Clear	No odour	No sheen
SW005	11/11/2021	5.65	134	4.67	92.3	297.3	23.5	Low	No odour	No sheen
SW005	11/05/2022	4.39	114	4.98	162	367	21.5	Slightly turbid	No odour	No sheen
SW005	18/10/2022	3.82	135	6.08	105.6	310.6	21.7	Slightly turbid, clear/brown	No odour	No sheen
SW006	27/10/2020	4.56	202.8	6.33	120.4	325.4	24.9	Clear	No odour	Slight organic sheen
SW006	20/05/2021	3.07	86.7	5.89	140	345	17.1	Clear	No odour	No sheen
SW006	9/11/2021	2.83	184.8	8.79	111.2	316.2	23.7	Low	No odour	No sheen
SW006	12/05/2022	3.16	87	5.29	144	349	22.3	Slightly turbid	No odour	No sheen
SW006	19/10/2022	4.2	144.6	6.78	86.3	291.3	21.8	Slightly turbid	No odour	No sheen
SW006	4/04/2023	1.01	120	5.88	35.8	240.8	22.9	-	No odour	No sheen
SW006	30/10/2023	3.15	205.5	6.65	-57.4	147.6	28.3	-	No odour	No sheen
SW007	26/10/2020	4.2	195.7	5.95	131.9	336.9	25.5	Clear	No odour	No sheen
SW007	20/05/2021	9.28	99.5	4.27	277	482	16.5	Clear	No odour	No sheen
SW007	8/11/2021	3.23	160.1	4.62	104.5	309.5	25.9	Low	No odour	No sheen
SW007	10/05/2022	3.78	106	4.71	196	401	21.4	Medium	No odour	No sheen
SW007	18/10/2022	2.8	132	5.5	111.4	316.4	25	Low, clear	No odour	No sheen
SW007	3/04/2023	2.43	161.2	5.45	40.6	245.6	25.1	-	No odour	No sheen
SW007	30/10/2023	4.09	289.8	6.47	-78.8	126.2	29	-	No odour	No sheen
SW008	27/10/2020	3.08	41392	6.82	84.2	289.2	26.2	Clear	No odour	No sheen
SW008	19/05/2021	5.61	2959	6.31	149.7	354.7	19.5	Clear	No odour	No sheen
SW008	11/05/2022	4.57	166	5.06	143	348	21.4	Clear	No odour	No sheen
SW008	17/10/2022	4.25	25221	6.66	101.6	306.6	25.6	Clear	No odour	No sheen
SW009	26/10/2020	0.26	225.9	5.51	51	256	21.5	Clear	No odour	Slight organic sheen
SW009	19/05/2021	4.11	232	6.93	166.7	371.7	17.5	Clear	No odour	No sheen
SW009	8/11/2021	1.47	213.9	5.03	100.4	305.4	22.4	Low	No odour	No sheen
SW009	11/05/2022	5.15	88.3	5.27	148	353	23.1	Turbid	No odour	No sheen
SW009	19/10/2022	4.72	213.7	6.36	55.9	260.9	21.9	Low-medium	No odour	No sheen
SW009	3/04/2023	4.18	381.1	6.27	96.6	301.6	23.7	-	No odour	No sheen
SW009	30/10/2023	2.88	308.2	5.71	36.1	241.1	25	-	No odour	No sheen
SW012	26/10/2020	5.31	46198	7.18	49.1	254.1	27.7	Clear	No odour	No sheen
SW012	19/05/2021	5.16	9667	6.91	122	327	19.3	Medium	No odour	No sheen
SW012	11/05/2022	4.63	398	5.34	136	341	21.2	Clear	No odour	No sheen
SW012	17/10/2022	3.9	39340	7.25	57.5	262.5	24.9	Low, clear/brown	No odour	No sheen
SW013	26/10/2020	6.02	41260	7.29	41.1	246.1	23.6	Clear	No odour	No sheen
SW013	19/05/2021	5.77	9461	6.17	130.8	335.8	21.1	Clear	No odour	No sheen
SW013	10/05/2022	5.78	109	4.8	203	408	21.6	Medium	No odour	No sheen
SW013	18/10/2022	4.62	24179	6.71	108.1	313.1	27.4	Low-medium, clear/brown	No odour	No sheen
SW013	3/04/2023	3.91	45517	6.99	130.2	335.2	29.3	-	No odour	No sheen
SW013	30/10/2023	3.75	58560	7.37	157.8	362.8	26.5	-	No odour	No sheen
SW014	26/10/2020	4.87	220.1	7.83	52	257	22.3	Low	No odour	No sheen
SW014	19/05/2021	5.7	121.4	6.8	151.2	356.2	17.8	Clear	No odour	No sheen
SW014	8/11/2021	2.58	463.6	8.88	49.7	254.7	24.7	Clear	No odour	No sheen
SW014	10/05/2022	3.90	123	4.9	194	399	21	Clear	No odour	No sheen
SW014	18/10/2022	3.56	545	6.7	95.2	300.2	25.6	Clear/brown	No odour	No sheen
SW014	3/04/2023	3.86	444.3	5.94	42.6	247.6	27.1	-	No odour	No sheen
SW014	30/10/2023	1.61	220.8	5.79	120.2	325.2	24.8	-	No odour	No sheen
SW016	26/10/2020	4.48	174.3	7.7	93.4	298.4	23.1	Clear	No odour	No sheen
SW016	19/05/2021	8.1	87	5.16	240	445	17.3	Clear	No odour	No sheen
SW016	9/11/2021	6.84	140.8	4.9	109.3	314.3	22.5	Low	No odour	No sheen
SW016	12/05/2022	4.80	67.7	5.18	144	349	21.7	Medium	No odour	No sheen
SW016	20/10/2022	5.52	167.7	4.91	152.6	357.6	21	Clear/brown, low turbidity	No odour	No sheen
SW016	3/04/2023	5.64	136.7	5.67	72.5	277.5	23.5	-	No odour	No sheen
SW016	30/10/2023	5.61	182.7	6.3	-83	122	28.4	-	No odour	No sheen
SW017	27/10/2020	5.91	169.9	7.16	97.9	302.9	23.2	Clear	No odour	No sheen
SW017	21/05/2021	3.42	932	6.85	146	351	19.2	Clear	No odour	No sheen
SW017	9/11/2021	4.89	53.9	8.64	133.7	338.7	23.2	Medium	No odour	No sheen
SW017	9/05/2022	6.80	107	6.27	165	370	20.9	Slightly turbid	No odour	No sheen
SW017	21/10/2022	6.5	39	6.55	92.3	297.3	22	Low	No odour	No sheen
SW017	3-5/04/2023	Dry								
SW017		Dry								
SW018	27/10/2020	5.79	117.9	7.23	101	306	24	Clear	No odour	No sheen
SW018	20/05/2021	6.34	434	6.9	149	354	22.0	Turbid	No odour	No sheen
SW018	9/11/2021	5.52	15.1	7.42	157.8	362.8	22.7	Turbid	No odour	No sheen
SW018	9/05/2022	6.00	78	6.1	163	368	21.3	Clear	No odour	No sheen
SW018	21/10/2022	6.07	34	6.31	94.5	299.5	22.3	Clear	No odour	No sheen
SW018	3-5/04/2023	Dry								
SW018		Dry								
SW019	28/10/2020	4.03	206.7	5.9	179.6	384.6	24.5	Low	No odour	No sheen
SW019	20/05/2021	9.56	189	6.09	139	344	20.0	Clear	No odour	No sheen
SW019	9/11/2021	5.73	25.9	7.58	180.8	385.8	22.7	Medium	No odour	No sheen
SW019	9/05/2022	5.81	143	5.35	173	378	20.5	Grey, silty	No odour	No sheen
SW019	20/10/2022	3.5	194.1	6.64	53.7	258.7	19.6	High, brown sediment	No odour	No sheen
SW019	4/04/2023	6.96	236.8	7.16	76.3	281.3	24.1	-	No odour	No sheen
SW019		Dry								
SW020	29/10/2020	4.31	117.9	4.9	215.2	420.2	25.1	Clear	No odour	No sheen
SW020	18/05/2021	Not sampled- stakeholder could not be contacted to obtain access permission.								
SW020	21/05/2021	Not sampled- stakeholder could not be contacted to obtain access permission.								
SW021	13/10/2020	4.6	182	-	155	360	20.4	-	No odour	No sheen
SW021	18/05/2021	0.96	115	5.9	16.9	221.9	16.9	Clear	Slight organic odour	No sheen
SW021	11/11/2021	1.25	157.4	3.75	23.8	228.8	25.3	Low	No odour	No sheen
SW021	13/05/2022	2.50	107	5.13	119	324	21.7	Clear	No odour	No sheen
SW021	19/10/2022	3.61	187.8	6.55	50.6	255.6	20.5	low-medium, brown/clear	No odour	No sheen
SW021	5/04/2023	0.43	121	5.81	97	302	22.7	-	No odour	No sheen
SW021	1/11/2023	3.81	164	6.22	102	307	22.5	-	No odour	No sheen
SW022	13/10/2020	4.77	135	-	243	448	26.1	-	No odour	No sheen
SW022	18/05/2021	2.81	92	7.12	112	317	17.9	Turbid	No odour	No sheen
SW022	11/11/2021	2.18	68.5	4.41	105.3	310.3	25.8	Medium	No odour	No sheen
SW022	12/05/2022	3.86	72	5.24	163	368	23.5	Clear	No odour	No sheen
SW022	19/10/2022	1.4	119.5	5.09	62.2	267.2	20.5	Medium, brown	No odour	No sheen
SW022	5/04/2023	0.72	108.9	5.98	88.7	293.7	21.9	-	No odour	No sheen
SW022	1/11/2023	1.1	114.7	5.75	45.1	250.1	23.5	-	No odour	No sheen
SW023	13/10/2020	6.27	125	-	247	452	26.2	-	No odour	No sheen
SW023	18/05/2021	5.05	69	6.81	70	275	19.2	Turbid	No odour	No sheen
SW023	11/11/2021	5.33	81.5	5.45	64.1	269.1	27.7	Medium	No odour	No sheen
SW023	12/05/2022	2.72	106	5.72	103	308	23.6	Clear	No odour	No sheen
SW023	19/10/2022	1.05	105.5	6.19	61.4	266.4	20.3	Medium, brown	No odour	No sheen
SW023	5/04/2023	1.74	66.7	6.12	87.9	292.9	24.3	-	No odour	No sheen
SW023	1/11/2023	5.48	88.4	6.97	67.2	272.2	24.1	-	No odour	No sheen
SW024	29/10/2020	1.91	174.4	5.39	167.1	372.1	22.8	Clear	No odour	No sheen
SW024	19/05/2021	1.1	126	5.5	184	389	19.2	Clear	No odour	No sheen
SW024	11/11/2021	5.48	170.2	5.12	52.9	257.9	26.8	Turbid	No odour	No sheen
SW024	9/05/2022	Not sampled- stakeholder declined access.								
SW024	17/10/2022	Not sampled- stakeholder declined access.								
SW025	28/10/2020	3.85	187.1	5.62	158.4	363.4	23.5	Clear	No odour	No sheen

Location ID	Sample Date	DO (mg/L)	EC (µS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Turbidity	Odour	Sheen
SW025	19/05/2021	1.74	118	5.62	195	400	17.9	Clear	Organic odour	No sheen
SW025	9/11/2021	4.42	128.9	5.83	150.1	355.1	23.5	Medium	No odour	No sheen
SW025	12/05/2022	3.09	94	5.29	134	339	21.6	Brown	No odour	No sheen
SW025	19/10/2022	2.74	151.8	6.4	48.7	253.7	20.2	Low, clearish/brown	No odour	No sheen
SW025	5/04/2023	0.53	113.8	6	88.6	293.6	23.4	-	No odour	No sheen
SW025	31/10/2023	5.02	158.2	6.28	-134.3	70.7	25.6	-	No odour	No sheen
SW026	28/10/2020	1.82	224.2	6.45	150.3	355.3	22	Turbid	No odour	No sheen
SW027	18/05/2021	3.46	173	5.97	100	305	16.8	Turbid	No odour	No sheen
SW027	9/11/2021	3.53	93.7	9.63	110.7	315.7	22.8	Turbid	No odour	No sheen
SW027	11/05/2022	3.23	107	5.97	116	321	21	Turbid	No odour	No sheen
SW027	19/10/2022	1	145.6	6.45	74.4	279.4	18.4	Turbid, brown	No odour	No sheen
SW027	5/04/2023	1.2	198.4	6.81	83.8	288.8	21.1	-	No odour	No sheen
SW027	1/11/2023	1.09	214.6	6.86	24.1	229.1	21.3	-	No odour	No sheen

Notes
DO is dissolved oxygen
EC is electrical conductivity
E_h is oxidation reduction potential
Oxidation reducation potential (E_r) measured with a platinum electrode and a silver/silver chloride reference electrode (E_r) and converted to E_h by E_h = E_r + 205 mV (based on a groundwater
Temp is Temperature
µS/cm is microsiemens per centrimetre
ºC is degrees Celcius
mV is millivolts
` - No data

						Perfluoroalkyl Sulfonic Acids						Perfluoroalkyl Carbonic Acids											Perfluoroalkyl Sulfonamides							Fluorotelomer Sulfonic Acids				
					Sum of PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSA	EtFOSA	MeFOSE	EtFOSE	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	Sum of PFAS
				Unit	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	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	µg/L	µg/L
				LOR	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0003
NHMRC (2019) Recreational Contact with Waters					2.0											10																		
NEMP (HEPA, 2018) Ecological Freshwater 99% Species Protection										0.00023						19																		
HEPA (2020)Ecological Freshwater 95% Species Protection (SW025 only)										*0.13*						*220*																		
ID	**Sample**	**Setting**	**Location**	**Date**																														
SW001	SW01	Freshwater	Kauri Creek	8/03/2017	<0.01	-	-	<0.01	-	<0.01	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
SW002	SW02	Freshwater	Mosquito Creek	16/08/2017	<0.01	-	-	<0.01	-	<0.01	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
SW003	SW03	Estuarine	Mosquito Creek	8/03/2017	<0.05	-	-	<0.05	-	<0.05	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05
SW004	SW04	Freshwater	Kauri Creek	15/08/2017	<0.01	-	-	<0.01	-	<0.01	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
SW004	0224_SW101_180927	Freshwater	Kauri Creek	27/09/2018	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW004	0224_SW04_190529	Freshwater	Kauri Creek	29/05/2019	<0.0003	<0.0005	-	<0.0005	-	<0.0003	-	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.0003
SW004	0224_SW004_201027	Freshwater	Kauri Creek	27/10/2020	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.002	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW004	0224_SW004_210519	Freshwater	Kauri Creek	19/05/2021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.003	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0045	<0.0016	<0.004	<0.005	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW004	0224_SW004_210519	Freshwater	Kauri Creek	11/11/2021	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.004	<0.202	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0019	<0.0008	<0.002	<0.002	<0.002	<0.002	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	<0.0008
SW004	0224_SW004_220511	Freshwater	Kauri Creek	11/05/2022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0079	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0157	<0.0157	<0.0393	<0.0016	<0.039	<0.039	<0.039	<0.039	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0157
SW004	0224_SW004_221018	Freshwater	Kauri Creek	18/10/2022	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW005	SW05	Freshwater	Mosquito Creek	8/03/2017	<0.01	-	-	<0.01	-	<0.01	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
SW005	0224_SW05_190529	Freshwater	Mosquito Creek	29/05/2019	<0.0003	<0.0005	-	<0.0005	-	<0.0003	-	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.0003
SW005	0224_SW005_201027	Freshwater	Mosquito Creek	27/10/2020	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW005	0224_SW005_210519	Freshwater	Mosquito Creek	19/05/2021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.002	0.0051	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0051
SW005	0224_SW005_210519	Freshwater	Mosquito Creek	11/11/2021	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.004	<0.012	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0020	<0.0008	<0.002	<0.002	<0.002	<0.002	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	<0.0008
SW005	0224_SW005_220511	Freshwater	Mosquito Creek	11/05/2022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0081	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0162	<0.0162	<0.0404	<0.0016	<0.04	<0.04	<0.04	<0.04	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0162
SW005	0224_SW005_221018	Freshwater	Mosquito Creek	18/10/2022	<0.002	<0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW006	SW06	Freshwater	Tributary of Kangaroo Creek	8/03/2017	4.62	-	-	0.69	-	3.93	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.14
SW006	0224_SW102_180726	Freshwater	Tributary of Kangaroo Creek	26/07/2018	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW006	0224_SW06_190527	Freshwater	Tributary of Kangaroo Creek	27/05/2019	0.0013	<0.0005	-	0.0008	-	0.0005	-	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	0.0013
SW006	0224_SW006_201027	Freshwater	Tributary of Kangaroo Creek	27/10/2020	0.0017	<0.0016	<0.0016	0.0017	<0.0016	<0.0016	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0039	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0017
SW006	0224_SW006_210520	Freshwater	Tributary of Kangaroo Creek	20/05/2021	0.0016	<0.0016	<0.0016	0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.0035	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0016
SW006	0224_SW006_210520	Freshwater	Tributary of Kangaroo Creek	9/11/2021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.0008	<0.0008	<0.002	<0.002	<0.002	<0.002	<0.0016
SW006	0224_QC228_220512	Freshwater	Tributary of Kangaroo Creek	12/05/2022	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.005	0.014	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.005	<0.005	<0.01	<0.01	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	0.014
SW006	0224_QC128_220512	Freshwater	Tributary of Kangaroo Creek	12/05/2022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0082	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0412	<0.0016	<0.004	<0.004	<0.041	<0.041	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0165
SW006	0224_SW006_220512	Freshwater	Tributary of Kangaroo Creek	13/05/2022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0082	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.041	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0164
SW006	0224_SW006_221019	Freshwater	Tributary of Kangaroo Creek	19/10/2022	<0.002	<0.008	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW006	0224_QC133_221019	Freshwater	Tributary of Kangaroo Creek	19/10/2022	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.024	<0.01	<0.024	<0.024	<0.024	<0.024	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW006	0224_QC233_221019	Freshwater	Tributary of Kangaroo Creek	19/10/2022	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW006A	0224_SW103_180726	Freshwater	Tributary of Kangaroo Creek	26/07/2018	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW006	0224_SW006_230403	Freshwater	Tributary of Kangaroo Creek	3/04/2023	0.0016	<0.0016	<0.0005	0.0016	<0.0005	<0.0006	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.004	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0016
SW006	0224_QC102_220403	Freshwater	Tributary of Kangaroo Creek	3/04/2023	0.0021	<0.0016	<0.0005	0.0021	<0.0005	<0.0003	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.004	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0021
SW006	0224_QC202_220403	Freshwater	Tributary of Kangaroo Creek	3/04/2023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW006	0224_SW006_231030	Freshwater	Tributary of Kangaroo Creek	30/10/2023	0.0022	<0.0005	<0.0015	0.0022	<0.0005	<0.0009	<0.0005	<0.008	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.004	<0.0005	<0.001	<0.004	<0.004	<0.004	<0.0005	<0.0006	<0.001	<0.001	<0.001	<0.001	0.0022
SW006	0224_QC102_231030	Freshwater	Tributary of Kangaroo Creek	30/10/2023	<0.0016	<0.0005	<0.002	<0.002	<0.0005	<0.0016	<0.0005	<0.008	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0016	<0.0041	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0005
SW006	0224_QC202_231030	Freshwater	Tributary of Kangaroo Creek	30/10/2023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW007	SW07	Freshwater	Kangaroo Creek	16/08/2017	<0.01	-	-	<0.01	-	<0.01	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
SW007	0224_SW104_180927	Freshwater	Kangaroo Creek	27/09/2018	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003
SW007	0224_SW07_190527	Freshwater	Kangaroo Creek	28/05/2019	<0.0003	<0.0005	-	<0.0005	-	<0.0003	-	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.0003
SW007	0224_SW007_201027	Freshwater	Kangaroo Creek	27/10/2020	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW007	0224_SW007_210520	Freshwater	Kangaroo Creek	20/05/2021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.003	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW007	0224_SW007_210520	Freshwater	Kangaroo Creek	9/11/2021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.0008	<0.0008	<0.002	<0.002	<0.002	<0.002	<0.0016
SW007	0224_SW007_220510	Freshwater	Kangaroo Creek	10/05/2022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0079	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0394	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0158
SW007	0224_SW007_221018	Freshwater	Kangaroo Creek	18/10/2022	<0.002	<0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW007	0224_SW007_230403	Freshwater	Kangaroo Creek	3/04/2023	<0.0003	<0.0016	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0041	<0.0005	<0.004	<0.004	<0.001	<0.004	<0.0005	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0016
SW007	0224_SW007_231030	Freshwater	Kangaroo Creek	30/10/2023	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.008	<0.0005	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0040	<0.0005	<0.001	<0.001	<0.001	<0.004	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003
SW008	0224_SW106_180726	Estuarine	Kauri Creek	26/07/2018	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW008	0224_SW105_180928	Estuarine	Kauri Creek	28/09/2018	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW008	0224_SW08_190530	Estuarine	Kauri Creek	30/05/2019	<0.0003	<0.0005	-	<0.0005	-	<0.0003	-	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.0003
SW008	0224_SW008_201027	Estuarine	Kauri Creek	27/10/2020	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW008	0224_SW008_210519	Estuarine	Kauri Creek	19/05/2021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.002	<0.003	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW008	0224_SW008_210519	Estuarine	Kauri Creek	10/11/2021	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.004	<0.012	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0020	<0.0008	<0.002	<0.002	<0.002	<0.002	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	<0.0008
SW008	0224_SW008_220511	Estuarine	Kauri Creek	11/05/2022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0079	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0397	<0.0016	<0.004	<0.04	<0.04	<0.04	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0159
SW008	0224_SW008_221017	Estuarine	Kauri Creek	17/10/2022	<0.002	<0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW009	SW09	Freshwater	Kangaroo Creek	9/03/2017	0.07	-	-	<0.02	-	0.07	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.07
SW009	SW09	Freshwater	Kangaroo Creek	26/07/2018	<0.01	-	-	<0.01	-	<0.02	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.02
SW009	0224_SW09_190530	Freshwater	Kangaroo Creek	30/05/2019	<0.0003	<0.0005	-	<0.0005	-	<0.0003	-	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.0003
SW009	0224_SW009_201027	Freshwater	Kangaroo Creek	27/10/2020	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.002	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW009	0224_SW009_210519	Freshwater	Kangaroo Creek	19/05/2021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.006	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.108	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW009	0224_SW009_210519	Freshwater	Kangaroo Creek	8/11/2021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.0008	<0.0008	<0.002	<0.002	<0.002	<0.002	<0.0016
SW009	0224_SW009_220511	Freshwater	Kangaroo Creek	11/05/2022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0079	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0395	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0158
SW009	0224_SW009_221019	Freshwater	Kangaroo Creek	19/10/2022	<0.002	<0.028	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW009	0224_SW009_230403	Freshwater	Kangaroo Creek	3/04/2023	<0.0003	<0.0016	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0041	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0016
SW009	0224_SW009_231030	Freshwater	Kangaroo Creek	30/10/2023	<0.0009	<0.0005	<0.0005	<0.0015	<0.0005	<0.0009	<0.0005	<0.008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0041	<0.0005	<0.001	<0.001	<0.004	<0.004	<0.0005	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0005
SW010	SW10	Freshwater	Mosquito Creek	16/08/2017	<0.01	-	-	<0.01	-	<0.01	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
SW012	SW12	Estuarine	Kauri Creek	9/03/2017	0.16	-	-	<0.05	-	0.16	-	-	-	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.16
SW012	0224_SW107_180726	Estuarine	Kauri Creek	26/07/2018	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW012	0224_SW12_190529	Estuarine	Kauri Creek	29/05/2019	<0.0003	<0.0005	-	<0.0005	-	<0.0003	-	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.0003
SW012	0224_SW012_201026	Estuarine	Kauri Creek	26/10/2020	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW012	0224_SW012_210519	Estuarine	Kauri Creek	19/05/2021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.01	<0.0035	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW012	0224_SW009_210519	Estuarine	Kauri Creek	8/11/2021	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0032	<0.0032	<0.0032	<0.008	<0.0032	<0.008	<0.008	<0.008	<0.008	<0.0032	<0.0032	<0.001	<0.001	<0.001	<0.001	<0.0003
SW012	0224_SW012_220511	Estuarine	Kauri Creek	11/05/2022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0079	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0397	<0.0016	<0.004	<0.04	<0.04	<0.04	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0159
SW012	0224_SW012_221017	Estuarine	Kauri Creek	17/10/2022	<0.002	<0.008	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW013	SW13	Estuarine	Snapper Creek	9/03/2017	1.16	-	-	0.08	-	1.08	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.16
SW013	0224_SW108_180726	Estuarine	Snapper Creek	26/07/2018	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW013	0224_SW13_190603	Estuarine	Snapper Creek	3/06/2019	0.0008	<0.0005	<0.0005	0.0005	<0.0005	0.0003	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0008
SW013	0224_SW013_201026	Estuarine	Snapper Creek	26/10/2020	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW013	0224_SW013_210519	Estuarine	Snapper Creek	19/05/2021	0.003	<0.0016	<0.0016	0.003	<0.0016	<0.0016	<0.0016	<0.002	0.0027	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0057
SW013	0224_SW013_210519	Estuarine	Snapper Creek	8/11/2021	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0032	<0.0032	<0.0032	<0.008	<0.0032	<0.008	<0.008	<0.008	<0.008	<0.0032	<0.0032	<0.001	<0.001	<0.001	<0.001	<0.0003
SW013	0224_SW013_220510	Estuarine	Snapper Creek	10/05/2022	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0012	<0.0008	<0.0041	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0082	<0.0082	<0.0205	<0.0008	<0.02	<0.02	<0.02	<0.02	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	<0.0082
SW013	0224_SW013_221018	Estuarine	Snapper Creek	18/10/2022	0.009	<0.008	<0.002	0.005	<0.002	0.004	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.009
SW013	0224_SW013_230403	Estuarine	Snapper Creek	3/04/2023	0.0011	<0.0016	<0.0005	0.0011	<0.0005	<0.0003	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0039	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0011
SW013	0224_SW013_231030	Estuarine	Snapper Creek	30/10/2023	<0.0003	<0.0005	<0.0008	<0.0005	<0.0005	<0.0003	<0.0005	<0.008	<0.0005	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0040	<0.0005	<0.001	<0.001	<0.004	<0.004	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003
SW014	SW14	Freshwater	Tributary of Snapper Creek	15/08/2017	<0.01	-	-	<0.02		<0.01	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01
SW014	0224_SW109_180928	Freshwater	Tributary of Snapper Creek	28/09/2018	0.0027	<0.0005	<0.0005	0.0017	<0.0005	0.001	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0027
SW014	0224_SW14_190603	Freshwater	Tributary of Snapper Creek	3/06/2019	0.0038	<0.0005	<0.0005	0.0023	<0.0005	0.0015	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0038
SW014	0224_SW014_201026	Freshwater	Tributary of Snapper Creek	26/10/2020	0.0021	<0.0016	<0.0016	0.0021	<0.0016	<0.0016	<0.0016	<0.008	<0.003	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0021
SW014	0224_SW014_210519	Freshwater	Tributary of Snapper Creek	19/05/2021	0.0016	<0.0016	<0.0016	0.0016	<0.0016	<0.0016	<0.0016	<0.002	0.0068	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0055	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0084
SW014	0224_SW014_210519	Freshwater	Tributary of Snapper Creek	8/11/2021	0.0027	<0.0016	<0.0016	0.0027	<0.0016	<0.0016	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.0008	<0.0008	<0.002	<0.002	<0.002	<0.002	0.0027
SW014	0224_SW014_220510	Freshwater	Tributary of Snapper Creek	10/05/2022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0018	<0.0016	<0.0081	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0162	<0.0162	<0.0404	<0.0016	<0.004	<0.04	<0.04	<0.04	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0162
SW014	0224_QC122_220510	Freshwater	Tributary of Snapper Creek	10/05/2022	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0012	<0.0008	<0.004	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.008	<0.008	<0.02	<0.0008	<0.02	<0.02	<0.02	<0.02	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	<0.008
SW014	0224_QC222_220510	Freshwater	Tributary of Snapper Creek	10/05/2022	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.005	0.018	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	0.018

Table T4 Surface Water PFAS Analytical Results

						Perfluoroalkyl Sulfonic Acids						Perfluoroalkyl Carbonic Acids											Perfluoroalkyl Sulfonamides							Fluorotelomer Sulfonic Acids				
					Sum of PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSA	EtFOSA	MeFOSE	EtFOSE	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FtS	8:2 FTS	10:2 FTS	Sum of PFAS
				Unit	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	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	µg/L	µg/L
				LOR	0.0003	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.002	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0003
NHMRC (2019) Recreational Contact with Waters					2.0											10																		
NEMP (HEPA, 2018) Ecological Freshwater 99% Species Protection										0.00023						19																		
HEPA (2020)Ecological Freshwater 95% Species Protection (SW025 only)										*0.13*						*220*																		
ID	Sample	Setting	Location	Date																														
SW014	0224_SW014_221018	Freshwater	Tributary of Snapper Creek	18/10/2022	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
SW014	0224_QC130_221018	Freshwater	Tributary of Snapper Creek	18/10/2022	0.003	<0.008	<0.002	0.003	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.003
SW014	0224_QC230_221018	Freshwater	Tributary of Snapper Creek	18/10/2022	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW014	0224_SW014_230403	Freshwater	Tributary of Snapper Creek	3/04/2023	0.0029	<0.0016	<0.0005	0.0021	<0.0005	0.0008	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0041	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0029
SW014	0224_SW014_231030	Freshwater	Tributary of Snapper Creek	30/10/2023	0.0018	<0.0005	<0.0005	0.0018	<0.0005	<0.0018	<0.002	<0.008	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0041	<0.0005	<0.001	<0.001	<0.004	<0.004	<0.0005	<0.0016	<0.001	<0.001	<0.002	<0.002	0.0018
SW015	0224_SW110_180928	Freshwater	Kangaroo Dam	28/09/2018	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003
SW015	0224_SW15_190530	Freshwater	Kangaroo Dam	28/05/2019	<0.0003	<0.0005	-	<0.0005	-	<0.0003	-	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.0003
SW016	0224_SW111_180928	Freshwater	Tributary of Snapper Creek	28/09/2018	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0005
SW016	0224_SW16_190603	Freshwater	Tributary of Snapper Creek	3/06/2019	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003
SW016	0224_SW016_201027	Freshwater	Tributary of Snapper Creek	27/10/2020	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.002	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW016	0224_SW016_210519	Freshwater	Tributary of Snapper Creek	19/05/2021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.002	<0.002	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0705	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW016	0224_SW016_210519	Freshwater	Tributary of Snapper Creek	9/11/2021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.0008	<0.0008	<0.002	<0.002	<0.002	<0.002	<0.0016
SW016	0224_SW016_220512	Freshwater	Tributary of Snapper Creek	13/05/2022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0081	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0163	<0.0163	<0.0407	<0.0016	<0.004	<0.041	<0.041	<0.041	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0163
SW016	0224_SW016_221020	Freshwater	Tributary of Snapper Creek	20/10/2022	<0.002	<0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW016	0224_SW016_230403	Freshwater	Tributary of Snapper Creek	3/04/2023	<0.0003	<0.0016	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0016
SW016	0224_SW016_231030	Freshwater	Tributary of Snapper Creek	30/10/2023	0.0011	<0.0005	<0.0005	<0.0015	<0.0005	0.0011	<0.0005	<0.008	<0.0005	<0.0016	<0.0005	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0041	<0.0005	<0.001	<0.001	<0.004	<0.004	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0011
SW017	0224_SW17_190603	Rainwater	Unlined stormwater channel	3/06/2019	0.0037	0.0012	<0.0005	0.0037	<0.0005	<0.0003	<0.0005	<0.002	<0.0005	<0.0005	0.0008	0.0024	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0081
SW017	0224_SW017_201027	Rainwater	Unlined stormwater channel	27/10/2020	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.012	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0039	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0016
SW017	0224_SW017_210521	Rainwater	Unlined stormwater channel	21/05/2021	0.0151	0.0169	0.0022	0.0151	<0.0016	<0.003	<0.0016	<0.008	0.017	0.0059	<0.0016	0.0072	<0.0016	0.0029	<0.0016	<0.0016	<0.0016	<0.006	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0672
SW017	0224_SW017_210521	Rainwater	Unlined stormwater channel	9/11/2021	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.004	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0020	<0.0008	<0.002	<0.002	<0.002	<0.002	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	<0.0008
SW017	0224_SW017_220509	Rainwater	Unlined stormwater channel	9/05/2022	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0032	<0.0032	<0.008	<0.0005	<0.008	<0.008	<0.008	<0.008	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0032
SW017	0224_SW017_221021	Rainwater	Unlined stormwater channel	21/10/2022	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW018	0224_SW18_190603	Rainwater	Unlined stormwater channel	3/06/2019	0.0089	<0.0005	<0.0005	0.0042	<0.0005	0.0047	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0098
SW018	0224_SW018_201027	Rainwater	Unlined stormwater channel	27/10/2020	0.0021	<0.0016	<0.0016	0.0021	<0.0016	<0.0049	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	0.0038	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0059
SW018	0224_SW018_210520	Rainwater	Unlined stormwater channel	20/05/2021	0.0159	<0.0079	<0.0079	0.0159	<0.0079	<0.0079	<0.0079	<0.04	<0.0079	0.0143	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0079	<0.0198	<0.0079	<0.02	<0.02	<0.02	<0.02	<0.0079	<0.0079	<0.008	0.013	<0.008	<0.008	0.0432
SW018	0224_SW018_210520	Rainwater	Unlined stormwater channel	9/11/2021	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.004	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0020	<0.0008	<0.002	<0.002	<0.002	<0.002	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	<0.0008
SW018	0224_SW018_220509	Rainwater	Unlined stormwater channel	9/05/2022	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0022	<0.0008	<0.004	<0.0035	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.002	<0.0008	<0.002	<0.002	<0.002	<0.002	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	<0.0008
SW018	0224_SW018_221021	Rainwater	Unlined stormwater channel	21/10/2022	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW019	0224_SW19_190530	Rainwater	Ponded water along track	30/05/2019	0.116	0.004	-	0.0665	-	0.05	-	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	0.1205
SW019	0224_SW019_201028	Rainwater	Ponded water along track	28/10/2020	0.0741	0.0025	0.0019	0.0433	<0.0016	0.0308	<0.0016	<0.008	<0.004	0.0027	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0812
SW019	0224_SW019_210520	Rainwater	Ponded water along track	20/05/2021	0.0063	<0.0016	<0.0016	0.0036	<0.0016	0.0027	<0.0016	<0.008	<0.0025	<0.002	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0063
SW019	0224_SW019_210520	Rainwater	Ponded water along track	9/11/2021	0.0026	<0.0008	<0.0008	0.0008	<0.0008	0.0018	<0.0008	<0.004	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0020	<0.0008	<0.002	<0.002	<0.002	<0.002	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	0.0026
SW019	0224_SW019_220509	Rainwater	Ponded water along track	9/05/2022	0.0354	<0.003	<0.002	0.0197	<0.0016	0.0157	<0.0016	<0.008	<0.0016	<0.003	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.016	<0.016	<0.04	<0.0016	<0.04	<0.04	<0.04	<0.04	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0354
SW019	0224_SW019_221020	Rainwater	Ponded water along track	20/10/2022	0.027	<0.014	<0.009	0.015	<0.009	0.012	<0.009	<0.04	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.022	<0.009	<0.022	<0.022	<0.022	<0.022	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	0.027
SW019	0224_SW019_230404	Rainwater	Ponded water along track	4/04/2023	0.161	<0.08	0.0065	0.091	0.0038	0.0698	<0.0005	<0.008	0.0279	0.0152	<0.003	<0.0016	<0.005	<0.005	<0.005	0.0011	<0.005	<0.004	<0.0005	<0.001	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.215
SW020	0224_SW20_190815	Freshwater	Private dam	15/08/2019	<0.002	0.011	<0.002	<0.002	<0.002	<0.002	<0.002	0.03	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.044
SW020	0224_SW020_201029	Freshwater	Private dam	29/10/2020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	0.0021	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0024	<0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0032
SW021	0224_SW21_190815	Freshwater	Private dam	15/08/2019	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.03	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.03
SW021	0224_SW021_201013	Freshwater	Private dam	13/10/2020	0.0043	<0.0016	<0.0016	<0.0016	<0.0016	0.0043	<0.0016	<0.008	0.0043	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0086
SW021	0224_SW021_210518	Freshwater	Private dam	18/05/2021	0.0056	<0.0016	<0.0016	0.0016	<0.0016	0.004	<0.0016	<0.008	<0.004	0.0021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.112	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0077
SW021	0224_SW021_210518	Freshwater	Private dam	11/11/2021	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0080	<0.0032	<0.008	<0.008	<0.008	<0.008	<0.0032	<0.0032	<0.003	<0.003	<0.003	<0.003	<0.0032
SW021	0224_SW021_220513	Freshwater	Private dam	13/05/2022	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.004	<0.0008	<0.004	<0.0015	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.02	<0.0008	<0.002	<0.002	<0.02	<0.02	<0.008	<0.008	<0.001	<0.001	<0.001	<0.001	<0.0008
SW021	0224_SW021_221019	Freshwater	Private dam	19/10/2022	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW021	0224_SW021_230405	Freshwater	Private dam	5/04/2023	0.0035	<0.0016	<0.0005	0.001	<0.0005	0.0025	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0035
SW021	0224_SW021_231101	Freshwater	Private dam	1/11/2023	<0.0016	<0.0016	<0.0005	<0.002	<0.0005	<0.0027	<0.0005	<0.008	<0.0045	<0.0016	<0.0016	<0.0016	0.0008	<0.0005	<0.0005	<0.0035	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0016
SW022	0224_SW22_190913	Freshwater	Private dam	13/09/2019	0.0096	0.0008	<0.0005	0.0048	<0.0005	0.0048	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0114
SW022	0224_SW022_201013	Freshwater	Private dam	13/10/2020	0.0093	<0.0016	<0.0016	0.0036	<0.0016	0.0057	<0.0016	<0.008	0.0052	0.0022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0167
SW022	0224_SW022_210518	Freshwater	Private dam	18/05/2021	0.0076	<0.0016	<0.0016	0.003	<0.0016	0.0046	<0.0016	<0.016	0.0133	0.0024	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0085	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0233
SW022	0224_SW022_210518	Freshwater	Private dam	11/11/2021	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0080	<0.0032	<0.008	<0.008	<0.008	<0.008	<0.0032	<0.0032	<0.003	<0.003	<0.003	<0.003	<0.0032
SW022	0224_SW022_220512	Freshwater	Private dam	12/05/2022	<0.0008	<0.0008	<0.0008	<0.0015	<0.0008	<0.0012	<0.0008	<0.004	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.02	<0.0008	<0.02	<0.02	<0.02	<0.02	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	<0.008
SW022	0224_SW022_221019	Freshwater	Private dam	19/10/2022	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW022	0224_SW022_230405	Freshwater	Private dam	5/04/2023	0.0047	<0.0016	<0.0005	0.0024	<0.0005	0.0023	<0.0005	<0.008	<0.0016	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0041	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0047
SW022	0224_SW022_231101	Freshwater	Private dam	1/11/2023	<0.0016	<0.0016	<0.0005	<0.004	<0.0005	<0.0039	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0016	<0.0041	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0016
SW023	0224_SW23_190913	Freshwater	Private dam	13/09/2019	0.0058	<0.0005	<0.0005	0.0032	<0.0005	0.0026	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0065
SW023	0224_SW023_201013	Freshwater	Private dam	13/10/2020	0.0067	<0.0016	<0.0016	0.0028	<0.0016	0.0039	<0.0016	<0.008	0.0053	0.0019	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0039	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0139
SW023	0224_SW023_210518	Freshwater	Private dam	18/05/2021	0.0057	<0.0016	<0.0016	0.0027	<0.0016	0.003	<0.0016	<0.012	0.0177	0.0032	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0266
SW023	0224_SW023_210518	Freshwater	Private dam	11/11/2021	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0080	<0.0032	<0.008	<0.008	<0.008	<0.008	<0.0032	<0.0032	<0.003	<0.003	<0.003	<0.003	<0.0032
SW023	0224_SW023_220512	Freshwater	Private dam	12/05/2022	0.0117	<0.0008	<0.0008	0.0074	<0.0008	0.0043	<0.0008	<0.006	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.02	<0.0008	<0.02	<0.02	<0.02	<0.02	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	0.0117
SW023	0224_SW023_221019	Freshwater	Private dam	19/10/2022	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002
SW023	0224_SW023_230405	Freshwater	Private dam	5/04/2023	0.0034	<0.0016	<0.0005	0.0013	<0.0005	0.0021	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0034
SW023	0224_SW023_231101	Freshwater	Private dam	1/11/2023	0.0024	<0.0005	<0.0005	0.0024	<0.0005	<0.0033	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0025	<0.0016	<0.0039	<0.0005	<0.004	<0.004	<0.001	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0024
SW024	0224_SW24_190913	Freshwater	Private dam	13/09/2019	0.0013	<0.0005	<0.0005	<0.0005	<0.0005	0.0013	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	0.0027	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.004
SW024	0224_SW024_201029	Freshwater	Private dam	29/10/2020	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.008	<0.005	<0.0016	<0.0016	0.002	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0039	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.002
SW024	0224_SW024_210519	Freshwater	Private dam	19/05/2021	0.0025	<0.0016	<0.0016	<0.0016	<0.0016	0.0025	<0.0016	<0.012	<0.005	<0.003	<0.0016	0.0025	0.0016	<0.0016	<0.0016	<0.0016	<0.0025	<0.035	<0.0016	<0.004	<0.004	<0.004	<0.005	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0066
SW024	0224_SW024_210519	Freshwater	Private dam	11/11/2021	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0080	<0.0032	<0.008	<0.008	<0.008	<0.008	<0.0032	<0.0032	<0.003	<0.003	<0.003	<0.003	<0.0032
SW025	0224_SW25_190912	Freshwater	Unnamed Waterway in Wallu	12/09/2019	0.0044	<0.0005	<0.0005	0.0015	<0.0005	0.0029	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.005
SW025	0224_SW025_201028	Freshwater	Unnamed Waterway in Wallu	28/10/2020	0.0046	<0.0016	<0.0016	0.0016	<0.0016	0.003	<0.0016	<0.008	<0.003	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0046
SW025	0224_SW025_210519	Freshwater	Unnamed Waterway in Wallu	19/05/2021	0.0051	<0.0016	<0.0016	0.0017	<0.0016	0.0034	<0.0016	<0.008	<0.0045	0.0017	<0.0016	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0039	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0084
SW025	0224_SW025_210519	Freshwater	Unnamed Waterway in Wallu	9/11/2021	0.0024	<0.0016	<0.0016	<0.0016	<0.0016	0.0024	<0.0016	<0.008	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0024
SW025	0224_SW025_220512	Freshwater	Unnamed Waterway in Wallu	13/05/2022	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0026	<0.0016	<0.0081	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0163	<0.0163	<0.0406	<0.0016	<0.041	<0.041	<0.041	<0.041	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	<0.0163
SW025	0224_SW025_221019	Freshwater	Unnamed Waterway in Wallu	19/10/2022	0.003	<0.008	<0.002	<0.002	<0.002	0.003	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.003
SW025	0224_SW025_230405	Freshwater	Unnamed Waterway in Wallu	5/04/2023	0.0018	<0.0016	<0.0005	0.0006	<0.0005	0.0012	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0040	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0018
SW025	0224_SW025_231031	Freshwater	Unnamed Waterway in Wallu	31/10/2023	0.0031	<0.0005	<0.0005	<0.002	<0.0005	0.0031	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0031
SW027	0224_SW027_201028	Freshwater	Discharge point from Base	28/10/2020	0.0124	<0.0032	<0.0032	0.0057	<0.0032	0.0067	<0.0032	<0.016	<0.0065	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.008	<0.0032	<0.008	<0.008	<0.008	<0.008	<0.0032	<0.0032	<0.003	<0.003	<0.003	<0.003	0.0124
SW027	0224_SW027_210518	Freshwater	Discharge point from Base	18/05/2021	0.0202	0.0021	<0.0016	0.0125	<0.0016	0.0077	<0.0016	<0.02	0.0072	0.0066	<0.0016	0.0021	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.004	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.002	<0.002	<0.002	<0.002	0.0382
SW027	0224_SW027_210518	Freshwater	Discharge point from Base	9/11/2021	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0080	<0.0032	<0.008	<0.008	<0.008	<0.008	<0.0032	<0.0032	<0.003	<0.003	<0.003	<0.003	<0.0032
SW027	0224_QC226_220511	Freshwater	Discharge point from Base	11/05/2022	0.0086	<0.001	<0.001	0.0039	<0.001	0.0047	<0.001	<0.005	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001	<0.005	<0.005	<0.01	<0.01	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	0.0186
SW027	0224_SW027_220511	Freshwater	Discharge point from Base	11/05/2022	<0.003	<0.003	<0.003	<0.004	<0.003	<0.0112	<0.003	<0.0151	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.0076	<0.003	<0.008	<0.008	<0.008	<0.008	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
SW027	0224_QC126_220511	Freshwater	Discharge point from Base	11/05/2022	<0.0031	<0.0031	<0.0031	<0.0035	<0.0031	<0.01	<0.0031	<0.0153	<0.0031	<0.0031	<0.0031	<0.0031	<0.0031	<0.0031	<0.0031	<0.0031	<0.0031	<0.0076	<0.0031	<0.008	<0.008	<0.008	<0.008	<0.0031	<0.0031	<0.003	<0.003	<0.003	<0.003	<0.0031
SW027	0224_SW027_221019	Freshwater	Discharge point from Base	19/10/2022	0.01	<0.024	<0.002	0.006	<0.002	0.004	<0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	0.01
SW027	0224_QC132_221019	Freshwater	Discharge point from Base	19/10/2022	<0.005	<0.028	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SW027	0224_QC232_221019	Freshwater	Discharge point from Base	19/10/2022	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW027	0224_SW027_220405	Freshwater	Discharge point from Base	5/04/2023	0.0284	<0.0016	0.001	0.0212	0.001	0.0072	<0.0005	<0.008	<0.0065	<0.0055	<0.0016	0.0009	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0313
SW027	0224_QC104_230405	Freshwater	Discharge point from Base	5/04/2023	0.0309	<0.0025	<0.002	0.0211	0.0008	0.0098	<0.0005	<0.008	<0.0070	<0.0065	<0.0025	0.0014	<0.0005	<0.0005	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0331
SW027	0224_QC204_230405	Freshwater	Discharge point from Base	5/04/2023	0.019	<0.01	<0.01	0.019	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.019
SW027	0224_SW027_231101	Freshwater	Discharge point from Base	1/11/2023	<0.0030	<0.0005	<0.0005	<0.0035	<0.0005	<0.0303	<0.0016	<0.014	<0.009	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0130	<0.0016	<0.0040	<0.0016	<0.004	<0.001	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0005
SW027	0224_QC103_231101	Freshwater	Discharge point from Base	1/11/2023	<0.0035	<0.0016	<0.0005	<0.003	<0.0005	<0.00237	<0.0005	<0.02	<0.0115	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0035	<0.0016	<0.0041	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0005
SW027	0224_QC203_231101	Freshwater	Discharge point from Base	1/11/2023	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
-' denotes no analysis undertaken
<' denotes concentration is less than

The LOR for PFOS is higher than the NEMP (2020) ecological guideline value for 99% species protection. PFOS concentrations reported as below the LOR have the potential to exceed the NEMP (2020) ecological guideline value.

In accordance with the SAQP, SW025 has been assessed with HEPA (2020) ecological guideline for the protection of freshwater species at 95%.

		Analyte	PFHxS + PFOS	Perfluoroalkyl Sulfonic Acids						Perfluoroalkyl Carbonic Acids											Perfluoroalkyl Sulfonamides							Fluorotelomer Sulfonic Acids				Sum of PFAS
				PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSA	EtFOSA	MeFOSE	EtFOSE	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	
		Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		LOR	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002
ID	Field ID	Sample Date																														
SD001	0224_SD001_170308	8/03/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD002	0224_SD002_170816	16/08/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD003	0224_SD003_170308	8/03/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD004	0224_SD004_170816	16/08/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD004	0224_SD004_210519	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD004	0224_SD004_220511	11/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD005	0224_SD005_170815	15/08/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD005	0224_SD005_210519	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD005	0224_SD005_220511	11/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD006	0224_SD006_170309	9/03/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD006	0224_SD006_180928	28/09/2018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD006	0224_SD006_210520	18/05/2021	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.001	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0007
SD006	0224_SD006_220512	12/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD006	0224_QC127_220512	12/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD006	0224_QC227_220512	12/05/2022	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001
SD006	0224_SD006_230404	4/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD006	0224_QC103_230404	4/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD006	0224_QC203_230404	4/04/2023	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001
SD007	0224_SD007_170816	16/08/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD007	0224_SD007_180927	27/09/2018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD007	0224_SD007_210520	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD007	0224_SD007_220510	10/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD007	0224_SD007_230403	3/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD008	0224_SD008_210519	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD008	0224_SD008_220511	11/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD009	0224_SD009_170309	9/03/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD009	0224_SD009_180927	27/09/2018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD009	0224_SD009_210519	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	<0.0002	<0.0004	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0012	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0005
SD009	0224_SD009_220511	11/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD009	0224_SD009_230403	3/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD010	0224_SD010_170816	16/08/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD012	0224_SD012_170309	9/03/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD012	0224_SD012_180928	28/09/2018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD012	0224_SD012_210519	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD012	0224_SD012_220511	11/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD013	0224_SD013_170309	9/03/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD013	0224_SD014_170815	15/08/2017	<0.0002	-	-	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0002
SD013	0224_SD013_180928	28/09/2018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD013	0224_SD013_210519	18/05/2021	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0002
SD013	0224_SD013_220510	10/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD013	0224_SD013_230403	3/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD014	0224_SD014_210519	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD014	0224_SD014_220510	10/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD014	0224_QC121_220510	10/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD014	0224_QC221_220510	10/05/2022	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001
SD014	0224_SD014_230403	3/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD015	0224_SD015_180928	28/09/2018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD016	0224_SD016_180928	28/09/2018	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD016	0224_SD016_210519	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD016	0224_SD016_220512	12/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD016	0224_SD016_230403	3/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD017	0224_SD017_190530	30/05/2019	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD017	0224_SD017_210521	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0003
SD017	0224_SD017_220509	9/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD017	0224_SD017_230405	5/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD018	0224_SD018_210520	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0004	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0003
SD018	0224_SD018_220509	9/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD018	0224_SD018_230404	4/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0003
SD019	0224_SD019_210520	18/05/2021	0.0008	<0.0002	<0.0002	<0.0002	<0.0002	0.0008	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0008
SD019	0224_SD019_220509	9/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0006	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD019	0224_SD019_230404	4/04/2023	0.0037	<0.0002	<0.0002	0.0005	<0.0002	0.0032	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0037
SD021	0224_SD021_210518	18/05/2021	0.0012	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	<0.0005	<0.002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0005	<0.0013	<0.0013	<0.0013	<0.0013	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0012
SD021	0224_SD022_220513	13/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD021	0224_SD021_230405	5/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD022	0224_SD022_210518	18/05/2021	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	0.0009	<0.0002	<0.001	<0.0002	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0016
SD022	0224_SD022_220512	12/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD022	0224_SD022_230405	5/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD023	0224_SD023_210518	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD023	0224_SD023_220512	12/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0006	<0.0002	<0.0002	<0.0002	<0.0006	<0.0006	<0.0006	<0.0006	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD023	0224_SD023_230405	5/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0006	<0.0002	<0.0002	<0.0006	<0.0006	<0.0006	<0.0006	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD024	0224_SD024_210519	19/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0002
SD025	0224_SD025_190912	12/09/2019	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD025	0224_SD025_210519	18/05/2021	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD025	0224_SD025_220512	12/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD025	0224_SD025_230405	5/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD027	0224_SD027_210518	18/05/2021	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0005
SD027	0224_SD027_220511	11/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD027	0224_QC125_220511	11/05/2022	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD027	0224_QC225_220511	11/05/2022	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001
SD027	0224_SD027_230405	5/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD027	0224_QC105_230405	5/04/2023	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD027	0224_QC205_230405	5/04/2023	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001

Location ID	Sample Date	DO (mg/L)	EC (µS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method / Comments
OTH001	20/05/2021	5.58	976	8.05	97.1	302.1	21.9	Clear	-	No odour	No sheen	-
OTH001	10/11/2021	5.4	879	6.93	420.1	625.1	25.5	Clear	-	No odour	No sheen	-
OTH001	10/05/2022	4.63	1549	8.6	589	794	21.9	Clear	-	No odour	No sheen	-
OTH001	20/10/2022	3.57	502.3	7.02	104.6	309.6	22.1	Clear	-	No odour	No sheen	-
OTH001	4/04/2023	3.57	502.3	7.02	104.6	309.6	22.1	Clear	Clear	No odour	No sheen	Tap
OTH001	31/10/2023	2.2	464	7.18	-119.7	85.3	38	Clear	Clear	No odour	No sheen	Tap

Notes
DO is dissolved oxygen
EC is electrical conductivity
E_h is oxidation reduction potential
Oxidation reducation potential (E_r) measured with a platinum electrode and a silver/silver chloride reference electrode (E_r) and
Temp is Temperature
µS/cm is microsiemens per centrimetre
ºC is degrees Celcius
mV is millivolts
` - No data

							Perfluoroalkyl Sulfonic Acids						Perfluoroalkyl Carbonic Acids											Perfluoroalkyl Sulfonamides							Fluorotelomer Sulfonic Acids				
						Sum of PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSA	EtFOSA	MeFOSE	EtFOSE	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FtS	8:2 FTS	10:2 FTS	Sum of PFAS
					Unit	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	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	µg/L	µg/L
					LOR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.005	0.002	0.005	0.005	0.005	0.005	0.002	0.002	0.005	0.005	0.005	0.005	0.002
NEMP (HEPA, 2020) Human Health Drinking Water						0.07											0.56																		
NHMRC (HEPA, 2020) Human Health Recreational Water						**2.0**											**10**																		
NEMP (HEPA, 2020) Ecological Freshwater 99% Species Protection											0.00023						19																		
Location	**Alt ID**	**Sample**	**Date**	**Lab Report**	**Type**																														
OTH001	WWTP	0224_QC114_190528	28/05/2019	EB1913917	Field_D	0.0091	0.0075	-	0.0079	-	0.0012	-	<0.002	0.0082	0.0066	0.0024	0.0064	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	0.0402
OTH001	WWTP	0224-QC214-190529	29/05/2019	RN1235762	Interlab_D	0.011	0.0049	0.0013	0.011	<0.001	<0.002	<0.001	0.0093	0.015	0.0056	0.0036	0.0068	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.005	<0.005	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	0.0403
OTH001	WWTP	0224_WWTP_190529	29/05/2019	EB1913917	Normal	0.0089	0.0094	-	0.0078	-	0.0011	-	<0.002	0.0077	0.0058	0.0025	0.0063	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	0.0406
OTH001	WWTP	0224 OTH001 201028	28/10/2020	EB2028561	Normal	<0.01	<0.04	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02
OTH001	WWTP	0224 OTH001 210520	20/05/2021	EB2114447	Normal	<0.01	<0.04	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.03	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
OTH001	WWTP	0224 OTH001 211110	10/11/2021	EB2132641	Normal	<0.01	<0.02	<0.02	<0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
OTH001	WWTP	0224 OTH001 220510	10/05/2022	EB2213545	Normal	0.01	<0.04	<0.02	0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.03	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01
OTH001	WWTP	0224 OTH001 220825	25/08/2022	EB2225015	Normal	0.02	<0.02	<0.02	0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02
OTH001	WWTP	0224 OTH001 220825	25/08/2022	EB2225015	Duplicate	0.02	<0.02	<0.02	0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02
OTH001	WWTP	0224 OTH001 220825	25/08/2022	ES2231048	Triplicate	0.02	<0.02	<0.02	0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02
OTH001	WWTP	0224 OTH001 221020	20/10/2022	EB2231148	Normal	0.02	<0.02	<0.02	0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.02
OTH001	WWTP	0224 OTH001 230404	4/04/2023	EB2310490020	Normal	0.02	<0.02	<0.02	0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.02
OTH001	WWTP	0224 OTH001 231031	31/10/2023	EB2334187019	Normal	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01

Appendix C

Infrastructure Projects at Wide Bay Training Area in 2023

Appendix C Infrastructure Projects at Wide Bay Training Area in 2023

Date	Location	Activity
2022 - 2024	ADP-050 (J1545) Multiple Tracks and Toilets Project.	A number of tracks in the WBTA, and up to eight enviro toilets will be placed within the training area. Will involve grading, repair of tracks; soil disturbance, potential temporary stockpiling; changes to water inputs from the toilets when land irrigation areas or selected/tank systems selected. Effluent disposal report, soil contamination, flora and fauna reports were completed by March 2022. As of January 2024, the construction phase has not started.
2022 - 2023	EMOS AE547 – Electronic Classification Range Reshaping Project.	This project was to reshape the 600m Electronic Classification Range and replenishment of 100m and 200m firing mounds. Soil was not removed from Base. The works were completed in 2023.
2022 – 2023	EST08878 EMOS Roads Grade and Roll Project.	This project was to grade roads. Completed in October 2023. Water from local creeks used for construction water, however no analysis for PFAS.
2022 - 2024	EST08100 Training Area Ranges Refurbishment Project (AGR/SGR and DFSW).	The purpose of this project is to bring up to current safety standards/requirements of Ranges. The project involves cleaning out of current bio-basin, changes to drainage/sub-surface irrigation off the throwing bay into newly devised sedimentation structure. The works included soil contamination testing completed to understand what contamination risks are coming from the throwing bay. The construction phase was between March and October 2022. Project completed in January 2024. Nitro-glycerine was detected in DFSW footprint, however no earth movement as excavation did not go ahead.
2022 - 2023	6ESR construction activity.	These unit works, undertaken during 2022 included safety works to the White Quarry and altering benching. Excess material has been stored in the middle level of the quarry.
2022 - 2023	EST08192 – WBTA Roads Refurbishments (Route 5, Gate 12 to Route 20) Project.	Construction works started in October 2022 and was completed in July 2023. Approximately 25-30 tonnes of concrete removed. Sustainably, the work reused 1700 cu m of spoil from drains and geotechnically unsuitably gravel was knitted into the new hardstand area where the FOB once was. Spoil was backloaded from the roads project to key locations (mainly the White Quarry) and then appropriately sampled and then transported and knitted in to build up the existing ‘brown-field’ footprint remaining from the demolished FOB. An approximate layer of 100mm was stitched in. The material from White Quarry was sampled and analysed for PFAS. Four soil samples out of 20 reported detectable PFAS concentrations with PFHxS + PFOS between 0.0002 and 0.0024 mg/kg. The

Date	Location	Activity
		material was classed as Category 4 material. A further 14 soil samples were collected from material sourced from the Gold Quarry and UAV Stockpile with PFAS not detected in any of the samples.
2022 - 2024	EST08193 – WBTA Fencing Gate 9 to Gate 14.	Project will realign fence onto boundary and will involve ground disturbance, vegetation disturbance on the western side of the Training Area. Has reached 90% design with construction to start later in 2024.
2022 - ongoing	EST08326 Ammo Point Repair, Route 20 and 15 repair, new TA13 track.	Reached 90% Design then all except TA13 work was put on hold. This has had contamination testing, UXO testing, ecological surveys. In July 2023 geotechnical and contamination surveys were completed. In August 2023 geotechnical surveying was completed for Route 15 & 20. Construction contractor soon to be appointed (tenders only finished last month)
2022 - 2023	Flood repair work – various.	Works in a number of causeways along the Base roads, including substantial changes to drainage at Castle Bridge on Route 20 including repairing erosion and damage from upstream into the Training Area from the February 2022 floods and smaller floods in 2022 and 2023. Flood repair works to the biobasin requiring removal of soil within a large area (hundreds of square metres). Some contaminated land investigation has been completed. No PFAS detected. Project completed in December 2023.
2023 - ongoing	EST09582 D Precinct Refurb. Downer (DELM/EDBU) and Apollo Property.	Currently in early construction. Involves refurbishment (demo and rebuild) of D038 using roughly the same footprint. Will include construction of cover/roof over current diesel pod and bunding area to be constructed to meet AS. Will also connect a water tank (unknown size at this point). Geotech only has taken place – no contamination testing has been completed. yet. Concrete slab being replaced.

Appendix D

Sampling Event Factual Reports

Prepared for
Department of Defence
ABN: 68706814312

Sampling Event Factual Report, April 2023

PFAS OMP - Wide Bay Training Area

18-Jul-2023
Doc No. 60612563_RP_073_2_230718

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Delivering a better world

Sampling Event Factual Report, April 2023

PFAS OMP - Wide Bay Training Area

Client: Department of Defence

ABN: 68706814312

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Prepared by	[redacted]
Reviewed by	[redacted]

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			Name/Position	Signature
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2	18-Jul-2023	Final	[redacted] Associate Director	[redacted]

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Abbreviation	
ALS	Australian Laboratory Services
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure 1999 (as amended 2013)
BoM	Bureau of Meteorology
COC	Chain of Custody
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved oxygen
EC	Electrical conductivity
HEPA	Heads of Environmental Protection Agencies
IP	Interface probe
LOR	Limit of reporting
mAHD	metres Australian height datum
mbtoc	Metres below top of casing
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
OMP	Ongoing management plan
ORP	Oxidation reduction potential
PFAS	Per- and poly-fluorinated alkyl substances
PFHxA	Perfluorohexanoic acid
PFHxS	Perfluorohexane sulfonate
PFOA	Perflurooctanoic acid
PFOS	Perflurooctanesulfonic acid
PMAP	PFAS management area plan
POL	Paints, oil and lubricants
QA/QC	Quality assurance / quality control
QLD	Queensland
RPD	Relative percent difference
SAQP	Sampling analysis and quality plan
SWL	Standing water level
WBTA	Wide Bay Training Area
WWTP	Wastewater treatment plant

Units of Measurement			
L	Litres	m	Metres
mg	Milligram	ha	Hectares
kg	Kilogram	µg	Microgram
mV	Millivolts		

1.0 Introduction

1.1 General

AECOM Australia Pty Ltd (AECOM) has been engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan (OMP) (Defence, 2020) at the Wide Bay Training Area (WBTA) (the 'Site') and the WBTA Management Area in the South Queensland Region. The locations of the Site and the Management Area are shown in **Figure 1** in **Appendix A**.

The OMP was included within the PFAS Management Area Plan (Defence, 2020). In February 2023, an OMP Review Report was completed (AECOM, 2023a), which evaluated the program and made recommendations for updates to the OMP. The revised program includes the following sampling events:

- Biannual sampling events in April 2023, October 2023 and April 2024 including:
  - Groundwater sampling of 11 on-Site groundwater monitoring wells and five off-Site groundwater monitoring wells.
  - Surface water sampling of creeks and dams at nine on-Site and five off-Site sampling locations.
  - Tap sampling of the two on-Site groundwater extraction bores.
  - Tap sampling of the treated wastewater from the outlet tap of the Camp Kerr wastewater treatment plant (WWTP).
- Sediment samples (co-located with the surface water samples) at creeks and dams to be collected once per year in April 2023 and April 2024.

Following each sampling event, a Sampling Event Factual Report will be prepared. Annual interpretive reports will be prepared following the completion of each 12-month sampling period.

This Sampling Event Factual Report has been prepared to report the results of the biannual sampling event completed in April 2023, specifically highlighting any first-time detections and/or new exceedances of human health or ecological (freshwater species) screening criteria for perflurooctanesulfonic acid (PFOS) + perfluorohexane sulfonate (PFHxS) and / or perflurooctanoic acid (PFOA).

This report has been prepared in accordance with the *PFAS OMP Factual Report Guidance,* v0.2, May 2021 (Defence, 2021).

1.2 Objectives

The objectives of the OMP program are to:

- Implement the OMP prepared as part of the PFAS Management Area Plan (PMAP); and
- Collect data that will enable Defence to maintain an up-to-date understanding of the distribution, concentration and transport of PFAS at the Site and WBTA Management Area.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PMAP.

The objective of this phase of works is to implement the scope of works for the biannual April 2023 sampling event (identified in **Section 2.0**) in accordance with the Sampling and Analysis Quality Plan (SAQP), Rev 9, (AECOM, 2023b).

2.0 Scope of Work

The biannual sampling event at WBTA was completed in accordance with the SAQP (AECOM, 2023b [Rev 9]). In summary, the scope of work for this sampling event included:

- Obtaining access to private properties where some surface water sampling locations are situated.
- Review of the SAQP prior to the monitoring event to ensure compliance with the following:
  - PFAS National Environmental Management Plan (NEMP) (Heads of Environmental Protection Authorities [HEPA], 2020).
  - National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM, 2013).
  - Defence Routine Environment Water Quality Monitoring Manual.
  - AS/NZ 5667:1998 Water Quality – Sampling.
  - Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
  - Relevant State regulatory guidelines.
- Gauging of groundwater level at 16 locations including 11 on-Site and five off-Site monitoring wells (located on Council / State land) prior to collection of samples[1] (refer to **Table 1** below, and **Figure 2** and **Figure 3** in **Appendix A** for specific locations).
- Tap sampling of the two on-Site groundwater extraction bores (refer to **Table 1** below and **Figure 3** in **Appendix A** for specific locations).
- Tap sampling of the treated wastewater from the outlet tap of the Camp Kerr WWTP (refer to **Table 2** below and **Figure 3** in **Appendix A** for specific location).
- Collection of surface water and sediment samples at 14 locations including nine on-Site and five off-Site locations (refer to **Table 3** below, and **Figure 2** and **Figure 3** in **Appendix A**[2]). One of the on-Site locations was dry (SW017) so only the sediment sample (SD017) was collected.
- Collecting field quality control samples including field duplicate and triplicate samples at a rate of 1 in 10 primary samples and collecting one rinsate sample per fieldwork day as per the SAQP.
- Analysis of all groundwater samples for the PFAS suite at the standard limit of reporting (LOR).
- Analysis of all surface water samples for the PFAS suite at trace levels of detection.
- Analysis of the WWTP outlet sample for the PFAS suite at the standard LOR.
- Data management of all OMP field and laboratory data in the Defence ESdat database.
- Preparation of results letters for off-site stakeholders.
- Preparation of this Sampling Event Factual Report.

[1] Two groundwater sampling locations, POT001 and POT005, have pumps installed and consequently groundwater levels cannot be gauged.
[2] Due to privacy reasons, sampling locations on private properties are not shown in the figures.

Table 1 Groundwater Sampling Locations

Location	Monitoring Well
Paints, oils and lubricants (POL) Refuelling point	MW101, MW102, MW115
Southern site boundary	MW106
Eastern site boundary	MW109
Possible demonstration area	MW111
WWTP discharge areas	MW112, MW113*, MW114*, MW120, MW121, MW122
Central portion of Camp Kerr	MW119
Down-gradient / cross-gradient of Camp Kerr	MW116*, MW117*, MW118*
Water treatment plant	POT001, POT005
Note: * denotes off-site sampling location	

Table 2 Wastewater Sampling Location

Description	Tapwater Sampling Location
Wastewater treatment plant outlet	OTH001

Table 3 Surface Water and Sediment Sampling Locations

Area	Description	Surface Water Sampling Locations
Creek	Kangaroo Creek	SW/SD006, SW/SD07, SW/SD009
	Snapper Creek	SW/SD013, SW/SD014, SW/SD016
Drainage Channels	Site entrance (receives runoff from WWTP discharge areas)	SW/SD017
	Vehicle wash point drainage channel	SW/SD018
	Ponded water from surface water flows flowing overland from Camp Kerr	SW/SD019
	Ephemeral waterway draining residential dams in Wallu	SW/SD025*
	Drainage pipe at Clyde Road discharging runoff from Camp Kerr to residential dam	SW/SD027*
Dams	Residential dams in Wallu	SW/SD021*, SW/SD022*, SW/SD023*
Note: * denotes off-site sampling location		

3.0 Methodology

The methodology used for the April 2023 sampling event was in accordance with the SAQP (AECOM, 2023b) and is summarised below.

3.1 Groundwater Sampling Methodology

Table 4 Groundwater Sampling Methodology

Item	Details
Groundwater gauging	The depth to groundwater was measured in each monitoring well immediately prior to collection of groundwater samples using an interface probe.
Groundwater quality parameter field measurements	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for all groundwater samples. Equipment calibration certificates are provided in **Appendix F**.
Sampling methodology	Groundwater samples were collected from all monitoring wells using no-purge methodology HydraSleeves™, which were installed within the screened interval of each well, approximately 1 m above the base of the well (the target depth is shown in **Table T1** in **Appendix B**), for a minimum of 24 hours prior to the sampling round. Once sampling was completed, new HydraSleeves™ were deployed at the screened interval depth in preparation for the next sampling round. Tap samples from the two extraction bores were collected by opening the tap / valve and allowing the water to run for approximately three minutes prior to sample collection. Water samples were collected by placing the laboratory provided sample bottle beneath the tap outlet.
Sample analysis	All primary samples were submitted for PFAS suite using the standard levels of detection. ALS Environmental (ALS) Brisbane, Queensland was used as the primary laboratory. The National Measurement Institute (NMI) of Sydney, NSW was used as the secondary laboratory. ALS and NMI methods for groundwater analyses were certified by the National Association of Testing Authorities (NATA). Chain of custody (COC) forms and laboratory certificates are presented in **Appendix D** and **Appendix E** respectively.
QA/QC Samples	Field quality assurance (QA) / quality control (QC) samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and rinsate samples. Refer to **Appendix C** for assessment of QA/QC sample data.

3.2 Surface Water Sampling Methodology

Table 5 Surface Water Sampling Methodology

Item	Details
Surface water parameter field measurements	Temperature, EC, DO, ORP, pH and observations of water quality were recorded for all surface water samples. Equipment calibration certificates are provided in **Appendix F**.
Sampling methodology	Samples were collected from immediately below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a new, laboratory-supplied container was lowered into the water with the cap immediately applied once the container was full.
Sample analysis	All primary samples were submitted for PFAS suite using the trace levels of detection. ALS Brisbane, Queensland was used as the primary laboratory. NMI of Sydney, NSW was used as the secondary laboratory. ALS and NMI methods for groundwater analyses were certified by the NATA. COC forms and laboratory certificates are presented in **Appendix D** and **Appendix E** respectively.
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and rinsate samples. Refer to **Appendix C** for assessment of QA/QC sample data.

3.3 Sediment Sampling Methodology

Table 6 Sediment Sampling Methodology

Item	Details
Sampling methodology	Samples representative of sediments were collected co-located with surface water samples. Sediment samples were collected by gloved hand or using a trowel. At each location, a new laboratory supplied container was used for each sample.
Logging	Sediment characteristics were recorded for each sample.
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and rinsate samples. Refer to **Appendix C** for assessment of QA/QC sample data.
Sample analysis	All primary samples were submitted for PFAS suite using the standard levels of detection. ALS Brisbane, Queensland was used as the primary laboratory. NMI of Sydney, NSW was used as the secondary laboratory. ALS and NMI methods for groundwater analyses were certified by the NATA. COC forms and laboratory certificates are presented in **Appendix D** and **Appendix E** respectively.

3.4 Wastewater Sampling Methodology

Table 7 Wastewater Sampling Methodology

Item	Details
Locations sampled	OTH001 was collected from a tap outlet at the WWTP.
Sampling methodology	The tap/valve was opened and water allowed to run for approximately one minute prior to a sample being collected. A laboratory provided sample bottle was placed beneath the tap outlet. The sample bottle was filled to the top to ensure no headspace and the cap was immediately applied. The sample bottle was immediately placed in a cooler with cooling media.
Sample analysis	The sample was submitted for PFAS suite using the standard levels of detection at ALS Brisbane, Queensland.

3.5 Adopted Screening Criteria

Adopted screening criteria references national guidance in the form of the PFAS NEMP, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset includes the following:

- PFAS NEMP v2.0 (HEPA, 2020).
- Department of Health, 2019. Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017 [updated September, 2019].
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC, 2019).
- National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013.

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in **Table 8** below.

Table 8 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment / Reference
Human Health Receptors			
Drinking water - groundwater	PFOS + PFHxS	0.07 µg/L	The values are from HEPA (2020). *All groundwater results will be compared to these criteria.*
	PFOA	0.56 µg/L	
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values presented in the NEMP (HEPA, 2020) are from NHMRC (2019). *All surface water and WWTP (OTH001) results will be compared to these criteria.*
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater / marine water (99% species protection values)	PFOS	0.00023 µg/L	The values are from the HEPA (2020). The 99% level of protection has been applied for slightly to moderately disturbed ecosystems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. For the purposes of preliminary screening of analytical water results, the laboratory LOR will be adopted rather than sole use of the criteria value. *All surface water (except SW025), groundwater and WWTP (OTH001) results will be compared to these criteria.*
	PFOA	19 µg/L	
Freshwater / marine water (95% species protection values)	PFOS	0.13 µg/L	Surface water in the ephemeral waterway south of Clyde Road (SW025) should be screened against freshwater ecological guidelines for slight to moderately disturbed ecosystems (95% species protection).
	PFOA	220 µg/L	

There are no human health or ecological guideline values available for sediment that are endorsed by HEPA.

3.6 Data Quality Objectives and Data Validation

The data quality objectives and data quality indicators adopted for these works are presented in the SAQP (AECOM, 2023b).

Data validation assessment is provided in **Appendix C**.

The data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (Defence 2018, amended August 2021) requirements.

3.7 Deviations from the SAQP

Table 9 lists the deviations from the SAQP (AECOM, 2023b) during this sampling event.

Table 9 Deviations from the SAQP during the May 2022 Sampling Event

SAQP	Comment	Impact on Dataset
Surface water and sediment sampling at 14 locations	Sample locations SW017 and SW018 (both drainage channels) were dry during the sampling visit and samples could not be collected.	The lack of water in the drains means that PFAS will not be migrating in surface water at these locations. The non-sampling of these locations means there are no data available in April 2023 to evaluate the trend in PFAS concentrations.

4.0 Field Observations and Results

The April 2023 biannual sampling event was completed between 03 and 05 April 2023. The results are summarised in following sections.

4.1 Groundwater

4.1.1 Groundwater Observations and Quality Parameter Field Measurements

Table 10 Groundwater Observations and Quality Parameter Field Measurements

Item	Details
Access	All monitoring wells, bores, surface water and sediment sampling locations were accessible.
Monitoring Well Network	Covers to all the groundwater monitoring wells were noted to be in good condition at the time of sampling.
Field Observations	No visible or olfactory indications of contamination were observed during the sampling of the groundwater monitoring wells. Field observations are presented **Table T1** in **Appendix B**.
Depth to Groundwater	Depth to groundwater in the monitoring wells was between 0.835 (MW109) metres below top of casing (mbtoc) and 10.802 mbtoc (MW101). Groundwater elevations in these wells were between 8.372 metres above Australian Height Datum (mAHD) (MW109) and 73.418 mAHD (MW119). Groundwater gauging data are presented in **Table T1** in **Appendix B**.
Groundwater Flow Direction	Inferred groundwater contours and groundwater flow directions within and immediately adjacent to Camp Kerr between 3 and 5 April 2023 are shown on **Figure 4** in **Appendix A**. A groundwater divide appears to be present in the central portion of Camp Kerr with groundwater to the east of the groundwater divide flowing towards the east. Groundwater to the west of the groundwater divide appears to be flowing to the west and southwest towards Wallu, and towards the south. The observed groundwater divide is consistent with that observed in previous investigations (AECOM, 2020) and previous OMP sampling events between October 2020 and October 2022 (AECOM, 2022b).
Groundwater Quality Parameter Field Measurements	Groundwater quality parameters were measured prior to collecting groundwater samples. The readings are presented in **Table T1** in **Appendix B** and are summarised below: • EC ranged from 15.2 µS/cm (MW113) to 498 µS/cm (POT001) indicating fresh conditions. • pH ranged from 4.2 (MW122) to 6.91 (POT001) with a mean pH of 5.4 generally indicating acidic conditions. • Corrected ORP ranged from 265 mV (MW109) to 340.2 mV (POT001) indicating mildly reducing conditions. • Temperature ranged from 20.6°C (MW118) to 27.2°C (MW115). • The DO results ranged between 0.61 mg/L (MW120) and 3.43 mg/L (MW109) indicating poorly to moderately oxygenated conditions.
Weather Conditions	Weather conditions during groundwater sampling were dry with little to no rainfall between 03 and 05 April 2023. There was a total of 2.6 mm of rainfall recorded at the Tin Can Bay (Defence) Bureau of Meteorology (BoM) Station 140010 during this period.

Item	Details
Estate Management Works or Training Activities	During the sampling event there were road repairs being conducted on the main access routes and some smaller routes. There were no training activities ongoing at the time of sampling.

4.1.2 PFAS Groundwater Analytical Results

The PFAS groundwater analytical results from this sampling event are presented in **Table T2** in **Appendix B** with analytical laboratory reports presented in **Appendix E**. There were no first-time detections of PFAS in the groundwater samples in the April 2023 sampling event. There were no new exceedances of the HEPA (2020) human health or ecological guidelines.

Two groundwater samples exceeded the HEPA (2020) drinking water guideline value for sum of PFOS+PFHxS (MW121 and MW122). These two groundwater samples, along with the sample from MW118, also exceeded the HEPA (2020) ecological freshwater 99% species protection guidelines for PFOS. PFOA was not detected above the LOR in any of the samples and there were no exceedances of the human health or ecological guideline values.

Groundwater samples from the two extraction bores, POT001 and POT005, reported detectable concentrations of PFHxS at 0.03 µg/L and 0.01 µg/L, respectively. However, sum of PFOS+PFHxS concentrations did not exceed the human health guideline values.

4.2 Surface Water

4.2.1 Surface Water Observations and Quality Parameter Field Measurements

Table 11 Surface Water Observations and Quality Parameter Field Measurements

Item	Details
Access	All surface water sampling locations were accessible during the April 2023 sampling event. Prior to conducting sampling on private properties, access permissions were obtained from stakeholders. Surface water samples from SW017 and SW018 were unable to be collected as they were dry.
Field Observations	No visual or olfactory indications of contamination were observed during the sampling of the surface water sampling locations. Field observations are presented in **Table T3** in **Appendix B**.
Surface Water Quality Parameter Field Measurements	Surface water quality parameters were measured prior to collecting surface water samples. The readings are presented in **Table T3** in **Appendix B** and are summarised below: • DO ranged from 0.43 mg/L (SW021) to 6.96 mg/L (SW019). The measurements generally indicated moderately to well oxygenated conditions. • EC ranged from 66.7 µS/cm (SW023) to 45517 µS/cm (SW013) indicating fresh to saline conditions in inland creeks, dams and estuarine environments. • pH ranged from 5.45 (SW007) to 7.16 (SW019) indicating slightly acidic to near neutral conditions. • Corrected ORP ranged from 240.8 mV (SW006) to 335.2 mV (SW013) indicating mildly reducing conditions. • Temperature ranged from 21.1°C (SW027) and 29.3°C (SW013).
Weather Conditions	Weather conditions during groundwater sampling were dry with little to no rainfall between 03 and 05 April 2023. There was a total of 2.6 mm of rainfall recorded at the Tin Can Bay (Defence) BoM Station 140010 during this period.

Item	Details
Estate Management Works or Training Activities	During the sampling event there were road repairs being conducted on the main access routes and some smaller routes. There were no training activities ongoing at the time of sampling.

4.2.2 PFAS Surface Water Analytical Results

The PFAS surface water analytical results from this sampling event are presented in **Table T4** in **Appendix B**. There were no first-time detections or new exceedances of the HEPA (2020) recreational human health guideline values or ecological guideline values in the April 2023 sampling event.

There were no exceedances of the HEPA (2020) recreational water guideline values for sum of PFOS+PFHxS or PFOA. Six primary surface water samples were detected above the LOR and exceeded the HEPA (2020) ecological guideline value for PFOS for 99% protection of fresh / marine water species (SW014, SW019, SW021, SW022, SW023 and SW027). The concentration of PFOS in the sample from SW025 did not exceed the ecological guideline for 95% protection level. PFOA was detected above the LOR in one surface water sample (SW027), however the 99% ecological guideline value was not exceeded.

4.3 Sediment

4.3.1 Sediment Observations

Table 12 Sediment Observations

Compound	Criteria
Access	All 14 sediment sampling locations were accessible during the April 2023 sampling event. Prior to conducting sampling on private properties, access permissions were obtained from stakeholders.
Field Observations	No visible or olfactory indications of contamination were observed during the sampling of the sediment locations. Field observations are presented in **Table T5** in **Appendix B**.
Weather Conditions	Weather conditions during groundwater sampling were dry with little to no rainfall between 03 and 05 April 2023. There was a total of 2.6 mm of rainfall recorded at the Tin Can Bay (Defence) BoM Station 140010 during this period.
Estate Management Works or Training Activities	During the sampling event there were road repairs being conducted on the main access routes and some smaller routes. There were no training activities ongoing at the time of sampling.

4.3.2 Sediment Analytical Results

The PFAS sediment analytical results from this sampling event are presented in **Table T6** in **Appendix B**. There were no first-time detections during the April 2023 sampling event. There are no HEPA-endorsed guideline values for PFAS in sediment samples. PFAS were only detected in two of the sediment samples: SD019 (0.003 mg/kg perfluorohexanoic acid [PFHxA]) and SD018 (0.0037 mg/kg sum of PFOS+PFHxS).

4.3.3 Wastewater Observations, Quality Parameter Field Measurements and Analytical Results

Wastewater observations and quality parameter field measurements are presented in **Table T7**, **Appendix B**. The water was clear with no sheen or odour. The field parameters indicated the water was neutral, fresh, moderately oxygenated and mildly reducing.

The PFAS analytical results for the wastewater sample is presented in **Table T8** in **Appendix B**. One compound, PFHxS was detected at 0.02 µg/L. There were no first-time detections of PFAS or exceedances of the human health or ecological guideline values in the April 2023 sampling event.

5.0 Summary and Next Sampling Event

5.1 Summary of Monitoring Event

A biannual groundwater, surface water and wastewater monitoring event was completed at the WBTA Management Area between 03 and 05 April 2023. The event included sampling of groundwater from 16 monitoring wells, two extraction bores, one wastewater sample from the WWTP and 14 surface water / sediment sampling locations. **Table 13** summarises the findings of the biannual April 2023 sampling event and the recommended actions.

Table 13 Summary of Sampling Event

Item	Comment	Recommended Actions
Access to sampling locations	All 16 monitoring wells and two extraction bores were accessible and able to be sampled. Surface water samples were collected from 12 of 14 locations with two locations dry (SW017 and SW018). Sediment samples were collected from all 14 locations. The WWTP outlet was able to be sampled.	None.
Monitoring well network condition	No issues were identified in the 16 monitoring wells sampled.	None.
Analytical results	PFAS concentrations in all groundwater, surface water, sediment and wastewater samples were consistent with historical results. Sum of PFOS+PFHxS concentrations exceeded the HEPA (2020) drinking water guidelines value in two groundwater samples (MW121, MW122). PFOS concentrations exceeded the HEPA (2020) ecological guideline value (99% species protection) in three groundwater and six surface water samples.	Ongoing monitoring in accordance with the OMP.
First-time detections of sum of PFOS+PFHxS or PFOA	There were no first-time detections of sum of PFOS+PFHxS or PFOA in any of the samples.	Ongoing monitoring in accordance with the OMP.
First time exceedance of HEPA (2020) guidelines	There were no new exceedances of the HEPA (2020) drinking water or recreational guidelines, or HEPA (2020) ecological freshwater / marine water species protection guidelines.	Ongoing monitoring in accordance with the OMP.

5.2 Upcoming Sampling Events

The next biannual sampling event is scheduled for October 2023.

5.3 Upcoming Annual Interpretive Report

The next annual interpretive report is scheduled for February 2024.

6.0 References

AECOM, 2020, *PFAS Detailed Site Investigation*, WBTA, Rev 0, September 2020.

AECOM, 2023a, *Wide Bay Training Area, OMP Review Report*, Revision 3, February 2023.

AECOM, 2023b, *PFAS OMP - WBTA Sampling and Analysis Quality Plan*, Revision 9, March 2023.

ASC NEPM, 2013. *Schedule B2. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B2 Guideline on Site Characterisation*.

ASC NEPM, 2013. *Schedule B4. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B4 Guideline on Site-Specific Health Risk Assessment Methodology*.

ASC NEPM, 2013. *Schedule B7. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B7 Guideline on Derivation of Health-Based Investigation Levels*.

Australian and New Zealand Governments and Australian state and territory governments [ANZG]. , 2018. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.*

Department of Defence, July 2018, Amended 2021, *Defence Contamination Management Manual.*

Department of Defence, 2020. *Wide Bay Training Area – PFAS Management Area Plan*, Version 7, September 2020.

Department of Defence, 2021. *PFAS OMP Factual Report Guidance*, Version 0.2, May 2021.

Department of Health, 2019. *Health Based Guidance Values for PFAS for use in site investigations in Australia*. 2017, as updated in 2019.

Heads of EPAs Australia and New Zealand, 2020. *PFAS National Environmental Management Plan*. January 2020.

National Health and Medical Research Council, 2019. *Guidance on PFAS in Recreational Water. August 2019*. August 2019.

Standards Australia 1998. AS/NZ 5667:1998 Water quality – sampling.

Appendix A

Figures

Appendix A Figures

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 0.5 1 2 3

km

1:80,000 (when printed at A3)

LEGEND

- Watercourse
- Road
- Major Road
- ManagementArea
- WBTA Property Boundary

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

LOCATION OF WBTA AND MANAGEMENT AREA

Sampling Event Factual Report, April 2023

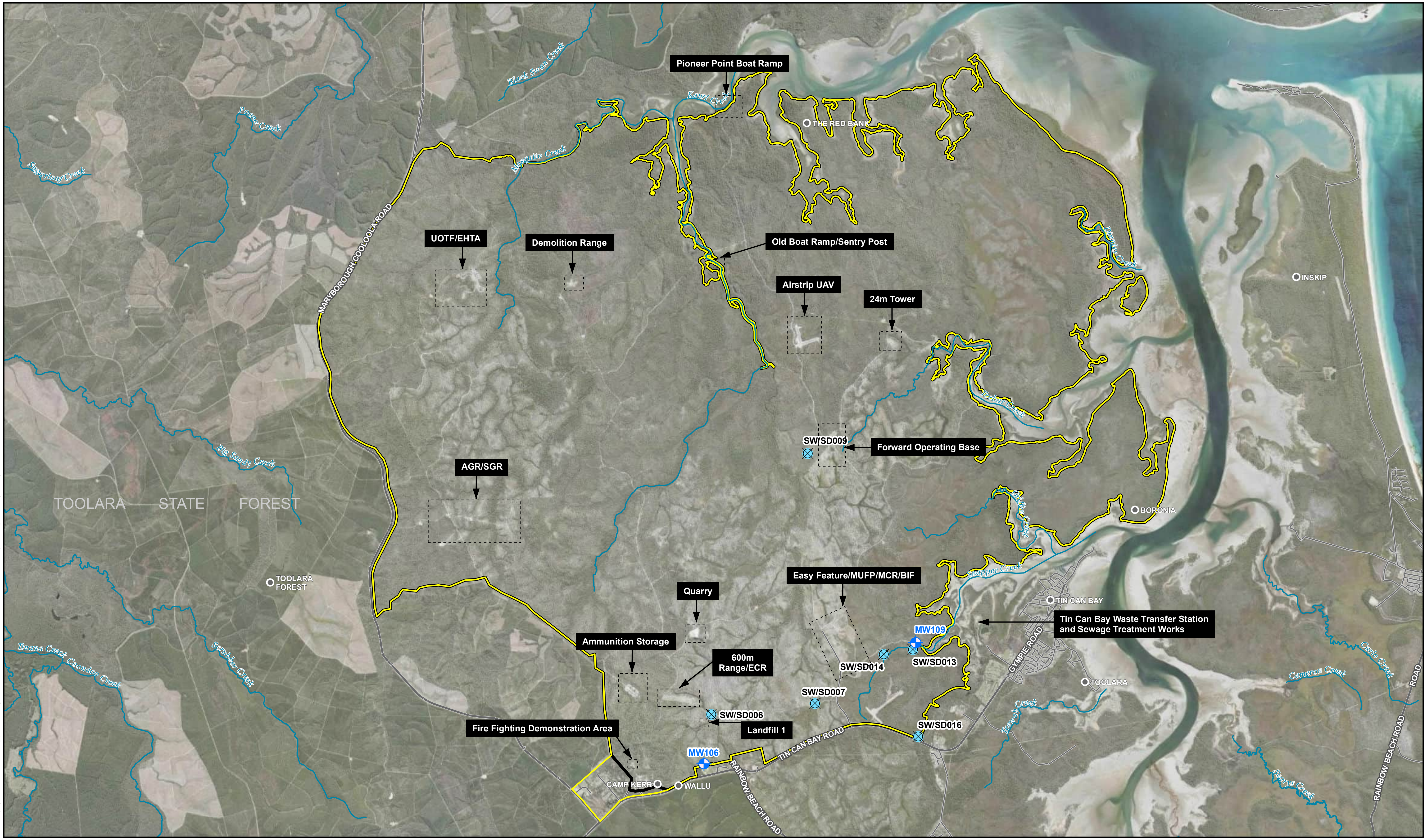
PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

1

Filename:\\na.aecomnet.com\lfs\APAC\Brisbane-AUBNE1\Secure\Projects\606X\60612563\900_CAD_GIS\920_GIS\02_MXDs\WBTA\PFAS_OMP_WBTA_AIR_2021\WBTA_P60612563_F1_OMP_WBTA_ManagementArea.mxd

A3 size



AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 0.5 1 2 3
km

1:80,000 (when printed at A3)

LEGEND

- Groundwater sampling location
- Sediment / surface water sampling location
- Road
- WBTA Property Boundary
- WBTA Management Area
- Watercourse

UOTF - Urban Operations Training Facility
AGR - Assault Grenade Range
SGR - Standard Grenade Range
MUFP - Multi User Firing Point
MCR - Multi Classification Range
ECR - Electronic Classification Range
BIF - Battle Inoculation Facility
EHTA - Explosive Handling Training Area
UAV - Unmanned Aerial Vehicle

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SAMPLE LOCATIONS (GREATER WBTA)

Sampling Event Factual Report, April 2023

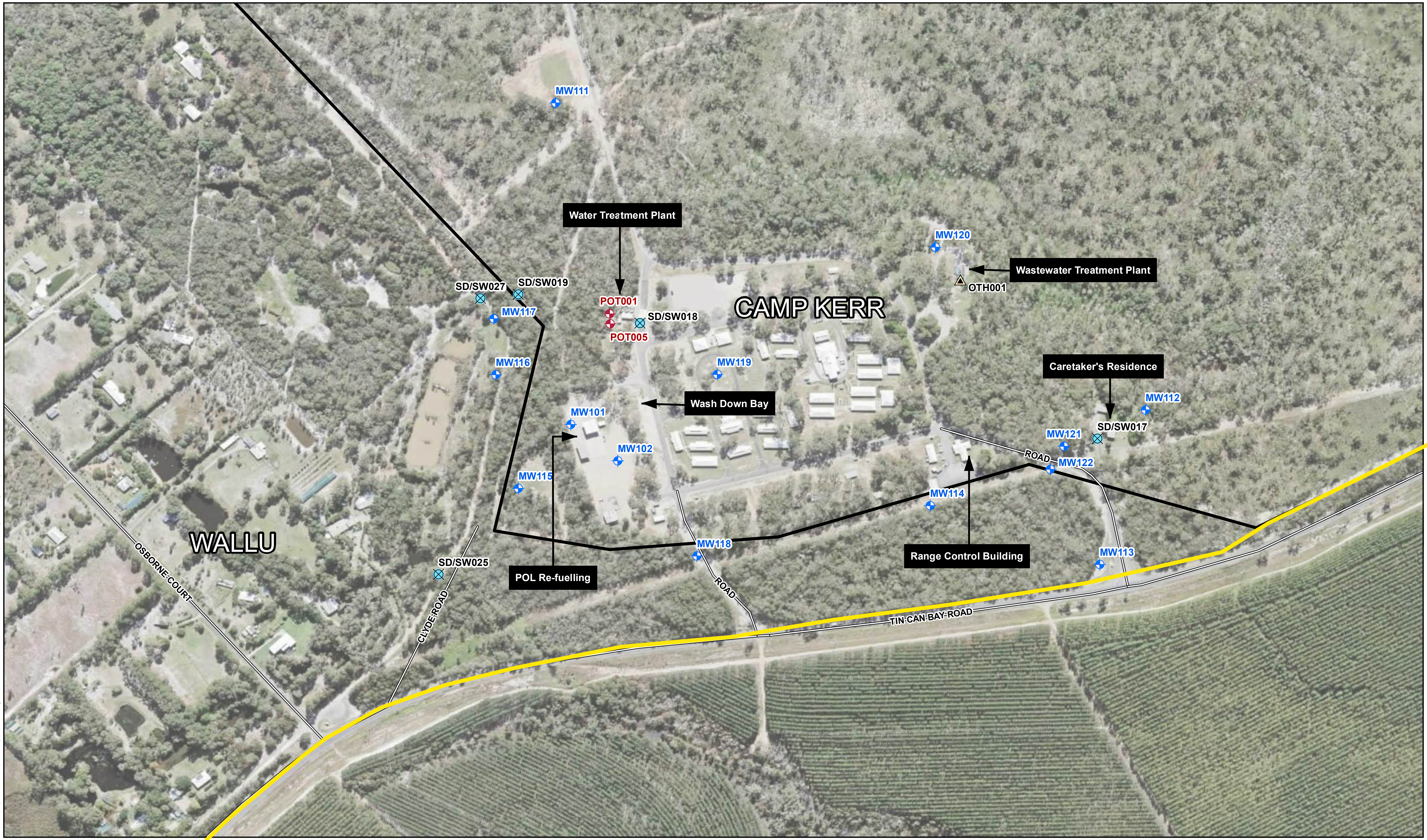
PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

2

Filename:\\na.aecomnet.com\lfs\APAC\Brisbane-AUBNE1\Secure\Projects\606X\60612563\900_CAD_GIS\920_GIS\02_MXDs\WBTA\PFAS_OMP_WBTA_AIR_2021\WBTA_P60612563_F2_OMP_Sampling_Locations_WBTA.mxd

A3 size



AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 50 100 200

metres

1:4,500 (when printed at A3)

LEGEND

- Wastewater treatment plant sampling location
- Abstraction bore
- Groundwater sampling location
- Sediment / surface water sampling location
- Road
- WBTA Property Boundary
- WBTA Management Area

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

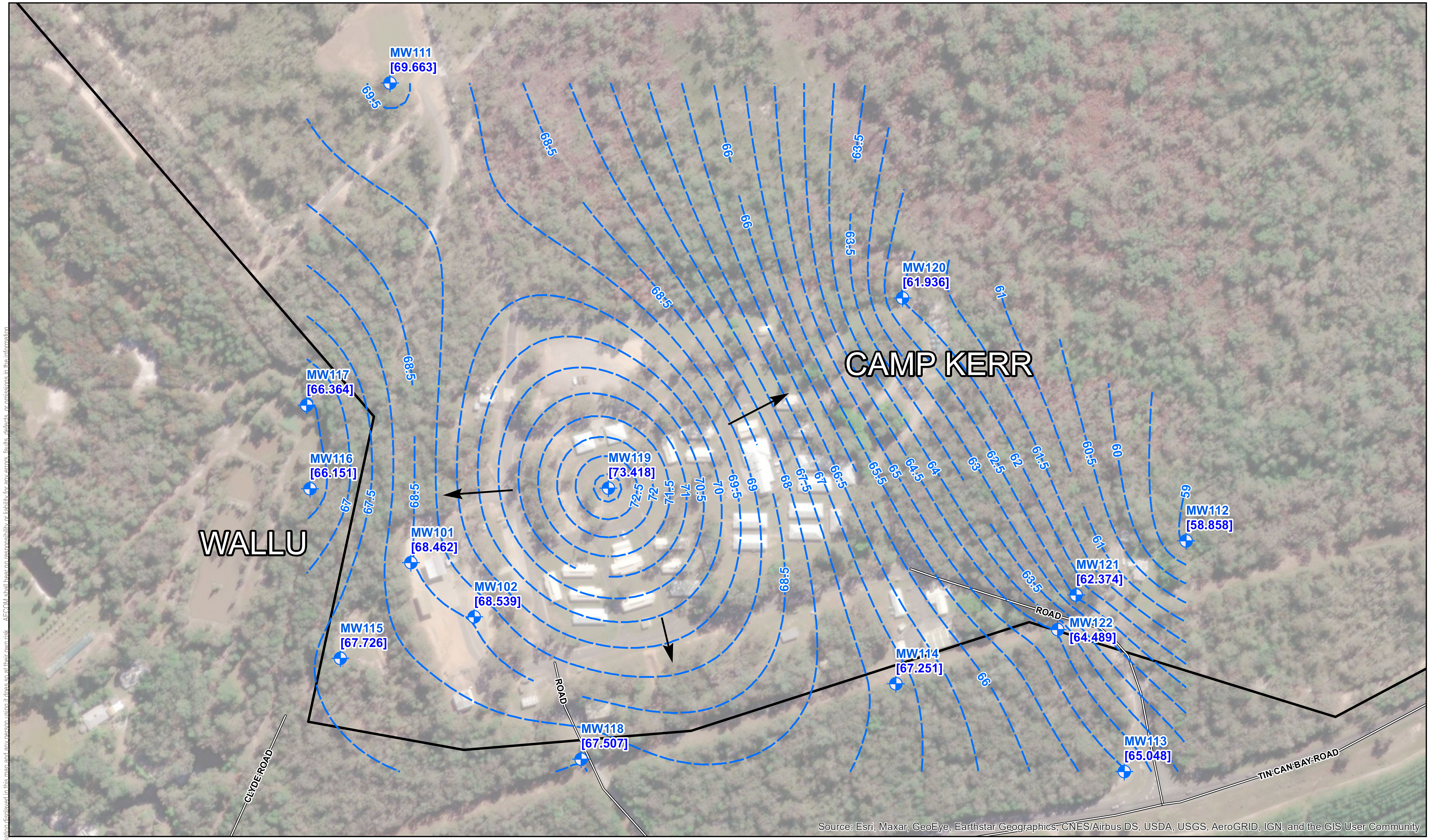
SAMPLING LOCATIONS (CAMP KERR)

Sampling Event Factual Report, April 2023

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

3



AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE XX

0 35 70 140

metres

1:3,000 (when printed at A3)

LEGEND

- Groundwater Elevation (mAHD)
- Inferred Groundwater Flow Direction
- Inferred Groundwater Contours (mAHD)
- WBTA Property Boundary

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

INFERRED GROUNDWATER CONTOURS (CAMP KERR)

3-5 April 2023

PROJECT ID	60612563
CREATED BY	ScottA3
LAST MODIFIED	SCS- 26/06/21
VERSION:	3

Figure

4

Appendix B

Tables

Appendix B Tables

Property ID	Well ID	Hydrasleeve install date	Gauging and Sample date	Hydrasleeve target depth (mbtoc)	Depth of Hydrasleeve (mbtoc)	Screened Interval depth (mbgs)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Well Depth (mbtoc)	Condition of Stand up cover / Gatic	DO (mg/L)	EC (µS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method / Comments
0224	MW101	21/10/2022	04/04/2023	15.0	15.0	11 - 16	10.802	79.264	68.462	16.073	Good	0.79	178.6	4.74	88.6	293.6	26.1	Low turbid	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW102	21/10/2022	04/04/2023	18.5	18.5	14-20	10.025	78.564	68.539	19.551	Good	1.67	117.8	4.91	100.6	305.6	23.5	Medium turbid	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW106	19/10/2022	04/04/2023	10.0	10.0	4 - 10	3.087	69.468	66.381	11.006	Good	2.87	113.2	4.75	78.6	283.6	24.9	Medium turbid	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™, rootlets present
0224	MW109	18/10/2022	03/04/2022	10.0	10.0	7 - 10	0.835	9.207	8.372	11.26	Good	3.43	277.6	5.64	60	265	24.9	Low	Cloudy, Brown Sediment	No odour	No sheen	HydraSleeve™
0224	MW111	19/10/2022	03/04/2022	20.5	20.5	16.5 - 20.5	9.289	78.952	69.663	21.625	Good	1.09	218.6	5.38	96.3	301.3	23.6	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW112	20/10/2022	04/04/2023	9.0	9.0	6 - 9	6.325	65.183	58.858	9.842	Good	0.89	166.1	5.29	90.9	295.9	23.9	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW113	20/10/2022	04/04/2023	8.0	8.0	6 - 9	2.669	67.717	65.048	8.965	Good	0.77	15.2	4.96	105.2	310.2	22.4	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW114	20/10/2022	05/04/2023	11.5	11.5	8.5 - 11.5	5.765	73.016	67.251	12.516	Good	1.65	58.1	5.21	84.6	289.6	21.2	Low	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW115	17/10/2022	06/04/2023	16.0	16.0	13 - 16	8.933	76.659	67.726	17.041	Good	1.1	161.5	5.36	105.1	310.1	27.2	Medium	Cloudy	No odour	No sheen	HydraSleeve™
0224	MW116	19/10/2022	05/04/2023	11.0	10.5	8 - 11	3.664	69.815	66.151	11.766	Good	0.84	441.6	6.42	98.2	303.2	26.9	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW117	19/10/2022	05/04/2023	10.0	9.0	7 - 10	2.55	68.914	66.364	10.961	Good	0.76	436.3	6.38	98.5	303.5	22.6	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW118	18/10/2022	05/04/2023	12.7	12.0	10 - 13	8.647	76.154	67.507	13.55	Good	3.07	136.9	5.06	88.7	293.7	20.6	Low	Clear, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW119	20/10/2022	04/04/2023	14.7	14.5	13 - 16	6.128	79.546	73.418	15.722	Good	2.29	208	4.77	109.2	314.2	24.3	Low	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW120	03/04/2023	04/04/2023	12.7	12.5	Unknown	9.396	71.332	61.936	13.659	Good	0.61	117.3	4.63	88.2	293.2	25.2	Med	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW121	03/04/2023	04/04/2023	14.0	14.0	Unknown	8.031	70.405	62.374	15.023	Good	1.12	142	5.24	93.3	298.3	24.9	Clear	Brown sediment	No odour	No sheen	HydraSleeve™
0224	MW122	03/04/2023	04/04/2023	19.0	19.0	Unknown	6.086	70.575	64.489	19.912	Good	0.77	90.5	4.2	97.4	302.4	24	Low	Clear	No odour	No sheen	HydraSleeve™
0224	POT001	-	04/04/2023	-		18 - 78.4	-	-	-	-	-	1.83	498	6.91	135.2	340.2	26.6	Clear	Clear	No odour	No sheen	Tap
0224	POT005	-	04/04/2023	-		30 - 51.5	-	-	-	-	-	1.01	455.3	6.8	109.3	314.3	26.9	Clear	Clear	No odour	No sheen	Tap

Notes
mbgs is metres below ground surface
mbtoc is metres below top of casing
mAHD is metres above Australian height datum
DO is dissolved oxygen
EC is electrical conductivity
E_h is oxidation reduction potential
Oxidation reduction potential (E_r) measured with a platinum electrode and a silver/silver chloride reference electrode (E_r) and converted to E_h by $E_h = E_r + 205$ mV (based on a groundwater temperature of 21°C)
Temp is Temperature
µS/cm is microsiemens per centimetre
ºC is degrees Celsius
mV is millivolts
` - No data

Location ID	Sample ID	Sample Date		Lab Report No.	PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTeDA	PFTrDA	FOSA	MeFOSE	EtFOSE	MeFOSA	EtFOSA	MFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	Sum of PFAS
				Units	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	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	µg/L	µg/L
				LOR	0.01	0.02	0.02	0.02	0.02	0.01	0.02	0.1	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01
NEMP (HEPA, 2020) Human Health Drinking Water					**0.07**											**0.56**																		
NHMRC (2019) PFAS Recreational Water					2											10																		
NEMP (HEPA, 2020) Ecological Freshwater 99% Species Protection										*0.00023*						*19*																		
Location ID	**Sample ID**	**Sample Date**		**Lab Report No.**																														
MW101	0224_MW101_230404	4/04/2023	Normal	EB2310490001	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW102	0224_MW102_230404	4/04/2023	Normal	EB2310490002	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW106	0224_MW106_230403	3/04/2023	Normal	EB2310490003	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW109	0224_MW109_230403	3/04/2023	Normal	EB2310490004	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW111	0224_MW111_230404	4/04/2023	Normal	EB2310490005	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW112	0224_MW112_230404	4/04/2023	Normal	EB2310490006	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW113	0224_MW113_230404	4/04/2023	Normal	EB2310490007	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW114	0224_MW114_230405	5/04/2023	Normal	EB2310490008	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW115	0224_MW115_230404	4/04/2023	Normal	EB2310490009	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW116	0224_MW116_230405	5/04/2023	Normal	EB2310490010	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW117	0224_MW117_230405	5/04/2023	Normal	EB2310490011	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW118	0224_MW118_230405	5/04/2023	Normal	EB2310490012	0.04	<0.02	<0.02	0.02	<0.02	*0.02*	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04
MW119	0224_MW119_230404	4/04/2023	Normal	EB2310490013	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW120	0224_MW120_230404	4/04/2023	Normal	EB2310490014	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW121	0224_MW121_230404	4/04/2023	Normal	EB2310490015	**0.13**	<0.02	<0.02	0.09	<0.02	*0.04*	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13
MW121	0224_QC100_230404	4/04/2023	Duplicate	EB2310490020	**0.13**	<0.02	<0.02	0.09	<0.02	*0.04*	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.13
MW121	0224_QC200_230404	4/04/2023	Triplicate	AECO06_230412	**0.102**	<0.01	<0.01	0.076	<0.01	*0.026*	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.102
MW122	0224_MW122_230404	4/04/2023	Normal	EB2310490016	**0.2**	<0.02	<0.02	0.15	<0.02	*0.05*	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.2
MW122	0224_QC101_230404	4/04/2023	Duplicate	EB2310490021	**0.2**	<0.02	<0.02	0.15	<0.02	*0.05*	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.2
MW122	0224_QC201_230404	4/04/2023	Triplicate	AECO06_230412	**0.17**	0.011	0.012	0.13	<0.01	*0.036*	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.109
POT001	0224_POT001_230404	4/04/2023	Normal	EB2310490017	0.03	<0.02	<0.02	0.03	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03
POT005	0224_POT005_230404	4/04/2023	Normal	EB2310490018	0.01	<0.02	<0.02	0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.01

LOR is limit of reporting
µg/L is micrograms per litre
-' denotes no analysis undertaken
<' denotes concentration is less than
NEMP is National Environmental Management Plan
Denotes first time detection above LOR
Denotes new exceedance of human health guideline values

Property ID	Location ID	Sample Date	DO (mg/L)	EC (µS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Odour	Sheen
0224	SW006	4/04/2023	1.01	120	5.88	35.8	240.8	22.9	No odour	No sheen
0224	SW007	3/04/2023	2.43	161.2	5.45	40.6	245.6	25.1	No odour	No sheen
0224	SW009	3/04/2023	4.18	381.1	6.27	96.6	301.6	23.7	No odour	No sheen
0224	SW013	3/04/2023	3.91	45517	6.99	130.2	335.2	29.3	No odour	No sheen
0224	SW014	3/04/2023	3.86	444.3	5.94	42.6	247.6	27.1	No odour	No sheen
0224	SW016	3/04/2023	5.64	136.7	5.67	72.5	277.5	23.5	No odour	No sheen
0224	SW017	3-5/04/2023	Dry							
0224	SW018	3-5/04/2023	Dry							
0224	SW019	4/04/2023	6.96	236.8	7.16	76.3	281.3	24.1	No odour	No sheen
0224	SW021	5/04/2023	0.43	121	5.81	97	302	22.7	No odour	No sheen
0224	SW022	5/04/2023	0.72	108.9	5.98	88.7	293.7	21.9	No odour	No sheen
0224	SW023	5/04/2023	1.74	66.7	6.12	87.9	292.9	24.3	No odour	No sheen
0224	SW025	5/04/2023	0.53	113.8	6	88.6	293.6	23.4	No odour	No sheen
0224	SW027	5/04/2023	1.2	198.4	6.81	83.8	288.8	21.1	No odour	No sheen

Notes
DO is dissolved oxygen
EC is electrical conductivity
E_h is oxidation reduction potential

Oxidation reduction potential (E_r) measured with a platinum electrode and a silver/silver chloride reference electrode (E_r) and converted to E_h by E_h = E_r + 205 mV (based on a groundwater temperature of 21°C)
Temp is Temperature
µS/cm is microsiemens per centimetre
ºC is degrees Celsius
mV is millivolts
` - No data

Location ID	Sample ID	Sample Date	Type	Lab Report No.	PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA
				Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
				LOR	0.0016	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.002	0.0005	0.0005	0.0005	0.0005
NHMRC (2019) PFAS Recreational Water					2											10
HEPA (2020) Ecological Freshwater 99% Species Protection										**0.00023**						**19**
HEPA (2020)Ecological Freshwater 95% Species Protection (SW025 only)										*0.13*						*220*
SW006	0224_SW006_230403	3/04/2023	Normal	EB2310490035	0.0016	<0.0016	<0.0005	0.0016	<0.0005	<0.0006	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005
SW006	0224_QC102_220403	3/04/2023	Duplicate	EB2310490045	0.0021	<0.0016	<0.0005	0.0021	<0.0005	<0.0003	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005
SW006	0224_QC202_220403	3/04/2023	Triplicate	AECO06_230412	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01
SW007	0224_SW007_230403	3/04/2023	Normal	EB2310490027	<0.0003	<0.0016	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005
SW009	0224_SW009_230403	3/04/2023	Normal	EB2310490029	<0.0003	<0.0016	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005
SW013	0224_SW013_230403	3/04/2023	Normal	EB2310490031	0.0011	<0.0016	<0.0005	0.0011	<0.0005	<0.0003	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005
SW014	0224_SW014_230403	3/04/2023	Normal	EB2310490033	0.0029	<0.0016	<0.0005	0.0021	<0.0005	**0.0008**	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005
SW016	0224_SW016_230403	3/04/2023	Normal	EB2310490035	<0.0003	<0.0016	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005
SW019	0224_SW019_230404	4/04/2023	Normal	EB2310490037	0.161	<0.08	0.0065	0.091	0.0038	**0.0698**	<0.0005	<0.008	0.0279	0.0152	<0.003	<0.0016
SW021	0224_SW021_230405	5/04/2023	Normal	EB2310493001	0.0035	<0.0016	<0.0005	0.001	<0.0005	**0.0025**	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005
SW022	0224_SW022_230405	5/04/2023	Normal	EB2310497001	0.0047	<0.0016	<0.0005	0.0024	<0.0005	**0.0023**	<0.0005	<0.008	<0.0016	<0.0016	<0.0016	<0.0005
SW023	0224_SW023_230405	5/04/2023	Normal	EB2310497003	0.0034	<0.0016	<0.0005	0.0013	<0.0005	**0.0021**	<0.0005	<0.008	<0.0016	<0.0016	<0.0005	<0.0005
SW025	0224_SW025_230405	5/04/2023	Normal	EB2310490041	0.0018	<0.0016	<0.0005	0.0006	<0.0005	**0.0012**	<0.0005	<0.008	<0.0016	<0.0016	<0.0016	<0.0005
SW027	0224_SW027_220405	5/04/2023	Normal	EB2310490043	0.0284	<0.0016	0.001	0.0212	0.001	**0.0072**	<0.0005	<0.008	<0.0065	<0.0055	<0.0016	0.0009
SW027	0224_QC104_230405	5/04/2023	Duplicate	EB2310490047	0.0309	<0.0025	<0.002	0.0211	0.0008	**0.0098**	<0.0005	<0.008	<0.0070	<0.0065	<0.0025	0.0014
SW027	0224_QC204_230405	5/04/2023	Triplicate	AECO06_230412	0.019	<0.01	<0.01	0.019	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01

Location ID	Sample ID	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSE	EtFOSE	MeFOSA	EtFOSA	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	Sum of PFAS
	Units	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	µg/L	µg/L	µg/L	µg/L
	LOR	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0016
SW006	0224_SW006_230403	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.004	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0016
SW006	0224_QC102_220403	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.004	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0021
SW006	0224_QC202_220403	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
SW007	0224_SW007_230403	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0041	<0.0005	<0.001	<0.004	<0.004	<0.004	<0.0005	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0016
SW009	0224_SW009_230403	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0041	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0016
SW013	0224_SW013_230403	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0039	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0011
SW014	0224_SW014_230403	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0041	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0029
SW016	0224_SW016_230403	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0016
SW019	0224_SW019_230404	<0.005	<0.005	<0.005	0.0011	<0.005	<0.004	<0.0005	<0.004	<0.004	<0.001	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.215
SW021	0224_SW021_230405	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0035
SW022	0224_SW022_230405	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0041	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0047
SW023	0224_SW023_230405	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0034
SW025	0224_SW025_230405	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0040	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0018
SW027	0224_SW027_220405	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0313
SW027	0224_QC104_230405	<0.0005	<0.0005	<0.0016	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0331
SW027	0224_QC204_230405	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.019

LOR is limit of reporting
µg/L is micrograms per litre
-' denotes no analysis undertaken
<' denotes concentration is less than
Denotes first time detection above LOR
Denotes new exceedance of human health guideline values
In accordance with the SAQP, SW025 has been assessed with HEPA (2020) ecological guideline for the protection of freshwater species at 95%.

Property ID	Location ID	Sample Date	Sample Description	Odour
0224	SD006	4/04/2023	SAND, grey with organic matter	No odour
0224	SD007	3/04/2023	SAND, white	No odour
0224	SD009	3/04/2023	SAND, brown	No odour
0224	SD013	3/04/2023	SAND, brown	No odour
0224	SD014	3/04/2023	SAND, grey	No odour
0224	SD016	3/04/2023	SAND, brown with organic matter	No odour
0224	SD017	5/04/2023	SAND, brown with organic matter	No odour
0224	SD018	4/04/2023	SAND, grey with gravel	No odour
0224	SD019	4/04/2023	SAND, brown with organic mater	No odour
0224	SD021	5/04/2023	Sandy CLAY, grey brown with organic matter and shells	No odour
0224	SD022	5/04/2023	clayey SAND, red orange	No odour
224	SD023	5/04/2023	sandy CLAY, dark brown, with oranic matter	No odour
0224	SD025	5/04/2023	SAND, brown with minor clay	No odour
0224	SD027	5/04/2023	Clayey SAND, brown with organic matter	No odour

Location ID	Sample ID	Sample Date	Type	Lab Report No.	PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFDoDA	PFTeDA	PFTrDA	PFUnDA	FOSA	EtFOSE	MeFOSE	EtFOSA	MeFOSA	EtFOSAA	MFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	Sum of PFAS
				Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
				LOR	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005	0.0002
SD006	0224_SD006_230404	4/04/2023	Normal	EB2310490026	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD006	0224_QC103_230404	4/04/2023	Duplicate	EB2310490	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD006	0224_QC203_230404	4/04/2023	Triplicate	AECO06_230412	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001
SD007	0224_SD007_230403	3/04/2023	Normal	EB2310490028	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD009	0224_SD009_230403	3/04/2023	Normal	EB2310490030	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD013	0224_SD013_230403	3/04/2023	Normal	EB2310490032	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD014	0224_SD014_230403	3/04/2023	Normal	EB2310490034	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD016	0224_SD016_230403	3/04/2023	Normal	EB2310490036	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD017	0224_SD017_230405	5/04/2023	Normal	EB2310490037	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD018	0224_SD018_230404	4/04/2023	Normal	EB2310490038	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	<0.0002	<0.001	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0003
SD019	0224_SD019_230404	4/04/2023	Normal	EB2310490040	0.0037	<0.0002	<0.0002	0.0005	<0.0002	0.0032	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0037
SD021	0224_SD021_230405	5/04/2023	Normal	EB2310493002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD022	0224_SD022_230405	5/04/2023	Normal	EB2310497002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD023	0224_SD023_230405	5/04/2023	Normal	EB2310497004	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0006	<0.0002	<0.0002	<0.0006	<0.0006	<0.0006	<0.0006	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD025	0224_SD025_230405	5/04/2023	Normal	EB2310490042	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD027	0224_SD027_230405	5/04/2023	Normal	EB2310490044	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD027	0224_QC105_230405	5/04/2023	Duplicate	EB2310490028	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0002
SD027	0224_QC205_230405	5/04/2023	Triplicate	AECO06_230412	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.001

LOR is limit of reporting
mg/kg is milligrams per kilogram
µg/kg is micrograms per kilogram
'-' denotes no analysis undertaken
'<' denotes concentration is less than
Denotes first time detection above LOR

Property ID	Well ID	Sample Date	DO (mg/L)	EC (µS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method / Comments
0224	OTH001	4/04/2023	3.57	502.3	7.02	104.6	309.6	22.1	Clear	Clear	No odour	No sheen	Tap

DO is dissolved oxygen
EC is electrical conductivity
E_h is oxidation reduction potential
Oxidation reduction potential (E_r) measured with a platinum electrode and a silver/silver chloride reference electrode (E_r) and converted to E_h by E_h = E_r + 205 mV (based on a groundwater temperature of 21°C)
Temp is Temperature
µS/cm is microsiemens per centimetre
ºC is degrees Celsius
mV is millivolts

Location ID	Sample ID	Sample Date	Type	Lab Report No.	PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHpA	PFHxA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSE	EtFOSE	MeFOSA	EtFOSA	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	Sum of PFAS
				Units	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	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	µg/L	µg/L
				LOR	0.01	0.02	0.02	0.02	0.02	0.01	0.02	0.1	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01
NHMRC (2019) PFAS Recreational Water					2											10																		
HEPA (2020) Ecological Freshwater 99% Species Protection										*0.00023*						*19*																		
OTH001	0224_OTH001_230404	4/04/2023	Normal	EB2310490020	0.02	<0.02	<0.02	0.02	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.02

LOR is limit of reporting
µg/L is micrograms per litre
-' denotes no analysis undertaken
<' denotes concentration is less than
Denotes first time detection above LOR
Denotes new exceedance of human health guideline values

Appendix C

Analytical Data Validation

Appendix C Analytical Data Validation

DATA VALIDATION REPORT

Project No.:	60612563	**Validation by:** JS		**Date:**	11/05/2023
Client:	Department of Defence				
Site:	Wide Bay Training Area				
Matrix type:	Groundwater, surface water, waste water, sediment	**Data verified by:** JP		**Date:**	12/05/2023
No. of primary samples:	16 groundwater, 12 surface water, 1 waste water, 14 sediment				
Laboratory:	ALS (Brisbane), NMI (Sydney)	**Project Manager:** JP			
Lab reference:	EB2310490; EB2310493; EB2310497; RN1390132				

Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication on data interpretation and therefore decision-making on the project. The data are therefore considered appropriate for use to meet the project objectives. All analytical data have been uploaded and assigned to DERP ESdat.

Field QA/QC

Sampling personnel	Sampling was conducted by an AECOM environmental scientist between 03 and 05 April 2023.
Sampling Methodology	Samples were collected using appropriate methods as identified within the main body of the report.
Hydrasleeve sampling	All hydrasleeves were left in the monitoring wells for a minimum of 24 hours prior to being sampled. Installation and retrieval dates are shown in **Table T1** in **Appendix B**.
Daily Equipment Calibration	Daily equipment calibration was completed during the sampling event and are attached within **Appendix F**.
Chain of Custody (COC)	COC documents were completed as per AECOM procedures and are attached within **Appendix D**.
Rinsate Blank (refer to **Table C1**)	Rinsate blank samples were collected at a frequency of approximately one per day of sampling (three in total) where non-dedicated sampling equipment was used. All rinsates were collected from the decontaminated interface probe. Concentrations reported below the LOR for all analytes tested.
Frequency of field QC	Field duplicate (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected for samples analysed for PFAS at a frequency of one in ten primary samples (four sets for 30 water samples [13%] and two sets for 14 sediment samples [14%]. The frequency of field QC achieves the expected frequency.
Handling and preservation	Primary, duplicate and triplicate samples were received preserved and chilled at the laboratory. All samples were received at the laboratory in appropriate sample containers with no sample container / preservation non-compliances noted.

Laboratory QA/QC	
Tests requested/reported	Samples were analysed and reported as requested on the COC.
Holding time compliance	Samples were extracted and analysed within recommended holding times.
Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Brisbane) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate samples were analysed at the National Measurement Institute (Sydney), also a NATA accredited laboratory.
Frequency of laboratory QC	The laboratory reported a sufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision, except: • Laboratory duplicates for PFAS were below the expected rate of 10.00% in: - EB2310490 (14 samples in batch, 0.00% rate achieved) - EB2310493 (14 samples in batch, 0.00% rate achieved) - EB2310497 (14 samples in batch, 0.00% rate achieved) • EB2310497 (1 samples in batch, 0.0% rate achieved)Matrix spikes for PFAS (0.00%) below the expected rate of 5.00% in: - EB2310490 (14 samples in batch, 0.00% rate achieved) - EB2310493 (14 samples in batch, 0.00% rate achieved) - EB2310497 (14 samples in batch, 0.00% rate achieved) The reason for insufficient matrix spikes and laboratory duplicates for these batches is due to the way the laboratory assigns the duplicates and matrix spikes and the availability of additional bottles. The laboratory LIMS assigns laboratory QC to samples in the analytical run; however, the runs may not allocate samples to allow for frequency compliance. However, as all other laboratory QC results met control limits this is not expected to impact data quality.
Method Blank	No method blank non-conformances were reported in the batches.
Laboratory duplicate RPDs	Laboratory duplicate relative percentage differences (RPD) were within control limits for all samples.
Laboratory control spike recovery	There were no laboratory control spike recovery outliers
Matrix spike recovery	No matrix spike recovery outliers
Surrogate spike recovery	Surrogate spike recoveries were within control limits.
QA/QC Data Evaluation	
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.
Limits of reporting	LORs were sufficiently low to assess all results against the required guidelines
Field duplicate RPDs (refer to **Tables C2, C3**, and **C4**)	Field duplicate RPDs were reported within control limits for all primary and duplicate samples except for the following. The highest concentration is in bold.

	• 0244_SW027_230405 and **0244_QC104_230405** for PFOS. The reason(s) for the discrepancies is unknown however it may be due to the presence of sediment in the unfiltered shallow drain sample. Although the duplicate samples highlighted above reported a higher concentration than the primary sample, the higher duplicate sample concentrations do not constitute a first-time detection of PFOA or PFHxS+PFOS or a new maximum of the same concentrations and therefore the elevated RPDs are not considered to affect data interpretation for use in this report. The higher concentration has however conservatively been adopted in the report tables.
Field triplicate RPDs (refer to **Tables C2, C3**, and **C4**)	Field triplicate RPDs were reported within control limits for all primary and triplicate samples.
Other	
Other observations	No other notable observation were made during sampling.

		Lab Report Number	EB2310490	EB2310490	EB2310490
		Field ID	0224_QC300_230403	0224_QC301_230404	0224_QC302_230405
		Sampled Date	3/04/2023	4/04/2023	5/04/2023
		Sample Type	Rinsate	Rinsate	Rinsate
Chemical Name	**Units**	**LOR**			
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.001	<0.05	<0.05	<0.05
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.001	<0.05	<0.05	<0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.001	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.001	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.001	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.0005	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.001	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.001	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.0005	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.001	<0.05	<0.05	<0.05
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.002	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide (FOSA)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.0005	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.0005	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.0005	<0.02	<0.02	<0.02
Sum of PFAS	µg/L	0.0003	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	µg/L	0.0003	<0.01	<0.01	<0.01
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.0003	<0.01	<0.01	<0.01
Perfluorooctanoic Acid (PFOA)	µg/L	0.0005	<0.01	<0.01	<0.01
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.0005	<0.01	<0.01	<0.01

Chemical Name	Units	LOR									
		Lab Report Number	EB2310490	EB2310490	**RPD**	RN1390132	**RPD**	EB2310490	EB2310490	**RPD**	RN1390132	**RPD**
		Field ID	0224_SD006_230403	0224_QC103_230404		0224_QC203_230404		0224_SD027_230405	0224_QC105_230405		0224_QC205_230405	
		Type	Primary	Duplicate		Triplicate		Primary	Duplicate		Triplicate	
		Sampled Date	4/04/2023	4/04/2023		4/04/2023		5/04/2023	5/04/2023		5/04/2023	
10:2 FTS	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	0	<0.002	0	<0.0005	<0.0005	0	<0.002	0
4:2 FTS	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	0	<0.001	0	<0.0005	<0.0005	0	<0.001	0
6:2 FtS	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	0	<0.001	0	<0.0005	<0.0005	0	<0.001	0
8:2 FTS	mg/kg	0.0005 : 0.001 (Interlab)	<0.0005	<0.0005	0	<0.001	0	<0.0005	<0.0005	0	<0.001	0
EtFOSA	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	0	<0.002	0	<0.0005	<0.0005	0	<0.002	0
EtFOSAA	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.002	0	<0.0002	<0.0002	0	<0.002	0
EtFOSE	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	0	<0.005	0	<0.0005	<0.0005	0	<0.005	0
MeFOSA	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	0	<0.002	0	<0.0005	<0.0005	0	<0.002	0
MFOSAA	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.002	0	<0.0002	<0.0002	0	<0.002	0
MeFOSE	mg/kg	0.0005 : 0.005 (Interlab)	<0.0005	<0.0005	0	<0.005	0	<0.0005	<0.0005	0	<0.005	0
PFBS	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.001	0	<0.0002	<0.0002	0	<0.001	0
PFBA	mg/kg	0.001	<0.001	<0.001	0	<0.002	0	<0.001	<0.001	0	<0.002	0
PFDS	mg/kg	0.0002	<0.0002	<0.0002	0	<0.001	0	<0.0002	<0.0002	0	<0.001	0
PFDA	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.001	0	<0.0002	<0.0002	0	<0.001	0
PFDoDA	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.002	0	<0.0002	<0.0002	0	<0.002	0
PFHpS	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.001	0	<0.0002	<0.0002	0	<0.001	0
PFHpA	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.001	0	<0.0002	<0.0002	0	<0.001	0
PFHxA	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.001	0	<0.0002	<0.0002	0	<0.001	0
PFNA	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.001	0	<0.0002	<0.0002	0	<0.001	0
FOSA	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.001	0	<0.0002	<0.0002	0	<0.001	0
PFPeS	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.001	0	<0.0002	<0.0002	0	<0.001	0
PFPeA	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.002	0	<0.0002	<0.0002	0	<0.002	0
PFTeDA	mg/kg	0.0005 : 0.002 (Interlab)	<0.0005	<0.0005	0	<0.002	0	<0.0005	<0.0005	0	<0.002	0
PFTrDA	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.002	0	<0.0002	<0.0002	0	<0.002	0
PFUnDA	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.002	0	<0.0002	<0.0002	0	<0.002	0
PFOS	mg/kg	0.0002 : 0.002 (Interlab)	<0.0002	<0.0002	0	<0.002	0	<0.0002	<0.0002	0	<0.002	0
PFOA	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.001	0	<0.0002	<0.0002	0	<0.001	0
PFHxS	mg/kg	0.0002 : 0.001 (Interlab)	<0.0002	<0.0002	0	<0.001	0	<0.0002	<0.0002	0	<0.001	0

		Lab Report Number	EB2310490	EB2310490	**RPD**	RN1390132	**RPD**	EB2310490	EB2310490	**RPD**	RN1390132	**RPD**
		Field ID	0224_MW121_230404	0224_QC100_230404		0224_QC200_230404		0224_MW122_230404	0224_QC101_230404		0224_QC201_230404	
		Type	Primary	Duplicate		Triplicate		Primary	Duplicate		Triplicate	
		Sampled Date	4/04/2023	4/04/2023		4/04/2023		4/04/2023	4/04/2023		4/04/2023	
Chemical Name	**Units**	**LOR**										
10:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0
4:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0
6:2 FtS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0
8:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0
EtFOSA	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.02	0	<0.05	<0.05	0	<0.02	0
EtFOSAA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
EtFOSE	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0
MeFOSA	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.02	0	<0.05	<0.05	0	<0.02	0
MFOSAA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
MeFOSE	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0
PFBS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	0.011	0
PFBA	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.05	0
PFDS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFDoDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFHpS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFHpA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFHxA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFNA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
FOSA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFPeS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	0.012	0
PFPeA	µg/L	0.02	<0.02	<0.02	0	<0.02	0	<0.02	<0.02	0	<0.02	0
PFTeDA	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.02	0	<0.05	<0.05	0	<0.02	0
PFTrDA	µg/L	0.02	<0.02	<0.02	0	<0.02	0	<0.02	<0.02	0	<0.02	0
PFUnDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFOS	µg/L	0.01 : 0.02 (Interlab)	0.04	0.04	0	0.026	42	0.05	0.05	0	0.036	33
PFOA	µg/L	0.01	<0.01	<0.01	0	<0.01	0	<0.01	<0.01	0	<0.01	0
PFHxS	µg/L	0.01	0.09	0.09	0	0.076	17	0.15	0.15	0	0.13	14

		Lab Report Number	EB2310490	EB2310490	**RPD**	RN1390132	**RPD**	EB2310490	EB2310490	**RPD**	RN1390132	**RPD**
		Field ID	0224_SW006_230404	0224_QC102_230404		0224_QC202_230404		0224_SW027_230405	0224_QC104_230405		0224_QC204_230405	
		Type	Primary	Duplicate		Triplicate		Primary	Duplicate		Triplicate	
		Sampled Date	4/04/2023	4/04/2023		4/04/2023		5/04/2023	5/04/2023		5/04/2023	
Chemical Name	**Units**	**LOR**										
10:2 FTS	µg/L	0.001 : 0.01 (Interlab)	<0.001	<0.001	0	<0.01	0	<0.001	<0.001	0	<0.01	0
4:2 FTS	µg/L	0.001 : 0.01 (Interlab)	<0.001	<0.001	0	<0.01	0	<0.001	<0.001	0	<0.01	0
6:2 FtS	µg/L	0.001 : 0.01 (Interlab)	<0.001	<0.001	0	<0.01	0	<0.001	<0.001	0	<0.01	0
8:2 FTS	µg/L	0.001 : 0.01 (Interlab)	<0.001	<0.001	0	<0.01	0	<0.001	<0.001	0	<0.01	0
EtFOSA	µg/L	0.001 : 0.02 (Interlab)	<0.004	<0.004	0	<0.02	0	<0.004	<0.004	0	<0.02	0
EtFOSAA	µg/L	0.0005 : 0.01 (Interlab)	<0.0016	<0.0016	0	<0.01	0	<0.0016	<0.0016	0	<0.01	0
EtFOSE	µg/L	0.001 : 0.05 (Interlab)	<0.004	<0.004	0	<0.05	0	<0.004	<0.004	0	<0.05	0
MeFOSA	µg/L	0.001 : 0.02 (Interlab)	<0.004	<0.004	0	<0.02	0	<0.004	<0.004	0	<0.02	0
MFOSAA	µg/L	0.0005 : 0.01 (Interlab)	<0.0016	<0.0016	0	<0.01	0	<0.0016	<0.0016	0	<0.01	0
MeFOSE	µg/L	0.001 : 0.05 (Interlab)	<0.004	<0.004	0	<0.05	0	<0.004	<0.004	0	<0.05	0
PFBS	µg/L	0.0005 : 0.01 (Interlab)	<0.0016	<0.0016	0	<0.01	0	<0.0016	<0.0025	0	<0.01	0
PFBA	µg/L	0.002 : 0.05 (Interlab)	<0.008	<0.008	0	<0.05	0	<0.008	<0.008	0	<0.05	0
PFDS	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0005	<0.0005	0	<0.01	0
PFDA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0005	<0.0005	0	<0.01	0
PFDoDA	µg/L	0.0005 : 0.01 (Interlab)	<0.0016	<0.0016	0	<0.01	0	<0.0016	<0.0016	0	<0.01	0
PFHpS	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	0.001	0.0008	22	<0.01	0
PFHpA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0016	<0.0025	0	<0.01	0
PFHxA	µg/L	0.0005 : 0.01 (Interlab)	<0.0016	<0.0016	0	<0.01	0	<0.0055	<0.006	0	<0.01	0
PFNA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0005	<0.0005	0	<0.01	0
FOSA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0016	<0.0016	0	<0.01	0
PFPeS	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	0.001	<0.002	0	<0.01	0
PFPeA	µg/L	0.0005 : 0.02 (Interlab)	<0.0016	<0.0016	0	<0.02	0	<0.0065	<0.007	0	<0.02	0
PFTeDA	µg/L	0.0005 : 0.02 (Interlab)	<0.004	<0.004	0	<0.02	0	<0.004	<0.004	0	<0.02	0
PFTrDA	µg/L	0.0005 : 0.02 (Interlab)	<0.0016	<0.0016	0	<0.02	0	<0.0016	<0.0016	0	<0.02	0
PFUnDA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0005	<0.0016	0	<0.01	0
PFOS	µg/L	0.0003 : 0.02 (Interlab)	<0.0006	<0.0003	0	<0.02	0	**0.0072**	**0.0098**	**31**	<0.02	0
PFOA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	0.0009	0.0014	43	<0.01	0
PFHxS	µg/L	0.0005 : 0.01 (Interlab)	0.0016	0.0021	27	<0.01	0	0.0212	0.0211	0	0.019	11

Appendix D

Chain of Custody Forms

Appendix D Chain of Custody Forms

Chain of Custody

QLD 4006

Email reports to: [redacted]

Laboratory Details

Lab. Name:
Lab. Address:
Contact Name:
Lab. Ref:

Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY/139/19

Environmental Division
Brisbane
Work Order Reference
EB2310490

Telephone : + 61-7-3243 7222

Sampled By: [redacted]
Mobile Number: [redacted]
Project Name: QLD_0224_PFASOMP_20
AECOM Project #: 60612563 4.1
Purchase Order No: 60612563 4.1

Specifications: Please report in ESdat format	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: ______________________)	
6. Report Format: ESdat 7. Project Manager [redacted]	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	sed	Preservation: filtered	acid	ice	other	Container (No. & type)	EP231X (PFAS Std 28)									HOLD	Notes
1	0224_MW101_230404	04/04/2023		X				X		2 x 125 ml	X										
2	0224_MW102_230404	04/04/2023		X				X		2 x 125 ml	X										
3	0224_MW106_230404	04/04/2023		X				X		2 x 125 ml	X										
4	0224_MW109_230403	03/04/2023		X				X		2 x 125 ml	X										
5	0224_MW111_230404	04/04/2023		X				X		2 x 125 ml	X										
6	0224_MW112_230404	04/04/2023		X				X		2 x 125 ml	X										
7	0224_MW113_230404	04/04/2023		X				X		2 x 125 ml	X										
8	0224_MW114_230405	05/04/2023		X				X		2 x 125 ml	X										
9	0224_MW115_230404	04/04/2023		X				X		2 x 125 ml	X										
10	0224_MW116_230405	05/04/2023		X				X		2 x 125 ml	X										
11	0224_MW117_230405	05/04/2023		X				X		2 x 125 ml	X										
12	0224_MW118_230405	05/04/2023		X				X		2 x 125 ml	X										
13	0224_MW119_230404	04/04/2023		X				X		2 x 125 ml	X										
14	0224_MW120_230404	04/04/2023		X				X		2 x 125 ml	X										
15	0224_MW121_230404	04/04/2023		X				X		2 x 125 ml	X										
16	0224_MW122_230404	04/04/2023		X				X		2 x 125 ml	X										
17	0224_POT001_230404	04/04/2023		X				X		2 x 125 ml	X										
18	0224_POT005_230404	04/04/2023		X				X		2 x 125 ml	X										
19	0224_OTH001_230404	04/04/2023		X				X		2 x 125 ml	X										
20	0224_QC100_230404	04/04/2023		X				X		2 x 125 ml	X										
21	0224_QC101_230404	04/04/2023		X				X		2 x 125 ml	X										
22	0224_QC300_230403	03/04/2023		X				X		2 x 125 ml	X										
23	0224_QC301_230404	04/04/2023		X				X		2 x 125 ml	X										
24	0224_QC302_230405	05/04/2023		X				X		2 x 125 ml	X										

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME

Temp. received: °C

Report & Invoice: [redacted]

Lab Report No | Esky ID

Relinquished by:	Signed:	Date:	Relinquished by:	Signed:	Date:
Received by:	Signed:	Date:	Received by:	Signed:	Date:

AECOM

Chain of Custody

COC Page 2 of 2

AECOM Australia Pty Ltd [redacted]	**Laboratory Details** Lab. Name: ALS Lab. Address: Brisbane Contact Name [redacted] Lab. Ref:
Email reports to: [redacted]	Tel: Fax: Preliminary Report by: Final Report by: Lab Quote No: SY/139/19

Sampled By: [redacted] **Project Name:** QLD_0224_PFASOMP_20 **AECOM Project #:** 60612563 4.1 **Purchase Order No:** 60612563 4.1

Specifications: Please report in ESdat format

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: ____________________)	
6. Report Format: ESdat 7. Project Manager: [redacted]	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: sed	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	EP231X (PFAS Std 28)	EP231X-ST (PFAS 28 - Super Trace)	HOLD	Notes
25	0224_SW006_230404	04/04/2023		x				x		2x125ml plastic		x		
26	0224_SD006_230404	04/04/2023			x			x		1x200ml plastic	x			
27	0224_SW007_230403	03/04/2023		x				x		2x125ml plastic		x		
28	0224_SD007_230403	03/04/2023			x			x		1x200ml plastic	x			
29	0224_SW009_230403	03/04/2023		x				x		2x125ml plastic		x		
30	0224_SD009_230403	03/04/2023			x			x		1x200ml plastic	x			
31	0224_SW013_230403	03/04/2023		x				x		2x125ml plastic		x		
32	0224_SD013_230403	03/04/2023			x			x		1x200ml plastic	x			
33	0224_SW014_230403	03/04/2023		x				x		2x125ml plastic		x		
34	0224_SD014_230403	03/04/2023			x			x		1x200ml plastic	x			
35	0224_SW016_230403	03/04/2023		x				x		2x125ml plastic		x		
36	0224_SD016_230403	03/04/2023			x			x		1x200ml plastic	x			
	~~0224_SW017_2304~~	~~/04/2023~~		~~x~~				x		~~2x125ml plastic~~		~~x~~		
37	0224_SD017_230405	05/04/2023			x			x		1x200ml plastic	x			
	~~0224_SW018_2304~~	~~/04/2023~~		x				x		~~2x125ml plastic~~		x		
38	0224_SD018_230404	04/04/2023			x			x		1x200ml plastic	x			
39	0224_SW019_230404	04/04/2023		x				x		2x125ml plastic		x		
40	0224_SD019_230404	04/04/2023			x			x		1x200ml plastic	x			
41	0224_SW025_230405	05/04/2023		x				x		2x125ml plastic		x		
42	0224_SD025_230405	05/04/2023			x			x		1x200ml plastic	x			
43	0224_SW027_230405	05/04/2023		x				x		2x125ml plastic		x		
44	0224_SD027_230405	05/04/2023			x			x		1x200ml plastic	x			
45	0224_QC102_230404	04/04/2023		x				x		2x125ml plastic		x		
46	0224_QC103_230404	04/04/2023			x			x		1x200ml plastic	x			
47	0224_QC104_230405	05/04/2023		x				x		2x125ml plastic		x		
48	0224_QC105_230405	05/04/2023			x			x		1x200ml plastic	x			

Comments:	Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME	Temp. received: °C	Report & Invoice: [redacted] Lab Report No. Esky ID
Relinquished by:	Signed:	Date:	Relinquished by: Signed: Date:
Received by:	Signed:	Date:	Received by: Signed: Date:

AECOM

Chain of Custody - Separate Batch

COC Page 1 of 1

AECOM Australia Pty Ltd [redacted] Email reports to: [redacted]	**Laboratory Details** Lab. Name: ALS Lab. Address: Brisbane Contact Name: [redacted] Lab. Ref: Tel: Fax: Preliminary Report by: Final Report by: Lab Quote No: SY/139/19

Sampled By: [redacted] **Project Name:** QLD_0224_PFASOMP_20 **AECOM Project #:** 60612563 4.1 **Purchase Order No:** 60612563 4.1

Mobile Number: [redacted]

Specifications: Please report in ESdat format

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: ____________________)	

6. Report Format: ESdat 7. Project Manager: James Peachey

Analysis Request - SEDIMENTS

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	sed	Preservation: filt'ed	acid	ice	other	Container (No. & type)	EP231X (PFAS Std 28)	EP231X-ST (PFAS 28 - Super Trace)								HOLD	Notes
1	**0224_SW021_230405**	05/04/2023		x				x		2x 125ml		x									
2	**0224_SD021_230405**	05/04/2023			x			x		1x 250 ml	x										

Environmental Division
Brisbane
Work Order Reference
EB2310493

Telephone : + 61-7-3243 7222

Comments: Please send ESdat files to DERP-labreports@esdat.com.au and ensure that the files use the PROJECT NAME	Temp. received: °C	Report & invoice [redacted]	Lab Report No / Esky ID
Relinquished by: Signed: Date:		Relinquished by: Signed: Date:	
Received by: Signed: Date:		Received by: Signed: Date:	

AECOM

Chain of Custody- Separate Batch

COC Page 1 of 1

AECOM Australia Pty Ltd

[redacted]

Email reports to: [redacted]

Laboratory Details

Lab. Name: ALS

Lab. Address: Brisbane

Contact Name: Carsten Emrich

Lab. Ref:

Tel:

Fax:

Preliminary Report by:

Final Report by:

Lab Quote No: SY/139/19

Sampled By: [redacted] **Project Name:** QLD_0224_PFASOMP_20 **AECOM Project #:** 60612563 4.1 **Purchase Order No:** 60612563 4.1

Mobile Number [redacted]

Specifications: Please report in ESdat format

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: ____________)	

6. Report Format: ESdat 7. Project Manager: [redacted]

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: sed	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	EP231X (PFAS Std 28)	EP231X-ST (PFAS 28 - Super Trace)								HOLD	Notes
1	0224_SW022_230405	05/04/2023		x				x		2x 125ml		x									
2	0224_SD022_230405	05/04/2023			x			x		1x 250 ml	x										
3	0224_SW023_230405	05/04/2023		x				x		2x 125ml		x									
4	0224_SD023_230405	05/04/2023			x			x		1x 250 ml	x										

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME

Temp. received: °C

Report & invoice [redacted]

Lab Report No | Esky ID

Relinquishe[redacted] Date:

Received b[redacted] 6/4/23 Date: 1130

Relinquished by: Signed: Date:

Received by: Signed: Date:

Environmental Division
Brisbane
Work Order Reference
EB2310497

Telephone : + 61-7-3243 7222

Appendix E

Laboratory Analytical Certificates and QA/QC Reports

Appendix E Laboratory Analytical Certificates and QA/QC Reports

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EB2310490**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: LEVEL 8 540 WICKHAM STREET FORTITUDE VALLEY 4006	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_20	Page	: 1 of 4
Order number	: 60612563 4.1	Quote number	: ES2021AECOMAU0008 (SY/139/19 v4_NSW_0902_PFASOMP)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	[redacted]		

Dates

Date Samples Received	: 06-Apr-2023 11:30	Issue Date	: 06-Apr-2023
Client Requested Due Date	: 18-Apr-2023	Scheduled Reporting Date	: **18-Apr-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 3	Temperature	: 1.4°C, 1.7°C, 1.1°C
Receipt Detail	: Medium Esky	No. of samples received / analysed	: 48 / 48

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- **Samples "QC200" - "QC205" have been forwarded to NMI, as requested. Please note that this will incur a freight forwarding fee.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
EB2310490-026	04-Apr-2023 00:00	0224_SD006_230403	✓	✓
EB2310490-028	03-Apr-2023 00:00	0224_SD007_230403	✓	✓
EB2310490-030	03-Apr-2023 00:00	0224_SD009_230403	✓	✓
EB2310490-032	03-Apr-2023 00:00	0224_SD013_230403	✓	✓
EB2310490-034	03-Apr-2023 00:00	0224_SD014_230403	✓	✓
EB2310490-036	03-Apr-2023 00:00	0224_SD016_230403	✓	✓
EB2310490-037	05-Apr-2023 00:00	0224_SD017_230405	✓	✓
EB2310490-038	04-Apr-2023 00:00	0224_SD018_230404	✓	✓
EB2310490-040	04-Apr-2023 00:00	0224_SD019_230404	✓	✓
EB2310490-042	05-Apr-2023 00:00	0224_SD025_230405	✓	✓
EB2310490-044	05-Apr-2023 00:00	0224_SD027_230405	✓	✓
EB2310490-046	04-Apr-2023 00:00	0224_QC103_230404	✓	✓
EB2310490-048	05-Apr-2023 00:00	0224_QC105_230405	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB2310490-001	04-Apr-2023 00:00	0224_MW101_230404	✓	
EB2310490-002	04-Apr-2023 00:00	0224_MW102_230404	✓	
EB2310490-003	04-Apr-2023 00:00	0224_MW106_230404	✓	
EB2310490-004	03-Apr-2023 00:00	0224_MW109_230403	✓	
EB2310490-005	04-Apr-2023 00:00	0224_MW111_230404	✓	
EB2310490-006	04-Apr-2023 00:00	0224_MW112_230404	✓	
EB2310490-007	04-Apr-2023 00:00	0224_MW113_230404	✓	
EB2310490-008	05-Apr-2023 00:00	0224_MW114_230405	✓	
EB2310490-009	04-Apr-2023 00:00	0224_MW115_230404	✓	
EB2310490-010	05-Apr-2023 00:00	0224_MW116_230405	✓	

			WATER - EP231X PFAS - Full Suite (28 analytes)	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB2310490-011	05-Apr-2023 00:00	0224_MW117_230405	✓	
EB2310490-012	05-Apr-2023 00:00	0224_MW118_230405	✓	
EB2310490-013	04-Apr-2023 00:00	0224_MW119_230404	✓	
EB2310490-014	04-Apr-2023 00:00	0224_MW120_230404	✓	
EB2310490-015	04-Apr-2023 00:00	0224_MW121_230404	✓	
EB2310490-016	04-Apr-2023 00:00	0224_MW122_230404	✓	
EB2310490-017	04-Apr-2023 00:00	0224_POT001_230404	✓	
EB2310490-018	04-Apr-2023 00:00	0224_POT005_230404	✓	
EB2310490-019	04-Apr-2023 00:00	0224_OTH001_230404	✓	
EB2310490-020	04-Apr-2023 00:00	0224_QC100_230404	✓	
EB2310490-021	04-Apr-2023 00:00	0224_QC101_230404	✓	
EB2310490-022	03-Apr-2023 00:00	0224_QC300_230403	✓	
EB2310490-023	04-Apr-2023 00:00	0224_QC301_230404	✓	
EB2310490-024	05-Apr-2023 00:00	0224_QC302_230405	✓	
EB2310490-025	04-Apr-2023 00:00	0224_SW006_230404		✓
EB2310490-027	03-Apr-2023 00:00	0224_SW007_230403		✓
EB2310490-029	03-Apr-2023 00:00	0224_SW009_230403		✓
EB2310490-031	03-Apr-2023 00:00	0224_SW013_230403		✓
EB2310490-033	03-Apr-2023 00:00	0224_SW014_230403		✓
EB2310490-035	03-Apr-2023 00:00	0224_SW016_230403		✓
EB2310490-039	04-Apr-2023 00:00	0224_SW019_230404		✓
EB2310490-041	05-Apr-2023 00:00	0224_SW025_230405		✓
EB2310490-043	05-Apr-2023 00:00	0224_SW027_230405		✓
EB2310490-045	04-Apr-2023 00:00	0224_QC102_230404		✓
EB2310490-047	05-Apr-2023 00:00	0224_QC104_230405		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ENMRG (ENMRG)	Email	
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE)	Email	
- EDI Format - ESDAT (ESDAT)	Email	

DERP ESDAT REPORTS

- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ENMRG (ENMRG)	Email	
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE)	Email	
- EDI Format - ESDAT (ESDAT)	Email	

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- A4 - AU Tax Invoice (INV)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ENMRG (ENMRG)	Email	
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email	
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
- Purchase Order Request Letter (PO_Request)	Email	

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ENMRG (ENMRG)	Email	
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE)	Email	
- EDI Format - ESDAT (ESDAT)	Email	

CERTIFICATE OF ANALYSIS

Work Order	: **EB2310490**	Page	: 1 of 25
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_20	Date Samples Received	: 06-Apr-2023 11:30
Order number	: 60612563 4.1	Date Analysis Commenced	: 11-Apr-2023
C-O-C number	: ----	Issue Date	: 20-Apr-2023 17:34
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 v4_NSW_0902_PFASOMP		
No. of samples received	: 48		
No. of samples analysed	: 48		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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*

[redacted]

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.

- EP231X-ST PFAS Super Trace: The LOR for particular analytes has been raised due to matrix interference.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X PFAS: The LOR of PFOS for sample ‘0224_SD017_230405’ (EB2310490-037) has been raised due to sample matrix interferences.
- EP231X-ST PFAS Super Trace: Particular samples required dilution prior to analysis due to matrix interferences (Internal Standard Suppression). LOR values have been adjusted accordingly.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0224_SD006_230403	0224_SD007_230403	0224_SD009_230403	0224_SD013_230403	0224_SD014_230403
			Sampling date / time	04-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-026	EB2310490-028	EB2310490-030	EB2310490-032	EB2310490-034
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	27.5	23.6	30.3	62.1	22.1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0224_SD006_230403	0224_SD007_230403	0224_SD009_230403	0224_SD013_230403	0224_SD014_230403
			Sampling date / time	04-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-026	EB2310490-028	EB2310490-030	EB2310490-032	EB2310490-034
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**94.0**	**98.0**	**112**	**128**	**116**
13C8-PFOA	----	0.0002	%	**102**	**102**	**102**	**123**	**106**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0224_SD016_230403	0224_SD017_230405	0224_SD018_230404	0224_SD019_230404	0224_SD025_230405
			Sampling date / time	03-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-036	EB2310490-037	EB2310490-038	EB2310490-040	EB2310490-042
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**22.6**	**25.6**	**1.9**	**29.2**	**35.3**
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0005**	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0006	<0.0002	**0.0032**	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	**0.0003**	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0005	<0.0005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0006	<0.0005

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0224_SD016_230403	0224_SD017_230405	0224_SD018_230404	0224_SD019_230404	0224_SD025_230405
			Sampling date / time	03-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-036	EB2310490-037	EB2310490-038	EB2310490-040	EB2310490-042
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0006	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0006	<0.0005	<0.0006	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	**0.0003**	<0.0002	**0.0037**	<0.0002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	**0.0037**	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	**0.0003**	<0.0002	**0.0037**	<0.0002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**104**	**92.0**	**102**	**114**	**110**
13C8-PFOA	----	0.0002	%	**100**	**114**	**100**	**127**	**108**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0224_SD027_230405	0224_QC103_230404	0224_QC105_230405	----	----
			Sampling date / time	05-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2310490-044	EB2310490-046	EB2310490-048	--------	--------
				Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**23.0**	**28.9**	**28.5**	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0224_SD027_230405	0224_QC103_230404	0224_QC105_230405	----	----
			Sampling date / time	05-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2310490-044	EB2310490-046	EB2310490-048	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	<0.0005	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	<0.0002	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**102**	**103**	**100**	----	----
13C8-PFOA	----	0.0002	%	**102**	**95.5**	**96.5**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW101_230404	0224_MW102_230404	0224_MW106_230404	0224_MW109_230403	0224_MW111_230404
			Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	03-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-001	EB2310490-002	EB2310490-003	EB2310490-004	EB2310490-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW101_230404	0224_MW102_230404	0224_MW106_230404	0224_MW109_230403	0224_MW111_230404
			Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	03-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-001	EB2310490-002	EB2310490-003	EB2310490-004	EB2310490-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**93.7**	**84.6**	**92.5**	**91.6**	**93.6**
13C8-PFOA	----	0.02	%	**97.3**	**95.9**	**99.3**	**99.7**	**102**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW112_230404	0224_MW113_230404	0224_MW114_230405	0224_MW115_230404	0224_MW116_230405
			Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-006	EB2310490-007	EB2310490-008	EB2310490-009	EB2310490-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW112_230404	0224_MW113_230404	0224_MW114_230405	0224_MW115_230404	0224_MW116_230405
			Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-006	EB2310490-007	EB2310490-008	EB2310490-009	EB2310490-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**87.1**	**88.4**	**89.5**	**87.6**	**98.1**
13C8-PFOA	----	0.02	%	**98.6**	**92.3**	**98.1**	**95.3**	**94.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW117_230405	0224_MW118_230405	0224_MW119_230404	0224_MW120_230404	0224_MW121_230404
			Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-011	EB2310490-012	EB2310490-013	EB2310490-014	EB2310490-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	**0.02**	<0.01	<0.01	**0.09**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	**0.02**	<0.01	<0.01	**0.04**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW117_230405	0224_MW118_230405	0224_MW119_230404	0224_MW120_230404	0224_MW121_230404
			Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-011	EB2310490-012	EB2310490-013	EB2310490-014	EB2310490-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	**0.04**	<0.01	<0.01	**0.13**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	**0.04**	<0.01	<0.01	**0.13**
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	**0.04**	<0.01	<0.01	**0.13**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**83.8**	**95.3**	**94.9**	**91.8**	**88.5**
13C8-PFOA	----	0.02	%	**92.7**	**97.6**	**98.8**	**97.0**	**105**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW122_230404	0224_POT001_230404	0224_POT005_230404	0224_OTH001_230404	0224_QC100_230404
			Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-016	EB2310490-017	EB2310490-018	EB2310490-019	EB2310490-020
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.15**	**0.03**	**0.01**	**0.02**	**0.09**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.05**	<0.01	<0.01	<0.01	**0.04**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW122_230404	0224_POT001_230404	0224_POT005_230404	0224_OTH001_230404	0224_QC100_230404
			Sampling date / time	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-016	EB2310490-017	EB2310490-018	EB2310490-019	EB2310490-020
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.20**	**0.03**	**0.01**	**0.02**	**0.13**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.20**	**0.03**	**0.01**	**0.02**	**0.13**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.20**	**0.03**	**0.01**	**0.02**	**0.13**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**100**	**112**	**101**	**101**	**104**
13C8-PFOA	----	0.02	%	**106**	**104**	**104**	**105**	**105**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_QC101_230404	0224_QC300_230403	0224_QC301_230404	0224_QC302_230405	0224_SW006_230404
			Sampling date / time	04-Apr-2023 00:00	03-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-021	EB2310490-022	EB2310490-023	EB2310490-024	EB2310490-025
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	----	----	----	----	<0.0016
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	----	----	----	----	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	----	----	----	----	**0.0016**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.15**	<0.01	<0.01	<0.01	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	----	----	----	----	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	----	----	----	----	<0.0006
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	----	----	----	----	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.05**	<0.01	<0.01	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	----	----	----	----	<0.008
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	----	----	----	----	<0.0016
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	----	----	----	----	<0.0016
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	----	----	----	----	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	----	----	----	----	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_QC101_230404	0224_QC300_230403	0224_QC301_230404	0224_QC302_230405	0224_SW006_230404
			Sampling date / time	04-Apr-2023 00:00	03-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-021	EB2310490-022	EB2310490-023	EB2310490-024	EB2310490-025
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	----	----	----	----	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	----	----	----	----	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	----	----	----	----	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	----	----	----	----	<0.0016
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	----	----	----	----	<0.0016
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	----	----	----	----	<0.0040
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	----	----	----	----	<0.0005
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	----	----	----	----	<0.004
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	----	----	----	----	<0.004
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	----	----	----	----	<0.004

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_QC101_230404	0224_QC300_230403	0224_QC301_230404	0224_QC302_230405	0224_SW006_230404
			Sampling date / time	04-Apr-2023 00:00	03-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-021	EB2310490-022	EB2310490-023	EB2310490-024	EB2310490-025
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	----	----	----	----	<0.004
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	----	----	----	----	<0.0016
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	----	----	----	----	<0.0016
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	----	----	----	----	<0.001
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	----	----	----	----	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	----	----	----	----	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	----	----	----	----	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231P: PFAS Sums								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_QC101_230404	0224_QC300_230403	0224_QC301_230404	0224_QC302_230405	0224_SW006_230404
			Sampling date / time	04-Apr-2023 00:00	03-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-021	EB2310490-022	EB2310490-023	EB2310490-024	EB2310490-025
				Result	Result	Result	Result	Result
EP231P: PFAS Sums - Continued								
Sum of PFAS	----	0.0003	µg/L	----	----	----	----	**0.0016**
Sum of PFAS	----	0.01	µg/L	**0.20**	<0.01	<0.01	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	----	----	----	----	**0.0016**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.20**	<0.01	<0.01	<0.01	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L	----	----	----	----	**0.0016**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.20**	<0.01	<0.01	<0.01	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	----	----	----	----	**89.4**
13C4-PFOS	----	0.02	%	**100**	**104**	**103**	**105**	----
13C8-PFOA	----	0.0005	%	----	----	----	----	**96.8**
13C8-PFOA	----	0.02	%	**104**	**105**	**103**	**104**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW007_230403	0224_SW009_230403	0224_SW013_230403	0224_SW014_230403	0224_SW016_230403
			Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-027	EB2310490-029	EB2310490-031	EB2310490-033	EB2310490-035
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	<0.0005	**0.0011**	**0.0021**	<0.0005
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	<0.0003	<0.0003	**0.0008**	<0.0003
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.008	<0.008	<0.008	<0.008	<0.008
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0016	<0.0005	<0.0016	<0.0016	<0.0016
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0016	<0.0005	<0.0016	<0.0016	<0.0016
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0041	<0.0041	<0.0039	<0.0041	<0.0040
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.004	<0.004	<0.004	<0.004	<0.004
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.004	<0.004	<0.004	<0.004	<0.004

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW007_230403	0224_SW009_230403	0224_SW013_230403	0224_SW014_230403	0224_SW016_230403
			Sampling date / time	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00	03-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-027	EB2310490-029	EB2310490-031	EB2310490-033	EB2310490-035
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.004	<0.004	<0.004	<0.004
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.004	<0.004	<0.004	<0.004	<0.004
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0016	<0.0016	<0.0016	<0.0016
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums								
Sum of PFAS	----	0.0003	µg/L	<0.0016	<0.0016	<0.0016	**0.0029**	<0.0016
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	<0.0003	<0.0003	**0.0011**	**0.0029**	<0.0003
Sum of PFAS (WA DER List)	----	0.0003	µg/L	<0.0016	<0.0016	<0.0016	**0.0029**	<0.0016
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**99.8**	**81.1**	**99.6**	**91.0**	**107**
13C8-PFOA	----	0.0005	%	**98.4**	**99.7**	**99.8**	**97.7**	**92.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW019_230404	0224_SW025_230405	0224_SW027_230405	0224_QC102_230404	0224_QC104_230405
			Sampling date / time	04-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-039	EB2310490-041	EB2310490-043	EB2310490-045	EB2310490-047
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0080	<0.0016	<0.0016	<0.0016	<0.0025
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	**0.0065**	<0.0005	**0.0010**	<0.0005	<0.0020
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0910**	**0.0006**	**0.0212**	**0.0021**	**0.0211**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	**0.0038**	<0.0005	**0.0010**	<0.0005	**0.0008**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0698**	**0.0012**	**0.0072**	<0.0003	**0.0098**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.008	<0.008	<0.008	<0.008	<0.008
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	**0.0279**	<0.0016	<0.0065	<0.0016	<0.0070
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	**0.0152**	<0.0016	<0.0055	<0.0016	<0.0060
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0030	<0.0016	<0.0016	<0.0005	<0.0025
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0016	<0.0005	**0.0009**	<0.0005	**0.0014**
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	**0.0011**	<0.0005	<0.0016	<0.0016	<0.0016
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	<0.0016	<0.0016	<0.0016
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0040	<0.0041	<0.0040	<0.0040	<0.0040
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	<0.0016	<0.0005	<0.0016
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.004	<0.004	<0.004	<0.004
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.004	<0.004	<0.004	<0.004	<0.004

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW019_230404	0224_SW025_230405	0224_SW027_230405	0224_QC102_230404	0224_QC104_230405
			Sampling date / time	04-Apr-2023 00:00	05-Apr-2023 00:00	05-Apr-2023 00:00	04-Apr-2023 00:00	05-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	EB2310490-039	EB2310490-041	EB2310490-043	EB2310490-045	EB2310490-047
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.004	<0.004	<0.004	<0.004	<0.004
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.004	<0.004	<0.004	<0.004	<0.004
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums								
Sum of PFAS	----	0.0003	µg/L	**0.215**	**0.0018**	**0.0313**	**0.0021**	**0.0331**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.161**	**0.0018**	**0.0284**	**0.0021**	**0.0309**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.204**	**0.0018**	**0.0293**	**0.0021**	**0.0323**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**98.3**	**97.8**	**77.1**	**106**	**98.5**
13C8-PFOA	----	0.0005	%	**99.2**	**98.5**	**92.6**	**98.0**	**98.5**

Surrogate Control Limits

Sub-Matrix: **SEDIMENT**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) High
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2310490**	Page	: 1 of 15
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	[redacted]	Contact	: [redacted]
Address	: [redacted]	Address	[redacted]
Telephone	[redacted]	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_20	Date Samples Received	: 06-Apr-2023
Order number	: 60612563 4.1	Date Analysis Commenced	: 11-Apr-2023
C-O-C number	: ----	Issue Date	: 20-Apr-2023
Sampler	[redacted]		
Site	: ----		
Quote number	: SY/139/19 v4_NSW_0902_PFASOMP		
No. of samples received	: 48		
No. of samples analysed	: 48		

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

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

This 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*
[redacted]		

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4987162)									
EB2307505-047	Anonymous	EA055: Moisture Content	----	0.1	%	7.8	7.6	2.7	0% - 20%
EB2310490-042	0224_SD025_230405	EA055: Moisture Content	----	0.1	%	35.3	33.8	4.5	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EB2310490-038	0224_SD018_230404	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4987161) - continued									
EB2307505-016	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EB2310490-038	0224_SD018_230404	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EB2310490-038	0224_SD018_230404	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EB2310490-038	0224_SD018_230404	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4983750)									
EB2310490-001	0224_MW101_230404	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EB2310490-006	0224_MW112_230404	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4989096)									
EB2310490-015	0224_MW121_230404	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.09	0.09	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4983750)									
EB2310490-001	0224_MW101_230404	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4983750) - continued									
EB2310490-001	0224_MW101_230404	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EB2310490-006	0224_MW112_230404	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4989096)									
EB2310490-015	0224_MW121_230404	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4983750)									
EB2310490-001	0224_MW101_230404	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4983750) - continued									
EB2310490-001	0224_MW101_230404	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EB2310490-006	0224_MW112_230404	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4989096)									
EB2310490-015	0224_MW121_230404	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4983750)									
EB2310490-001	0224_MW101_230404	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4983750) - continued									
EB2310490-001	0224_MW101_230404	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EB2310490-006	0224_MW112_230404	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4989096)									
EB2310490-015	0224_MW121_230404	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4983750)									
EB2310490-001	0224_MW101_230404	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EB2310490-006	0224_MW112_230404	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4989096)									
EB2310490-015	0224_MW121_230404	EP231X: Sum of PFAS	----	0.01	µg/L	0.13	0.13	0.0	0% - 50%
		EP231X: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.13	0.13	0.0	0% - 50%
		EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	0.13	0.13	0.0	0% - 50%

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: **SOIL**

				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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4987161)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0011 mg/kg	115	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00117 mg/kg	91.9	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	91.5	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	90.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	92.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0012 mg/kg	103	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4987161)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	95.0	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.2	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.3	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4987161)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.7	59.6	143
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.4	62.8	140
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	112	61.5	139
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.6	61.9	137
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4987161)								

Sub-Matrix: **SOIL**

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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4987161) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	105	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00118 mg/kg	108	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	108	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.0012 mg/kg	120	54.8	124

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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4978853)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.00355 µg/L	130	72.0	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.00376 µg/L	127	71.0	127
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.00379 µg/L	121	68.0	131
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.00381 µg/L	134	69.0	134
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.00371 µg/L	113	65.0	140
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.00385 µg/L	108	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4983750)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	106	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	98.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	83.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	98.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	90.3	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	90.9	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4989096)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	128	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	97.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	98.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	108	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	118	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	106	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4978853)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.02 µg/L	105	73.0	129
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	114	72.0	129
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	102	72.0	129
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	119	72.0	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	102	71.0	133

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
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4978853) - continued								
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	115	69.0	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	102	71.0	129
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	112	69.0	133
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	120	72.0	134
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	109	65.0	144
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	108	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4983750)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	86.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	81.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	97.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	99.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	81.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4989096)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	88.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	101	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4978853)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	116	67.0	137
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	137	68.0	141

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	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4978853) - continued								
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	141	57.9	141
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	130	63.3	134
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	123	60.0	136
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	103	65.0	136
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	112	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4983750)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	88.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	107	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	79.9	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	79.2	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	81.8	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	92.0	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	79.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4989096)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	137	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	116	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	132	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	102	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	120	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	122	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	125	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4978853)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.00374 µg/L	115	63.0	143
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.0038 µg/L	109	64.0	140
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.00384 µg/L	98.8	67.0	138
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.00386 µg/L	103	53.1	133

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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4983750)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	97.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	107	64.2	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4989096)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	116	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	123	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	132	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	129	64.2	133
EP231P: PFAS Sums (QCLot: 4978853)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFAS (WA DER List)	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231P: PFAS Sums (QCLot: 4983750)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 4989096)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

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: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0011 mg/kg	116	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00117 mg/kg	114	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00118 mg/kg	99.2	67.0	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4987161) - continued							
EB2307505-017	Anonymous	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	108	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	105	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0012 mg/kg	102	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	106	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	104	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	113	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	112	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	101	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	103	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	111	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	108	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	98.4	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	80.0	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	93.6	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	110	48.0	128
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	99.2	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	106	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	101	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	98.4	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	104	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	85.6	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	90.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00118 mg/kg	98.7	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	122	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0012 mg/kg	85.0	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4983750)							
EB2310490-002	0224_MW102_230404	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	120	72.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4983750) - continued							
EB2310490-002	0224_MW102_230404	EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	95.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	78.5	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	87.0	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	83.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	81.5	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4989096)							
EB2310490-016	0224_MW122_230404	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	116	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	89.2	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	94.9	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	105	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	113	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	100	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4983750)							
EB2310490-002	0224_MW102_230404	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	86.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	81.4	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	75.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	76.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	76.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	82.9	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	89.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	92.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	101	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	96.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	74.6	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4989096)							
EB2310490-016	0224_MW122_230404	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	108	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	106	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	97.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.2	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	108	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	102	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	105	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	103	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	111	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	99.0	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4983750)							
EB2310490-002	0224_MW102_230404	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	83.4	59.0	135

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
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4983750) - continued							
EB2310490-002	0224_MW102_230404	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	95.3	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	70.7	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	72.6	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	72.2	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	77.7	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	72.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4989096)							
EB2310490-016	0224_MW122_230404	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	123	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	120	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	110	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	99.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	112	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	101	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	105	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4983750)							
EB2310490-002	0224_MW102_230404	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	78.2	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	90.1	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	93.2	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	75.6	70.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4989096)							
EB2310490-016	0224_MW122_230404	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	97.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	119	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	117	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	121	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2310490**	Page	: 1 of 11
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_20	Date Samples Received	: 06-Apr-2023
Site	: ----	Issue Date	: 20-Apr-2023
Sampler	: [redacted]	No. of samples received	: 48
Order number	: 60612563 4.1	No. of samples analysed	: 48

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, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	14	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: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055) 0224_SD007_230403, 0224_SD009_230403, 0224_SD013_230403, 0224_SD014_230403, 0224_SD016_230403	**03-Apr-2023**	----	----	----	**13-Apr-2023**	17-Apr-2023	✓
HDPE Soil Jar (EA055) 0224_SD006_230403, 0224_SD018_230404, 0224_SD019_230404, 0224_QC103_230404	**04-Apr-2023**	----	----	----	**13-Apr-2023**	18-Apr-2023	✓
HDPE Soil Jar (EA055) 0224_SD017_230405, 0224_SD025_230405, 0224_SD027_230405, 0224_QC105_230405	**05-Apr-2023**	----	----	----	**13-Apr-2023**	19-Apr-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X) 0224_SD007_230403, 0224_SD009_230403, 0224_SD013_230403, 0224_SD014_230403, 0224_SD016_230403	**03-Apr-2023**	**13-Apr-2023**	30-Sep-2023	✓	**18-Apr-2023**	23-May-2023	✓
HDPE Soil Jar (EP231X) 0224_SD006_230403, 0224_SD018_230404, 0224_SD019_230404, 0224_QC103_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
HDPE Soil Jar (EP231X) 0224_SD017_230405, 0224_SD025_230405, 0224_SD027_230405, 0224_QC105_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓

Matrix: **SOIL**

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
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X) 0224_SD007_230403, 0224_SD009_230403, 0224_SD013_230403, 0224_SD014_230403, 0224_SD016_230403	**03-Apr-2023**	**13-Apr-2023**	30-Sep-2023	✓	**18-Apr-2023**	23-May-2023	✓
HDPE Soil Jar (EP231X) 0224_SD006_230403, 0224_SD018_230404, 0224_SD019_230404, 0224_QC103_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
HDPE Soil Jar (EP231X) 0224_SD017_230405, 0224_SD025_230405, 0224_SD027_230405, 0224_QC105_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X) 0224_SD007_230403, 0224_SD009_230403, 0224_SD013_230403, 0224_SD014_230403, 0224_SD016_230403	**03-Apr-2023**	**13-Apr-2023**	30-Sep-2023	✓	**18-Apr-2023**	23-May-2023	✓
HDPE Soil Jar (EP231X) 0224_SD006_230403, 0224_SD018_230404, 0224_SD019_230404, 0224_QC103_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
HDPE Soil Jar (EP231X) 0224_SD017_230405, 0224_SD025_230405, 0224_SD027_230405, 0224_QC105_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) 0224_SD007_230403, 0224_SD009_230403, 0224_SD013_230403, 0224_SD014_230403, 0224_SD016_230403	**03-Apr-2023**	**13-Apr-2023**	30-Sep-2023	✓	**18-Apr-2023**	23-May-2023	✓
HDPE Soil Jar (EP231X) 0224_SD006_230403, 0224_SD018_230404, 0224_SD019_230404, 0224_QC103_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
HDPE Soil Jar (EP231X) 0224_SD017_230405, 0224_SD025_230405, 0224_SD027_230405, 0224_QC105_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X) 0224_SD007_230403, 0224_SD009_230403, 0224_SD013_230403, 0224_SD014_230403, 0224_SD016_230403	**03-Apr-2023**	**13-Apr-2023**	30-Sep-2023	✓	**18-Apr-2023**	23-May-2023	✓
HDPE Soil Jar (EP231X) 0224_SD006_230403, 0224_SD018_230404, 0224_SD019_230404, 0224_QC103_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
HDPE Soil Jar (EP231X) 0224_SD017_230405, 0224_SD025_230405, 0224_SD027_230405, 0224_QC105_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0224_MW109_230403	**03-Apr-2023**	**13-Apr-2023**	30-Sep-2023	✓	**14-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X) 0224_QC300_230403	**03-Apr-2023**	**14-Apr-2023**	30-Sep-2023	✓	**17-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW007_230403, 0224_SW009_230403, 0224_SW013_230403, 0224_SW014_230403, 0224_SW016_230403	**03-Apr-2023**	**18-Apr-2023**	30-Sep-2023	✓	**19-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW112_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**13-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW101_230404, 0224_MW102_230404, 0224_MW106_230404, 0224_MW111_230404, 0224_MW113_230404, 0224_MW115_230404, 0224_MW119_230404, 0224_MW120_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**14-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW121_230404, 0224_MW122_230404, 0224_POT001_230404, 0224_POT005_230404, 0224_OTH001_230404, 0224_QC100_230404, 0224_QC101_230404, 0224_QC301_230404	**04-Apr-2023**	**14-Apr-2023**	01-Oct-2023	✓	**17-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW006_230404, 0224_SW019_230404, 0224_QC102_230404	**04-Apr-2023**	**18-Apr-2023**	01-Oct-2023	✓	**19-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW114_230405, 0224_MW116_230405, 0224_MW117_230405, 0224_MW118_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**14-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_QC302_230405	**05-Apr-2023**	**14-Apr-2023**	02-Oct-2023	✓	**17-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW025_230405, 0224_SW027_230405, 0224_QC104_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0224_MW109_230403	**03-Apr-2023**	**13-Apr-2023**	30-Sep-2023	✓	**14-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X) 0224_QC300_230403	**03-Apr-2023**	**14-Apr-2023**	30-Sep-2023	✓	**17-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW007_230403, 0224_SW009_230403, 0224_SW013_230403, 0224_SW014_230403, 0224_SW016_230403	**03-Apr-2023**	**18-Apr-2023**	30-Sep-2023	✓	**19-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW112_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**13-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW101_230404, 0224_MW102_230404, 0224_MW106_230404, 0224_MW111_230404, 0224_MW113_230404, 0224_MW115_230404, 0224_MW119_230404, 0224_MW120_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**14-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW121_230404, 0224_MW122_230404, 0224_POT001_230404, 0224_POT005_230404, 0224_OTH001_230404, 0224_QC100_230404, 0224_QC101_230404, 0224_QC301_230404	**04-Apr-2023**	**14-Apr-2023**	01-Oct-2023	✓	**17-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW006_230404, 0224_SW019_230404, 0224_QC102_230404	**04-Apr-2023**	**18-Apr-2023**	01-Oct-2023	✓	**19-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW114_230405, 0224_MW116_230405, 0224_MW117_230405, 0224_MW118_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**14-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_QC302_230405	**05-Apr-2023**	**14-Apr-2023**	02-Oct-2023	✓	**17-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW025_230405, 0224_SW027_230405, 0224_QC104_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0224_MW109_230403	**03-Apr-2023**	**13-Apr-2023**	30-Sep-2023	✓	**14-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X) 0224_QC300_230403	**03-Apr-2023**	**14-Apr-2023**	30-Sep-2023	✓	**17-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW007_230403, 0224_SW009_230403, 0224_SW013_230403, 0224_SW014_230403, 0224_SW016_230403	**03-Apr-2023**	**18-Apr-2023**	30-Sep-2023	✓	**19-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW112_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**13-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW101_230404, 0224_MW102_230404, 0224_MW106_230404, 0224_MW111_230404, 0224_MW113_230404, 0224_MW115_230404, 0224_MW119_230404, 0224_MW120_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**14-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW121_230404, 0224_MW122_230404, 0224_POT001_230404, 0224_POT005_230404, 0224_OTH001_230404, 0224_QC100_230404, 0224_QC101_230404, 0224_QC301_230404	**04-Apr-2023**	**14-Apr-2023**	01-Oct-2023	✓	**17-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW006_230404, 0224_SW019_230404, 0224_QC102_230404	**04-Apr-2023**	**18-Apr-2023**	01-Oct-2023	✓	**19-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW114_230405, 0224_MW116_230405, 0224_MW117_230405, 0224_MW118_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**14-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_QC302_230405	**05-Apr-2023**	**14-Apr-2023**	02-Oct-2023	✓	**17-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW025_230405, 0224_SW027_230405, 0224_QC104_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0224_MW109_230403		**03-Apr-2023**	**13-Apr-2023**	30-Sep-2023	✓	**14-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X) 0224_QC300_230403		**03-Apr-2023**	**14-Apr-2023**	30-Sep-2023	✓	**17-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW007_230403, 0224_SW013_230403, 0224_SW016_230403	0224_SW009_230403, 0224_SW014_230403,	**03-Apr-2023**	**18-Apr-2023**	30-Sep-2023	✓	**19-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW112_230404		**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**13-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW101_230404, 0224_MW106_230404, 0224_MW113_230404, 0224_MW119_230404,	0224_MW102_230404, 0224_MW111_230404, 0224_MW115_230404, 0224_MW120_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**14-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW121_230404, 0224_POT001_230404, 0224_OTH001_230404, 0224_QC101_230404,	0224_MW122_230404, 0224_POT005_230404, 0224_QC100_230404, 0224_QC301_230404	**04-Apr-2023**	**14-Apr-2023**	01-Oct-2023	✓	**17-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW006_230404, 0224_QC102_230404	0224_SW019_230404,	**04-Apr-2023**	**18-Apr-2023**	01-Oct-2023	✓	**19-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW114_230405, 0224_MW117_230405,	0224_MW116_230405, 0224_MW118_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**14-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_QC302_230405		**05-Apr-2023**	**14-Apr-2023**	02-Oct-2023	✓	**17-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW025_230405, 0224_QC104_230405	0224_SW027_230405,	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓

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
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) 0224_MW109_230403		**03-Apr-2023**	**13-Apr-2023**	30-Sep-2023	✓	**14-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X) 0224_QC300_230403		**03-Apr-2023**	**14-Apr-2023**	30-Sep-2023	✓	**17-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW007_230403, 0224_SW013_230403, 0224_SW016_230403	0224_SW009_230403, 0224_SW014_230403,	**03-Apr-2023**	**18-Apr-2023**	30-Sep-2023	✓	**19-Apr-2023**	30-Sep-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW112_230404		**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**13-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW101_230404, 0224_MW106_230404, 0224_MW113_230404, 0224_MW119_230404,	0224_MW102_230404, 0224_MW111_230404, 0224_MW115_230404, 0224_MW120_230404	**04-Apr-2023**	**13-Apr-2023**	01-Oct-2023	✓	**14-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW121_230404, 0224_POT001_230404, 0224_OTH001_230404, 0224_QC101_230404,	0224_MW122_230404, 0224_POT005_230404, 0224_QC100_230404, 0224_QC301_230404	**04-Apr-2023**	**14-Apr-2023**	01-Oct-2023	✓	**17-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW006_230404, 0224_QC102_230404	0224_SW019_230404,	**04-Apr-2023**	**18-Apr-2023**	01-Oct-2023	✓	**19-Apr-2023**	01-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_MW114_230405, 0224_MW117_230405,	0224_MW116_230405, 0224_MW118_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**14-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X) 0224_QC302_230405		**05-Apr-2023**	**14-Apr-2023**	02-Oct-2023	✓	**17-Apr-2023**	02-Oct-2023	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW025_230405, 0224_QC104_230405	0224_SW027_230405,	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓

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: **SOIL**

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)							
Moisture Content	EA055	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	30	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	14	**0.00**	**10.00**	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	30	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	14	**0.00**	**5.00**	✘	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2310493**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_20	Page	: 1 of 3
Order number	: 60612563 4.1	Quote number	: ES2021AECOMAU0008 (SY/139/19 v4_NSW_0902_PFASOMP)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 06-Apr-2023 11:30	Issue Date	: 06-Apr-2023
Client Requested Due Date	: 18-Apr-2023	Scheduled Reporting Date	: **18-Apr-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 1.4°c - Ice present
Receipt Detail	: Medium Esky	No. of samples received / analysed	: 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **6/4/23: SRN has been resent to acknowledge the correct quote. For any further information regarding these adjustments please contact client services at ALSEnviro.Brisbane@alsglobal.com.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
EB2310493-002	05-Apr-2023 00:00	0224_SD21_230405	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB2310493-001	05-Apr-2023 00:00	0224_SW21_230405	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email
- Chain of Custody (CoC) (COC)	Email
- EDI Format - ENMRG (ENMRG)	Email
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE)	Email
- EDI Format - ESDAT (ESDAT)	Email

DERP ESDAT REPORTS

- *AU Certificate of Analysis - NATA (COA)	Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email
- Chain of Custody (CoC) (COC)	Email
- EDI Format - ENMRG (ENMRG)	Email
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE)	Email
- EDI Format - ESDAT (ESDAT)	Email

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email
- A4 - AU Tax Invoice (INV)	Email
- Chain of Custody (CoC) (COC)	Email
- EDI Format - ENMRG (ENMRG)	Email
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM)	Email
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE)	Email
- EDI Format - ESDAT (ESDAT)	Email
- Purchase Order Request Letter (PO_Request)	Email

[redacted]

- *AU Certificate of Analysis - NATA (COA)	Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email
- Chain of Custody (CoC) (COC)	Email
- EDI Format - ENMRG (ENMRG)	Email
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE)	Email
- EDI Format - ESDAT (ESDAT)	Email

CERTIFICATE OF ANALYSIS

Work Order	: **EB2310493**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: +61 2 8784 8555
Project	: 60612563 4.1 QLD_0224_PFASOMP_20	Date Samples Received	: 06-Apr-2023 11:30
Order number	: 60612563 4.1	Date Analysis Commenced	: 13-Apr-2023
C-O-C number	: ----	Issue Date	: 20-Apr-2023 17:41
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 v4_NSW_0902_PFASOMP		
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
- 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*
[redacted]		

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.

- EP231X-ST PFAS Super Trace: The LOR for particular analytes for sample '0224_SW21_230405' (EB2310493_001) has been raised due to matrix interference.
- EP231X PFAS: The LOR of PFOS for sample ‘0224_SD21_230405’ (EB2310493-002) has been raised due to sample matrix interferences.
- EP231X-ST PFAS Super Trace: Particular samples required dilution prior to analysis due to matrix interferences (Internal Standard Suppression). LOR values have been adjusted accordingly.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0224_SD21_230405	----	----	----	----
			Sampling date / time	05-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2310493-002	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**55.2**	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0003	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0224_SD21_230405	----	----	----	----
			Sampling date / time	05-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2310493-002	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**126**	----	----	----	----
13C8-PFOA	----	0.0002	%	**122**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW21_230405	----	----	----	----
			Sampling date / time	05-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2310493-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0016	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0010**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0025**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.008	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0016	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0016	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0040	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.004	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.004	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW21_230405	----	----	----	----
			Sampling date / time	05-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2310493-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.004	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.004	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0016	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0016	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0003	µg/L	**0.0035**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0035**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0035**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**87.7**	----	----	----	----
13C8-PFOA	----	0.0005	%	**94.8**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SEDIMENT**

Compound	CAS Number	Recovery Limits (%) Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2310493**	Page	: 1 of 8
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_20	Date Samples Received	: 06-Apr-2023
Order number	: 60612563 4.1	Date Analysis Commenced	: 13-Apr-2023
C-O-C number	: ----	Issue Date	: 20-Apr-2023
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 v4_NSW_0902_PFASOMP		
No. of samples received	: 2		
No. of samples analysed	: 2		

NATA

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*
[redacted]		

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4987162)									
EB2307505-047	Anonymous	EA055: Moisture Content	----	0.1	%	7.8	7.6	2.7	0% - 20%
EB2310490-042	Anonymous	EA055: Moisture Content	----	0.1	%	35.3	33.8	4.5	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EB2310490-038	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4987161) - continued									
EB2307505-016	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EB2310490-038	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EB2310490-038	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EB2310490-038	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	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: **SOIL**

				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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4987161)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0011 mg/kg	115	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00117 mg/kg	91.9	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	91.5	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	90.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	92.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0012 mg/kg	103	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4987161)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	95.0	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.2	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.3	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4987161)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.7	59.6	143
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.4	62.8	140
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	112	61.5	139
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.6	61.9	137
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4987161)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4987161) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	105	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00118 mg/kg	108	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	108	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.0012 mg/kg	120	54.8	124

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	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4978853)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.00355 µg/L	130	72.0	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.00376 µg/L	127	71.0	127
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.00379 µg/L	121	68.0	131
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.00381 µg/L	134	69.0	134
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.00371 µg/L	113	65.0	140
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.00385 µg/L	108	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4978853)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.02 µg/L	105	73.0	129
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	114	72.0	129
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	102	72.0	129
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	119	72.0	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	102	71.0	133
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	115	69.0	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	102	71.0	129
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	112	69.0	133
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	120	72.0	134
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	109	65.0	144
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	108	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4978853)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	116	67.0	137
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	137	68.0	141
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	141	57.9	141
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	130	63.3	134
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	123	60.0	136

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
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4978853) - continued								
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	103	65.0	136
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4978853)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.00374 µg/L	115	63.0	143
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.0038 µg/L	109	64.0	140
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.00384 µg/L	98.8	67.0	138
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.00386 µg/L	103	53.1	133
EP231P: PFAS Sums (QCLot: 4978853)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFAS (WA DER List)	----	0.0003	µg/L	<0.0003	----	----	----	----

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: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0011 mg/kg	116	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00117 mg/kg	114	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00118 mg/kg	99.2	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	108	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	105	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0012 mg/kg	102	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	106	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	104	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	113	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	112	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	101	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	103	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	111	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	108	64.0	136

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4987161) - continued							
EB2307505-017	Anonymous	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	98.4	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	80.0	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	93.6	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	110	48.0	128
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	99.2	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	106	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	101	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	98.4	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	104	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	85.6	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	90.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00118 mg/kg	98.7	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	122	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0012 mg/kg	85.0	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2310493**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_20	Date Samples Received	: 06-Apr-2023
Site	: ----	Issue Date	: 20-Apr-2023
Sampler	[redacted]	No. of samples received	: 2
Order number	: 60612563 4.1	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, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
	0				
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	14	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: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation* Date extracted	*Due for extraction*	*Evaluation*	*Analysis* Date analysed	*Due for analysis*	*Evaluation*
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055) 0224_SD21_230405	**05-Apr-2023**	----	----	----	**13-Apr-2023**	19-Apr-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X) 0224_SD21_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X) 0224_SD21_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X) 0224_SD21_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) 0224_SD21_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X) 0224_SD21_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation* Date extracted	*Due for extraction*	*Evaluation*	*Analysis* Date analysed	*Due for analysis*	*Evaluation*

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST) 0224_SW21_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-ST) 0224_SW21_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-ST) 0224_SW21_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST) 0224_SW21_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-ST) 0224_SW21_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓

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: **SOIL**

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)							
Moisture Content	EA055	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	14	**0.00**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	14	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EB2310497**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: [redacted]	Facsimile	: [redacted]
Project	: QLD_0224_PFASOMP_20	Page	: 1 of 3
Order number	: 60612563 4.1	Quote number	: ES2021AECOMAU0008 (SY/139/19 v4_NSW_0902_PFASOMP)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 06-Apr-2023 11:30	Issue Date	: 11-Apr-2023
Client Requested Due Date	: 18-Apr-2023	Scheduled Reporting Date	: **18-Apr-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 1.7°C - Ice present
Receipt Detail	: Medium Esky	No. of samples received / analysed	: 4 / 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- ***SRN Reissued 11/04/2023: Project name corrected as per COC per email from [redacted]n 11/04/2023.***
- **6/4/23: SRN has been resent to acknowledge the correct quote. For any further information regarding these adjustments please contact client services at ALSEnviro.Brisbane@alsglobal.com.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EP231X (solids) PFAS - Full Suite (28 analytes)
EB2310497-002	05-Apr-2023 00:00	0224_SD022_230405	✓	✓
EB2310497-004	05-Apr-2023 00:00	0224_SD023_230405	✓	✓

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB2310497-001	05-Apr-2023 00:00	0224_SW022_230405	✓
EB2310497-003	05-Apr-2023 00:00	0224_SW023_230405	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email [redacted]

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ENMRG (ENMRG) Email
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE) Email
- EDI Format - ESDAT (ESDAT) Email

DERP ESDAT REPORTS

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ENMRG (ENMRG) Email
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- A4 - AU Tax Invoice (INV) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ENMRG (ENMRG) Email
- EDI Format - EQUIS V5 AECOM (EQUIS_V5_AECOM) Email
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE) Email
- EDI Format - ESDAT (ESDAT) Email
- Purchase Order Request Letter (PO_Request) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ENMRG (ENMRG) Email
- EDI Format - EQUIS_V5_AECOM_SAMPLE (EQUIS_V5_AECOM_SAMPLE) Email
- EDI Format - ESDAT (ESDAT) Email

CERTIFICATE OF ANALYSIS

Work Order	: **EB2310497**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	[redacted]	Contact	: [redacted]
Address	[redacted]	Address	: [redacted]
Telephone	[redacted]	Telephone	: +[redacted]
Project	: QLD_0224_PFASOMP_20	Date Samples Received	: 06-Apr-2023 11:30
Order number	: 60612563 4.1	Date Analysis Commenced	: 13-Apr-2023
C-O-C number	: ----	Issue Date	: 20-Apr-2023 17:31
Sampler	[redacted]		
Site	: ----		
Quote number	: SY/139/19 v4_NSW_0902_PFASOMP		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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*
[redacted]		

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.

- EP231X-ST PFAS Super Trace: The LOR for particular analytes for samples '0224_SW022_230405' (EB2310497_001) and '0224_SW023_230405' (EB2310497_003) has been raised due to matrix interference.
- EP231X PFAS: The LOR of PFOS for sample ‘0224_SD022_230405’ (EB2310497-002) has been raised due to sample matrix interferences.
- EP231X-ST PFAS Super Trace: Particular samples required dilution prior to analysis due to matrix interferences (Internal Standard Suppression). LOR values have been adjusted accordingly.
- EP231X-ST PFAS Super Trace: The LOR of PFPeA for sample "0224_SW022_230405"(EB2310497-001) has been raised due to sample matrix interferences.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0224_SD022_230405	0224_SD023_230405	----	----	----
			Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2310497-002	EB2310497-004	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**45.8**	**22.5**	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0005	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0006	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Sample ID	0224_SD022_230405	0224_SD023_230405	----	----	----
			Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2310497-002	EB2310497-004	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0006	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0006	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**124**	**98.5**	----	----	----
13C8-PFOA	----	0.0002	%	**131**	**96.0**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW022_230405	0224_SW023_230405	----	----	----
			Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2310497-001	EB2310497-003	--------	--------	--------
				Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0016	<0.0016	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0024**	**0.0013**	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0023**	**0.0021**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.008	<0.008	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0035	<0.0016	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0016	<0.0016	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0016	<0.0005	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0016	<0.0016	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0016	<0.0016	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0041	<0.0040	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0016	<0.0016	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.004	<0.004	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.004	<0.004	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW022_230405	0224_SW023_230405	----	----	----
			Sampling date / time	05-Apr-2023 00:00	05-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2310497-001	EB2310497-003	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.004	<0.004	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.004	<0.004	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0016	<0.0016	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0016	<0.0016	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0003	µg/L	**0.0047**	**0.0034**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0047**	**0.0034**	----	----	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0047**	**0.0034**	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**90.6**	**103**	----	----	----
13C8-PFOA	----	0.0005	%	**100**	**102**	----	----	----

Surrogate Control Limits

Sub-Matrix: **SEDIMENT**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) High
EP231S: PFAS Surrogate			
13C4-PFOS	----	76	136
13C8-PFOA	----	78	131

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2310497**	Page	: 1 of 8
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	[redacted]
Address	: [redacted]	Address	[redacted]
Telephone	[redacted]	Telephone	: [redacted]
Project	: QLD_0224_PFASOMP_20	Date Samples Received	: 06-Apr-2023
Order number	: 60612563 4.1	Date Analysis Commenced	: 13-Apr-2023
C-O-C number	: ----	Issue Date	: 20-Apr-2023
Sampler	[redacted]		
Site	: ----		
Quote number	: SY/139/19 v4_NSW_0902_PFASOMP		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

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

This 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*
[redacted]		

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4987162)									
EB2307505-047	Anonymous	EA055: Moisture Content	----	0.1	%	7.8	7.6	2.7	0% - 20%
EB2310490-042	Anonymous	EA055: Moisture Content	----	0.1	%	35.3	33.8	4.5	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EB2310490-038	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4987161) - continued									
EB2307505-016	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EB2310490-038	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EB2310490-038	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4987161)									
EB2307505-016	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EB2310490-038	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	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: **SOIL**

				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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4987161)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.0011 mg/kg	115	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00117 mg/kg	91.9	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00118 mg/kg	91.5	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00119 mg/kg	90.8	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00116 mg/kg	92.2	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.0012 mg/kg	103	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4987161)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	95.0	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.2	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	102	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	87.3	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4987161)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	95.7	59.6	143
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	93.4	62.8	140
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	112	61.5	139
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.6	61.9	137
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.0	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4987161)								

Sub-Matrix: **SOIL**

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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4987161) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00117 mg/kg	105	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00118 mg/kg	108	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.0012 mg/kg	108	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.0012 mg/kg	120	54.8	124

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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4978853)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.00355 µg/L	130	72.0	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.00376 µg/L	127	71.0	127
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.00379 µg/L	121	68.0	131
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.00381 µg/L	134	69.0	134
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.00371 µg/L	113	65.0	140
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.00385 µg/L	108	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4978853)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.02 µg/L	105	73.0	129
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	114	72.0	129
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	102	72.0	129
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	119	72.0	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	102	71.0	133
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	115	69.0	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	102	71.0	129
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	112	69.0	133
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	120	72.0	134
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	109	65.0	144
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	108	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4978853)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	116	67.0	137
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	137	68.0	141
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	141	57.9	141
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	130	63.3	134
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	123	60.0	136

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	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4978853) - continued								
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	103	65.0	136
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4978853)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.00374 µg/L	115	63.0	143
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.0038 µg/L	109	64.0	140
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.00384 µg/L	98.8	67.0	138
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.00386 µg/L	103	53.1	133
EP231P: PFAS Sums (QCLot: 4978853)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFAS (WA DER List)	----	0.0003	µg/L	<0.0003	----	----	----	----

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: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0011 mg/kg	116	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00117 mg/kg	114	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00118 mg/kg	99.2	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00119 mg/kg	108	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00116 mg/kg	105	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0012 mg/kg	102	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	106	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	104	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	113	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	112	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	101	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	103	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	111	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	108	64.0	136

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4987161) - continued							
EB2307505-017	Anonymous	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	98.4	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	80.0	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	93.6	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	110	48.0	128
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	99.2	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	106	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	101	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	98.4	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	104	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	85.6	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4987161)							
EB2307505-017	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00117 mg/kg	90.6	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00118 mg/kg	98.7	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0012 mg/kg	122	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0012 mg/kg	85.0	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2310497**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	[redacted]	Telephone	[redacted]
Project	: QLD_0224_PFASOMP_20	Date Samples Received	: 06-Apr-2023
Site	: ----	Issue Date	: 20-Apr-2023
Sampler	[redacted]	No. of samples received	: 4
Order number	: 60612563 4.1	No. of samples analysed	: 4

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, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
	0				
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	14	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: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE Soil Jar (EA055) 0224_SD022_230405,	0224_SD023_230405	**05-Apr-2023**	----	----	----	**13-Apr-2023**	19-Apr-2023	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X) 0224_SD022_230405,	0224_SD023_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X) 0224_SD022_230405,	0224_SD023_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X) 0224_SD022_230405,	0224_SD023_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X) 0224_SD022_230405,	0224_SD023_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X) 0224_SD022_230405,	0224_SD023_230405	**05-Apr-2023**	**13-Apr-2023**	02-Oct-2023	✓	**18-Apr-2023**	23-May-2023	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation

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
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-ST)								
0224_SW022_230405,	0224_SW023_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-ST)								
0224_SW022_230405,	0224_SW023_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-ST)								
0224_SW022_230405,	0224_SW023_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-ST)								
0224_SW022_230405,	0224_SW023_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-ST)								
0224_SW022_230405,	0224_SW023_230405	**05-Apr-2023**	**18-Apr-2023**	02-Oct-2023	✓	**19-Apr-2023**	02-Oct-2023	✓

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: **SOIL**

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)							
Moisture Content	EA055	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	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*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	14	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	14	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOME[redacted]

Attention: [redacted]

Customer: AECOM AUSTRALIA PTY LTD

Address: LEVEL 8
FORTITUDE VALLEY QLD 4006

Email: [redacted]

Telephone: [redacted]

Fax:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: [redacted]

Address: 105 Delhi Road, North Ryde, NSW
NSW 2113

Email: [redacted]

Telephone: [redacted]

Fax:

SAMPLE DETAILS

NMI Job Name: **AECO06/230412/2**

Total No. of Samples: **6**

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N23/007085	21-APR-2023	0224_QC200_230404	WATER 04/04/23
N23/007086	21-APR-2023	0224_QC201_230404	WATER 04/04/23
N23/007087	21-APR-2023	0224_QC202_230404	WATER 04/04/23
N23/007088	21-APR-2023	0224_QC203_230404	SEDIMENT 04/04/23
N23/007089	21-APR-2023	0224_QC204_230405	WATER 05/04/23
N23/007090	21-APR-2023	0224_QC205_230405	SEDIMENT 05/04/23

SAMPLE RECEIVED CONDITION

Date samples received:	12-APR-2023
Sample received in good order:	Yes
NMI Quotation no. provided:	QLD_0224_PFASOMP_20
Client purchase order number:	60612563_4_1
Temperature of samples:	Chilled
Comments:	
Mode of Delivery:	Courier

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1390132

Client	: AECOM AUSTRALIA PTY LTD LEVEL 8 540 WICKHAM STREET	**Job No.**	: AECO06/230412/2
		Quote No.	: QT-02018
		Order No.	: 60612563_4_1
		Date Received	: 12-APR-2023
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0224_PFASOMP_20		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N23/007088	0224_QC203_230404	SEDIMENT 04/04/23
N23/007090	0224_QC205_230405	SEDIMENT 05/04/23

Lab Reg No.		**N23/007088**	**N23/007090**			
Date Sampled		**04-APR-2023**	**05-APR-2023**			
	Units					**Method**
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	mg/kg	<0.002	<0.002			NR70
PFPeA (2706-90-3)	mg/kg	<0.002	<0.002			NR70
PFHxA (307-24-4)	mg/kg	<0.001	<0.001			NR70
PFHpA (375-85-9)	mg/kg	<0.001	<0.001			NR70
PFOA (335-67-1)	mg/kg	<0.001	<0.001			NR70
PFNA (375-95-1)	mg/kg	<0.001	<0.001			NR70
PFDA (335-76-2)	mg/kg	<0.001	<0.001			NR70
PFUdA (2058-94-8)	mg/kg	<0.002	<0.002			NR70
PFDoA (307-55-1)	mg/kg	<0.002	<0.002			NR70
PFTrDA (72629-94-8)	mg/kg	<0.002	<0.002			NR70
PFTeDA (376-06-7)	mg/kg	<0.002	<0.002			NR70
PFHxDA (67905-19-5)	mg/kg	<0.002	<0.002			NR70
PFODA (16517-11-6)	mg/kg	<0.005	<0.005			NR70
FOUEA (70887-84-2)	mg/kg	<0.001	<0.001			NR70
PFBS (375-73-5)	mg/kg	<0.001	<0.001			NR70
PFPeS (2706-91-4)	mg/kg	<0.001	<0.001			NR70
PFHxS (355-46-4)	mg/kg	<0.001	<0.001			NR70
PFHpS (375-92-8)	mg/kg	<0.001	<0.001			NR70
PFOS (1763-23-1)	mg/kg	<0.002	<0.002			NR70
PFNS (68259-12-1)	mg/kg	<0.001	<0.001			NR70
PFDS (335-77-3)	mg/kg	<0.001	<0.001			NR70
PFOSA (754-91-6)	mg/kg	<0.001	<0.001			NR70
N-MeFOSA (31506-32-8)	mg/kg	<0.002	<0.002			NR70
N-EtFOSA (4151-50-2)	mg/kg	<0.002	<0.002			NR70
N-MeFOSAA (2355-31-9)	mg/kg	<0.002	<0.002			NR70
N-EtFOSAA(2991-50-6)	mg/kg	<0.002	<0.002			NR70
N-MeFOSE (24448-09-7)	mg/kg	<0.005	<0.005			NR70
N-EtFOSE (1691-99-2)	mg/kg	<0.005	<0.005			NR70
4:2 FTS (757124-72-4)	mg/kg	<0.001	<0.001			NR70

REPORT OF ANALYSIS

Report No. RN1390132

Lab Reg No.		N23/007088	N23/007090			
Date Sampled		**04-APR-2023**	**05-APR-2023**			
	Units					**Method**
PFAS (per-and poly-fluoroalkyl substances)						
6:2 FTS (27619-97-2)	mg/kg	<0.001	<0.001			NR70
8:2 FTS (39108-34-4)	mg/kg	<0.001	<0.001			NR70
10:2 FTS (120226-60-0)	mg/kg	<0.002	<0.002			NR70
8:2 diPAP (678-41-1)	mg/kg	<0.002	<0.002			NR70
PFBA (Surrogate Recovery)	%	99	91			NR70
PFPeA (Surrogate Recovery)	%	101	90			NR70
PFHxA (Surrogate Recovery)	%	96	99			NR70
PFHpA (Surrogate Recovery)	%	97	91			NR70
PFOA (Surrogate Recovery)	%	98	93			NR70
PFNA (Surrogate Recovery)	%	96	92			NR70
PFDA (Surrogate Recovery)	%	93	95			NR70
PFUdA (Surrogate Recovery)	%	97	91			NR70
PFDoA (Surrogate Recovery)	%	98	96			NR70
PFTeDA (Surrogate Recovery)	%	105	99			NR70
PFHxDA (Surrogate Recovery)	%	98	94			NR70
FOUEA (Surrogate Recovery)	%	67	54			NR70
PFBS (Surrogate Recovery)	%	90	83			NR70
PFHxS (Surrogate Recovery)	%	93	89			NR70
PFOS (Surrogate Recovery)	%	99	94			NR70
PFOSA (Surrogate Recovery)	%	95	94			NR70
N-MeFOSA (Surrogate Recovery)	%	102	105			NR70
N-EtFOSA (Surrogate Recovery)	%	92	91			NR70
N-MeFOSAA (Surrogate Recovery)	%	97	93			NR70
N-EtFOSAA (Surrogate Recovery)	%	103	100			NR70
N-MeFOSE (Surrogate Recovery)	%	82	73			NR70
N-EtFOSE (Surrogate Recovery)	%	80	73			NR70
4:2 FTS (Surrogate Recovery)	%	83	83			NR70
6:2 FTS (Surrogate Recovery)	%	80	78			NR70
8:2 FTS (Surrogate Recovery)	%	82	84			NR70
8:2 diPAP (Surrogate Recovery)	%	105	87			NR70
Dates						
Date extracted		18-APR-2023	18-APR-2023			
Date analysed		20-APR-2023	20-APR-2023			

N23/007088
to
N23/007090

PFOS and PFHxS are quantified using a combined branched and linear standard,

linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

[redacted]

Organics - NSW
Accreditation No. 198

21-APR-2023

Lab Reg No.		**N23/007088**	**N23/007090**			
Date Sampled		**04-APR-2023**	**05-APR-2023**			
	Units					**Method**
Trace Elements						
Total Solids	%	78.7	75.5			NT2_49
Dates						
Date extracted		20-APR-2023	20-APR-2023			
Date analysed		21-APR-2023	21-APR-2023			

[redacted]

Accreditation No. 198

21-APR-2023

All results are expressed on a dry weight basis.

REPORT OF ANALYSIS

Report No. RN1390132

Client	: AECOM AUSTRALIA PTY LTD LEVEL 8 540 WICKHAM STREET	**Job No.**	: AECO06/230412/2
		Quote No.	: QT-02018
		Order No.	: 60612563_4_1
		Date Received	: 12-APR-2023
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0224_PFASOMP_20		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N23/007085	0224_QC200_230404	WATER 04/04/23
N23/007086	0224_QC201_230404	WATER 04/04/23
N23/007087	0224_QC202_230404	WATER 04/04/23
N23/007089	0224_QC204_230405	WATER 05/04/23

Lab Reg No.		**N23/007085**	**N23/007086**	**N23/007087**	**N23/007089**	
Date Sampled		**04-APR-2023**	**04-APR-2023**	**04-APR-2023**	**05-APR-2023**	
	Units					**Method**
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70
PFPeA (2706-90-3)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFHxA (307-24-4)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFHpA (375-85-9)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFOA (335-67-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFPeS (2706-91-4)	ug/L	<0.01	0.012	<0.01	<0.01	NR70
PFHxS (355-46-4)	ug/L	0.076	0.13	<0.01	0.019	NR70
PFHpS (375-92-8)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFOS (1763-23-1)	ug/L	0.026	0.036	<0.02	<0.02	NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFBS (375-73-5)	ug/L	<0.01	0.011	<0.01	<0.01	NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70

REPORT OF ANALYSIS

Report No. RN1390132

Lab Reg No.			N23/007085	N23/007086	N23/007087	N23/007089	
Date Sampled			04-APR-2023	04-APR-2023	04-APR-2023	05-APR-2023	
		Units					Method
PFAS (per-and poly-fluoroalkyl substances)							
N-EtFOSE (1691-99-2)		ug/L	<0.05	<0.05	<0.05	<0.05	NR70
4:2 FTS (757124-72-4)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
6:2 FTS (27619-97-2)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 FTS (39108-34-4)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
10:2 FTS (120226-60-0)		ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 diPAP (678-41-1)		ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFBA (Surrogate Recovery)		%	103	90	105	99	NR70
PFPeA (Surrogate Recovery)		%	102	89	151	167	NR70
PFHxA (Surrogate Recovery)		%	99	89	95	87	NR70
PFHpA (Surrogate Recovery)		%	104	90	102	94	NR70
PFOA (Surrogate Recovery)		%	104	93	103	100	NR70
PFNA (Surrogate Recovery)		%	98	90	100	94	NR70
PFDA (Surrogate Recovery)		%	99	82	97	96	NR70
PFUdA (Surrogate Recovery)		%	104	88	89	88	NR70
PFDoA (Surrogate Recovery)		%	94	85	78	72	NR70
PFTeDA (Surrogate Recovery)		%	97	82	67	55	NR70
PFHxDA (Surrogate Recovery)		%	102	92	79	57	NR70
FOUEA (Surrogate Recovery)		%	69	60	82	81	NR70
PFBS (Surrogate Recovery)		%	92	87	96	89	NR70
PFHxS (Surrogate Recovery)		%	99	84	102	100	NR70
PFOS (Surrogate Recovery)		%	102	92	98	94	NR70
PFOSA (Surrogate Recovery)		%	78	64	77	69	NR70
N-MeFOSA (Surrogate Recovery)		%	66	51	53	56	NR70
N-EtFOSA (Surrogate Recovery)		%	56	46	38	41	NR70
N-MeFOSAA (Surrogate Recovery)		%	81	81	68	60	NR70
N-EtFOSAA (Surrogate Recovery)		%	85	82	64	56	NR70
N-MeFOSE (Surrogate Recovery)		%	66	57	56	53	NR70
N-EtFOSE (Surrogate Recovery)		%	68	57	49	48	NR70
4:2 FTS (Surrogate Recovery)		%	98	95	182	185	NR70
6:2 FTS (Surrogate Recovery)		%	88	80	103	119	NR70
8:2 FTS (Surrogate Recovery)		%	92	74	89	93	NR70
8:2 diPAP (Surrogate Recovery)		%	88	68	67	51	NR70
Dates							
Date extracted			19-APR-2023	19-APR-2023	19-APR-2023	19-APR-2023	
Date analysed			20-APR-2023	20-APR-2023	20-APR-2023	20-APR-2023	

N23/007085
to
N23/007089

REPORT OF ANALYSIS

PFOS and PFHxS are quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.ô
High PFAS surrogate recoveries accepted - results corrected for recovery.
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

[redacted]

Organics - NSW
Accreditation No. 198

21-APR-2023

NATA
WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

This Report supersedes reports: *RN1390071*

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/230412/2 **Sample Matrix:** Solid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		mg/kg	mg/kg	mg/kg	mg/kg	%	%	%
PFBA (375-22-4)	NR70	0.002	<0.002	NA	NA	NA	92	NA
PFPeA (2706-90-3)	NR70	0.002	<0.002	NA	NA	NA	98	NA
PFHxA (307-24-4)	NR70	0.001	<0.001	NA	NA	NA	94	NA
PFHpA (375-85-9)	NR70	0.001	<0.001	NA	NA	NA	97	NA
PFOA (335-67-1)	NR70	0.001	<0.001	NA	NA	NA	93	NA
PFNA (375-95-1)	NR70	0.001	<0.001	NA	NA	NA	98	NA
PFDA (335-76-2)	NR70	0.001	<0.001	NA	NA	NA	97	NA
PFUdA (2058-94-8)	NR70	0.002	<0.002	NA	NA	NA	96	NA
PFDoA (307-55-1)	NR70	0.002	<0.002	NA	NA	NA	93	NA
PFTrDA (72629-94-8)	NR70	0.002	<0.002	NA	NA	NA	96	NA
PFTeDA (376-06-7)	NR70	0.002	<0.002	NA	NA	NA	97	NA
PFHxDA (67905-19-5)	NR70	0.002	<0.002	NA	NA	NA	98	NA
PFODA (16517-11-6)	NR70	0.005	<0.005	NA	NA	NA	90	NA
FOUEA (70887-84-2)	NR70	0.001	<0.001	NA	NA	NA	104	NA
PFBS (375-73-5)	NR70	0.001	<0.001	NA	NA	NA	92	NA
PFPeS (2706-91-4)	NR70	0.001	<0.001	NA	NA	NA	106	NA
PFHxS (355-46-4)	NR70	0.001	<0.001	NA	NA	NA	91	NA
PFHpS (375-92-8)	NR70	0.001	<0.001	NA	NA	NA	93	NA
PFOS (1763-23-1)	NR70	0.002	<0.002	NA	NA	NA	97	NA
PFNS (68259-12-1)	NR70	0.001	<0.001	NA	NA	NA	95	NA
PFDS (335-77-3)	NR70	0.001	<0.001	NA	NA	NA	97	NA
PFOSA (754-91-6)	NR70	0.001	<0.001	NA	NA	NA	92	NA
N-MeFOSA (31506-32-8)	NR70	0.002	<0.002	NA	NA	NA	79	NA
N-EtFOSA (4151-50-2)	NR70	0.002	<0.002	NA	NA	NA	98	NA
N-MeFOSAA (2355-31-9)	NR70	0.002	<0.002	NA	NA	NA	92	NA
N-EtFOSAA(2991-50-6)	NR70	0.002	<0.002	NA	NA	NA	94	NA
N-MeFOSE (24448-09-7)	NR70	0.005	<0.005	NA	NA	NA	98	NA
N-EtFOSE (1691-99-2)	NR70	0.005	<0.005	NA	NA	NA	96	NA
4:2 FTS (757124-72-4)	NR70	0.001	<0.001	NA	NA	NA	98	NA
6:2 FTS (27619-97-2)	NR70	0.001	<0.001	NA	NA	NA	94	NA
8:2 FTS (39108-34-4)	NR70	0.001	<0.001	NA	NA	NA	96	NA
10:2 FTS (120226-60-0)	NR70	0.002	<0.002	NA	NA	NA	91	NA
8:2 diPAP (678-41-1)	NR70	0.002	<0.002	NA	NA	NA	98	NA

Results expressed in percentage (%) or mg/kg wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Date: **21/04/2023**

Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/230412/2 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
				N23/007085				N23/007086
PFBA (375-22-4)	NR70	0.05	<0.05	<0.05	<0.05	-	107	95
PFPeA (2706-90-3)	NR70	0.02	<0.02	<0.02	<0.02	-	91	103
PFHxA (307-24-4)	NR70	0.01	<0.01	<0.01	<0.01	-	99	103
PFHpA (375-85-9)	NR70	0.01	<0.01	<0.01	<0.01	-	104	105
PFOA (335-67-1)	NR70	0.01	<0.01	<0.01	<0.01	-	100	101
PFNA (375-95-1)	NR70	0.01	<0.01	<0.01	<0.01	-	101	94
PFDA (335-76-2)	NR70	0.01	<0.01	<0.01	<0.01	-	103	104
PFUdA (2058-94-8)	NR70	0.01	<0.01	<0.01	<0.01	-	106	107
PFDoA (307-55-1)	NR70	0.01	<0.01	<0.01	<0.01	-	102	104
PFTrDA (72629-94-8)	NR70	0.02	<0.02	<0.02	<0.02	-	113	108
PFTeDA (376-06-7)	NR70	0.02	<0.02	<0.02	<0.02	-	105	112
PFHxDA (67905-19-5)	NR70	0.02	<0.02	<0.02	<0.02	-	109	117
PFODA (16517-11-6)	NR70	0.05	<0.05	<0.05	<0.05	-	106	97
FOUEA (70887-84-2)	NR70	0.01	<0.01	<0.01	<0.01	-	101	113
PFBS (375-73-5)	NR70	0.01	<0.01	<0.01	<0.01	-	102	106
PFPeS (2706-91-4)	NR70	0.01	<0.01	<0.01	<0.01	-	109	110
PFHxS (355-46-4)	NR70	0.01	<0.01	0.076	0.082	8.0	97	84
PFHpS (375-92-8)	NR70	0.01	<0.01	<0.01	<0.01	-	96	116
PFOS (1763-23-1)	NR70	0.02	<0.02	0.026	0.028	7.0	101	93
PFNS (68259-12-1)	NR70	0.01	<0.01	<0.01	<0.01	-	95	103
PFDS (335-77-3)	NR70	0.01	<0.01	<0.01	<0.01	-	99	103
PFOSA (754-91-6)	NR70	0.01	<0.01	<0.01	<0.01	-	96	100
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	<0.02	<0.02	-	89	91
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	<0.02	<0.02	-	100	104
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	<0.01	<0.01	-	94	101
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	<0.01	<0.01	-	97	102
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	<0.05	<0.05	-	100	104
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	<0.05	<0.05	-	103	106
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	<0.01	<0.01	-	105	105
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	<0.01	<0.01	-	106	105
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	<0.01	<0.01	-	102	100
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	<0.01	<0.01	-	92	112
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	<0.02	<0.02	-	110	112

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Organics Manager, NMI-North Ryde

Date: **21/04/2023**

Appendix F

Equipment Calibration Certificates

Appendix F Equipment Calibration Certificates

Solinst Model 122 Interface Meter

Instrument: Interface Meter (100M)
Serial No.: 485360

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	8.49v
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
		✓	
Tape Check	Cleaned	✓	
Connectors	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

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

Calibrated by: [redacted]

Calibration date: 30/03/2023 0:00

Next calibration due: 29/05/2023 0:00

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 18G103118

airmet
Air-Met Scientific Pty Ltd
1300 137 067

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

Certificate of Calibration

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00		393774	pH 7.01
2. pH 4.00		pH 4.00		329384	pH 4.01
3. ORP		232.7mV		390802/387761	267.3mV
4. EC		2760uS		385789	2760uS
5. D.O		100%		Fresh Air	99.4% - 758.4mmHg
6. Temp		23.3oC		MultiTherm 09000528	24.4oC

Calibrated by: [redacted]

Calibration date: 30-Mar-23

Next calibration due: 26-Sep-23

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	**Project Number:**	60612563
Project Location:	WBTA	**Client:**	Defence
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	
Make and Model:	YSI Quatro Pro Plus
Serial Number:	18G103118

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ppm	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	5.04.23 06:30				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ORP ~~ppm~~	ppm
Calibration Standard Concentration:	4	7	2655	233.4	0
Bump Test Reading:	4.01	7.00	2614	234.1	0.00
Bump Test Temperature:	22.8	22.9	23	22.9	22.8

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[redacted]

06.04.23

Date

Distribution: Project Central File

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	**Project Number:**	60612563
Project Location:	WBTA	**Client:**	Defence
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	
Make and Model:	YSI Quatro Pro Plus
Serial Number:	18G103118

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ORP ~~ppm~~	ppm
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	06:27 4.04.23				
Parameter	Acidity		Conductivity	Dissolved Oxygen	
Units	pH	pH	µS/cm	ORP ~~ppm~~	ppm
Calibration Standard Concentration:	4	7	2655	233.4	0
Bump Test Reading:	4.00	6.98	2609	236.8	0.00
Bump Test Temperature:	22.9	22.9	22.9	22.8	22.9

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☑ Each individual instru[redacted] bump tested as required by fieldwork staff.

Fieldwork Staff Signature | Date

Distribution: Project Central File

Prepared for
Department of Defence
ABN: 68706814312

Sampling Event Factual Report, October / November 2023

PFAS OMP - Wide Bay Training Area

15-Dec-2023
Doc No. 60612563_RP_083_2_231215

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Sampling Event Factual Report, October / November 2023

PFAS OMP - Wide Bay Training Area

Client: Department of Defence

ABN: 68706814312

Prepared by

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15-Dec-2023

Job No.: 60612563

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

Quality Information

Document Sampling Event Factual Report, October / November 2023

Ref 60612563

Date 15-Dec-2023

Prepared by [redacted]

Reviewed by [redacted]

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
0	17-Nov-2023	Draft	[redacted] Associate Director	
1	01-Dec-2023	Draft	[redacted] Associate Director	
2	15-Dec-2023	Final	[redacted] Associate Director	[redacted]

Table of Contents

List of Tables (in Text)

List of Figures (in Appendix A)

List of Tables (in Appendix B)

Abbreviation	
ALS	Australian Laboratory Services
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure 1999 (as amended 2013)
BoM	Bureau of Meteorology
COC	Chain of Custody
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved oxygen
EC	Electrical conductivity
HEPA	Heads of Environmental Protection Authorities
IP	Interface probe
LOR	Limit of reporting
mAHD	metres Australian height datum
mbtoc	Metres below top of casing
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
OMP	Ongoing Monitoring Plan
ORP	Oxidation reduction potential
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonate
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PMAP	PFAS Management Area Plan
POL	Paints, oil and lubricants
QA/QC	Quality assurance / quality control
QLD	Queensland
RPD	Relative percent difference
SAQP	Sampling and analysis quality plan
SWL	Standing water level
WBTA	Wide Bay Training Area
WWTP	Wastewater treatment plant

Units of Measurement			
L	Litres	m	Metres
mg	Milligram	ha	Hectares
kg	Kilogram	µg	Microgram
mV	Millivolts		

1.0 Introduction

1.1 General

AECOM Australia Pty Ltd (AECOM) has been engaged by the Department of Defence (Defence) to implement the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan (OMP) (Defence, 2020) at the Wide Bay Training Area (WBTA) (the 'Site') and the WBTA Management Area in the South Queensland Region. The locations of the Site and the Management Area are shown in **Figure 1** in **Appendix A**.

The OMP was included within the PFAS Management Area Plan (Defence, 2020). In February 2023, an OMP Review Report was completed (AECOM, 2023a), which evaluated the program and made recommendations for updates to the OMP. The revised program includes the following sampling events:

- Biannual sampling events in April 2023, October 2023 and April 2024 including:
  - Groundwater sampling of 11 on-Site groundwater monitoring wells and five off-Site groundwater monitoring wells.
  - Surface water sampling of creeks and dams at nine on-Site and five off-Site sampling locations.
  - Tap sampling of the two on-Site groundwater extraction bores.
  - Tap sampling of the treated wastewater from the outlet tap of the Camp Kerr wastewater treatment plant (WWTP).
- Sediment samples (co-located with the surface water samples) at creeks and dams to be collected once per year in April 2023 and April 2024.

Following each sampling event, a Sampling Event Factual Report will be prepared. Ongoing monitoring interpretive reports will be prepared following the completion of each 12-month sampling period.

This Sampling Event Factual Report has been prepared to report the results of the biannual sampling event completed in October/November 2023, specifically highlighting any first-time detections and/or new exceedances of human health or ecological (freshwater species) screening criteria for perfluorooctane sulfonate (PFOS) + perfluorohexane sulfonate (PFHxS) and / or perfluorooctanoic acid (PFOA).

This report has been prepared in accordance with the *PFAS OMP Factual Report Guidance,* v0.2, May 2021 (Defence, 2021).

1.2 Objectives

The objectives of the OMP program are to:

- Implement the OMP prepared as part of the PFAS Management Area Plan (PMAP); and
- Collect data that will enable Defence to maintain an up-to-date understanding of the distribution, concentration and transport of PFAS at the Site and WBTA Management Area.

The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PMAP.

The objective of this phase of works is to implement the scope of works for the biannual October/November 2023 sampling event (identified in **Section 2.0**) in accordance with the Sampling and Analysis Quality Plan (SAQP), Rev 9 (AECOM, 2023b).

2.0 Scope of Work

The biannual sampling event at WBTA was completed in accordance with the SAQP (AECOM, 2023b [Rev 9]). In summary, the scope of work for this sampling event included:

- Obtaining access to private properties where some surface water sampling locations are situated.
- Review of the SAQP prior to the monitoring event to ensure compliance with the following:
  - PFAS National Environmental Management Plan (NEMP) (Heads of Environmental Protection Authorities [HEPA], 2020).
  - National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM, 2013).
  - Defence Routine Environment Water Quality Monitoring Manual.
  - AS/NZ 5667:1998 Water Quality – Sampling.
  - Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
  - Relevant State regulatory guidelines.
- Gauging of groundwater level at 16 locations including 11 on-Site and five off-Site monitoring wells (located on Council / State land) prior to collection of samples[1] (refer to **Table 1** below, and **Figure 2** and **Figure 3** in **Appendix A** for specific locations).
- Tap sampling of the two on-Site groundwater extraction bores (refer to **Table 1** below and **Figure** 3 in **Appendix A** for specific locations).
- Tap sampling of the treated wastewater from the outlet tap of the Camp Kerr WWTP (refer to **Table 2** below and **Figure 3** in **Appendix A** for specific location).
- Collection of surface water samples at 14 locations including nine on-Site and five off-Site locations (refer to **Table 3** below, and **Figure 2** and **Figure 3** in **Appendix A**[2]). Three surface water samples (SW017, SW018, SW019) could not be collected as the locations were dry.
- Collecting field quality control samples including field duplicate and triplicate samples at a rate of 1 in 10 primary samples and collecting one rinsate sample per fieldwork day as per the SAQP.
- Analysis of all groundwater samples for the PFAS suite at the standard limit of reporting (LOR).
- Analysis of all surface water samples for the PFAS suite at trace levels of detection.
- Analysis of the WWTP outlet sample for the PFAS suite at the standard LOR.
- Data management of all OMP field and laboratory data in the Defence ESdat database.
- Preparation of results letters for off-Site stakeholders.
- Preparation of this Sampling Event Factual Report.

[1] Two groundwater sampling locations, POT001 and POT005, have pumps installed and consequently groundwater levels cannot be gauged.
[2] Due to privacy reasons, sampling locations on private properties are not shown in the figures.

Table 1 Groundwater Sampling Locations

Location	Monitoring Well
Paints, oils and lubricants (POL) Refuelling point	MW101, MW102, MW115
Southern site boundary	MW106
Eastern site boundary	MW109
Possible demonstration area	MW111
WWTP discharge areas	MW112, MW113*, MW114*, MW120, MW121, MW122
Central portion of Camp Kerr	MW119
Down-gradient / cross-gradient of Camp Kerr	MW116*, MW117*, MW118*
Water treatment plant	POT001, POT005
Note: * denotes off-Site sampling location	

Table 2 Wastewater Sampling Location

Description	Tapwater Sampling Location
Wastewater treatment plant outlet	OTH001

Table 3 Surface Water Sampling Locations

Area	Description	Surface Water Sampling Locations
Creek	Kangaroo Creek	SW006, SW007, SW009
	Snapper Creek	SW013, SW014, SW016
Drainage Channels	Site entrance (receives runoff from WWTP discharge areas)	SW017
	Vehicle wash point drainage channel	SW018
	Ponded water from surface water flows flowing overland from Camp Kerr	SW019
	Ephemeral waterway draining residential dams in Wallu	SW025*
	Drainage pipe at Clyde Road discharging runoff from Camp Kerr to residential dam	SW027*
Dams	Residential dams in Wallu	SW021*, SW022*, SW023*
Note: * denotes off-Site sampling location		

3.0 Methodology

The methodology used for the October / November 2023 sampling event was in general accordance with the SAQP (AECOM, 2023b) and is summarised below.

3.1 Groundwater Sampling Methodology

Table 4 Groundwater Sampling Methodology

Item	Details
Groundwater gauging	The depth to groundwater was measured in each monitoring well immediately prior to collection of groundwater samples using an interface probe.
Groundwater quality parameter field measurements	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality were recorded for all groundwater samples. Equipment calibration certificates are provided in **Appendix F**.
Sampling methodology	Groundwater samples were collected from all monitoring wells using no-purge methodology HydraSleeves™, which were installed within the screened interval of each well, approximately 1 m above the base of the well (the target depth is shown in **Table T1** in **Appendix B**), for a minimum of 24 hours prior to the sampling round. Once sampling was completed, new HydraSleeves™ were deployed at the screened interval depth in preparation for the next sampling round. Tap samples from the two extraction bores were collected by opening the tap / valve and allowing the water to run for approximately three minutes prior to sample collection. Water samples were collected by placing the laboratory provided sample bottle beneath the tap outlet.
Sample analysis	All primary samples were submitted for PFAS suite using the standard levels of detection. ALS Environmental (ALS) Brisbane, Queensland was used as the primary laboratory. The National Measurement Institute (NMI) of Sydney, NSW was used as the secondary laboratory. ALS and NMI methods for groundwater analyses were certified by the National Association of Testing Authorities (NATA). Chain of custody (COC) forms and laboratory certificates are presented in **Appendix D** and **Appendix E** respectively.
QA/QC Samples	Field quality assurance (QA) / quality control (QC) samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and rinsate samples. Refer to **Appendix C** for assessment of QA/QC sample data.

3.2 Surface Water Sampling Methodology

Table 5 Surface Water Sampling Methodology

Item	Details
Surface water parameter field measurements	Temperature, EC, DO, ORP, pH and observations of water quality were recorded for all surface water samples. Equipment calibration certificates are provided in **Appendix F**.
Sampling methodology	Samples were collected from immediately below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a new, laboratory-supplied container was lowered into the water with the cap immediately applied once the container was full.
Sample analysis	All primary samples were submitted for PFAS suite using the trace levels of detection. ALS Brisbane, Queensland was used as the primary laboratory. NMI of Sydney, NSW was used as the secondary laboratory. ALS and NMI methods for water analyses were certified by the NATA. COC forms and laboratory certificates are presented in **Appendix D** and **Appendix E** respectively.
QA/QC Samples	Field QA/QC samples collected included intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and rinsate samples. Refer to **Appendix C** for assessment of QA/QC sample data.

3.3 Wastewater Sampling Methodology

Table 6 Wastewater Sampling Methodology

Item	Details
Locations sampled	OTH001 was collected from a tap outlet at the WWTP.
Sampling methodology	The tap/valve was opened and water allowed to run for approximately one minute prior to a sample being collected. A laboratory provided sample bottle was placed beneath the tap outlet. The sample bottle was filled to the top to ensure no headspace and the cap was immediately applied. The sample bottle was immediately placed in a cooler with cooling media.
Sample analysis	The sample was submitted for PFAS suite using the standard levels of detection at ALS Brisbane, Queensland.

3.4 Adopted Screening Criteria

Adopted screening criteria references national guidance in the form of the PFAS NEMP, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset includes the following:

- PFAS NEMP v2.0 (HEPA, 2020).
- Department of Health, 2019. Health Based Guidance Values for PFAS for use in site investigations in Australia. April 2017 [updated September, 2019].
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC, 2019).
- National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013.

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in **Table 7** below.

Table 7 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment / Reference
Human Health Receptors			
Drinking water - groundwater	PFOS + PFHxS	0.07 µg/L	The values are from HEPA (2020). *All groundwater results will be compared to these criteria.*
	PFOA	0.56 µg/L	
Recreational use – surface water	PFOS + PFHxS	2 µg/L	The values presented in the NEMP (HEPA, 2020) are from NHMRC (2019). *All surface water and WWTP (OTH001) results will be compared to these criteria.*
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater / marine water (99% species protection values)	PFOS	0.00023 µg/L	The values are from the HEPA (2020). The 99% level of protection has been applied for slightly to moderately disturbed ecosystems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. For the purposes of preliminary screening of analytical water results, the laboratory LOR will be adopted rather than sole use of the criteria value. *All surface water (except SW025), groundwater and WWTP (OTH001) results will be compared to these criteria.*
	PFOA	19 µg/L	
Freshwater / marine water (95% species protection values)	PFOS	0.13 µg/L	Surface water in the ephemeral waterway south of Clyde Road (SW025) should be screened against freshwater ecological guidelines for slight to moderately disturbed ecosystems (95% species protection).
	PFOA	220 µg/L	

3.5 Data Quality Objectives and Data Validation

The data quality objectives and data quality indicators adopted for these works are presented in the SAQP (AECOM, 2023b).

Data validation assessment is provided in **Appendix C**.

The data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the sample locations and that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (Defence, 2018, amended August 2021) requirements.

3.6 Deviations from the SAQP

Table 8 lists the deviations from the SAQP (AECOM, 2023b) during this sampling event.

Table 8 Deviations from the SAQP during the October/November 2023 Sampling Event

SAQP	Comment	Impact on Dataset
Surface water sampling at 14 locations	Sample locations SW017 (drainage channel), SW018 (drainage channel) and SW019 (overland flow location) were dry during the sampling visit and samples could not be collected.	The lack of water in the drains / overland flow location means that PFAS was not migrating in surface water at these locations at the time of sampling. The non-sampling of these locations means there are no data available in October/November 2023 to evaluate the trend in PFAS concentrations.

4.0 Field Observations and Results

The October / November 2023 biannual sampling event was completed between 30 October and 1 November 2023. The results are summarised in the following sections.

4.1 Groundwater

4.1.1 Groundwater Observations and Quality Parameter Field Measurements

Table 9 Groundwater Observations and Quality Parameter Field Measurements

Item	Details
Access	All monitoring well and bore sampling locations were accessible.
Monitoring Well Network	Covers to all the groundwater monitoring wells were noted to be in good condition at the time of sampling.
Field Observations	No visible or olfactory indications of contamination were observed during the sampling of the groundwater monitoring wells. Field observations are presented **Table T1** in **Appendix B**.
Depth to Groundwater	Depth to groundwater in the monitoring wells was between 2.571 metres below top of casing (mbtoc) (MW109) and 13.203 mbtoc (MW101). Groundwater elevations in these wells were between 6.636 metres above Australian Height Datum (mAHD) (MW109) and 70.742 mAHD (MW119). Groundwater gauging data are presented in **Table T1** in **Appendix B**.
Groundwater Flow Direction	Inferred groundwater contours and groundwater flow directions within and immediately adjacent to Camp Kerr on 30 and 31 October 2023 are shown on **Figure 4** in **Appendix A**. A groundwater divide appears to be present in the central portion of Camp Kerr with groundwater to the east of the groundwater divide flowing towards the east. Groundwater to the west of the groundwater divide appears to be flowing to the west and southwest towards Wallu, and towards the south. The observed groundwater divide is consistent with that observed in previous investigations (AECOM, 2020) and previous OMP sampling events between October 2020 and April 2023 (AECOM, 2023c).
Groundwater Quality Parameter Field Measurements	Groundwater quality parameters were measured prior to collecting groundwater samples. The readings are presented in **Table T1** in **Appendix B** and are summarised below: • EC ranged from 50.6 µS/cm (MW114) to 1549 µS/cm (MW109) indicating fresh conditions. • pH ranged from 4.4 (MW113) to 6.9 (POT005) with a mean pH of 5.3 generally indicating acidic conditions. • Corrected ORP ranged from -10 mV (POT005) to 372.8 mV (MW118) indicating mildly to strongly reducing conditions. • Temperature ranged from 21.8°C (MW106) to 38.1°C (POT001). • The DO results ranged between 0.63 mg/L (MW122) and 3.27 mg/L (MW114) indicating poorly to moderately oxygenated conditions.
Weather Conditions	Weather conditions during groundwater sampling were sunny and dry between 30 October and 1 November 2023. There was no rainfall recorded at the Tin Can Bay (Defence) BoM Station 140010 during the sampling visit.
Estate Management Works or Training Activities	There were no estate management works or training activities ongoing at the time of sampling.

4.1.2 PFAS Groundwater Analytical Results

The PFAS groundwater analytical results from this sampling event are presented in **Table T2** in **Appendix B** with analytical laboratory reports presented in **Appendix E**. There were no first-time detections of PFAS in the groundwater samples in the October/November 2023 sampling event. There were no new exceedances of the HEPA (2020) human health or ecological guidelines.

Two groundwater samples exceeded the HEPA (2020) drinking water guideline value for sum of PFOS+PFHxS (MW121 and MW122). These two groundwater samples, along with the sample from MW118, also exceeded the HEPA (2020) ecological freshwater 99% species protection guidelines for PFOS. PFOA was not detected above the LOR in any of the samples and there were no exceedances of the human health or ecological guideline values.

A groundwater sample from one of the two extraction bores, POT001, reported a detectable concentration of PFHxS at 0.03 µg/L. However, sum of PFOS+PFHxS concentrations did not exceed the human health guideline values. PFAS were not detected in the groundwater sample from the other extraction bore, POT005.

4.2 Surface Water

4.2.1 Surface Water Observations and Quality Parameter Field Measurements

Table 10 Surface Water Observations and Quality Parameter Field Measurements

Item	Details
Access	All surface water sampling locations were accessible during the October / November 2023 sampling event. Of these, three sampling locations (SW017, SW018 and SW019) were dry so water samples could not be collected. Prior to conducting sampling on private properties, access permissions were obtained from stakeholders.
Field Observations	No visual or olfactory indications of contamination were observed during the sampling of the surface water sampling locations. Field observations are presented in **Table T3** in **Appendix B**.
Surface Water Quality Parameter Field Measurements	Surface water quality parameters were measured prior to collecting surface water samples. The readings are presented in **Table T3** in **Appendix B** and are summarised below: • DO ranged from 1.09 mg/L (SW027) to 5.61 mg/L (SW016). The measurements generally indicated poorly to well oxygenated conditions. • EC ranged from 88.4 µS/cm (SW023) to 58,560 µS/cm (SW013) indicating fresh to saline conditions in inland creeks, dams and estuarine environments. • pH ranged from 5.71 (SW009) to 7.37 (SW013) indicating slightly acidic to near neutral conditions. • Corrected ORP ranged from 70.7 mV (SW025) to 362.8 mV (SW013) indicating mildly to strongly reducing conditions. • Temperature ranged from 21.3°C (SW027) and 29.0°C (SW007).
Weather Conditions	Weather conditions during surface water sampling were sunny and dry between 30 October and 1 November 2023. There was no rainfall recorded at the Tin Can Bay (Defence) BoM Station 140010 during the sampling visit.
Estate Management Works or Training Activities	There were no estate management works or training activities ongoing at the time of sampling.

4.2.2 PFAS Surface Water Analytical Results

The PFAS surface water analytical results from this sampling event are presented in **Table T4** in **Appendix B** with analytical laboratory reports presented in **Appendix E**. There were no first-time detections or new exceedances of the HEPA (2020) recreational human health guideline values or ecological guideline values in the October / November 2023 sampling event.

There were no exceedances of the HEPA (2020) recreational water guideline values for sum of PFOS+PFHxS or PFOA. PFAS were detected above the LOR in five primary surface water samples (SW006, SW014, SW016, SW023 and SW025). The HEPA (2020) ecological guideline value for PFOS for 99% protection of fresh / marine water species was exceeded in the sample from SW016 located along Snapper Creek. The concentration of PFOS in the sample from SW025 did not exceed the ecological guideline for 95% protection level. PFOA was not detected above the LOR in any of the surface water samples and there were no exceedances of the 99% ecological guideline value.

4.3 Wastewater Observations, Quality Parameter Field Measurements and Analytical Results

Wastewater observations and quality parameter field measurements are presented in **Table T5**, **Appendix B.** The water was clear with no sheen or odour. The field parameters indicated the water was neutral, fresh, moderately oxygenated and strongly reducing.

The PFAS analytical results for the wastewater sample are presented in **Table T6** in **Appendix B** with analytical laboratory reports presented in **Appendix E**. PFAS were detected above the LOR in the wastewater sample and there was no exceedance of the human health or ecological guideline values in the October / November 2023 sampling event.

5.0 Summary and Next Sampling Event

5.1 Summary of Monitoring Event

A biannual groundwater, surface water and wastewater monitoring event was completed at the WBTA Management Area between 30 October and 1 November 2023. The scope of the sampling event included sampling of groundwater from 16 monitoring wells, two extraction bores, one wastewater sample from the WWTP and 14 surface water sampling locations. **Table 11** summarises the findings of the October/November 2023 sampling event and the recommended actions.

Table 11 Summary of Sampling Event

Item	Comment	Recommended Actions
Access to sampling locations	All 16 monitoring wells and two extraction bores were accessible and able to be sampled. Surface water samples were collected from 11 of 14 locations. Three locations were dry and so samples could not be collected (SW017, SW018, SW019). The WWTP outlet was able to be sampled.	None.
Monitoring well network condition	No issues were identified in the 16 monitoring wells sampled.	None.
Analytical results	PFAS concentrations in all groundwater, surface water and wastewater samples were consistent with historical results. Sum of PFOS+PFHxS concentrations exceeded the HEPA (2020) drinking water guidelines value in two groundwater samples (MW121, MW122). PFOS concentrations exceeded the HEPA (2020) ecological guideline value (99% species protection) in three groundwater and one surface water samples.	Ongoing monitoring in accordance with the OMP.
First-time detections of sum of PFOS+PFHxS or PFOA	There were no first-time detections of sum of PFOS+PFHxS or PFOA in any of the samples.	Ongoing monitoring in accordance with the OMP.
First time exceedance of HEPA (2020) guidelines	There were no new exceedances of the HEPA (2020) drinking water or recreational guidelines, or HEPA (2020) ecological freshwater / marine water species protection guidelines.	Ongoing monitoring in accordance with the OMP.

5.2 Upcoming Sampling Events

The next biannual sampling event is scheduled for April 2024.

5.3 Upcoming Ongoing Monitoring Interpretive Report

The next ongoing monitoring interpretive report is scheduled for February 2024.

6.0 References

AECOM, 2020, *PFAS Detailed Site Investigation*, WBTA, Rev 0, September 2020.

AECOM, 2023a, *Wide Bay Training Area, OMP Review Report*, Revision 3, February 2023.

AECOM, 2023b, *PFAS OMP - WBTA Sampling and Analysis Quality Plan*, Revision 9, March 2023.

AECOM, 2023c, *Ongoing Monitoring Interpretive Report – 2022, PFAS OMP – Wide Bay Training Area,* Rev 1 November 2023 - in draft.

ASC NEPM, 2013. *Schedule B1. National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) Schedule B1 Guideline on Investigation Levels for Soil and Groundwater*.

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Department of Defence, July 2018, Amended 2021, *Defence Contamination Management Manual.*

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Department of Health, 2019. *Health Based Guidance Values for PFAS for use in site investigations in Australia*. 2017, as updated in 2019.

Heads of EPAs Australia and New Zealand, 2020. *PFAS National Environmental Management Plan*. January 2020.

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Standards Australia 1998. AS/NZ 5667:1998 Water quality – sampling.

Appendix A

Figures

Appendix A Figures

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 0.5 1 2 3

km

1:80,000 (when printed at A3)

LEGEND

- Watercourse
- Road
- Major Road
- ManagementArea
- WBTA Property Boundary

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

LOCATION OF WBTA AND MANAGEMENT AREA

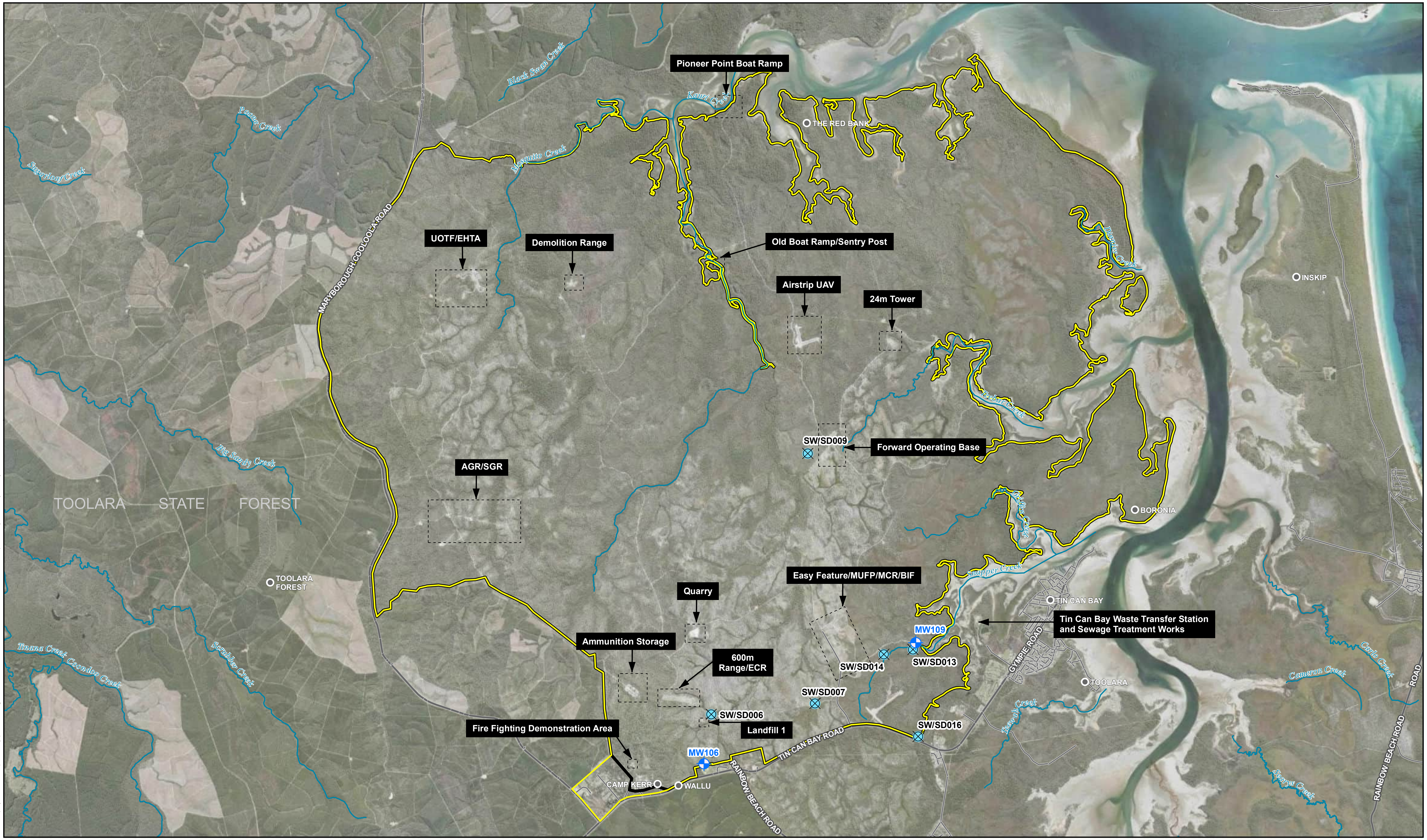
Sampling Event Factual Report,

October / November 2023

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

1



AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 0.5 1 2 3
km

1:80,000 (when printed at A3)

LEGEND

- Groundwater sampling location
- Sediment / surface water sampling location
- Road
- WBTA Property Boundary
- WBTA Management Area
- Watercourse

UOTF - Urban Operations Training Facility
AGR - Assault Grenade Range
SGR - Standard Grenade Range
MUFP - Multi User Firing Point
MCR - Multi Classification Range
ECR - Electronic Classification Range
BIF - Battle Inoculation Facility
EHTA - Explosive Handling Training Area
UAV - Unmanned Aerial Vehicle

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SAMPLE LOCATIONS (GREATER WBTA)

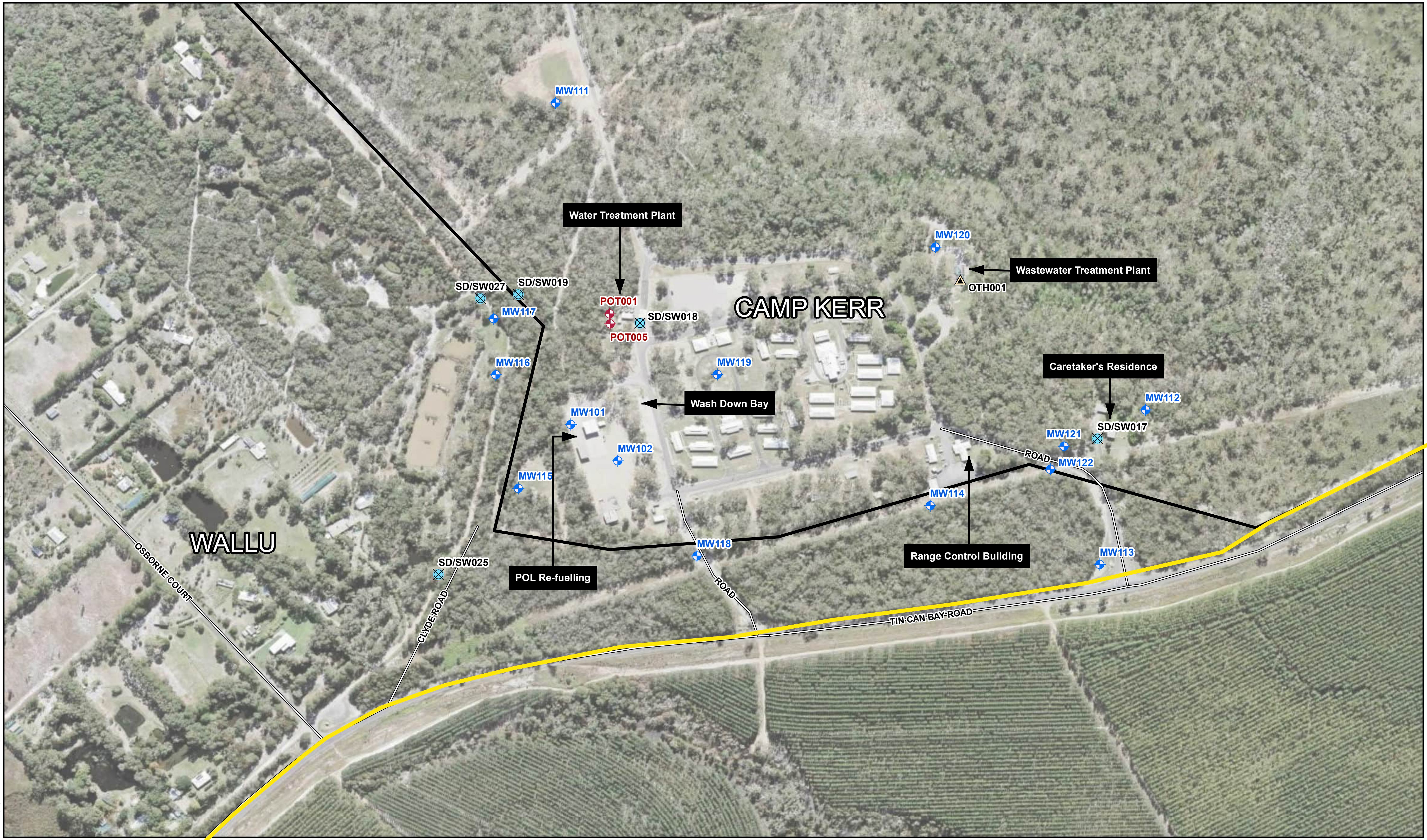
Sampling Event Factual Report, October / November 2023

PROJECT ID 60612563
CREATED BY PeacheyJ
LAST MODIFIED SCS- 25/06/21
VERSION: 1

Figure 2

A3 size

Filename:\\na.aecomnet.com\lfs\APAC\Brisbane-AUBNE1\Secure\Projects\606X\60612563\900_CAD_GIS\920_GIS\02_MXDs\WBTA\PFAS_OMP_WBTA_AIR_2021\WBTA_P60612563_F2_OMP_Sampling_Locations_WBTA.mxd



AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 50 100 200

metres

1:4,500 (when printed at A3)

LEGEND

- Wastewater treatment plant sampling location
- Abstraction bore
- Groundwater sampling location
- Sediment / surface water sampling location
- Road
- WBTA Property Boundary
- WBTA Management Area

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SAMPLING LOCATIONS (CAMP KERR)

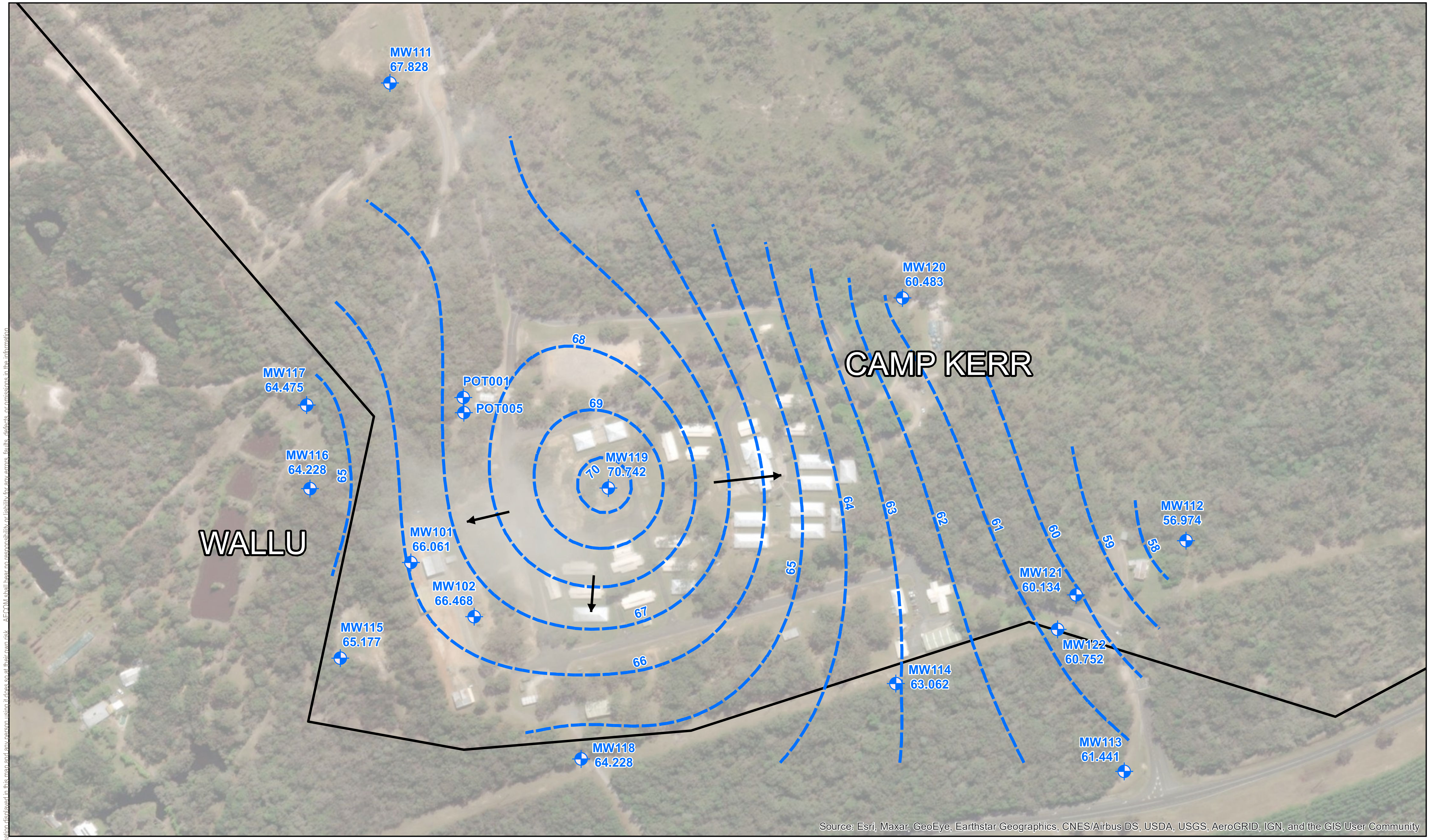
Sampling Event Factual Report, October / November 2023

PROJECT ID 60612563
CREATED BY PeacheyJ
LAST MODIFIED SCS- 25/06/21
VERSION: 1

Figure 3

Filename:L:\Secure\Projects\606X\60612563\900_CAD_GIS\920_GIS\02_MXDs\WBTA\PFAS_OMP_WBTA_AIR_2021\WBTA_P60612563_F3_OMP_Sampling_Locations_CampKerr.mxd

A3 size



AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE XX

0 35 70 140

metres

1:3,000 (when printed at A3)

LEGEND

- Groundwater Elevation (mAHD)
- Inferred Groundwater Contours (mAHD)
- Inferred Groundwater Flow Direction
- WBTA Property Boundary

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

INFERRED GROUNDWATER CONTOURS (CAMP KERR)

30-31 October 2023

PROJECT ID 60612563
CREATED BY ScottA3
LAST MODIFIED SCS- 26/06/21
VERSION: 3

Figure

4

A3 size

Filename:\\na.aecomnet.com\lfs\APAC\Brisbane-AUBNE1\Secure\Projects\606X\60612563\900_CAD_GIS\920_GIS\02_MXDs\WBTA\PFAS_OMP_WBTA_Factual Report_November 2023\WBTA_P60612563_F4_OMP_InferredGWcontours_CampKerr_20231030_v1.mxd

Appendix B

Tables

Appendix B Tables

Property ID	Well ID	Hydrasleeve install date	Gauging and Sample date	Hydrasleeve target depth (mbtoc)	Depth of Hydrasleeve (mbtoc)	Screened Interval depth (mbgs)	Depth to Water (mbtoc)	TOC Elevation (mAHD)	Groundwater Elevation (mAHD)	Well Depth (mbtoc)	Condition of Stand up cover / Gatic	DO (mg/L)	EC (µS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method / Comments
0224	MW101	30/10/2023	31/10/2023	15.0	15.0	11 - 16	13.203	79.264	66.061	16.05	Good	1.31	151.4	4.72	-110.3	94.7	24.2	med	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW102	30/10/2023	31/10/2023	18.5	18.5	14-20	12.096	78.564	66.468	19.84	Good	2.97	106.4	4.55	-77.8	127.2	27.9	Medium turbid	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW106	04/04/2023	31/10/2023	10.0	10.0	4 - 10	4.631	69.468	64.837	11.002	Good	3.07	96.9	4.68	105.8	310.8	21.8	Medium turbid	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™, rootlets present
0224	MW109	03/04/2023	30/10/2023	10.0	10.0	7 - 10	2.571	9.207	6.636	11.006	Good	1.43	1549	5.93	-21.1	183.9	24	Low	Cloudy, Brown Sediment	No odour	No sheen	HydraSleeve™
0224	MW111	03/04/2023	30/10/2023	20.5	20.5	16.5 - 20.5	11.124	78.952	67.828	21.51	Good	1.72	249.9	5.36	29.5	234.5	23.3	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW112	04/04/2023	31/10/2023	9.0	9.0	6 - 9	8.209	65.183	56.974	9.88	Good	1.8	140.6	5.4	81	286	23.4	High	Brown/orange with briwn sed	No odour	No sheen	HydraSleeve™
0224	MW113	04/04/2023	31/10/2023	8.0	8.0	6 - 9	6.276	67.717	61.441	8.97	Good	1.11	124	4.44	61.8	266.8	24.7	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW114	05/04/2023	31/10/2023	11.5	11.5	8.5 - 11.5	9.954	73.016	63.062	12.51	Good	3.27	50.6	5.02	-28.8	176.2	24	Low	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW115	06/04/2023	30/10/2023	16.0	16.0	13 - 16	11.482	76.659	65.177	17.004	Good	1.04	200.1	5.33	82.8	287.8	22.2	Low	Cloudy	No odour	No sheen	HydraSleeve™
0224	MW116	05/04/2023	31/10/2023	11.0	10.5	8 - 11	5.587	69.815	64.228	11.77	Good	1.22	392.9	6.19	-82.5	122.5	22.9	low	clear	No odour	No sheen	HydraSleeve™
0224	MW117	05/04/2023	31/10/2023	10.0	9.0	7 - 10	4.439	68.914	64.475	10.98	Good	1.99	102.6	6.24	-209.3	-4.3	22.5	Medium	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW118	05/04/2023	31/10/2023	12.7	12.0	10 - 13	11.816	76.154	64.338	13.57	Good	3.15	120.9	4.78	167.8	372.8	-	Low	Clear, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW119	04/04/2023	31/10/2023	14.7	14.5	13 - 16	8.804	79.546	70.742	15.71	Good	2.74	223.7	4.96	38.9	243.9	23	Med	Cloudy, brown sediment	No odour	No sheen	HydraSleeve™
0224	MW120	30/10/2023	31/10/2023	12.7	12.5	Unknown	10.849	71.332	60.483	13.61	Good	1.75	136.4	5.01	2.8	207.8	25.6	Med	clerish/brown	No odour	No sheen	HydraSleeve™
0224	MW121	30/10/2023	31/10/2023	14.0	14.0	Unknown	10.271	70.405	60.134	15	Good	1.56	106.4	5.11	-8.5	196.5	23.8	Clear	Brown sediment	No odour	No sheen	HydraSleeve™
0224	MW122	30/10/2023	31/10/2023	19.0	19.0	Unknown	9.823	70.575	60.752	19.98	Good	0.63	69.9	4.72	-92.7	112.3	24	Low	Clear	No odour	No sheen	HydraSleeve™
0224	POT001	-	31/10/2023	-		18 - 78.4	-	-	-	-	-	1.58	471	6.76	-195.3	9.7	38.1	Clear	Clear	No odour	No sheen	Tap
0224	POT005	-	31/10/2023	-		30 - 51.5	-	-	-	-	-	1.59	447	6.9	-215.9	-10.9	33.5	Clear	Clear	No odour	No sheen	Tap

Notes
mbgs is metres below ground surface
mbtoc is metres below top of casing
mAHD is metres above Australian height datum
DO is dissolved oxygen
EC is electrical conductivity
E_h is oxidation reduction potential
Oxidation reduction potential (E_r) measured with a platinum electrode and a silver/silver chloride reference electrode (E_r) and converted to E_h by E_h = E_r + 205 mV (based on a groundwater temperature of 21°C)
Temp is Temperature
µS/cm is microsiemens per centimetre
ºC is degrees Celsius
mV is millivolts
` - No data

Location ID	Sample ID	Sample Date		Lab Report No.	PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTeDA	PFTrDA	FOSA	MeFOSE	EtFOSE	MeFOSA	EtFOSA	MFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	Sum of PFAS
				Units	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	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	µg/L	µg/L
				LOR	0.01	0.02	0.02	0.02	0.02	0.01	0.02	0.1	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01
NEMP (HEPA, 2020) Human Health Drinking Water					**0.07**											**0.56**																		
NHMRC (2019) PFAS Recreational Water					2											10																		
NEMP (HEPA, 2020) Ecological Freshwater 99% Species Protection										*0.00023*						*19*																		
MW101	0224_MW101_231031	31/10/2023	Normal	EB2334187001	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW102	0224_MW102_231031	31/10/2023	Normal	EB2334187002	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW106	0224_MW106_231031	31/10/2023	Normal	EB2334187003	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW109	0224_MW109_231031	31/10/2023	Normal	EB2334187004	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW111	0224_MW111_231031	31/10/2023	Normal	EB2334187005	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW112	0224_MW112_231031	31/10/2023	Normal	EB2334187006	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW113	0224_MW113_231031	31/10/2023	Normal	EB2334187007	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW114	0224_MW114_231031	31/10/2023	Normal	EB2334187008	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW115	0224_MW115_231030	30/10/2023	Normal	EB2334187009	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW116	0224_MW116_231031	31/10/2023	Normal	EB2334187010	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW117	0224_MW117_231031	31/10/2023	Normal	EB2334187011	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW118	0224_MW118_231031	31/10/2023	Normal	EB2334187012	0.04	<0.02	<0.02	0.02	<0.02	*0.02*	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.04
MW119	0224_MW119_231031	31/10/2023	Normal	EB2334187013	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW120	0224_MW120_231031	31/10/2023	Normal	EB2334187014	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01
MW121	0224_MW121_231031	31/10/2023	Normal	EB2334187015	**0.1**	<0.02	<0.02	0.06	<0.02	*0.04*	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.1
MW121	0224_QC100_231031	31/10/2023	Duplicate	EB2334187020	**0.09**	<0.02	<0.02	0.06	<0.02	*0.03*	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.09
MW121	0224_QC200_231031	31/10/2023	Triplicate	RN1410641	**0.09**	<0.01	<0.01	0.065	<0.01	*0.027*	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.09
MW122	0224_MW122_231031	31/10/2023	Normal	EB2334187016	**0.15**	<0.02	<0.02	0.12	<0.02	*0.03*	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15
MW122	0224_QC101_231031	31/10/2023	Duplicate	EB2334187021	**0.15**	<0.02	<0.02	0.13	<0.02	*0.02*	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.15
MW122	0224_QC201_231031	31/10/2023	Triplicate	RN1410641	**0.14**	<0.02	0.012	0.13	<0.01	*0.011*	<0.01	<0.05	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.05	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.14
POT001	0224_POT001_231031	31/10/2023	Normal	EB2334187017	0.03	<0.02	<0.02	0.03	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	0.03
POT005	0224_POT005_231031	31/10/2023	Normal	EB2334187018	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
-' denotes no analysis undertaken
<' denotes concentration is less than
NEMP is National Environmental Management Plan
Denotes first time detection above LOR
Denotes new exceedance of human health guideline values

Property ID	Location ID	Sample Date	DO (mg/L)	EC (µS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Odour	Sheen
0224	SW006	30/10/2023	3.15	205.5	6.65	-57.4	147.6	28.3	No odour	No sheen
0224	SW007	30/10/2023	4.09	289.8	6.47	-78.8	126.2	29	No odour	No sheen
0224	SW009	30/10/2023	2.88	308.2	5.71	36.1	241.1	25	No odour	No sheen
0224	SW013	30/10/2023	3.75	58560	7.37	157.8	362.8	26.5	No odour	No sheen
0224	SW014	30/10/2023	1.61	220.8	5.79	120.2	325.2	24.8	No odour	No sheen
0224	SW016	30/10/2023	5.61	182.7	6.3	-83	122	28.4	No odour	No sheen
0224	SW017	Dry								
0224	SW018	Dry								
0224	SW019	Dry								
0224	SW021	1/11/2023	3.81	164	6.22	102	307	22.5	No odour	No sheen
0224	SW022	1/11/2023	1.1	114.7	5.75	45.1	250.1	23.5	No odour	No sheen
0224	SW023	1/11/2023	5.48	88.4	6.97	67.2	272.2	24.1	No odour	No sheen
0224	SW025	31/10/2023	5.02	158.2	6.28	-134.3	70.7	25.6	No odour	No sheen
0224	SW027	1/11/2023	1.09	214.6	6.86	24.1	229.1	21.3	No odour	No sheen

Notes
DO is dissolved oxygen
EC is electrical conductivity
E_h is oxidation reduction potential

Oxidation reduction potential (E_r) measured with a platinum electrode and a silver/silver chloride reference electrode (E_r) and converted to E_h by $E_h = E_r + 205$ mV (based on a groundwater temperature of 21°C)
Temp is Temperature
µS/cm is microsiemens per centimetre
ºC is degrees Celsius
mV is millivolts
` - No data

Location ID	Sample ID	Sample Date	Type	Lab Report No.	PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHxA	PFHpA
				Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
				LOR	0.0016	0.0005	0.0005	0.0005	0.0005	0.0003	0.0005	0.002	0.0005	0.0005	0.0005
NHMRC (2019) PFAS Recreational Water					2										
HEPA (2020) Ecological Freshwater 99% Species Protection										**0.00023**					
HEPA (2020)Ecological Freshwater 95% Species Protection (SW025 only)										*0.13*					
SW006	0224_SW006_231030	30/10/2023	Normal	EB2334191001	0.0022	<0.0005	<0.0015	0.0022	<0.0005	<0.0009	<0.0005	<0.008	<0.0016	<0.0005	<0.0005
SW006	0224_QC102_231030	30/10/2023	Duplicate	EB2334191009	<0.0016	<0.0005	<0.002	<0.002	<0.0005	<0.0016	<0.0005	<0.008	<0.0016	<0.0005	<0.0005
SW006	0224_QC202_231030	30/10/2023	Triplicate	RN1410641	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01
SW007	0224_SW007_231030	30/10/2023	Normal	EB2334191002	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0003	<0.0005	<0.008	<0.0005	<0.0016	<0.0005
SW009	0224_SW009_231030	30/10/2023	Normal	EB2334191003	<0.0009	<0.0005	<0.0005	<0.0015	<0.0005	<0.0009	<0.0005	<0.008	<0.0005	<0.0005	<0.0005
SW013	0224_SW013_231030	30/10/2023	Normal	EB2334191004	<0.0003	<0.0005	<0.0008	<0.0005	<0.0005	<0.0003	<0.0005	<0.008	<0.0005	<0.0005	<0.001
SW014	0224_SW014_231030	30/10/2023	Normal	EB2334191005	0.0018	<0.0005	<0.0005	0.0018	<0.0005	<0.0018	<0.002	<0.008	<0.0005	<0.0005	<0.0005
SW016	0224_SW016_231030	30/10/2023	Normal	EB2334191006	0.0011	<0.0005	<0.0005	<0.0015	<0.0005	**0.0011**	<0.0005	<0.008	<0.0005	<0.0016	<0.0005
SW021	0224_SW021_231101	1/11/2023	Normal	EB2334198001	<0.0016	<0.0016	<0.0005	<0.002	<0.0005	<0.0027	<0.0005	<0.008	<0.0045	<0.0016	<0.0016
SW022	0224_SW022_231101	1/11/2023	Normal	EB2334197001	<0.0016	<0.0016	<0.0005	<0.004	<0.0005	<0.0039	<0.0005	<0.008	<0.0016	<0.0016	<0.0005
SW023	0224_SW023_231101	1/11/2023	Normal	EB2334197002	0.0024	<0.0005	<0.0005	0.0024	<0.0005	<0.0033	<0.0005	<0.008	<0.0016	<0.0016	<0.0005
SW025*	0224_SW025_231031	31/10/2023	Normal	EB2334191007	0.0031	<0.0005	<0.0005	<0.002	<0.0005	0.0031	<0.0005	<0.008	<0.0016	<0.0016	<0.0005
SW027	0224_SW027_231101	1/11/2023	Normal	EB2334191008	<0.0030	<0.0005	<0.0005	<0.0035	<0.0005	<0.0303	<0.0016	<0.014	<0.009	<0.0016	<0.0016
SW027	0224_QC103_231101	1/11/2023	Duplicate	EB2334191010	<0.0035	<0.0016	<0.0005	<0.003	<0.0005	<0.00237	<0.0005	<0.02	<0.0115	<0.0016	<0.0005
SW027	0224_QC203_231101	1/11/2023	Triplicate	RN1410641	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.05	<0.02	<0.01	<0.01

Sample ID	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSA	EtFOSA	MeFOSE	EtFOSE	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	Sum of PFAS
Units	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	µg/L	µg/L	µg/L	µg/L	µg/L
LOR	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0005	0.0005	0.001	0.001	0.001	0.001	0.0016
NHMRC (2019) PFAS Recreational Water	10																		
HEPA (2020) Ecological Freshwater 99% Species Protection	**19**																		
HEPA (2020)Ecological Freshwater 95% Species Protection (SW025 only)	*220*																		
0224_SW006_231030	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.004	<0.0005	<0.004	<0.004	<0.001	<0.004	<0.0005	<0.0006	<0.001	<0.001	<0.001	<0.001	0.0022
0224_QC102_231030	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0016	<0.0041	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0005
0224_QC202_231030	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
0224_SW007_231030	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0040	<0.0005	<0.001	<0.004	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003
0224_SW009_231030	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0041	<0.0005	<0.004	<0.004	<0.001	<0.001	<0.0005	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0005
0224_SW013_231030	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0040	<0.0005	<0.004	<0.004	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0003
0224_SW014_231030	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0041	<0.0005	<0.004	<0.004	<0.001	<0.001	<0.0005	<0.0016	<0.001	<0.001	<0.002	<0.002	0.0018
0224_SW016_231030	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0041	<0.0005	<0.004	<0.004	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0011
0224_SW021_231101	<0.0016	0.0008	<0.0005	<0.0005	<0.0035	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0016
0224_SW022_231101	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0016	<0.0041	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0016
0224_SW023_231101	<0.0005	<0.0005	<0.0005	<0.0005	<0.0025	<0.0016	<0.0039	<0.0005	<0.001	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0024
0224_SW025_231031	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	0.0031
0224_SW027_231101	<0.0016	<0.0016	<0.0016	<0.0016	<0.0130	<0.0016	<0.0040	<0.0016	<0.004	<0.004	<0.004	<0.001	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0005
0224_QC103_231101	<0.0005	<0.0005	<0.0005	<0.0005	<0.0035	<0.0016	<0.0041	<0.0005	<0.004	<0.004	<0.004	<0.004	<0.0016	<0.0016	<0.001	<0.001	<0.001	<0.001	<0.0005
0224_QC203_231101	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
-' denotes no analysis undertaken
<' denotes concentration is less than
Denotes first time detection above LOR
Denotes new exceedance of human health guideline values
*In accordance with the SAQP, SW025 has been assessed with HEPA (2020) ecological guideline for the protection of freshwater species at 95%.

Property ID	Well ID	Sample Date	DO (mg/L)	EC (µS/cm)	pH	E_r (mV)	E_h (mV)	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method / Comments
0224	OTH001	31/10/2023	2.2	464	7.18	-119.7	85.3	38	Clear	Clear	No odour	No sheen	Tap

DO is dissolved oxygen
EC is electrical conductivity
E_h is oxidation reduction potential
Oxidation reduction potential (E_r) measured with a platinum electrode and a silver/silver chloride reference electrode (E_r) and converted to E_h by $E_h = E_r + 205$ mV (based on a groundwater temperature of 21°C)
Temp is Temperature
µS/cm is microsiemens per centimetre
ºC is degrees Celsius
mV is millivolts

Location ID	Sample ID	Sample Date	Type	Lab Report No.	PFHxS and PFOS	PFBS	PFPeS	PFHxS	PFHpS	PFOS	PFDS	PFBA	PFPeA	PFHpA	PFHxA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	FOSA	MeFOSE	EtFOSE	MeFOSA	EtFOSA	MeFOSAA	EtFOSAA	4:2 FTS	6:2 FTS	8:2 FTS	10:2 FTS	Sum of PFAS
				Units	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	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	µg/L	µg/L
				LOR	0.01	0.02	0.02	0.02	0.02	0.01	0.02	0.1	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.01
NHMRC (2019) PFAS Recreational Water					2											10																		
HEPA (2020) Ecological Freshwater 99% Species Protection										*0.00023*						*19*																		
OTH001	0224_OTH001_231031	31/10/2023	Normal	EB2334187019	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.1	<0.02	<0.02	<0.02	<0.01	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01

LOR is limit of reporting
µg/L is micrograms per litre
-' denotes no analysis undertaken
<' denotes concentration is less than
Denotes first time detection above LOR
Denotes new exceedance of human health guideline values

Appendix C

Analytical Data Validation

Appendix C Analytical Data Validation

DATA VALIDATION REPORT

Project No.:	60612563	**Validation by:** JS		**Date:**	12/11/2023
Client:	Department of Defence				
Site:	Wide Bay Training Area				
Matrix type:	Groundwater, surface water, waste water	**Data verified by:** JP		**Date:**	14/11/2023
No. of primary samples:	16 groundwater, 11 surface water, 1 waste water,				
Laboratory:	ALS (Brisbane), NMI (Sydney)	**Project Manager:** JP			
Lab reference:	EB2334187, EB2334191, EB2334197, EB2334198, RN1410641				

Key Issues:	No QA/QC issues were identified in the field or laboratory datasets that could have a material implication on data interpretation and therefore decision-making on the project. The data are therefore considered appropriate for use to meet the project objectives. All analytical data have been uploaded and assigned to DERP ESdat.

Field QA/QC

Sampling personnel	Sampling was conducted by an AECOM environmental scientist on 30 and 31 October 2023 and 01 November 2023.
Sampling Methodology	Samples were collected using appropriate methods as identified within the main body of the report.
Hydrasleeve sampling	All hydrasleeves were left in the monitoring wells for a minimum of 24 hours prior to being sampled. Installation and retrieval dates are shown in **Table T1** in **Appendix B**.
Daily Equipment Calibration	Daily equipment calibration was completed during the sampling event and are attached within **Appendix F**.
Chain of Custody (COC)	COC documents were completed as per AECOM procedures and are attached within **Appendix D**.
Rinsate Blank (refer to **Table C1**)	Rinsate blank samples were collected at a frequency of approximately one per day of sampling (two in total) where non-dedicated sampling equipment was used. All rinsates were collected from the decontaminated interface probe. Concentrations reported below the LOR for all analytes tested.
Frequency of field QC	Field duplicate (intra-laboratory duplicates) and triplicates (inter-laboratory duplicates) were collected for samples analysed for PFAS at a frequency of one in ten primary samples (four sets for 27 water samples [15%]. The frequency of field QC achieves the expected frequency.
Handling and preservation	Primary, duplicate and triplicate samples were received preserved and chilled at the laboratory. All samples were received at the laboratory in appropriate sample containers with no sample container / preservation non-compliances noted.

Laboratory QA/QC	
Tests requested/reported	Samples were analysed and reported as requested on the COC.
Holding time compliance	Samples were extracted and analysed within recommended holding times.
Laboratory Accreditation	The laboratory analysis was conducted by ALS Environmental Pty Ltd (Brisbane) a National Association of Testing Authorities (NATA) accredited laboratory. The triplicate samples were analysed at the National Measurement Institute (Sydney), also a NATA accredited laboratory.
Frequency of laboratory QC	The laboratory reported a sufficient frequency of quality control samples to assess whether the results have been reported to an acceptable accuracy and precision, except: • Laboratory duplicates for PFAS were below the expected rate of 10.00% in: - EB2334187 (38 samples in batch, 0.00% rate achieved) - EB2334191 (13 samples in batch, 0.00% rate achieved) - EB2334197 (14 samples in batch, 0.00% rate achieved) - EB2334198 (13 samples in batch, 0.0% rate achieved) • Matrix spikes for PFAS (0.00%) below the expected rate of 5.00% in: - EB2334187 (38 samples in batch, 0.00% rate achieved) - EB2334191 (13 samples in batch, 0.00% rate achieved) - EB2334197 (13 samples in batch, 0.00% rate achieved) - EB2334198 (13 samples in batch, 0.00% rate achieved) - The reason for insufficient matrix spikes and laboratory duplicates for these batches is due to the way the laboratory assigns the duplicates and matrix spikes and the availability of additional bottles. The laboratory LIMS assigns laboratory QC to samples in the analytical run; however, the runs may not allocate samples to allow for frequency compliance. However, as all other laboratory QC results met control limits this is not expected to impact data quality.
Method Blank	No method blank non-conformances were reported in the batches.
Laboratory duplicate RPDs	Laboratory duplicate relative percentage differences (RPD) were within control limits for all samples.
Laboratory control spike recovery	There were no laboratory control spike recovery outliers.
Matrix spike recovery	No matrix spike recovery outliers.
Surrogate spike recovery	Surrogate spike recoveries were within control limits.
QA/QC Data Evaluation	
Comparison of Field Observations and Laboratory Results	No anomalous results between field observations and analysis results were noted.
Data transcription	A random 10% check of the laboratory results identified no anomalies within the electronic data, the laboratory reports, and tables generated by AECOM.
Limits of reporting	LORs were sufficiently low to assess all results against the required guidelines

Field duplicate RPDs (refer to **Tables C2** and **C3**)	Field duplicate RPDs were reported within control limits for all primary and duplicate samples
Field triplicate RPDs (refer to **Tables C2** and **C3**)	Field triplicate RPDs were reported within control limits for all primary and triplicate samples.
Other	
Other observations	No other notable observation were made during sampling.

		Lab Report Number	EB2334187022	EB2334187023
		Field ID	0224_QC300_231030	0224_QC301_231031
		Sampled Date	30/10/2023	31/10/2023
		Sample Type	Rinsate	Rinsate
Chemical Name	**Units**	**LOR**		
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.0005	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.0005	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.0005	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.0005	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.0003	<0.01	<0.01
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.0005	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.002	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	µg/L	0.0005	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.0005	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.0005	<0.02	<0.02
Perfluorooctanoic Acid (PFOA)	µg/L	0.0005	<0.01	<0.01
Perfluorononanoic acid (PFNA)	µg/L	0.0005	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.0005	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.0005	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.0005	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.0005	<0.02	<0.02

Table C2
Groundwater Duplicate and Triplicate Analytical Results

		Field ID	0224_MW121_231031	0224_QC100_231031	**RPD**	0224_QC200_231031	**RPD**	0224_MW122_231031	0224_QC101_231031	**RPD**	0224_QC201_231031	**RPD**
		Type	Primary	Duplicate		Triplicate		Primary	Duplicate		Triplicate	
		Sampled Date	31/10/2023	31/10/2023		31/10/2023		31/10/2023	31/10/2023		31/10/2023	
		Lab Report Number	EB2334187015	EB2334187020		RN1410641		EB2334187016	EB2334187021		RN1410641	
Chemical Name	**Units**	**LOR**										
PFBS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.02	0
PFPeS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	0.012	NC
PFHxS	µg/L	0.02 : 0.01 (Interlab)	0.06	0.06	0	0.065	8	0.12	0.13	8	0.13	0
PFHpS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFOS	µg/L	0.02 : 0.01 (Interlab)	0.04	0.03	29	0.027	39	0.03	0.02	40	0.011	93
PFDS	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFBA	µg/L	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.05	0	<0.1	<0.1	0	<0.05	0
PFPeA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	0	<0.02	<0.02	0	<0.02	0
PFHxA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFHpA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFOA	µg/L	0.02 : 0.01 (Interlab)	<0.01	<0.01	0	<0.01	0	<0.01	<0.01	0	<0.01	0
PFNA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFUnDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFDoDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
PFTeDA	µg/L	0.02 : 0.01 (Interlab)	<0.05	<0.05	0	<0.02	0	<0.05	<0.05	0	<0.02	0
PFTrDA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.02	0	<0.02	<0.02	0	<0.02	0
FOSA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
MeFOSE	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0
EtFOSE	µg/L	0.05	<0.05	<0.05	0	<0.05	0	<0.05	<0.05	0	<0.05	0
MeFOSA	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.02	0	<0.05	<0.05	0	<0.02	0
EtFOSA	µg/L	0.05 : 0.02 (Interlab)	<0.05	<0.05	0	<0.02	0	<0.05	<0.05	0	<0.02	0
MFOSAA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
EtFOSAA	µg/L	0.02 : 0.01 (Interlab)	<0.02	<0.02	0	<0.01	0	<0.02	<0.02	0	<0.01	0
4:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0
6:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0
8:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0
10:2 FTS	µg/L	0.05 : 0.01 (Interlab)	<0.05	<0.05	0	<0.01	0	<0.05	<0.05	0	<0.01	0

NC is not calculable.
*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
***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

Chemical Name	Units	LOR	0224_SW006_231030	0224_QC102_231030	RPD	0224_QC202_231030	RPD	0224_SW027_231101	0224_QC103_231101	RPD	0224_QC203_231101	RPD
		Sample Date	30/10/2023	30/10/2023		30/10/2023		1/11/2023	1/11/2023		1/11/2023	
		Type	Primary	Duplicate		Triplicate		Primary	Duplicate		Triplicate	
		Lab Report No.	EB2334191001	EB2334191009		RN1410641		EB2334191008	EB2334191010		RN1410641	
PFBS	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0005	<0.0016	0	<0.01	0
PFPeS	µg/L	0.0005 : 0.01 (Interlab)	<0.0015	<0.002	0	<0.01	0	<0.0005	<0.0005	0	<0.01	0
PFHxS	µg/L	0.0005 : 0.01 (Interlab)	0.0022	<0.002	NC	<0.01	0	<0.0035	<0.003	0	<0.01	0
PFHpS	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0005	<0.0005	0	<0.01	0
PFOS	µg/L	0.0005 : 0.01 (Interlab)	<0.0009	<0.0016	0	<0.02	0	<0.0303	<0.00237	0	<0.02	0
PFDS	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0016	<0.0005	0	<0.01	0
PFBA	µg/L	0.0005 : 0.01 (Interlab)	<0.008	<0.008	0	<0.05	0	<0.014	<0.02	0	<0.05	0
PFPeA	µg/L	0.0005 : 0.01 (Interlab)	<0.0016	<0.0016	0	<0.02	0	<0.009	<0.0115	0	<0.02	0
PFHxA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0016	<0.0016	0	<0.01	0
PFHpA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0016	<0.0005	0	<0.01	0
PFOA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0016	<0.0005	0	<0.01	0
PFNA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0016	<0.0005	0	<0.01	0
PFDA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0016	<0.0005	0	<0.01	0
PFUnDA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0016	0	<0.01	0	<0.0016	<0.0005	0	<0.01	0
PFDoDA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0016	0	<0.01	0	<0.0130	<0.0035	0	<0.01	0
PFTrDA	µg/L	0.0005 : 0.01 (Interlab)	<0.0016	<0.0016	0	<0.02	0	<0.0016	<0.0016	0	<0.02	0
PFTeDA	µg/L	0.0005 : 0.01 (Interlab)	<0.004	<0.0041	0	<0.02	0	<0.0040	<0.0041	0	<0.02	0
FOSA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0005	0	<0.01	0	<0.0016	<0.0005	0	<0.01	0
MeFOSA	µg/L	0.001 : 0.05 (Interlab)	<0.004	<0.004	0	<0.02	0	<0.004	<0.004	0	<0.02	0
EtFOSA	µg/L	0.001 : 0.05 (Interlab)	<0.004	<0.004	0	<0.02	0	<0.004	<0.004	0	<0.02	0
MeFOSE	µg/L	0.001 : 0.05 (Interlab)	<0.001	<0.004	0	<0.05	0	<0.004	<0.004	0	<0.05	0
EtFOSE	µg/L	0.001 : 0.05 (Interlab)	<0.004	<0.004	0	<0.05	0	<0.001	<0.004	0	<0.05	0
MeFOSAA	µg/L	0.0005 : 0.01 (Interlab)	<0.0005	<0.0016	0	<0.01	0	<0.0016	<0.0016	0	<0.01	0
EtFOSAA	µg/L	0.0005 : 0.01 (Interlab)	<0.0006	<0.0016	0	<0.01	0	<0.0016	<0.0016	0	<0.01	0
4:2 FTS	µg/L	0.001 : 0.01 (Interlab)	<0.001	<0.001	0	<0.01	0	<0.001	<0.001	0	<0.01	0
6:2 FTS	µg/L	0.001 : 0.01 (Interlab)	<0.001	<0.001	0	<0.01	0	<0.001	<0.001	0	<0.01	0
8:2 FTS	µg/L	0.001 : 0.01 (Interlab)	<0.001	<0.001	0	<0.01	0	<0.001	<0.001	0	<0.01	0
10:2 FTS	µg/L	0.001 : 0.01 (Interlab)	<0.001	<0.001	0	<0.01	0	<0.001	<0.001	0	<0.01	0

NC is not calculable
*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 200 (1-10 x LOR); 50 (10-20 x LOR); 30 (> 20 x LOR))
***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

Appendix D

Chain of Custody Forms

Appendix D Chain of Custody Forms

AECOM

Chain of Custody

AECOM Australia Pty Ltd
[redacted]

Email reports to: [redacted]

Laboratory Details
Lab. Name: ALS Brisbane
Lab. Address:
Contact Name:
Lab. Ref:

Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY/139/19

Sampled By: Jake Suchting
Mobile Number [redacted]

Project Name: QLD_0224_PFASOMP_23
AECOM Project #: 60612563 4.1
Purchase Order No: 60612563 4.1

Specifications: Please report in ESdat format

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: ______________________________)	

6. Report Format: ESdat
7. Project Manager: [redacted]

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: sed	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	EP231X (PFAS Std 28)	HOLD	Notes
1	0224_MW101_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
2	0224_MW102_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
3	0224_MW106_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
4	0224_MW109_23 1030	30.10 / 2023		X				X		2 x 125 ml	X		
5	0224_MW111_23 1030	30.10 / 2023		X				X		2 x 125 ml	X		
6	0224_MW112_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
7	0224_MW113_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
8	0224_MW114_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
9	0224_MW115_23 1030	30.10 / 2023		X				X		2 x 125 ml	X		
10	0224_MW116_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
11	0224_MW117_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
12	0224_MW118_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
13	0224_MW119_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
14	0224_MW120_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		

Environmental Division
Brisbane
Work Order Reference
EB2334187
Telephone : +61-7-3243 7222

Comments: **Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME**

Temp. received: °C

Report & invoice: [redacted]

Lab Report No | Esky ID

Relinquished by: [redacted] Signed: [redacted] Date: 01.11.23
Received by: [redacted] Signed: Date:

Relinquished by: Signed: Date:
Received by: ED Signed: Date: 01/11

1309

AECOM

Chain of Custody

AECOM Australia Pty Ltd	Laboratory Details	
[redacted]	Lab. Name: ALS Brisbane	Tel:
Email reports to: [redacted]	Lab. Address:	Fax:
	Contact Name:	Preliminary Report by:
		Final Report by:
	Lab. Ref:	Lab Quote No: SY/139/19

Sampled By: [redacted]
Mobile Numb[redacted]

Project Name: QLD_0224_PFASOMP_23 **AECOM Project #:** 60612563 4.1 **Purchase Order No:** 60612563 4.1

Specifications: Please report in ESdat format

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: ____________________)	

6. Report Format: ESdat 7. Project Manager[redacted]

Analysis Request — Notes

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: sed	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	EP231X (PFAS Std 28)	HOLD	Notes
15	0224_MW121_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
16	0224_MW122_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
17	0224_POT001_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
18	0224_POT005_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
19	0224_OTH001_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
20	0224_QC100_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
21	0224_QC101_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
22	0224_QC300_23 1030	30.10 / 2023		X				X		2 x 125 ml	X		
23	0224_QC301_23 1031	31.10 / 2023		X				X		2 x 125 ml	X		
	~~0224_QC302_23~~	~~/ 2023~~		~~X~~				~~X~~		~~2 x 125 ml~~	~~X~~		

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME

Temp. received: °C

Report & invoice: [redacted]

Lab Report N | Esky ID

Relinquished by: [redacted]	Signed [redacted]	Date: 01.11.23	Relinquished by:	Signed:	Date:
Received by:	Signed	Date:	Received by: ED	Signed:	Date: 01/11

1308

AECOM

Chain of Custody

COC Page 1 of 2

AECOM Australia Pty Ltd

[redacted]

Email reports to: [redacted]

Laboratory Details
Lab. Name: ALS
Lab. Address: Brisbane
Contact Name: [redacted]
Lab. Ref:

Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY/139/19

Sampled By [redacted] **Project Name:** QLD_0224_PFASOMP_23 **AECOM Project #:** 60612563 4.1 **Purchase Order No:** 60612563 4.1

Specifications: Please report in ESdat format

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: ________________)	
6. Report Format: ESdat 7. Project Manager [redacted]	

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: sed	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	EP231X (PFAS Std 28)	EP231X-ST (PFAS 28 - Super Trace)								HOLD	Notes
1	**0224_SW006_23**/1030	30.10/2023		x				x		2x125ml plastic		x									
2	**0224_SW007_23**/1030	30.10/2023		x				x		2x125ml plastic		x									
3	**0224_SW009_23** 1030	30.10/2023		x				x		2x125ml plastic		x									
4	**0224_SW013_23** 1030	30.10/2023		x				x		2x125ml plastic		x									
5	**0224_SW014_23**/1030	30.10/2023		x				x		2x125ml plastic		x									
6	**0224_SW016_23**/1030	30.10/2023		x				x		2x125ml plastic		x									
	~~**0224_SW017_23**~~	~~/2023~~		~~x~~				~~x~~		~~2x125ml plastic~~		~~x~~									

Environmental Division
Brisbane
Work Order Reference
EB2334191

Telephone : + 61-7-3243 7222

Comments: **Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME**

Temp. received: °C

Report & invoice [redacted]

Lab Report N | Esky ID

Relinquished by: [redacted]	Signed: [redacted]	Date: 01.11.23	Relinquished by:	Signed:	Date:
Received by:	Signed:	Date:	Received by: ED	Signed:	Date: 01/11

1308

AECOM

Chain of Custody

COC Page 2 of 2

AECOM Australia Pty Ltd

[redacted]

Email reports to: [redacted]

Laboratory Details

Lab. Name: ALS

Lab. Address: Brisbane

Contact Name: [redacted]

Lab. Ref:

Tel:

Fax:

Preliminary Report by:

Final Report by:

Lab Quote No: SY/139/19

Sampled By: [redacted] **Project Name:** QLD_0224_PFASOMP_23 **AECOM Project #:** 60612563 4.1 **Purchase Order No:** 60612563 4.1

Specifications: Please report in ESdat format	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: ______________________________)	

6. Report Format: ESdat 7. Project Manager [redacted]

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: sed	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	EP231X (PFAS Std 28)	EP231X-ST (PFAS 28 - Super Trace)	HOLD	Notes
	~~0224_SW018_23~~	~~/ 2023~~		~~x~~				~~x~~		~~2x125ml plastic~~		~~x~~		
	~~0224_SW019_23~~	~~/ 2023~~		~~x~~				~~x~~		~~2x125ml plastic~~		~~x~~		
7	0224_SW025_231031	31.10 / 2023		x				x		2x125ml plastic		x		
8	0224_SW027_231101	01.11 / 2023		x				x		2x125ml plastic		x		
9	0224_QC102_231030	30.10 / 2023		x				x		2x125ml plastic		x		
10	0224_QC103_231101	01.11 / 2023		x				x		2x125ml plastic		x		

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME

Temp. received: °C

Report & invoice: [redacted]

Lab Report N | Esky ID

Relinquished by: [redacted]	Signed: [redacted]	Date: 01.11.23	
Received by:	Signed:	Date:	
Relinquished by:	Signed:	Date:	
Received by:	Signed: ED	Date: 01/11	

1308.

WC

AECOM

Chain of Custody- Separate Batch

AECOM Australia Pty Ltd

[redacted]

Email reports to: [redacted]

Laboratory Details
Lab. Name: ALS
Lab. Address: Brisbane
Contact Name: [redacted]
Lab. Ref:

Tel:
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY/139/19

Sampled By: [redacted]
Mobile Numb[redacted]

Project Name: QLD_0224_PFASOMP_23
AECOM Project #: 60612563 4.1
Purchase Order No: 60612563 4.1

Specifications: Please report in ESdat format.

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: ______________________)	

6. Report Format: ESdat
7. Project Manager [redacted]

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: soil	Matrix: water	Matrix: sed	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: other	Container (No. & type)	EP231X (PFAS Std 28)	EP231X-ST (PFAS 28 - Super Trace)								HOLD	Notes
1	0224_SW022_23 11101	01.11 / 2023		x				x		2x 125ml		x									
2	0224_SW023_23 11101	01.11 / 2023		x				x		2x 125ml		x									

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME

Temp. received: °C

Report & invoice [redacted]

Lab Report N | Esky ID

Relinquished by: [redacted]	Signed [redacted]	Date: 01.11.23	Relinquished by:	Signed:	Date:
Received by: [redacted]	Signed [redacted]	Date:	Received by: ED	Signed:	Date: 1111

1308

Environmental Division
Brisbane
Work Order Reference
EB2334197

Telephone + 61-7-3243 7222

AECOM

Chain of Custody - Separate Batch

COC Page 1 of 1

AECOM Australia Pty Ltd [redacted] Email reports to: [redacted]	**Laboratory Details** Lab. Name: ALS Lab. Address: Brisbane Contact Name: [redacted] Lab. Ref: Tel: Fax: Preliminary Report by: Final Report by: Lab Quote No: SY/139/19

Sampled By: [redacted] **Project Name:** QLD_0224_PFASOMP_23 **AECOM Project #:** 60612563 4.1 **Purchase Order No:** 60612563 4.1

Mobile Numb[redacted]

Specifications: Please report in ESdat format	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: ______________________)	
6. Report Format: ESdat 7. Project Manager [redacted]	

Analysis Request -

Lab. ID	Sample ID	Sampling Date	Matrix: soil	water	sed	Preservation: filt'ed	acid	ice	other	Container (No. & type)	EP231X (PFAS Std 28)	EP231X-ST (PFAS 28 - Super Trace)								HOLD	Notes
1	0224_SW021_23 1101	01.11 / 2023		x				x		2x 125ml		x									

Comments:	Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME	Temp. received: °C	Report & invoice: [redacted]	Lab Report N / Esky ID
Relinquished by: [redacted]	Signed: [redacted]	Date: 01.11.23	Relinquished by:	Signed: Date:
Received by:	Signed:	Date:	Received by: ED	Signed: Date: 01/11

1308

Environmental Division
Brisbane
Work Order Reference
EB2334198

Telephone: + 61 7 3243 7222

Appendix E

Laboratory Analytical Certificates and QA/QC Reports

Appendix E Laboratory Analytical Certificates and QA/QC Reports

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EB2334187**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Page	: 1 of 3
Order number	: 60612563 4.1	Quote number	: ES2020AECOMAU0024 (SY/139/19 V3_QLD)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 01-Nov-2023 13:08	Issue Date	: 02-Nov-2023
Client Requested Due Date	: 09-Nov-2023	Scheduled Reporting Date	: **09-Nov-2023**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 13.0°C, 4.7°C - Ice present
Receipt Detail	: SMALL ESKY, MEDIUM ESKY	No. of samples received / analysed	: 23 / 23

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample/s "0224_QC200_231031", "0224_QC201_231031", "0224_QC202_231030", and "0224_QC203_231101" has been forwarded to NMI, as requested. Please note that this will incur a freight forwarding fee.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (28 analytes)
EB2334187-001	31-Oct-2023 00:00	0224_MW101_231031	✓
EB2334187-002	31-Oct-2023 00:00	0224_MW102_231031	✓
EB2334187-003	31-Oct-2023 00:00	0224_MW106_231031	✓
EB2334187-004	30-Oct-2023 00:00	0224_MW109_231030	✓
EB2334187-005	30-Oct-2023 00:00	0224_MW111_231030	✓
EB2334187-006	31-Oct-2023 00:00	0224_MW112_231031	✓
EB2334187-007	31-Oct-2023 00:00	0224_MW113_231031	✓
EB2334187-008	31-Oct-2023 00:00	0224_MW114_231031	✓
EB2334187-009	30-Oct-2023 00:00	0224_MW115_231030	✓
EB2334187-010	31-Oct-2023 00:00	0224_MW116_231031	✓
EB2334187-011	31-Oct-2023 00:00	0224_MW117_231031	✓
EB2334187-012	31-Oct-2023 00:00	0224_MW118_231031	✓
EB2334187-013	31-Oct-2023 00:00	0224_MW119_231031	✓
EB2334187-014	31-Oct-2023 00:00	0224_MW120_231031	✓
EB2334187-015	31-Oct-2023 00:00	0224_MW121_231031	✓
EB2334187-016	31-Oct-2023 00:00	0224_MW122_231031	✓
EB2334187-017	31-Oct-2023 00:00	0224_POT001_231031	✓
EB2334187-018	31-Oct-2023 00:00	0224_POT005_231031	✓
EB2334187-019	31-Oct-2023 00:00	0224_OTH001_231031	✓
EB2334187-020	31-Oct-2023 00:00	0224_QC100_231031	✓
EB2334187-021	31-Oct-2023 00:00	0224_QC101_231031	✓
EB2334187-022	30-Oct-2023 00:00	0224_QC300_231030	✓
EB2334187-023	31-Oct-2023 00:00	0224_QC301_231031	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

Work Order	: **EB2334187**	Page	: 1 of 13
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023 13:08
Order number	: 60612563 4.1	Date Analysis Commenced	: 03-Nov-2023
C-O-C number	: ----	Issue Date	: 09-Nov-2023 15:26
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3_QLD		
No. of samples received	: 23		
No. of samples analysed	: 23		

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*
[redacted]	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X PFAS: The LOR of PFBS has been raised in sample '0224_QC101_231031' (EB2334187-021) due to matrix interference.
- EP231X PFAS: The LOR of PFBS has been raised in sample '0224_MW122_231031' (EB2334187-016) due to matrix interference.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			*Sample ID*	0224_MW101_231031	0224_MW102_231031	0224_MW106_231031	0224_MW109_231030	0224_MW111_231030
			Sampling date / time	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	30-Oct-2023 00:00	30-Oct-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	EB2334187-001	EB2334187-002	EB2334187-003	EB2334187-004	EB2334187-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW101_231031	0224_MW102_231031	0224_MW106_231031	0224_MW109_231030	0224_MW111_231030
			Sampling date / time	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	30-Oct-2023 00:00	30-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	EB2334187-001	EB2334187-002	EB2334187-003	EB2334187-004	EB2334187-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**109**	**106**	**114**	**107**	**104**
13C8-PFOA	----	0.02	%	**94.5**	**92.9**	**95.4**	**95.3**	**94.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW112_231031	0224_MW113_231031	0224_MW114_231031	0224_MW115_231030	0224_MW116_231031
			Sampling date / time	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	30-Oct-2023 00:00	31-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	EB2334187-006	EB2334187-007	EB2334187-008	EB2334187-009	EB2334187-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW112_231031	0224_MW113_231031	0224_MW114_231031	0224_MW115_231030	0224_MW116_231031
			Sampling date / time	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	30-Oct-2023 00:00	31-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	EB2334187-006	EB2334187-007	EB2334187-008	EB2334187-009	EB2334187-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**109**	**102**	**110**	**103**	**106**
13C8-PFOA	----	0.02	%	**93.0**	**96.3**	**92.8**	**95.7**	**93.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW117_231031	0224_MW118_231031	0224_MW119_231031	0224_MW120_231031	0224_MW121_231031
			Sampling date / time	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	EB2334187-011	EB2334187-012	EB2334187-013	EB2334187-014	EB2334187-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	**0.02**	<0.01	<0.01	**0.06**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	**0.02**	<0.01	<0.01	**0.04**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW117_231031	0224_MW118_231031	0224_MW119_231031	0224_MW120_231031	0224_MW121_231031
			Sampling date / time	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	EB2334187-011	EB2334187-012	EB2334187-013	EB2334187-014	EB2334187-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	**0.04**	<0.01	<0.01	**0.10**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	**0.04**	<0.01	<0.01	**0.10**
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	**0.04**	<0.01	<0.01	**0.10**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**107**	**102**	**107**	**104**	**106**
13C8-PFOA	----	0.02	%	**95.0**	**94.3**	**95.7**	**96.5**	**97.0**

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

Compound	CAS Number	LOR	Unit	0224_MW122_231031	0224_POT001_231031	0224_POT005_231031	0224_OTH001_231031	0224_QC100_231031
			Sampling date / time	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00
				EB2334187-016	EB2334187-017	EB2334187-018	EB2334187-019	EB2334187-020
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.04	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.12**	**0.03**	<0.01	<0.01	**0.06**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.03**	<0.01	<0.01	<0.01	**0.03**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_MW122_231031	0224_POT001_231031	0224_POT005_231031	0224_OTH001_231031	0224_QC100_231031
			Sampling date / time	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00	31-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	EB2334187-016	EB2334187-017	EB2334187-018	EB2334187-019	EB2334187-020
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.15**	**0.03**	<0.01	<0.01	**0.09**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.15**	**0.03**	<0.01	<0.01	**0.09**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.15**	**0.03**	<0.01	<0.01	**0.09**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**106**	**110**	**108**	**103**	**100**
13C8-PFOA	----	0.02	%	**95.1**	**94.4**	**95.1**	**96.8**	**93.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_QC101_231031	0224_QC300_231030	0224_QC301_231031	----	----
			Sampling date / time	31-Oct-2023 00:00	30-Oct-2023 00:00	31-Oct-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2334187-021	EB2334187-022	EB2334187-023	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.03	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.13**	<0.01	<0.01	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.02**	<0.01	<0.01	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_QC101_231031	0224_QC300_231030	0224_QC301_231031	----	----
			Sampling date / time	31-Oct-2023 00:00	30-Oct-2023 00:00	31-Oct-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	EB2334187-021	EB2334187-022	EB2334187-023	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.15**	<0.01	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.15**	<0.01	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.15**	<0.01	<0.01	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**106**	**105**	**108**	----	----
13C8-PFOA	----	0.02	%	**93.8**	**95.2**	**92.8**	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	*CAS Number*	*Recovery Limits (%)* Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2334187**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023
Order number	: 60612563 4.1	Date Analysis Commenced	: 03-Nov-2023
C-O-C number	: ----	Issue Date	: 09-Nov-2023
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3_QLD		
No. of samples received	: 23		
No. of samples analysed	: 23		

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*
[redacted]	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5405114)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	100	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	112	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	96.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	114	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	103	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	103	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5405115)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	121	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	120	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	105	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	113	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	104	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	106	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5405114)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	83.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	95.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	106	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	112	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	88.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	91.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5405115)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	73.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	112	72.0	130

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
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5405115) - continued								
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	110	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	103	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	112	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	99.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	99.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	107	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5405114)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	106	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	117	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	103	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	103	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	109	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5405115)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	131	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	129	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	117	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	124	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	119	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	116	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	115	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5405114)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	123	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	109	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	119	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	111	64.2	133

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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5405115)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	135	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	114	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	134	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	129	64.2	133
EP231P: PFAS Sums (QCLot: 5405114)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231P: PFAS Sums (QCLot: 5405115)								
EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFHxS and PFOS	355-46-4/17 63-23-1	0.01	µg/L	<0.01	----	----	----	----
EP231X: Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----

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.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2334187**	Page	: 1 of 6
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023
Site	: ----	Issue Date	: 09-Nov-2023
Sampler	: [redacted]	No. of samples received	: 23
Order number	: 60612563 4.1	No. of samples analysed	: 23

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, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
	0				
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	38	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	38	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	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0224_MW109_231030, 0224_MW111_231030, 0224_MW115_231030	**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**06-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_QC300_231030	**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**07-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_MW101_231031, 0224_MW102_231031, 0224_MW106_231031, 0224_MW112_231031, 0224_MW113_231031, 0224_MW114_231031, 0224_MW116_231031, 0224_MW117_231031, 0224_MW118_231031, 0224_MW119_231031, 0224_MW120_231031, 0224_MW121_231031, 0224_MW122_231031, 0224_POT001_231031, 0224_POT005_231031, 0224_OTH001_231031	**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**06-Nov-2023**	28-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_QC100_231031, 0224_QC101_231031, 0224_QC301_231031	**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**07-Nov-2023**	28-Apr-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) 0224_MW109_231030, 0224_MW115_231030	0224_MW111_231030,	**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**06-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_QC300_231030		**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**07-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_MW101_231031, 0224_MW106_231031, 0224_MW113_231031, 0224_MW116_231031, 0224_MW118_231031, 0224_MW120_231031, 0224_MW122_231031, 0224_POT005_231031,	0224_MW102_231031, 0224_MW112_231031, 0224_MW114_231031, 0224_MW117_231031, 0224_MW119_231031, 0224_MW121_231031, 0224_POT001_231031, 0224_OTH001_231031	**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**06-Nov-2023**	28-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_QC100_231031, 0224_QC301_231031	0224_QC101_231031,	**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**07-Nov-2023**	28-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) 0224_MW109_231030, 0224_MW115_231030	0224_MW111_231030,	**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**06-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_QC300_231030		**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**07-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_MW101_231031, 0224_MW106_231031, 0224_MW113_231031, 0224_MW116_231031, 0224_MW118_231031, 0224_MW120_231031, 0224_MW122_231031, 0224_POT005_231031,	0224_MW102_231031, 0224_MW112_231031, 0224_MW114_231031, 0224_MW117_231031, 0224_MW119_231031, 0224_MW121_231031, 0224_POT001_231031, 0224_OTH001_231031	**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**06-Nov-2023**	28-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_QC100_231031, 0224_QC301_231031	0224_QC101_231031,	**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**07-Nov-2023**	28-Apr-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0224_MW109_231030, 0224_MW115_231030	0224_MW111_231030,	**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**06-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_QC300_231030		**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**07-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_MW101_231031, 0224_MW106_231031, 0224_MW113_231031, 0224_MW116_231031, 0224_MW118_231031, 0224_MW120_231031, 0224_MW122_231031, 0224_POT005_231031,	0224_MW102_231031, 0224_MW112_231031, 0224_MW114_231031, 0224_MW117_231031, 0224_MW119_231031, 0224_MW121_231031, 0224_POT001_231031, 0224_OTH001_231031	**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**06-Nov-2023**	28-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_QC100_231031, 0224_QC301_231031	0224_QC101_231031,	**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**07-Nov-2023**	28-Apr-2024	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) 0224_MW109_231030, 0224_MW115_231030	0224_MW111_231030,	**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**06-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_QC300_231030		**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**07-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_MW101_231031, 0224_MW106_231031, 0224_MW113_231031, 0224_MW116_231031, 0224_MW118_231031, 0224_MW120_231031, 0224_MW122_231031, 0224_POT005_231031,	0224_MW102_231031, 0224_MW112_231031, 0224_MW114_231031, 0224_MW117_231031, 0224_MW119_231031, 0224_MW121_231031, 0224_POT001_231031, 0224_OTH001_231031	**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**06-Nov-2023**	28-Apr-2024	✓
HDPE (no PTFE) (EP231X) 0224_QC100_231031, 0224_QC301_231031	0224_QC101_231031,	**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**07-Nov-2023**	28-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✘ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	38	**0.00**	**10.00**	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	38	**0.00**	**5.00**	✘	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EB2334191**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Page	: 1 of 3
Order number	: 60612563 4.1	Quote number	: ES2020AECOMAU0024 (SY/139/19 V3_QLD)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 01-Nov-2023 13:08	Issue Date	: 02-Nov-2023
Client Requested Due Date	: 09-Nov-2023	Scheduled Reporting Date	: **09-Nov-2023**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 13.0°C, 4.7°C - Ice present
Receipt Detail	: SMALL ESKY, MEDIUM ESKY	No. of samples received / analysed	: 10 / 10

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB2334191-001	30-Oct-2023 00:00	0224_SW006_231030	✓
EB2334191-002	30-Oct-2023 00:00	0224_SW007_231030	✓
EB2334191-003	30-Oct-2023 00:00	0224_SW009_231030	✓
EB2334191-004	30-Oct-2023 00:00	0224_SW013_231030	✓
EB2334191-005	30-Oct-2023 00:00	0224_SW014_231030	✓
EB2334191-006	30-Oct-2023 00:00	0224_SW016_231030	✓
EB2334191-007	31-Oct-2023 00:00	0224_SW025_231031	✓
EB2334191-008	01-Nov-2023 00:00	0224_SW027_231101	✓
EB2334191-009	30-Oct-2023 00:00	0224_QC102_231030	✓
EB2334191-010	01-Nov-2023 00:00	0224_QC103_231101	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

CERTIFICATE OF ANALYSIS

Work Order	: **EB2334191**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023 13:08
Order number	: 60612563 4.1	Date Analysis Commenced	: 06-Nov-2023
C-O-C number	: ----	Issue Date	: 07-Nov-2023 17:17
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3_QLD		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
[redacted]	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X-ST-PFAS: Particular samples showed matrix interference indicated by internal standard recovery lower than 50%. This is deemed acceptable as all associated analytes are less than the limit of reporting.
- EP231X-ST- PFAS: Particular samples required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly. The LOR for particular analytes has been raised further due to matrix interference.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW006_231030	0224_SW007_231030	0224_SW009_231030	0224_SW013_231030	0224_SW014_231030
			Sampling date / time	30-Oct-2023 00:00	30-Oct-2023 00:00	30-Oct-2023 00:00	30-Oct-2023 00:00	30-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	EB2334191-001	EB2334191-002	EB2334191-003	EB2334191-004	EB2334191-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0015	<0.0005	<0.0005	<0.0080	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	**0.0022**	<0.0005	<0.0015	<0.0005	**0.0018**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0009	<0.0003	<0.0009	<0.0003	<0.0018
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0020
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.008	<0.008	<0.008	<0.008	<0.008
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0016	<0.0005	<0.0005	<0.0005
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0010	<0.0005
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0016	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0040	<0.0040	<0.0041	<0.0040	<0.0041
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.004	<0.001	<0.004	<0.004	<0.004
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.004	<0.004	<0.004	<0.004	<0.004

Analytical Results

Sub-Matrix: WATER
(Matrix: WATER)

			Sample ID	0224_SW006_231030	0224_SW007_231030	0224_SW009_231030	0224_SW013_231030	0224_SW014_231030
			Sampling date / time	30-Oct-2023 00:00	30-Oct-2023 00:00	30-Oct-2023 00:00	30-Oct-2023 00:00	30-Oct-2023 00:00
Compound	CAS Number	LOR	Unit	EB2334191-001	EB2334191-002	EB2334191-003	EB2334191-004	EB2334191-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.004	<0.001	<0.001	<0.001	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	<0.0016	<0.0005	<0.0016
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.002
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.002
EP231P: PFAS Sums								
Sum of PFAS	----	0.0003	µg/L	**0.0022**	<0.0003	<0.0005	<0.0003	**0.0018**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0022**	<0.0003	<0.0009	<0.0003	**0.0018**
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0022**	<0.0003	<0.0005	<0.0003	**0.0018**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**111**	**86.8**	**119**	**128**	**120**
13C8-PFOA	----	0.0005	%	**108**	**106**	**105**	**99.6**	**106**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW016_231030	0224_SW025_231031	0224_SW027_231101	0224_QC102_231030	0224_QC103_231101
			Sampling date / time	30-Oct-2023 00:00	31-Oct-2023 00:00	01-Nov-2023 00:00	30-Oct-2023 00:00	01-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	EB2334191-006	EB2334191-007	EB2334191-008	EB2334191-009	EB2334191-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	<0.0005	<0.0016	<0.0005	<0.0005
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0020	<0.0005
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0015	<0.0020	<0.0030	<0.0020	<0.0035
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	**0.0011**	**0.0031**	<0.0237	<0.0016	<0.0303
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.008	<0.008	<0.020	<0.008	<0.014
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	<0.0016	<0.0115	<0.0016	<0.0090
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0016	<0.0016	<0.0005	<0.0016
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0010	<0.0005	<0.0005	<0.0005	<0.0016
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0016
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	<0.0005	<0.0016	<0.0016
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0016	<0.0035	<0.0016	<0.0130
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0041	<0.0040	<0.0041	<0.0041	<0.0040
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0016	<0.0005	<0.0005	<0.0016
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.004	<0.004	<0.004	<0.004	<0.004
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.004	<0.004	<0.004	<0.004	<0.004

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW016_231030	0224_SW025_231031	0224_SW027_231101	0224_QC102_231030	0224_QC103_231101
			Sampling date / time	30-Oct-2023 00:00	31-Oct-2023 00:00	01-Nov-2023 00:00	30-Oct-2023 00:00	01-Nov-2023 00:00
Compound	CAS Number	LOR	Unit	EB2334191-006	EB2334191-007	EB2334191-008	EB2334191-009	EB2334191-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.004	<0.004	<0.004	<0.004
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.004	<0.004	<0.004	<0.001
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0016	<0.0016	<0.0016	<0.0016
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0016	<0.0016	<0.0016	<0.0016
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
EP231P: PFAS Sums								
Sum of PFAS	----	0.0003	µg/L	**0.0011**	**0.0031**	<0.0005	<0.0005	<0.0005
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	**0.0011**	**0.0031**	<0.0030	<0.0016	<0.0035
Sum of PFAS (WA DER List)	----	0.0003	µg/L	**0.0011**	**0.0031**	<0.0005	<0.0005	<0.0005
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**91.8**	**90.3**	**84.1**	**110**	**125**
13C8-PFOA	----	0.0005	%	**105**	**102**	**109**	**105**	**99.0**

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2334191**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023
Order number	: 60612563 4.1	Date Analysis Commenced	: 06-Nov-2023
C-O-C number	: ----	Issue Date	: 07-Nov-2023
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3_QLD		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
[redacted]	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

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: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5401625)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.00355 µg/L	110	72.0	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.00376 µg/L	92.3	71.0	127
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.00379 µg/L	97.9	68.0	131
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.00381 µg/L	98.7	69.0	134
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.00371 µg/L	119	65.0	140
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.00385 µg/L	110	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5401625)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.02 µg/L	116	73.0	129
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	116	72.0	129
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	72.0	129
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	100	72.0	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	132	71.0	133
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	109	69.0	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	102	71.0	129
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	101	69.0	133
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	112	72.0	134
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	132	65.0	144
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	106	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5401625)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	108	67.0	137
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	125	68.0	141
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	114	57.9	141
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	130	63.3	134
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	102	60.0	136
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	97.6	65.0	136
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	74.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5401625)								

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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5401625) - continued								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.00374 µg/L	90.7	63.0	143
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.0038 µg/L	84.6	64.0	140
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.00384 µg/L	100	67.0	138
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.00386 µg/L	115	53.1	133
EP231P: PFAS Sums (QCLot: 5401625)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFAS (WA DER List)	----	0.0003	µg/L	<0.0003	----	----	----	----

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.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2334191**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Telephone	[redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023
Site	: ----	Issue Date	: 07-Nov-2023
Sampler	[redacted]	No. of samples received	: 10
Order number	: 60612563 4.1	No. of samples analysed	: 10

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.

- **<u>NO</u> Method Blank value outliers occur.**
- **<u>NO</u> Duplicate outliers occur.**
- **<u>NO</u> Laboratory Control outliers occur.**
- **<u>NO</u> Matrix Spike outliers occur.**
- **For all regular sample matrices, <u>NO</u> surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **<u>NO</u> Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	13	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	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-ST) 0224_SW027_231101,	0224_QC103_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW006_231030, 0224_SW009_231030, 0224_SW014_231030, 0224_QC102_231030	0224_SW007_231030, 0224_SW013_231030, 0224_SW016_231030,	**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**06-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW025_231031		**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**06-Nov-2023**	28-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-ST) 0224_SW027_231101,	0224_QC103_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW006_231030, 0224_SW009_231030, 0224_SW014_231030, 0224_QC102_231030	0224_SW007_231030, 0224_SW013_231030, 0224_SW016_231030,	**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**06-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW025_231031		**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**06-Nov-2023**	28-Apr-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-ST) 0224_SW027_231101,	0224_QC103_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW006_231030, 0224_SW009_231030, 0224_SW014_231030, 0224_QC102_231030	0224_SW007_231030, 0224_SW013_231030, 0224_SW016_231030,	**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**06-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW025_231031		**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**06-Nov-2023**	28-Apr-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-ST) 0224_SW027_231101,	0224_QC103_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW006_231030, 0224_SW009_231030, 0224_SW014_231030, 0224_QC102_231030	0224_SW007_231030, 0224_SW013_231030, 0224_SW016_231030,	**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**06-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW025_231031		**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**06-Nov-2023**	28-Apr-2024	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-ST) 0224_SW027_231101,	0224_QC103_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW006_231030, 0224_SW009_231030, 0224_SW014_231030, 0224_QC102_231030	0224_SW007_231030, 0224_SW013_231030, 0224_SW016_231030,	**30-Oct-2023**	**06-Nov-2023**	27-Apr-2024	✓	**06-Nov-2023**	27-Apr-2024	✓
HDPE (no PTFE) (EP231X-ST) 0224_SW025_231031		**31-Oct-2023**	**06-Nov-2023**	28-Apr-2024	✓	**06-Nov-2023**	28-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✘ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	13	**0.00**	**10.00**	✘	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	13	**0.00**	**5.00**	✘	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2334197**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Page	: 1 of 2
Order number	: 60612563 4.1	Quote number	: ES2020AECOMAU0024 (SY/139/19 V3_QLD)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 01-Nov-2023 13:08	Issue Date	: 02-Nov-2023
Client Requested Due Date	: 09-Nov-2023	Scheduled Reporting Date	: **09-Nov-2023**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 13.0°C - Ice present
Receipt Detail	: SMALL ESKY	No. of samples received / analysed	: 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB2334197-001	01-Nov-2023 00:00	0224_SW022_231101	✓
EB2334197-002	01-Nov-2023 00:00	0224_SW023_231101	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **EB2334197**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023 13:08
Order number	: 60612563 4.1	Date Analysis Commenced	: 06-Nov-2023
C-O-C number	: ----	Issue Date	: 07-Nov-2023 17:17
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3_QLD		
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
- 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*
[redacted]	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X-ST-PFAS: Sample '0224_SW022_231101' (EB2334197-001) and '0224_SW023_231101' (EB2334197-002) showed matrix interference indicated by internal standard recovery lower than 50%. This is deemed acceptable as all associated analytes are less than the limit of reporting.
- EP231X-ST- PFAS: Sample '0224_SW022_231101' (EB2334197-001) and '0224_SW023_231101' (EB2334197-002) required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly. The LOR for particular analytes has been raised further due to matrix interference.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW022_231101	0224_SW023_231101	----	----	----
			Sampling date / time	01-Nov-2023 00:00	01-Nov-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2334197-001	EB2334197-002	--------	--------	--------
				Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0016	<0.0005	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0040	**0.0024**	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0039	<0.0033	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.008	<0.008	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0016	<0.0016	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0016	<0.0016	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0016	<0.0005	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0016	<0.0025	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0016	<0.0016	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0041	<0.0039	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0016	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.004	<0.004	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.004	<0.004	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW022_231101	0224_SW023_231101	----	----	----
			Sampling date / time	01-Nov-2023 00:00	01-Nov-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	EB2334197-001	EB2334197-002	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.004	<0.001	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.004	<0.004	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0016	<0.0016	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0016	<0.0016	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0003	µg/L	<0.0016	**0.0024**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	<0.0016	**0.0024**	----	----	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L	<0.0016	**0.0024**	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**85.8**	**127**	----	----	----
13C8-PFOA	----	0.0005	%	**96.4**	**110**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	Recovery Limits (%) High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2334197**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	[redacted]	Contact	[redacted]
Address	[redacted]	Address	[redacted]
Telephone	: ----	Telephone	[redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023
Order number	: 60612563 4.1	Date Analysis Commenced	: 06-Nov-2023
C-O-C number	: ----	Issue Date	: 07-Nov-2023
Sampler	[redacted]		
Site	: ----		
Quote number	: SY/139/19 V3_QLD		
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*
[redacted]	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

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: 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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5401625)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.00355 µg/L	110	72.0	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.00376 µg/L	92.3	71.0	127
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.00379 µg/L	97.9	68.0	131
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.00381 µg/L	98.7	69.0	134
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.00371 µg/L	119	65.0	140
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.00385 µg/L	110	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5401625)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.02 µg/L	116	73.0	129
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	116	72.0	129
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	72.0	129
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	100	72.0	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	132	71.0	133
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	109	69.0	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	102	71.0	129
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	101	69.0	133
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	112	72.0	134
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	132	65.0	144
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	106	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5401625)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	108	67.0	137
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	125	68.0	141
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	114	57.9	141
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	130	63.3	134
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	102	60.0	136
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	97.6	65.0	136
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	74.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5401625)								

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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5401625) - continued								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.00374 µg/L	90.7	63.0	143
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.0038 µg/L	84.6	64.0	140
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.00384 µg/L	100	67.0	138
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.00386 µg/L	115	53.1	133
EP231P: PFAS Sums (QCLot: 5401625)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFAS (WA DER List)	----	0.0003	µg/L	<0.0003	----	----	----	----

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.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2334197**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023
Site	: ----	Issue Date	: 07-Nov-2023
Sampler	: [redacted]	No. of samples received	: 2
Order number	: 60612563 4.1	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, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
	0				
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	13	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		*Sample Date*	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)			*Date extracted*	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-ST) 0224_SW022_231101,	0224_SW023_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-ST) 0224_SW022_231101,	0224_SW023_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-ST) 0224_SW022_231101,	0224_SW023_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-ST) 0224_SW022_231101,	0224_SW023_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-ST) 0224_SW022_231101,	0224_SW023_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	13	**0.00**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	13	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **EB2334198**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Page	: 1 of 2
Order number	: 60612563 4.1	Quote number	: ES2020AECOMAU0024 (SY/139/19 V3_QLD)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 01-Nov-2023 13:08	Issue Date	: 02-Nov-2023
Client Requested Due Date	: 09-Nov-2023	Scheduled Reporting Date	: **09-Nov-2023**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 13.0°C - Ice present
Receipt Detail	: SMALL ESKY	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X-ST PFAS - Super Trace Waters Long Suite (28
EB2334198-001	01-Nov-2023 00:00	0224_SW021_231101	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

ACCOUNTS PAYABLE
- A4 - AU Tax Invoice (INV)

[redacted]
- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

DERP ESDAT REPORTS
- EDI Format - ESDAT (ESDAT)

[redacted]
- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

[redacted]
- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)

CERTIFICATE OF ANALYSIS

Work Order	: **EB2334198**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023 13:08
Order number	: 60612563 4.1	Date Analysis Commenced	: 06-Nov-2023
C-O-C number	: ----	Issue Date	: 07-Nov-2023 17:18
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3_QLD		
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*
[redacted]	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD

General Comments

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

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X-ST-PFAS: Sample '0224_SW021_231101' (EB2334198-001) showed matrix interference indicated by internal standard recovery lower than 50%. This is deemed acceptable as all associated analytes are less than the limit of reporting.
- EP231X-ST- PFAS: Sample '0224_SW021_231101' (EB2334198-001) required dilution prior to analysis due to matrix interferences. LOR values have been adjusted accordingly. The LOR for particular analytes has been raised further due to matrix interference.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW021_231101	----	----	----	----
			Sampling date / time	01-Nov-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2334198-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0016	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0020	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0027	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.008	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0045	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0016	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0016	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0016	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	**0.0008**	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0035	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0016	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0040	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0016	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.004	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.004	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0224_SW021_231101	----	----	----	----
			Sampling date / time	01-Nov-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2334198-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.004	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.004	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0016	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0016	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0003	µg/L	<0.0016	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	<0.0016	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L	<0.0016	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0005	%	**97.0**	----	----	----	----
13C8-PFOA	----	0.0005	%	**109**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	*CAS Number*	*Recovery Limits (%)* Low	*Recovery Limits (%)* High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2334198**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023
Order number	: 60612563 4.1	Date Analysis Commenced	: 06-Nov-2023
C-O-C number	: ----	Issue Date	: 07-Nov-2023
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3_QLD		
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*
[redacted]	Assistant Laboratory Manager	Brisbane Organics, Stafford, QLD

General Comments

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

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

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
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5401625)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.00355 µg/L	110	72.0	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.00376 µg/L	92.3	71.0	127
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.00379 µg/L	97.9	68.0	131
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.00381 µg/L	98.7	69.0	134
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.00371 µg/L	119	65.0	140
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.00385 µg/L	110	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5401625)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.02 µg/L	116	73.0	129
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	116	72.0	129
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	72.0	129
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	100	72.0	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	132	71.0	133
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	109	69.0	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	102	71.0	129
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	101	69.0	133
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	112	72.0	134
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	132	65.0	144
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	106	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5401625)								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	108	67.0	137
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	125	68.0	141
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	114	57.9	141
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	130	63.3	134
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	102	60.0	136
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	97.6	65.0	136
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	74.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5401625)								

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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5401625) - continued								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.00374 µg/L	90.7	63.0	143
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.0038 µg/L	84.6	64.0	140
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.00384 µg/L	100	67.0	138
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.00386 µg/L	115	53.1	133
EP231P: PFAS Sums (QCLot: 5401625)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L	<0.0003	----	----	----	----
EP231X-ST: Sum of PFAS (WA DER List)	----	0.0003	µg/L	<0.0003	----	----	----	----

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.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2334198**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Telephone	: [redacted]
Project	: 60612563 4.1 QLD_0224_PFASOMP_23	Date Samples Received	: 01-Nov-2023
Site	: ----	Issue Date	: 07-Nov-2023
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60612563 4.1	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.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
	0				
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	13	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	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST) 0224_SW021_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-ST) 0224_SW021_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-ST) 0224_SW021_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST) 0224_SW021_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-ST) 0224_SW021_231101	**01-Nov-2023**	**06-Nov-2023**	29-Apr-2024	✓	**06-Nov-2023**	29-Apr-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	13	**0.00**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	13	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [redacted]

Customer: AECOM AUSTRALIA PTY LTD

Address: [redacted]

Email: [redacted]

Telephone: 02 8008 1700

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: Client Services

Address: [redacted]

Email: [redacted]

Telephone: [redacted]

SAMPLE DETAILS

NMI Job Name: **AECO06/231103**

Total No. of Samples: **4**

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N23/023082	10-NOV-2023	0224_QC200_231031	WATER 31.10.2023
N23/023083	10-NOV-2023	0224_QC201_231031	WATER 31.10.2023

N23/023084	10-NOV-2023	0224_QC202_231030	WATER 30.10.2023
N23/023085	10-NOV-2023	0224_QC203_231101	WATER 01.11.2023

SAMPLE RECEIVED CONDITION

Date samples received:	3-NOV-2023
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	60612563/4_1
Temperature of samples:	Chilled
Comments:	
Mode of Delivery:	

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work.

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

Alterations to Client requirements requested after commencement of testing may incur charges.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptence of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation.
NMI Terms and Conditions are available on the web at
https://www.industry.gov.au/client-services/testing-and-analysis-services/chemical-and-biological-analysis-services-terms-and-conditions

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1410641

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO06/231103
	[redacted]	**Quote No.**	: QT-02232
	[redacted]	**Order No.**	: 60612563/4_1
		Date Received	: 03-NOV-2023
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: QLD_0224_PFASOMP_23		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N23/023082	0224_QC200_231031	WATER 31.10.2023
N23/023083	0224_QC201_231031	WATER 31.10.2023
N23/023084	0224_QC202_231030	WATER 30.10.2023
N23/023085	0224_QC203_231101	WATER 01.11.2023

Lab Reg No.		**N23/023082**	**N23/023083**	**N23/023084**	**N23/023085**	
Date Sampled		**31-OCT-2023**	**31-OCT-2023**	**30-OCT-2023**	**01-NOV-2023**	
	Units					**Method**
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70
PFPeA (2706-90-3)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFHxA (307-24-4)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFHpA (375-85-9)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFOA (335-67-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFPeS (2706-91-4)	ug/L	<0.01	0.012	<0.01	<0.01	NR70
PFHxS (355-46-4)	ug/L	0.065	0.13	<0.01	<0.01	NR70
PFHpS (375-92-8)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFOS (1763-23-1)	ug/L	0.027	<0.02	<0.02	<0.02	NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
PFBS (375-73-5)	ug/L	<0.01	0.011	<0.01	<0.01	NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70

REPORT OF ANALYSIS

Report No. RN1410641

Lab Reg No.		N23/023082	N23/023083	N23/023084	N23/023085	
Date Sampled		**31-OCT-2023**	**31-OCT-2023**	**30-OCT-2023**	**01-NOV-2023**	
	Units					**Method**
PFAS (per-and poly-fluoroalkyl substances)						
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05	<0.05	<0.05	NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01	<0.01	<0.01	NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02	<0.02	<0.02	NR70
PFBA (Surrogate Recovery)	%	113	113	116	113	NR70
PFPeA (Surrogate Recovery)	%	123	111	158	150	NR70
PFHxA (Surrogate Recovery)	%	115	116	112	93	NR70
PFHpA (Surrogate Recovery)	%	113	112	121	110	NR70
PFOA (Surrogate Recovery)	%	110	110	111	109	NR70
PFNA (Surrogate Recovery)	%	99	104	101	113	NR70
PFDA (Surrogate Recovery)	%	103	104	100	110	NR70
PFUdA (Surrogate Recovery)	%	95	102	89	100	NR70
PFDoA (Surrogate Recovery)	%	88	98	80	72	NR70
PFTeDA (Surrogate Recovery)	%	91	94	74	78	NR70
PFHxDA (Surrogate Recovery)	%	95	99	87	87	NR70
FOUEA (Surrogate Recovery)	%	83	85	80	103	NR70
PFBS (Surrogate Recovery)	%	101	103	109	107	NR70
PFHxS (Surrogate Recovery)	%	116	100	116	126	NR70
PFOS (Surrogate Recovery)	%	119	116	111	118	NR70
PFOSA (Surrogate Recovery)	%	77	91	66	64	NR70
N-MeFOSA (Surrogate Recovery)	%	86	94	69	51	NR70
N-EtFOSA (Surrogate Recovery)	%	79	92	64	48	NR70
N-MeFOSAA (Surrogate Recovery)	%	85	92	71	86	NR70
N-EtFOSAA (Surrogate Recovery)	%	97	95	81	86	NR70
N-MeFOSE (Surrogate Recovery)	%	97	101	78	55	NR70
N-EtFOSE (Surrogate Recovery)	%	74	81	62	48	NR70
4:2 FTS (Surrogate Recovery)	%	96	103	157	318	NR70
6:2 FTS (Surrogate Recovery)	%	97	93	106	216	NR70
8:2 FTS (Surrogate Recovery)	%	90	88	81	163	NR70
8:2 diPAP (Surrogate Recovery)	%	70	76	62	76	NR70
Dates						
Date extracted		9-NOV-2023	9-NOV-2023	9-NOV-2023	9-NOV-2023	
Date analysed		9-NOV-2023	9-NOV-2023	9-NOV-2023	9-NOV-2023	

N23/023082
To
N23/023085

REPORT OF ANALYSIS

PFOS and PFHxS are quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.
High PFAS surrogate recoveries accepted - results corrected for recovery.
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

[redacted]
Accreditation No. 198

10-NOV-2023

WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

This Report supersedes reports: *RN1410639*

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: [redacted]

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/231103 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	121	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	108	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	120	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	118	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	117	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	106	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	110	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	118	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	111	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	106	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	97	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	132	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	123	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	103	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	110	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	89	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	120	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	106	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	109	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	115	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	118	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	94	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	109	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	99	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	105	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	112	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	87	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	99	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Date:

Appendix F

Equipment Calibration Certificates

Appendix F Equipment Calibration Certificates

19/10/23

airmet

[redacted]

Oil / Water Interface Meter

Instrument **Interface Meter (100M)**
Serial No. **348899**

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

Certificate of Calibration

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

Calibrated by: [redacted]

Calibration date: 19-Oct-23

Next calibration due: 18/12/2023

Multi Parameter Water Meter

airmet

[redacted]

Instrument YSI Quatro Pro Plus
Serial No. 18J104329

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

Certificate of Calibration

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00		372012	pH 7.01
2. pH 4.00		pH 4.00		380832	pH 4.01
3. ORP		232.7mV		370499/367457	232.0mV
4. EC		2760uS		377099	2665uS
5. D.O		100%			95.20%
6. Temp		23.1oC		MultiTherm 09000528	23.2oC

Calibrated by: [redacted]

Calibration date: 17/10/2023

Next calibration due: 14-Apr-24

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	**Project Number:**	60612563
Project Location:	WBTA	**Client:**	DOD
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Airmet
Make and Model:	YSI Quatro Pro Plus
Serial Number:	18J104329

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	Redox
Units	pH	pH	µS/cm	ppm	mV
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	31/10/2023 0730				
Parameter	Acidity		Conductivity	Dissolved Oxygen	Redox
Units	pH	pH	µS/cm	ppm	mV
Calibration Standard Concentration:	4	7.01	2760	0	232.3
Bump Test Reading:	4.05	6.96	2788	0.01	234.9
Bump Test Temperature:	23.4	23.5	23.6	23.6	23.5

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☐ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[redacted] 31/10/2023

Fieldwork Staff Signature **Date**

Distribution: Project Central File

AECOM

ANZ

FQM - Water Quality Meter Calibration Record

Q4AN(EV)-410-FM1

Project Name:	PFAS OMP	**Project Number:**	60612563
Project Location:	WBTA	**Client:**	DOD
PM Name:	[redacted]	**Fieldwork Staff Name:**	[redacted]

This calibration record is intended to prompt fieldwork staff to calibrate water quality meter (WQM) daily before the start of fieldworks.

INSTRUMENT DETAILS

Supplier:	Airmet
Make and Model:	YSI Quatro Pro Plus
Serial Number:	18J104329

CALIBRATION

CALIBRATE WITH CALIBRATION SOLUTIONS

Date and Time:					
Parameter	Acidity		Conductivity	Dissolved Oxygen	Redox
Units	pH	pH	µS/cm	ppm	mV
Calibration Standard Concentration:					
Calibration Reading:					
Calibration Temperature:					

ONGOING CHECKS

BUMP TEST WITH CALIBRATION SOLUTION

Date and Time:	01/11/2023 0800				
Parameter	Acidity		Conductivity	Dissolved Oxygen	Redox
Units	pH	pH	µS/cm	ppm	mV
Calibration Standard Concentration:	4	7.01	2760	0	232.3
Bump Test Reading:	4.03	6.98	2790	0.01	236.5
Bump Test Temperature:	22.6	22.7	22.6	22.6	22.8

COMMENTS

Detail any equipment faults, minor maintenance performed, change of batteries or technical support provided.

Approval and Distribution

☐ Each individual instrument has been inspected and calibrated daily and bump tested as required by fieldwork staff.

[redacted] 1/11/2023

Fieldwork Staff Signature **Date**

Distribution: Project Central File

Appendix E

Sampling Analysis and Quality Plan

Prepared for
Department of Defence
ABN: 68 706 814 312

AECOM

PFAS OMP - WBTA Sampling and Analysis Quality Plan

23-Feb-2023
Doc No. 60612563_PL11_9_230223

PFAS OMP - WBTA Sampling and Analysis Quality Plan

Client: Department of Defence

ABN: 68 706 814 312

Prepared by

AECOM Australia Pty Ltd
Turrbal and Jagera Country, Level 8, 540 Wickham Street, PO Box 1307, Fortitude Valley QLD 4006, Australia
T +61 7 3056 4800 www.aecom.com
ABN 20 093 846 92520 093 846 925

23-Feb-2023

Job No.: 60612563

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

Quality Information

Document	PFAS OMP - WBTA Sampling and Analysis Quality Plan
Ref	60612563
Date	23-Feb-2023
Prepared by	[redacted]
Reviewed by	[redacted]

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	06-Oct-2020	Draft	[redacted] Project Manager	
0	16-Oct-2020	Final	[redacted] Project Manager	
1	19-Feb-2021	Final	[redacted] Project Manager	
2	16-Mar-2021	Final	[redacted] Project Manager	
3	23-Mar-2021	Final	[redacted] Project Manager	
4	23-Apr-2021	Final	[redacted] Project Manager	
5	03-Mar-2022	Final	[redacted] Project Manager	
6	17-Mar-2023	Final	[redacted] Project Manager	
7	26-Sep-2022	Final	[redacted] Project Manager	
8	10-Feb-2023	Final	[redacted] Project Manager	
9	23-Feb-2023	Final	[redacted] Project Manager	[redacted]

Table of Contents

1.0 Introduction

1.1 Preamble

AECOM Australia Pty Ltd (AECOM) has prepared this Sampling and Analysis Quality Plan (SAQP) for the per- and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan at the **Wide Bay Training Area (WBTA)** (the 'site') and the **WBTA Management Area** in the **South Queensland Region**.

The SAQP supports the *PFAS Ongoing Monitoring Plan (OMP) – Wide Bay Training Area* which was included in the WBTA PFAS Management Area Plan (PMAP) (Defence, 2020), and here-in referred to as the OMP.

The purpose of the OMP program is to collect data that will enable Defence to maintain an up-to-date understanding of the distribution, concentration, transport (migration pathways and flow) and transformation of PFAS at the site and wider WBTA Management Area. The data will assist in the timely identification of risks and inform Defence's approach to the management of PFAS, including updates and revisions to the PMAP. The WBTA Management Area is presented on **Figure 1**, **Appendix A**.

A review of the OMP was completed in January 2023 (AECOM, 2023), referred to as the 'OMP Review' in accordance with the PFAS OMP Review Guidance Version 1 (Defence, 2021c). The OMP Review recommended the following changes to the OMP to optimise the sampling program by focusing on the sample locations where PFAS have been detected:

- Removal of seven groundwater monitoring wells from the sampling program at locations where PFAS have generally not been detected during the monitoring conducted to date.
- removal six co-located surface water and sediment sampling locations to remove locations where PFAS have generally not been detected during the monitoring conducted to date.

No changes were recommended to the monitoring frequency other than the removal of the requirement for sampling of the waste water plant during times of high site usage.

This SAQP has been updated in accordance with the modified OMP sampling program outlined in the OMP Review (AECOM, 2023). The updated program will be implemented from April 2023.

1.2 SAQP Objectives

The objectives of this SAQP are to:

- define the proposed scope of works in detail
- outline the proposed sampling methodology to be adopted
- outline the proposed data quality assurance and quality control (QA/QC) measures to be adopted
- define the data collection requirements for the project.

1.3 Scope of Works

To meet the project objectives, the following scope of work is proposed as per the OMP (Defence, 2020) and OMP Review (AECOM, 2023):

- Biannual sampling events in approximately October 2020[1], May 2021, November 2021, May 2022, October/November 2022, April 2023 October/November 2023, April/May 2024. As per the OMP Review (AECOM, 2023), from April 2023 the sampling events will include:
    - groundwater sampling of eleven on-site groundwater monitoring wells and five off-site groundwater monitoring wells
    - groundwater sampling of the two on-site extraction bores from the tap outlets

[1] The October 2020, May 2021 and November 2021 sampling events are reported in AECOM (2021a), AECOM (2021b) and AECOM (2022).

  - surface water sampling at nine on-site and five off-site sampling locations
  - Water sampling of the treated wastewater from the outlet tap of the Camp Kerr wastewater treatment plant (WWTP) from the treated water tap outlet
- Sediment samples (co-located with the surface water samples) will be collected once per year in April 2021, May 2022, April 2023 and April 2024.
- Preparation of reports including a sampling event factual report (following each sampling event) and an annual interpretive report following the completion of each 12-month sampling period.

1.4 Guidelines and Legislation

The SAQP has been developed with reference to the following guidelines and legislation:

- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018) at https://www.waterquality.gov.au/anz-guidelines/guideline-values/default.
- Australian Government, 2019. *National Health and Medical Research Council (2019), Guidance on Per- and Poly-fluoroalkyl Substances (PFAS) in Recreational Water, 2019.*
- Department of Defence, *Routine Environment Water Quality Monitoring Manual*, 2016.
- Department of Defence, *Contamination Management Manual*, 2018 amended 2021.
- Department of Health, *Health Based Guidance Values for PFAS for use in site investigations in Australia*, 2019.
- Department of Environment and Science, *Environmental Protection Act 1994.*
- Environmental Protection Policy, (Water and Wetland Biodiversity), 2019.
- PFAS National Environmental Management Plan (NEMP), *Heads of Environmental Protection Agencies (HEPA)*, Version 2.0 2020
- FSANZ, 2017, *Perfluorinated chemicals in food. Food Standards Australia New Zealand and associated supporting documents,* 2017.
- National Environment Protection Council, 1999. *National Environment Protection (Assessment of Site Contamination) Measure* 1999, as amended 2013.
- National Health and Medical Research Council (NHMRC), *Guidance on PFAS in Recreational Water.* August 2019.
- Standards Australia 1998. AS/NZ 5667:1998 Water Quality – Sampling.
- US EPA, 2002. *Guidance on Environmental Data Verification and Data Validation*, November 2002.
- US EPA, 2006. *Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA QA/G-4: EPA/240/B-06/001), February 2006*.

2.0 Site Identification and Conceptual Site Model

2.1 The Base and Management Area

The Preliminary Site Investigation (PSI) (AECOM, 2019) reported that the site was likely to have been in use by Defence since 1958. Prior to 1958, the site is likely to have been used for logging. Development of the site did not occur until circa 1965 when the airstrip and a small building were constructed in the southern portion of the site.

WBTA covers approximately 19,100 hectares (ha) of remnant bush and coastal to sub-coastal wetland. The site comprises 16 Training Area sectors including an approximately 20 ha cantonment at Camp Kerr in the southern portion of the site. Infrastructure within Camp Kerr includes a vehicle wash point, a refuelling area, accommodation and associated amenities, administrative facilities, a water treatment plant (WTP) and a WWTP. The remainder of the site comprises remnant bush and wetlands and is principally used to conduct combat team training, live firing activities and unmanned aerial vehicle (UAV) training. Infrastructure associated with the training areas include several firing ranges, training facilities, an ammunition storage compound, a road base quarry, a UAV airstrip and a disused airfield.

The Management Area is located on Tin Can Bay Road, Tin Can Bay, Queensland, 4580, approximately 50 km southeast of Maryborough and 175 km north of the Brisbane central business district (CBD), Queensland. The Management Area comprises WBTA and the small residential area of Wallu located adjacent to the southwestern corner of the Base. The Management Area is bordered by Toolara State Forest to the west and south, the Great Sandy Strait to the east, and the township of Tin Can Bay to the southwest, refer to **Figure 1**, **Appendix A**.

The small residential area of Wallu has approximately 34 properties and 110 residents. Some of the properties have dams. Bore water is used at individual properties for different purposes including household and outdoor purposes, topping up swimming pools, dam storage, crop irrigation, washing livestock. The Detailed Site Investigation (DSI) (AECOM, 2020) reported that dam water in some individual properties is used for recreational purposes and irrigating crops or watering livestock.

2.2 Conceptual Site Model

The conceptual site model (CSM) for the site is presented in detail in the OMP (Defence, 2020) which summarises the linkages between sources, pathways and receptors.

3.0 Data Quality Assessment

3.1 Data Quality Objectives

The amended National Environmental Protection Measure (NEPM, Schedule B [2]) Guideline on Site Characterisation (2013) specifies that the nature and quality of the data produced in an investigation will be determined by the Data Quality Objectives (DQOs). As referenced by the NEPM, the DQO process is detailed in the United States Environmental Protection Agency (US EPA) *Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA QA/G-4: EPA/240/B-06/001), February 2006.*

The US EPA defines the process as *'a strategic planning approach based on the Scientific Method that is used to prepare for a data collection activity. It provides a systematic procedure for defining the criteria that a data collection design should satisfy, including when to collect samples, where to collect samples, the tolerable level of decision errors for the study, and how many samples to collect'.*

The process of establishing appropriate DQOs is defined according to the following seven steps:

Table 1 The seven steps in defining DQOs

Step	Data Quality Objective Step
1	***State the problem*** – Define the problem that necessitates the study; identify the planning team, examine budget, schedule.
2	***Identify the goal of the study*** – State how environmental data will be used in meeting objectives and solving the problem, identify study questions, define alternative outcomes.
3	***Identify information inputs*** – Identify data and information needed to answer study questions.
4	***Define the boundaries of the study*** – Specify the target population and characteristics of interest, define spatial and temporal limits, scale of inference.
5	***Develop the analytic approach*** – Define the parameter of interest, specify the type of inference, and develop the logic for drawing conclusions from findings.
6	***Specify performance or acceptance criteria*** – Develop performance criteria for new data being collected or acceptable criteria for existing data being considered for use.
7	***Develop the plan for obtaining data*** – Select the resource-effective sampling and analysis plan that meets the performance criteria.

The approach adopted relative to the seven steps presented above is discussed below.

3.1.1 Step 1 – State the Problem

There is limited temporal and spatial data available to evaluate if PFAS in groundwater, surface water and sediment is increasing, stable or decreasing. More information is required on the impact of seasonality on PFAS concentrations in these media. Data are also required to demonstrate that at locations where PFAS has not been detected, this remains unchanged over time and at different times of the year.

Defence and State agencies require up-to-date data to enable informed risk management decisions to protect human health and the environment, given that elevated concentrations of PFAS have been identified in environmental media.

The data collected by this SAQP will provide a detailed dataset that can be used to assist with assessment of temporal changes in PFAS concentrations in groundwater and surface water / sediment on- and off-site. This will facilitate refinement of the CSM, allow update of the human health and ecological risk assessments and inform management decisions by Defence and government agencies.

3.1.2 Step 2 – Identify the Goal of the Study

The overall goal of the study is to establish a systematic routine groundwater, surface water / sediment and wastewater sampling and analysis program to provide current and ongoing information on the distribution and migration of PFAS contaminants of potential concern in groundwater and surface water / sediment in the Management Area.

Specific goals of the program are to:

- understand the changes and trends in the nature, extent and magnitude of PFAS concentrations in the groundwater, surface water and sediment within the Management Area
- understand if the nature, extent and magnitude of PFAS concentrations has changed significantly to warrant a revision to the human health and environmental risk assessments
- understand whether monitoring can be incorporated into existing Defence monitoring programs.

3.1.3 Step 3 – Identify Information Inputs

To allow assessment of the data against the study goal listed in Step 2 above, the following inputs will be considered:

- PFAS and investigation (groundwater levels and flow direction) results from previous investigations
- meteorological data including rainfall
- quantitative site characterisation data including visual observations and field measurements made during the monitoring program (sediment, groundwater and surface water), analytical data comparisons with screening criteria appropriate for the land use
- groundwater, surface water, sediment and wastewater data collected and analysed for PFAS, as part of the SAQP
- hydrogeological and hydrological data across the Management Area including gradient and flow direction
- statistical analysis to identify trends
- advances in laboratory analytical approaches and changes in regulatory requirements
- sampling event factual reports (e.g. AECOM, 2021a,b, 2022a,c)
- annual interpretive reports (AECOM, 2022b).

3.1.4 Step 4 – Define the Boundaries of the Study

The spatial and temporal boundaries that apply for data collection are detailed below and will influence the decision-making process for ongoing monitoring:

- The lateral extent of the study area defined for decision making in this OMP is the Management Area as outlined in **Figure 1**, **Appendix A**). The vertical extent of the investigation will be the depth of the water supply bores (Bore 1 and Bore 2) at the Base (78.5 m below ground level).
- The sampling completed as part of the SAQP includes groundwater, surface water, sediment and wastewater at the frequencies defined in **Section 0**.
- The monitoring will be long term and potentially ongoing.

The SAQP will also cover the primary implementation period of the OMP (Defence, 2020). The SAQP will also cover the extended implementation period to the extent required by specific characteristics of the site and surrounds, and behaviour of PFAS in groundwater, measured against specified data trends.

3.1.5 Step 5 – Develop the Analytical Approach

The decision rules can be defined as:

- Analytical selection; all samples will be analysed for the extended PFAS suite.

- Analytical method selection for PFAS is based on achieving appropriate laboratory limits of reporting (LOR) in the various media to be analysed.
- Sample locations have been selected with the objective of monitoring PFAS trends (temporal and seasonal), providing early warning of changes in the migration of PFAS in surface water and groundwater.
- If the laboratory quality assurance / quality control data are within the acceptable ranges, the data will be considered suitable for use.
- If PFAS concentrations are reported above the laboratory LOR, where it was previously <LOR, then it will be considered whether further assessment of the data will be required.
- If the PFAS is reported at a concentration that is above drinking water guideline in groundwater, then it will be considered that further assessment is required and / or notification.
- If the PFAS is reported at a concentration that is inside a trigger value or acceptable range, then it will be considered whether monitoring is continued or reduced, this assessment will be undertaken after two years of monitoring.

The decision on the acceptance of the analytical data will be made on the basis of the Data Quality Indicators (DQIs) as follows:

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

3.1.6 Step 6 – Specify Performance or Acceptance Criteria

Specific limits for the works included in the OMP (Defence, 2020) are in accordance with the appropriate guidance made or endorsed by state and national regulations, appropriate indicators of data quality, and standard procedures for field sampling and handling.

This step also examines the certainty of conclusive statements based on the available new data collected. This should include the following points to quantify tolerable limits:

- A decision can be made based on a certainty assumption of 95% confidence in any given data set. A limit on the decision error will be 5% that a conclusive statement may be a false positive or false negative.
- A decision error in the context of the decision rule presented above would lead to either underestimation or overestimation of the risk level associated with a particular sampling area.
- Sampling errors may occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the site. To address this, the OMP outlines minimum numbers of samples proposed to be collected from each media.
- As such, there may be limitations in the data if aspects of the OMP cannot be implemented. Some examples of this scenario include but are not limited to:
  - Proposed surface water sample locations may be dry at the time of sampling
  - Proposed groundwater well locations are damaged or destroyed and therefore cannot be sampled
  - Proposed samples are not collected due to access being restricted to a given location.
- Limitations in ability to acquire useful and representative information from the data collected. The data are proposed to be collected from multiple locations and sample media.

- Measurement errors can occur during sample collection, handling, preparation, analysis and data reduction. To address this the following measures are proposed:
  - Collection of sufficient sample mass to facilitate analysis reported to standard laboratory detections limits. Collection of insufficient sample mass may result in raised detection limits.
  - Field staff to follow a standard procedure when collecting samples, including decontamination of tools, and use of appropriate sample containers and preservation methods.
  - Laboratories to follow a standard procedure when preparing samples for analysis and undertaking analysis.
  - Laboratories to report quality assurance/ quality control data for comparison with the DQIs established for the SAQP.

3.1.7 Step 7 – Optimise the Design for Obtaining Data

The methodology presented in this SAQP is designed to meet the project objectives described in **Section 1.2** and to achieve the nominated DQOs. Optimisation of the data collection process will be achieved by:

- working closely with the analytical laboratories and sampling equipment suppliers to ensure that appropriate procedures and processes are developed and implemented prior to and during the fieldwork, to ensure that sample handling, and transport to and processing by the analytical laboratories is appropriate
- conducting sampling according to NEMP, Defence and Australian Standards. These standards are as follows:
  - Department of Defence (July 2018, Amended August 2019), *Contamination Management Manual.*
  - National Environment Protection Council, 1999. *National Environment Protection (Assessment of Site Contamination) Measure* 1999, as amended 2013.
  - Standards Australia (AS/NZS5667.11–1998) *Water Quality – Sampling, part 11: Guidance on sampling of groundwater.*
  - Standards Australia (AS 4482.1-2005) *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.*
  - Standards Australia (AS 4482.2-1999) *Guide to the sampling and investigation of potentially contaminated soil, Part 2: Volatile Substances.*
- conducting sampling in accordance with AECOM's internal PFAS Sample Collection Guidance
- sampling conducted by suitably qualified and experienced field staff
- basing the sampling upon a CSM developed using the information available at the implementation of the SAQP. Updating the CSM as new data becomes available in the course of the implementation of the SAQP, as required
- progressive review of the data throughout the initial three-year OMP period and modification of sampling programs to optimise the value of data generated.

If the objectives of the SAQP are not being met, the sampling design and approach will be reviewed and amended, as required.

3.2 Assessment of Data Quality

The quality of data collected as part of the sampling will be assessed on a range of factors including:

- Documentation and data completeness
- Data quality – comparability, representativeness, precision and accuracy of the analytical data.

The project target for data completeness is to achieve 95% of data as suitable for use.

The acceptance criteria for DQIs for samples are specified in **Table 2**.

Table 2 Acceptance Criteria for Data Quality Indicators for Sample Analysis

Data Quality Indicators	Acceptance Criteria
Water and Sediment Samples	
Rinsates (where sampling equipment is reused)	Less than the laboratory LOR.
Field duplicates/Inter-lab duplicates	The RPDs will be assessed as acceptable if less than or equal to 30% as per the NEPM Schedule B3. Where the results show greater than 30% difference a review of the cause will be conducted (NEPM, 2013). It is noted that RPDs that exceed this range may be considered acceptable where: • Results are less than 10 times the LOR (no limit) • Results are less than 20 times the LOR and the RPD is less than 50%; and • Heterogeneous materials are encountered.
Laboratory duplicates	RPDs less than: • 20% for high level laboratory duplicates (i.e. >20 x LOR); and • 50% for medium level laboratory duplicates (i.e. 10 to 20 x LOR).
Matrix spikes	Recoveries between 70-130% of the theoretical recovery or as nominated in the laboratory's QC report, based on their historical database.
Method blanks	Less than the laboratory LOR.
Laboratory control samples	Recoveries between laboratories specified range for each particular analyte / analytical suite.

4.0 Sampling Location Rationale and Methodology

4.1 OMP

The OMP (Defence, 2020) presents an overview of specific monitoring works to be undertaken and provides the basis for the preparation of this SAQP. An OMP Review was completed in January 2023, which recommended changes to the sampling program. This included:

- Removal of a total of seven groundwater monitoring wells (MW103, MW104, MW105, MW107, MW108, MW110, MW120) from the sampling program at locations where PFAS have generally not been detected during the monitoring conducted to date. This optimises the sampling program by focusing on the sample locations where PFAS have been detected.
- removal of six co-located surface water and sediment sampling locations (SW/SD004, SW/SD005, SW/SD008, SW/SD012, SW/SD020, SW/SD024) to remove locations where PFAS have generally not been detected during the monitoring conducted to date. This optimises the sampling program by focusing on the sample locations where PFAS have been detected.
- Removal of the requirement to sample the WWTP at times of high usage.

The scope of work presented in this SAQP is consistent with that detailed in the OMP Review (AECOM, 2023).

4.2 Proposed Schedule

4.2.1 Sampling Events

Groundwater, surface water, sediment and wastewater sampling from across the Management Area will be performed biannually as part of a post-wet season sampling event in April/May and a post-dry season sampling event in October/November. The proposed schedule of fieldworks is presented in **Table 3** below.

Table 3 Proposed Fieldwork Schedule

Sampling Round No.	Description of works	Proposed Schedule
1	Post-dry season groundwater, surface water, sediment and wastewater sampling	October 2020
2	Post-wet season groundwater, surface water and wastewater sampling	May 2021
3	Post-dry season groundwater, surface water, sediment and wastewater sampling	November 2021
4	Post-wet season groundwater, surface water and wastewater sampling	May 2022
5	Post-dry season groundwater, surface water, sediment and wastewater sampling	October/November 2022
6	Post-wet season groundwater, surface water and wastewater sampling	April/May 2023
7	Post-dry season groundwater, surface water, sediment and wastewater sampling	October/November 2023
8	Post-wet season groundwater, surface water and wastewater sampling	April/May 2024

4.3 Sample Location Rationale

4.3.1 Groundwater Sampling Locations

Groundwater monitoring will be undertaken on selected monitoring wells. The rationale for monitoring well selection for each area is summarised in **Table 4** below.

It is noted that the OMP (Defence, 2020) does not propose to sample private residential bores in Wallu as groundwater at these locations have been characterised as part of the DSI (AECOM, 2020). Groundwater monitoring will include wells MW116 and MW117, positioned between Camp Kerr and Wallu, which will allow identification of PFAS migrating from the base towards Wallu.

Access permissions will be required for the sampling of off-Site monitoring locations on Council and DTMR land. A stakeholder engagement plan may need to be prepared to manage this process.

Table 4 Groundwater Monitoring Locations and rationale

Well ID	Location	Rationale
MW101	POL refuelling point	To characterise groundwater quality down-gradient of the refuelling point where aqueous film forming foam (AFFF) containing PFAS may have been used historically. Resampling of this well, which was installed in 2018.
MW102	POL refuelling point	To characterise groundwater quality down-gradient of refuelling point where AFFF may have been used historically. Resampling of this well, which was installed in 2018.
MW106	Along southern Site boundary	To characterise groundwater quality adjacent to the southern Site boundary close to an off-site landfill. Resampling of this well, which was installed in 2018.
MW109	Close to eastern site boundary	To characterise groundwater quality down-gradient of the MUFP close to the eastern site boundary. Resampling of this well, which was installed in 2018.
MW111	North west of Camp Kerr	To characterise groundwater in an area potentially historically used for AFFF demonstration. Resampling of this well, which was installed in 2018.
MW112	East of the caretaker's residence	To characterise the lateral extent of PFAS in the area of the caretaker's residence. Resampling of wells installed in 2019.
MW113 (Off-site)	South of the caretaker's residence (Department of Transport and Main Roads land)	
MW114 (Off-site)	Southwest of the caretaker's residence (Department of Transport and Main Roads land)	
MW115	West of the POL, southwest of the WTP	To characterise the lateral extent of PFAS in the area of the POL/WTP and potential risk to groundwater users in Wallu. Resampling of wells installed in 2019.
MW116 (Off-site)	West of Camp Kerr (Council land)	

Well ID	Location	Rationale
MW117 (Off-site)	West of Camp Kerr (Council land)	
MW118 (Off-site)	South of Camp Kerr (DTMR land)	To characterise the lateral extent of PFAS in the area of the caretaker's residence and potential risk to groundwater users in Wallu. Resampling of the well, which was installed in 2019.
MW119	Central portion of Camp Kerr	To provide information on groundwater flow directions and PFAS concentrations in the central portion of Camp Kerr. Resampling of the well, which was installed in 2019.
MW120	West of WWTP	To characterise groundwater to the east of the wastewater treatment plant. Resampling of this well, which has been sampled in monitoring events conducted since 2017.
MW121	Southwest of the caretaker's residence	To characterise groundwater in the area of the caretaker's residence. Resampling of these wells which have recorded PFAS in monitoring events conducted since 2017.
MW122	Southwest of the caretaker's residence	
POT001	WTP- tap outlet prior to treatment	These are abstraction bores in the WTP, which are 78.4 m (Bore 1) and 51.5 m deep (Bore 2). The purpose of the monitoring is to understand PFAS concentrations in the deeper part of the aquifer.
POT005	WTP- tap outlet prior to treatment	

Note: Off-site sampling locations will require the agreement of the landholder/leaseholder.

4.3.2 Wastewater monitoring

A sample of the treated wastewater will be collected from the outlet tap of the Camp Kerr WWTP twice a year, in April and October. The sample location and rationale is set out in **Table 5** below.

Table 5 Groundwater monitoring locations and rationale

Sample ID	Location	Rationale
OTH001	Wastewater treatment plant	The purpose of the sampling is to monitor PFAS concentrations in the effluent that is irrigated to ground at three locations in Camp Kerr.

4.3.3 Surface Water and Sediment Sampling Locations

The proposed 14 surface water and sediment monitoring locations are set out in **Table 6** below and on **Figure 2** and **Figure 3**, **Appendix A**. Sampling of surface water locations is proposed twice a year, in April and October. Sampling of sediment is proposed to occur once a year in April only.

Water may not be consistently present at sample locations SW017, SW018, SW019, SW025 and SW027, therefore, sampling of these locations should be timed to occur following rain events.

Table 6 Surface Water and Sediment Sampling Locations and Rationale

Sample ID	On/Off-site	Location	Rationale
SD/SW006	On-site	Tributary of Kangaroo Creek	Characterisation along Kangaroo Creek.
SD/SW007	On-site	Upper part of Kangaroo Creek	
SD/SW009	On-site	Central section Kangaroo Creek	

Sample ID	On/Off-site	Location	Rationale
SD/SW013	On-site	Snapper Creek, downstream of MUFP and airstrip	Characterisation along Snapper Creek.
SD/SW014	On-site	Tributary of Snapper Creek	
SD/SW016	On-site	Tributary of Snapper Creek	
SD/SW017	On-site	Unlined channel to south of the caretaker's residence	Characterisation of surface water in drainage feature which received runoff from the irrigation of treated effluent containing PFAS.
SD/SW018	On-site	Vehicle washpoint drainage channel	Characterisation along unlined drainage channel downstream of vehicle wash point to characterise the potential for PFAS concentrations.
SD/SW019	On-site	Ponded water from surface water flows	Sampling of area of ponded water on the western site boundary to inform potential for PFAS to be present in surface water flowing overland from the Camp Kerr area.
SD/SW021*	Off-site	Residential dams in Wallu	PFAS was detected in residential dams in Wallu in the DSI. Sampling will provide temporal data.
SD/SW022*	Off-site		
SD/SW023*	Off-site		
SD/SW025	Off-site	Ephemeral waterway	Resampling of an ephemeral waterway that drains the residential dams in Wallu.
SD/SW027	Off-site	Drainage pipe at Clyde Road	Sampling at the point where overland water discharges from the western portion of Camp Kerr into residential dams. Not previously sampled.

Note: * Location is on a private residential property and will require the agreement of the landholder / leaseholder

4.4 Sample Collection and Handling

4.4.1 Groundwater Sampling

The groundwater sampling methodology and schedule are presented in **Table 7**.

Table 7 Groundwater Sampling Methodology and Schedule

Item	Details
Groundwater gauging	The depth to groundwater will be measured in each monitoring well immediately prior to collection of groundwater samples. Groundwater gauging will be conducted in as short a period as possible, noting there may be access restrictions during the fieldworks due to operational activities at the Base. The gauging event will include all monitoring wells listed in **Table 4** and shown on **Figure 2 and Figure 3** in **Appendix A** to enable a groundwater contour map to be prepared and groundwater flow directions to be inferred. Groundwater gauging will consider environmental variables including tidal influence at the Base.
Sample Collection Methodology	**Groundwater Monitoring Wells** Groundwater samples will be collected from all monitoring wells using no-purge methodology HydraSleeves™, which will be installed within the screened interval of the wells (approximately 1 m above the base of the well) for a minimum of 24 hours prior to the sampling round. Monitoring well construction details are presented in **Appendix B**. Once sampling is completed, new HydraSleeves™ will be deployed at the screened interval depth in preparation for the next sampling round. **Abstraction Bores** The tap/valve will be opened, and water allowed to run prior to a sample being collected. Water samples will be collected by placing the laboratory provided sample bottle beneath the tap outlet.
QA/QC Samples to be Collected	Field QA/QC samples are to include intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and equipment rinsate blank (rinsate) samples. Duplicate samples are to be collected at a minimum frequency of 1 in 10 primary samples. Rinsate samples are to be collected at a rate of one sample per fieldwork day by pouring laboratory supplied PFAS-free deionised water over the decontaminated sampling equipment. Two QA samples will be targeted at locations where PFAS is expected to be detected (i.e. MW121 and MW122).
Field Parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (ORP), pH and observations of water quality will be recorded for all samples.
Sample Analysis	All primary samples will be submitted for PFAS extended suite using the standard levels of detection.
Sampling Schedule	The monitoring at WBTA will include two biannual monitoring events of all monitoring wells specified in **Section 4.3.1** in April and October. These months are busy periods for the Range as training exercises (live firing) frequently occur at the Range at these times restricting access. Sampling events will be scheduled around the training. This may result in the sampling events being conducted in May and November.

4.4.2 Surface Water Sampling

The surface water sampling methodology and schedule is presented in **Table 8**.

Table 8 Surface Water Sampling Methodology and Schedule

Item	Details
Sample Collection Methodology	Samples to be collected from immediately below the water surface to minimise collection of sediment or floating materials in the samples. At each location, a new, laboratory supplied container should be lowered into the water with the cap immediately applied once the container is full.
Sample Location Observations	Descriptions on the sample location characteristics (drain / stream width, water height, flow direction and strength of flow) will be recorded.
QA/QC Samples to be Collected	Field QA/QC samples are to include intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and equipment rinsate blank (rinsate) samples. Duplicate samples are to be collected at a minimum frequency of 1 in 10 primary samples. Rinsate samples are to be collected at a rate of one sample per fieldwork day by pouring laboratory supplied PFAS-free deionised water over the decontaminated sampling equipment. Two QA samples will be targeted at locations where PFAS is expected to be detected (i.e. SW06 and SW027).
Field Parameters	Temperature, EC, DO, ORP, pH and observations of water quality will be recorded for all samples.
Sample Analysis	All primary samples will be submitted for PFAS extended suite using the trace levels of detection.
Sampling Schedule	The monitoring at WBTA will include two biannual monitoring events, in April and October. These months are busy periods for the Range as training exercises (live firing) frequently occur at the Range at these times restricting access. Sampling events will be scheduled around the training. This may result in the sampling events being conducted in May and November.

4.4.3 Sediment Sampling

The surface water sampling methodology and schedule are outlined in **Table 9**.

Table 9 Sediment Sampling Methodology and Schedule

Item	Details
Sample Collection Methodology	Samples representative of potentially deposited sediments to be collected from within the water body if possible. Sediment samples will be collected using a trenching shovel from the base of the drain (where possible) or edge of the dam, or using a Dormer Piston Sediment Sampler. At each location, a new laboratory supplied container should be used for each sample.
Sample Location Observations	Descriptions on the sample location characteristics (drain / stream width, water height, flow direction and strength of flow) will be recorded.
QA/QC Samples to be Collected	Field QA/QC samples are to include intra-laboratory duplicate and inter-laboratory duplicate samples (i.e. splits) and equipment rinsate blank (rinsate) samples. Duplicate samples are to be collected at a minimum frequency of 1 in 10 primary samples. Rinsate samples are to be collected at a rate of one sample per fieldwork day by pouring laboratory supplied PFAS free deionised water over the decontaminated sampling equipment.
Sample Analysis	All primary samples will be submitted for PFAS extended suite using the standard levels of detection.
Sampling Schedule	The sediment sampling will be conducted annually as part of the post-wet season event (April).

4.4.4 Biota Sampling

Biota sampling is not included in the OMP (Defence, 2020) or OMP Review (AECOM, 2023). However, ad hoc biota samples may be collected at the request of Defence in accordance with the sampling methodology presented in **Table 10**.

Table 10 Biota Sampling Methodology and Schedule

Item	Details
Sample Collection Methodology	Targeting sampling of biota (e.g. aquatic biota such as fish, crayfish) may need to be conducted on an ad hoc basis. Appropriate sampling techniques will be used to collect the samples; for example, gill nets or electro fishing will be used to collect fish, sample traps could be used to collect crayfish. Where required, samples will be collected by a qualified contractor holding a general fisheries permit for the collection of tissue samples. Where required to obtain sufficient sample mass for laboratory analysis, multiple specimens of the same species may need to be composited. Sampling of fish for human health assessment will require targeting of fish of consumptive size. Samples will be identified, measured, weighed, photographed and placed in a zip lock bag following euthanasia in ice slurry.
QA/QC Samples to be Collected	No QA/QC samples will be collected.
Sample Analysis	All primary samples will be submitted for PFAS extended suite using the standard levels of detection for biota samples.
Sampling Schedule	Samples will be collected on an ad hoc basis at the request of Defence.

4.4.5 Sample Handling and Transport to Laboratory

AECOM personnel will attempt to reduce potential heterogeneity in the sample media matrix by dividing the sample collected between primary and intra-laboratory jars or bottles during sampling. All samples will be placed on ice in eskies immediately after sampling.

All samples will be kept, if possible, at or below 4°C during transit to the laboratory. Prior to sampling, assessment of the analytical holding times will be made and the sampling planned accordingly to help ensure that holding times are not breached or is minimised.

Samples will be transported to the laboratory for analytical testing under standard Chain of Custody documentation. Primary and associated duplicate QA/QC samples will be analysed by ALS Brisbane. The inter-laboratory duplicate samples will be analysed by the National Measurement Institute (NMI).

4.5 Calibration

The water quality meter will be calibrated each day prior to the commencement of field activities with relevant solutions, including pH, EC and ORP. The calibration will be in accordance with manufacturers' instructions or NATA publication "General Requirements for Registration: Supplementary Requirement: Chemical Testing (NATA 1993) and Technical Note N0. 19 (NATA 1994)". Where satisfactory calibration cannot be achieved, the water quality data will not be used for interpretive purposes.

Calibration details will be recorded on field sheets and included in the Sampling Events Factual Reports.

4.6 Logistics

The laboratory sample containers will be collected from the laboratory prior to the commencement of fieldwork. All samples will be transported by an ALS by the field team or a supplied courier at the completion of fieldwork. All inter-laboratory duplicate samples will be couriered from ALS to the secondary laboratory under a separate CoC documentation for analysis.

4.7 Analytical Suite and Laboratory Analysis Methods

4.7.1 Laboratory NATA Accreditation Details

The laboratory is required to use NATA accredited methods based on NEPM, US EPA, Table B 15 of the US Department of Defence/Department of Energy (US DOD/DoE) and American Society for Testing and Materials (ASTM) methods as appropriate.

The primary laboratories selected for this program is ALS (NATA Accreditation Number 825). The secondary laboratory is either NMI (NATA Accreditation Number 198) or Eurofins (NATA Accreditation Number 1261).

4.7.2 Analytical Schedule

All media sampled shall be analysed for the extended PFAS suite as outlined in **Table 11** below.

Table 11 Sample Analytical Suite for PFAS

PFAS Group	Compound	CAS No.
Perfluoroalkyl Sulfonic Acids	Perfluorobutane sulfonic acid (PFBS)	375-73-5
	Perfluoropentane sulfonic acid (PFPeS)	2706-91-4
	Perfluorohexane sulfonic acid (PFHxS)	355-46-4
	Perfluoroheptane sulfonic acid (PFHpS)	375-92-8
	Perfluorooctane sulfonic acid (PFOS)	1763-23-1
	Perfluorodecane sulfonic acid (PFDS)	335-77-3
Perfluoroalkyl Carboxylic Acids	Perfluorobutanoic acid (PFBA)	375-22-4
	Perfluoropentanoic acid (PFPeA)	2706-90-3
	Perfluorohexanoic acid (PFHxA)	307-24-4
	Perfluoroheptanoic acid (PFHpA)	375-85-9
	Perfluorooctanoic acid (PFOA)	335-67-1
	Perfluorononanoic acid (PFNA)	375-95-1
	Perfluorodecanoic acid (PFDA)	335-76-2
	Perfluoroundecanoic acid (PFUnDA)	2058-94-8
	Perfluorododecanoic acid (PFDoDA)	307-55-1
	Perfluorotridecanoic acid (PFTrDA)	72629-94-8
	Perfluorotetradecanoic acid (PFTeDA)	376-06-7
Perfluoroalkyl Sulfonamides	Perfluorooctane sulphonamide (FOSA)	754-91-6
	N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8
	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2
	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	2448-09-7
	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2
	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9
	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6
(n:2) Fluorotelomer Sulfonic Acids	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4
	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2
	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0

The current standard laboratory limits of reporting (LOR) are described in **Table 12** below.

Table 12 Laboratory Limits of Reporting

Sample Media	Parameter	Technique/Method Reference	LOR*
Groundwater and Surface Water	Standard PFAS Suite (groundwater samples)	LC/MS-MS	0.002 – 0.1 µg/L
	Trace level PFAS Suite (surface water samples)	LC/MS-MS	0.0005 to 0.002 µg/L
Sediment	Standard PFAS Suite	LC/MS-MS	0.0002 – 0.001 mg/kg

LC/MS-MS = Liquid chromatography–mass spectrometry, GC = Gas chromatography

*LOR for Australian Laboratory Services (ALS)

4.8 Sample Nomenclature

In order to meet Defence data management requirements, a consistent sample nomenclature has been adopted for the Program. All primary samples will be labelled using the following Defence Contamination Management Manual (DCCM) naming convention:

PPPP_XX000 _YYMMDD

[property ID]_[type of sample][THREE DIGIT sample number]_[yearmonthday]

e.g. 0224_MW101_201001

Location types and codes are prescribed by Defence and the site's investigation history.

Primary Sample Types/Location Codes relevant to this OMP include:

- SD = sediment – top depth required
- MW = monitoring well
- SW = surface water - no depth required

QAQC Samples will be labelled in accordance with the following convention:

- Duplicate: PPPP_QC1XX_YYMMDD
- Triplicate: PPPP_QC2XX_YYMMDD
- Rinsate: PPPP_QC3XX_YYMMDD

4.9 Defence ESdat Requirements

Defence has contracted Earth Science Information Systems (EScIS), to provide contamination data management services through a cloud instance of its ESdat product.

All OMP field and laboratory data collected by AECOM will be uploaded, stored and managed in Defence's ESdat database in accordance with Section 6 of Annex L to the Defence Contamination Management Manual. AECOM will refer to historical investigation data to ensure consistent location codes are used to enable analysis of data trends. Where required under Annex L, non-compliant location codes will be resolved under direction from Defence.

AECOM will upload the data from each monitoring event into ESdat prior to submitting the Sampling Event Factual Report.

4.10 Adopted Screening Criteria

Adopted screening criteria references national guidance in the form of the PFAS National Environmental Management Plan, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance.

At the time of preparing this SAQP, a number of guidance documents were in circulation in Australia including:

- PFAS National Environmental Management Plan (NEMP), Version 2.0, (HEPA 2020)
- Department of Health, 2019. Health Based Guidance Values for PFAS for use in site investigations in Australia
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC 2019)
- National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, as amended in 2013 (ASC NEPM)

The adopted PFAS screening criteria to assess the data generated as part of the OMP are presented in **Table 13** below.

Groundwater will be screened against drinking water guidelines. Surface water in creeks and dams will be screened against recreational water and ecological guidelines.

There are no HEPA (2020) endorsed guideline values available for PFAS in sediment.

Table 13 Summary of Adopted Screening Criteria

Pathway	Compound	Criteria	Comment / Reference
Human Health Receptors			
Drinking water - groundwater	PFOS + PFHxS	0.07 µg/L	The values presented in the PFAS NEMP, 2020 are from DoH 2019, which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the TDI for PFOS and PFOA from FSANZ, 2017 and the methodology described in Chapter 6.3.3 of the National Health and Medical Research Council's (NHMRC) Australian Drinking Water Guidelines (ADWG), 2016 to determine drinking water values. For PFHxS, DoH 2019 noted that '*FSANZ concluded that there was not enough toxicological and epidemiological information to justify establishing a tolerable daily intake. However, as a precaution, and for the purposes of site investigations, the PFOS tolerable daily intake should apply to PFHxS. In practice, this means that the level of PFHxS exposure should be added to the level of PFOS exposure; and this combined level be compared to the tolerable daily intake for PFOS*'. *All groundwater results will be compared to these criteria.*
	PFOA	0.56 µg/L	
Recreational use – surface water	PFOS + PFHxS	2 µg/L	In August 2019, NHMRC released guidance on the assessment of PFAS in surface water. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events / year) to calculate an annual ingestion rate of 30 L per year. *All surface water results will be compared to these criteria.*
	PFOA	10 µg/L	
Ecological Receptors			
Freshwater (99% species protection values)	PFOS PFOA	0.00023 µg/L 19 µg/L	The values are from the PFAS NEMP, 2020 which endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality – draft default guideline values. AECOM understands that these guidelines are currently being reviewed and will consider the appropriateness of considering any future revision. The 99% level of protection has been applied for high conservation ecosystems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. For the purposes of preliminary screening of analytical water results, the laboratory LOR will be adopted rather than sole use of the criteria value. *All surface water (except SW025) and groundwater results will be compared to these criteria.*
Freshwater (95% species protection values)	PFOS PFOA	0.13 µg/L 220 µg/L	Surface water in the ephemeral waterway south of Clyde Road (SW025) should be screened against freshwater ecological guidelines for slight to moderately disturbed ecosystems (95% species protection).

4.11 Waste Management

Due to the proposed “no purge” sampling methodology, it is not anticipated that significant volumes of liquid waste would be generated that would require management or disposal.

All consumables (i.e. HydraSleeves™, filter cartridges, general rubbish) will be bagged and placed in on-site general waste bins for disposal.

4.12 Quality Assurance/Quality Control Sampling

4.12.1 Field Duplicate and Inter-laboratory Duplicate Samples

Field duplicate (intra-laboratory) duplicate samples and split (inter-laboratory field duplicates) are to be collected and analysed at a minimum frequency of 1 in 10 primary samples.

4.12.2 Rinsate Samples

Rinsate samples are to be collected at a rate of one sample per fieldwork day or at least one rinsate sample per ten primary samples (whichever rate is lower) by pouring laboratory supplied deionised water over the decontaminated sampling equipment.

4.13 Fieldwork Documentation

4.13.1 Field Notes

Field notes will be maintained to record all field sampling events and include observations made at each sample location. Field notes will include information specific to the sample media as follows:

- Groundwater samples – comments on the observed characteristics of the sample (e.g. colour, turbidity, odour, sheen) and reported field water quality parameters (pH, EC, DO, ORP, temperature) will be recorded at regular intervals. The date and time of the Hydrasleeve installation and sampling will be recorded;
- Surface water samples – comments on the observed characteristics of the sample (e.g. colour, turbidity, odour, sheen), field water quality parameters (pH, EC, DO, ORP, temperature) and sample location characteristics (drain / stream width, water height, flow direction and strength of flow) will be recorded; and
- Sediment samples - comments on the morphology of the sample location, the depth, flow direction and strength of water flow (if water is present), the water and sediment/soil colour and odour, and the presence of flora and fauna. The soil/sediment types observed at each sample location will be described using the Unified Soil Classification System (USCS).

The geo-coordinates for each sample location will be noted. The location of quality control (e.g. duplicate and inter-laboratory duplicate) sample collection points will also be noted.

AECOM’s tablet-based data capture (‘EDCA’) system will be utilized by field staff to minimise potential data recording errors and allow on-the-spot identification of potentially erroneous data in comparison to historical data.

4.13.2 Sample Labels

Sample containers will be labelled, as a minimum, with the following information:

- AECOM project number
- Name of sampler
- Sample ID
- Date of sample collection
- Filtered vs non-filtered (for water samples only).

An indelible felt pen will be used for labelling, to ensure that the lettering is not erased during transit to the laboratory.

AECOM will utilize the tablet-based ALS ‘Compass’ sample management application to streamline sample labelling and chain of custody (CoC) creation to ensure compliant sample IDs are used in the field.

4.13.3 Chain of Custody Forms

A CoC form will be completed, documenting the sample identification number and analytes. The CoC documents the chain of events from sample collection to delivery at the laboratory and provides a traceable account of sample handling. The CoC form will be signed by both the sample collector and the receiving laboratory.

The CoC form will include the following information:

- Job number (Note: the name of the site is not identified for confidentiality purposes)
- Date and time of sample collection
- Sample ID
- Type of containers
- Name of sampler
- Laboratory to be used
- Analyses required
- Any comments
- Signatures of the sampler and laboratory receiver.

In the event that additional samples are collected during the field investigations due to observations made by the field team, (i.e. samples not proposed in this SAQP), Defence will be provided the rationale for collection of those samples and proposed laboratory analyses. Defence approval will be sought to include these samples on the CoC and to dispatch these samples to the laboratory.

Upon receipt of the original documents accompanying the samples at the laboratory, the laboratory will provide a sample receipt document (noting the temperature of samples upon receipt, analyses required and any non-conformances) and return the signed CoC form to confirm analyses to be performed and the due date for the analytical results.

4.13.4 Sampling Documentation

Field sampling sheets will be completed for each location, and will include the following information (as appropriate for the media being sampled):

- Name of sampler
- Sample location
- Date /time of monitoring/ sampling
- Sampling method
- Observations of the sampled media
- Calibration records.

Records of all equipment calibration will be included in the Sampling Event Factual Reports.

4.14 Reporting

4.14.1 Sampling Event Factual Report

No later than four weeks following receipt of the laboratory reports, AECOM will prepare and submit a Sampling Event Factual Report to Defence in accordance with Defence OMP Factual Report Guidance (Defence 2021a). Each Sampling Event Factual Report will include:

- details of the scope of monitoring completed

- a description of the sampling methodologies used
- a summary of observations made while sampling (e.g. any visual or olfactory observations that may indicate impacts to surface water or groundwater)
- a summary of any changes to the monitoring network condition that may affect data integrity, or require rectification works, and recommendations for repair, replacement of decommissioning of a location
- a presentation of the analysis results in a table that includes comparisons with PFAS guidelines, highlighting any significant statistical deviations from historical monitoring and investigation data
- a presentation of the reduced groundwater levels for the event on a figure with inferred contours and inferred groundwater flow direction
- discussion of the analytical data quality, including review of the quality control sampling results and laboratory quality control data
- inclusion of the following information as attachments:
    - Groundwater sampling forms including field water quality parameter measurements;
        i. Chain of custody forms;
        ii. Laboratory analytical certificates; and
        iii. Equipment calibration certificates.

4.14.2 Annual Interpretive Report

At the end of each 12-month monitoring period following the April monitoring event, AECOM will prepare and submit an Annual Interpretive Report to Defence in accordance with Defence OMP Interpretive Report guidance (Defence, 2021b). Each Interpretive Report will include:

- evidence of compliance with the requirements of the SAQP and meeting stated objectives of the OMP (Defence, 2020)
- relevant figures depicting sampling locations and site-specific hydrogeological features
- laboratory results and analysis including comparison with relevant screening criteria as identified in each OMP (Defence, 2020)
- assessment and commentary on appropriate QA/QC procedures
- a review of the CSM and provision of a revised CSM if required
- data interpretation, including trends in groundwater concentration, gradient and flow directions
- assessment of statistically based trends that may inform decision making when it comes to the revision of an OMP (Defence, 2020)
- a statement as to whether the risk profile has changed overall, or for any specific location at the site, and a recommendation as to whether this should trigger an OMP and/or PMAP review, or other action.

4.15 Deviations from OMP

The following deviations from the OMP (Defence, 2020) are recorded below:

- The OMP included analysis for a non-PFAS suite for approximately 20% of groundwater, surface water and sediment samples. The first OMP sampling event, completed in October 2020, included these analyses. This requirement was removed in March 2021 at the request of Defence as the collection and analysis of samples for non-PFAS analytes was not justified at the Base to meet the requirements of the OMP.

- Sampling location SW020/SD020 was not accessible for sampling in 2021, despite repeated attempts requesting access. Consequently this sampling location was removed from the OMP from 2022.
- Sampling events were planned to occur in April 2021, October 2021 and April 2022 but actually took place in May, 2021, November 2021 and May 2022, respectively. The sampling events were delayed due to training exercises, including live firing, occurring at the Range during April 2021, October 2021 and April 2022 which restricted access to portions of the Base.
- The OMP Review (AECOM, 2023) recommended the following changes to the sampling program to optimise the program by focusing on the sample locations where PFAS have been detected.:
    - Removal of a total of seven groundwater monitoring wells (MW103, MW104, MW105, MW107, MW108, MW110, MW120) from the sampling program at locations where PFAS have generally not been detected during the monitoring conducted to date.
    - removal six co-located surface water and sediment sampling locations (SW/SD004, SW/SD005, SW/SD008, SW/SD012, SW/SD020, SW/SD024) to remove locations where PFAS have generally not been detected during the monitoring conducted to date.
    - Removal of the requirement to sample the WWTP at times of high usage.

Other than the above changes, the scope of works and methodology described in this SAQP are consistent with that presented in the OMP (Defence, 2020) and as amended in the OMP Review (AECOM, 2023).

5.0 References

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Department of Defence, 2021c. *PFAS OMP Review Guidance,* Version 1, 2021.

enHealth, 2012a. *Environmental Health Risk Assessment: Guidelines for assessing human health risks from environmental hazards*.

enHealth, 2012b. *Australian Exposure Factor Guide. Department of Health and Ageing*.

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Heads of EPAs Australia and New Zealand (HEPA) 2020. *PFAS National Environmental Management Plan*. Version 2.0 January 2020.

National Health and Medical Research Council (NHMRC), 2019. *Guidance on PFAS in Recreational Water. August 2019*. August 2019.

Standards Australia 1998. AS/NZ 5667:1998 *Water quality – sampling.*

US EPA, 2002. *Guidance on Environmental Data Verification and Data Validation*, November 2002.

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Appendix A

Figures

Appendix A Figures

AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 0.5 1 2 3

km

1:80,000 (when printed at A3)

LEGEND

- Watercourse
- Road
- Major Road
- ManagementArea
- WBTA Property Boundary

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

LOCATION OF WBTA AND MANAGEMENT AREA

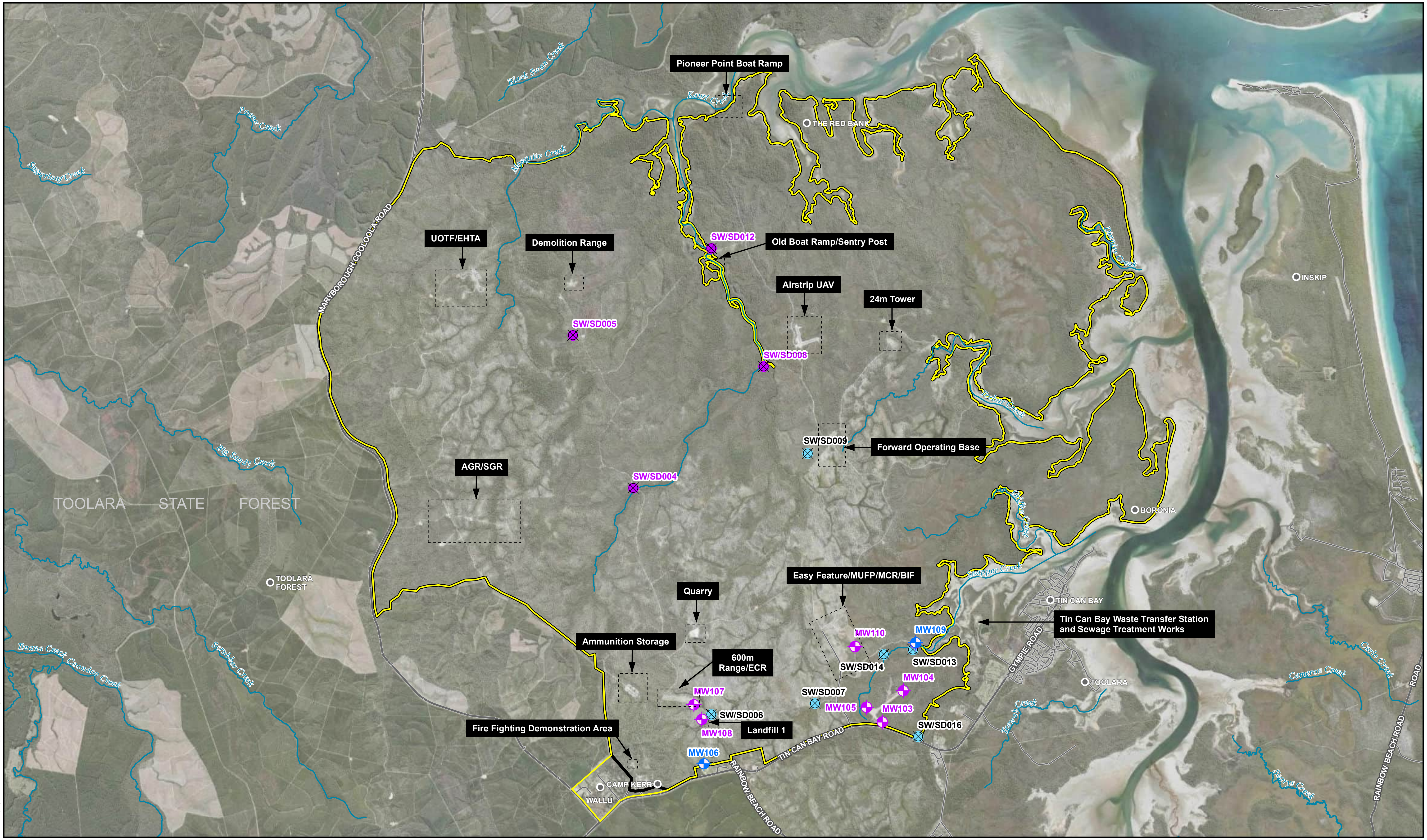
PFAS OMP

WBTA - SAQP Rev 8

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

1



AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 0.5 1 2 3

km

1:80,000 (when printed at A3)

LEGEND

- Removed sediment / surface water sampling location
- Removed groundwater sampling location
- Retained groundwater sampling location
- Retained sediment / surface water sampling location
- Road
- WBTA Property Boundary
- WBTA Management Area
- Watercourse

UOTF - Urban Operations Training Facility
AGR - Assault Grenade Range
SGR - Standard Grenade Range
MUFP - Multi User Firing Point
MCR - Multi Classification Range
ECR - Electronic Classification Range
BIF - Battle Inoculation Facility
EHTA - Explosive Handling Training Area
UAV - Unmanned Aerial Vehicle

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SAMPLE LOCATIONS (GREATER WBTA)

PFAS OMP

WBTA - SAQP Rev 8

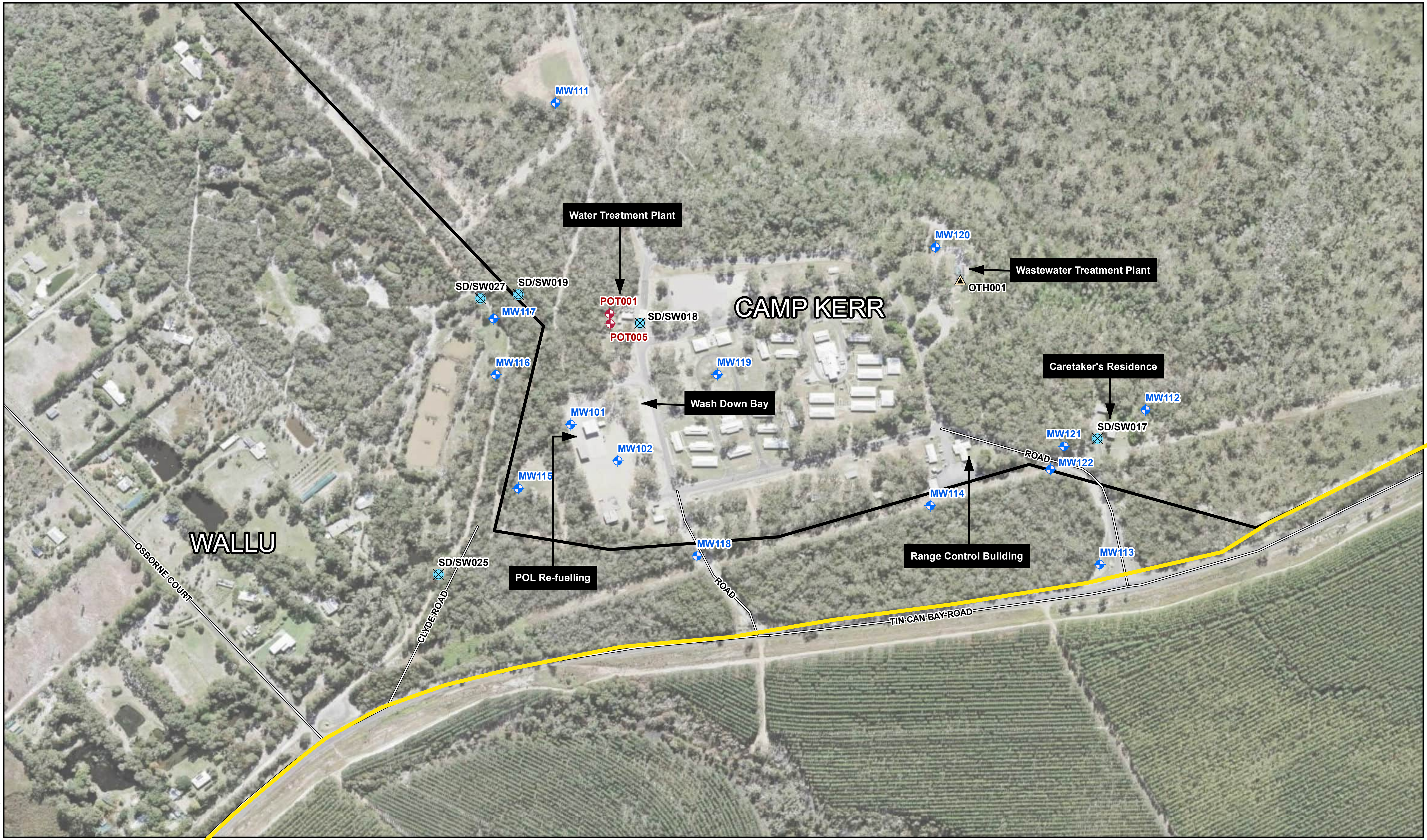
PROJECT ID 60612563
CREATED BY PeacheyJ
LAST MODIFIED SCS- 25/06/21
VERSION: 1

Figure

2

Filename:\\na.aecomnet.com\lfs\APAC\Brisbane-AUBNE1\Secure\Projects\606X\60612563\900_CAD_GIS\920_GIS\02_MXDs\WBTA\PFAS_OMP_WBTA_AIR_2021\WBTA_P60612563_F2_OMP_Sampling_Locations_WBTA.mxd

A3 size



AECOM

N

DATUM GDA 1994, PROJECTION MGA ZONE 56

0 50 100 200

metres

1:4,500 (when printed at A3)

LEGEND

- Removed sediment / surface water sampling location
- Removed groundwater sampling location
- Retained Wastewater treatment plant sampling location
- Retained abstraction bore
- Retained groundwater sampling location
- Retained sediment / surface water sampling location
- Road
- WBTA Property Boundary
- WBTA Management Area

Data sources:

Base Data: (c) 20XX (data source) (additional data)

Wide Bay Training Area, Queensland

SAMPLING LOCATIONS (CAMP KERR)

PFAS OMP

WBTA - SAQP Rev 8

PROJECT ID	60612563
CREATED BY	PeacheyJ
LAST MODIFIED	SCS- 25/06/21
VERSION:	1

Figure

3

Appendix B

Monitoring Well Construction Details

Appendix B Monitoring Well Construction Details

Well ID	Easting	Northing	Relative Elevation of Top of Casing (mAHD)	Constructed Total Bore Depth (mbgl)	Depth of Screened Interval (mbtoc)	Targeted depth for Hydrasleeve (mbtoc)
MW101	491110.98	7129853.54	79.264	15.0	11.0 - 15.0	14.0
MW102	491164.14	7129808.09	78.564	20.0	14.0 - 20.0	19.0
MW103	496663.71	7131232.71	33.239	10.5	7.5 - 10.5	9.5
MW104	497121.86	7131937.54	20.815	11.0	8.0 - 11.0	10.0
MW105	496293.82	7131574.71	27.603	7.2	4.2 - 7.2	6.5
MW106	492729.31	7130284.43	69.468	10.0	4.0 - 10.0	9.0
MW107	492450.19	7131631.52	37.789	5.8	2.8 - 5.8	4.8
MW108	492639.22	7131306.77	39.99	17.5	14.5 - 17.5	16.5
MW109	497399.00	7133007.94	9.207	10.0	7.0 - 10.0	9.0
MW110	496044.47	7132934.25	17.967	4.0	0.5 - 4.0	3.0
MW111	491093.50	7130255.87	78.952	20.5	16.5 - 20.5	19.5
MW112	491760.84	7129872.04	65.183	9.0	6.0 - 9.0	8.0
MW113	491709.10	7129678.45	67.717	9.0	6.0 - 9.0	8.0
MW114	491517.49	7129752.02	73.016	14.5	8.5 - 11.5	10.5
MW115	491051.90	7129773.34	76.659	16.0	13.0 - 16.0	15.0
MW116	491026.40	7129915.59	69.815	11.0	8.0 -11.0	10.0
MW117	491023.74	7129985.77	68.914	10.0	7.0 - 10.0	9.0
MW118	491253.67	7129688.89	76.154	13.0	10.0 -13.0	12.0
MW119	491276.52	7129916.21	79.546	16.0	13.0 - 16.0	15.0
MW120 (MB1.1)	491523.05	7130075.59	71.332	Unknown	Unknown	12.5
MW121 (MB2.1)	491668.54	7129826.51	70.405	Unknown	Unknown	14.0
MW122 (MB3.1)	491653.19	7129797.48	70.575	Unknown	Unknown	19.0

Notes:
mbgl - metres below ground level
mbtoc - metres below top of casing
mAHD - metres above Australian Height Datum