Supplementary Per- and Poly-fluoroalkyl Substances (PFAS) Assessment

35 McCullough Street, Cooranbong, NSW

Prepared for: Johnson Property Group Pty Ltd
EP2743.001 28 July 2022

APPROVED COMPANY ISO 9001 Quality Management Systems QMS Certification Services

APPROVED COMPANY AS/NZS 4801 Occupational Health & Safety Management Systems QMS Certification Services

APPROVED COMPANY ISO 14001 Environmental Management Systems QMS Certification Services

EP RISK

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35 McCullough Street, Cooranbong, NSW

Johnson Property Group Pty Ltd
27 Patrick Drive,
Cooranbong, NSW 2265

28 July 2022

Our Ref: EP2743.001

LIMITATIONS

This Supplementary Per- and Poly-fluoroalkyl Substances (PFAS) Assessment was conducted on the behalf of Johnson Property Group Pty Ltd for the purpose/s stated in **Section 1**.

EP Risk has prepared this document in good faith but is unable to provide certification outside of areas over which EP Risk had some control or were reasonably able to check. The report also relies upon information provided by third parties. EP Risk has undertaken all practical steps to confirm the reliability of the information provided by third parties and do not accept any liability for false or misleading information provided by these parties.

It is not possible in a Supplementary Per- and Poly-fluoroalkyl Substances (PFAS) Assessment to present all data, which could be of interest to all readers of this report. Readers are referred to any referenced investigation reports for further data.

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This report has been reviewed by Paul Simpson, a CEnvP SC, of EP Risk Management Pty Ltd.

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Executive Summary

EP Risk Management Pty Ltd (EP Risk) was engaged by Johnson Property Group Pty Ltd (JPG) to undertake a supplementary per- and poly- fluoroalkyl substances (PFAS) Assessment (the Assessment) at 35 McCullough Street, Cooranbong, NSW (the Site). The Site is located at the former Cooranbong Recreational Aviation Centre, which is currently vacant and the former buildings have been demolished. The proposed development comprises a residential subdivision.

Based upon the previous use of the Site as an Aviation Centre, Lake Macquarie City Council requested that additional assessment of the Site for PFAS contamination be undertaken given the potential for historical fire-fighting training using aqueous film forming foam (AFFF) which have historically contained PFAS.

Fieldwork investigations comprised collection of soil samples from 20 soil hand auger locations in the immediate vicinity of the former buildings and runway, where historical firefighting activities would most likely have been undertaken. Samples were sent to a National Association of Testing Authorities (NATA) accredited laboratory for PFAS analysis.

The Site is underlain by shallow fill and topsoil between 0.1 m BGL to 0.15 m BGL overlying natural silty clay. The former runway comprises a sealed asphalt runway and concrete slabs were present in the location of the former aviation buildings.

Based upon the results of analytical testing, concentrations of PFAS in soil were below the laboratory detection limits and no exceedances of health or ecological criteria were reported. Therefore, EP Risk considers the former use of the Site as a recreational aviation facility presents a low risk of PFAS contamination to human health and the environment for the proposed residential development.

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1 Introduction

1.1 Overview

EP Risk Management Pty Ltd (EP Risk) was engaged by Johnson Property Group Pty Ltd (JPG) to undertake a supplementary per- and poly- fluoroalkyl substances (PFAS) Assessment (the Assessment) at 35 McCullough Street, Cooranbong, New South Wales (NSW) (the Site).

The Site comprises a large irregular shaped lot formerly used as the Cooranbong Recreational Aviation Centre. A preliminary site investigation (PSI) was undertaken at the Site in 2017 (EP Risk, 2017). It is understood Council have requested a subsequent assessment of Per and Poly Fluoroalkyl Substances (PFAS) due to the emergence of PFAS as a contaminant of concern particularly around former aviation facilities. JPG are in the process of revising the development application (DA) for the proposed residential subdivision.

1.2 Objectives

The objective of the Assessment was to assess and characterise the nature and extent of PFAS contamination (if any) resulting from the operation of the former recreational aviation centre and runway.

1.3 Scope of Work

The scope of work completed to achieve the objective was:

- Review of the previous investigation undertaken at the Site
- Review of updated desktop information available for the Site in relation to PFAS contamination since the PSI was prepared in 2017.
- Site visit to observe onsite and offsite conditions and identify any areas of environmental concern.
- Preparation of all work health and safety documentation and procurement of dial before you dig information.
- Engagement of a service locator to check for underground services at and near the proposed sampling locations at the Site.
- Collection of soil samples from 20[1] soil boring locations to a maximum of 0.5 meters below ground level (m BGL) (or prior refusal). The boreholes were advanced with a hand auger.
- At least one sample per location was collected and analysed to satisfy the NSW EPA (1995) sampling density requirements for the approximate area.
- Collection of soil samples from the top 0.1, 0.5, 1.0 and every meter thereafter, at each location, until target depth was achieved.
- Submission of samples to a National Association of Testing Authorities (NATA) accredited laboratory for selected analysis for the identified contaminants of potential concern (COPC).
- Preparation of a Supplementary PFAS Assessment report to support the DA in accordance with the NSW EPA (2020) *Guideline for Consultants Reporting on Contaminated Sites,* the PFAS National Environmental Management Plan 2020 (HEPA NEMP 2020) and the National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM 2013).

[1] NSW EPA (1995) Sampling Design Guidelines: minimum sampling points required for site characterisation based on detecting circular hot spots using a systematic sampling pattern.

2 Site Identification

The Site Identification details are presented in **Table 1**.

Table 1 – Site Identification

Item	Description
Address	35 McCullough Street, Cooranbong, NSW (**Figure 1**)
Legal description	Lot 8450 DP 1250919
Approximate area	Approximately 23.85 ha
Owner	Johnson Property Group Pty Ltd
Municipality	Lake Macquarie City Council
Zoning	A mix of RE1 Public Recreation, R3 Medium Density Residential and B4 Mixed Use.

3 Methodology

The Investigation was conducted in accordance with:

- Australian Standard AS4482.1-2005: *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds*.
- Australian Standard AS4482.1-1999: *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 2: Volatile substances*.
- Australian and New Zealand Environment and Conservation Council ('ANZECC'), Agriculture and Resource Management Council of Australia and New Zealand ('ARMCANZ') (2000) *Guidelines for Fresh and Marine Water Quality* (ANZECC 2000).
- ANZECC (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG 2018)[2].
- Food Standards Australia New Zealand (FSANZ) (2017), *Perfluorinated Chemicals in Food* (April 2017) (FSANZ 2017).
- Heads of EPAs Australia and New Zealand (HEPA) (2020) *PFAS National Environmental Management Plan* 2.0 (PFAS NEMP 2020).
- National Health and Medical Research Council (NHMRC) (2019) Guidance on Per and Polyfluoroalkyl (PFAS) in Recreational Water (NHMRC 2019).
- National Environment Protection Council: (NEPC) (1999) *National Environment Protection (Assessment of Site Contamination) Measure*, as amended April 2013 (ASC NEPM 2013).
- NSW EPA (2016) Designing Sampling Programs for Sites Potentially Contaminated by PFAS (NSW EPA 2016).
- NSW EPA (2016) Proposed Decision Tree for Prioritising Sites Potentially Contaminated with PFASs (NSW EPA 2016a).
- NSW Environment Protection Authority (EPA) (1995) *Sampling Design Guidelines*.
- NSW EPA (2014) *Waste Classification Guidelines: Part 1 – Classifying Waste* (NSW Waste Classification Guidelines).
- NSW EPA (2015) *Guidelines on the Duty to Report Contamination under the* Contaminated Land Management Act 1997.
- NSW EPA (2017) *Guidelines for the NSW Auditor Scheme (3rd Edition)* (NSW Auditor Guidelines).
- NSW OEH (2019) *Contaminated Sites, Guidelines for Consultants Reporting on Contaminated Sites*.
- Simpson SL, Batley GB, Chariton AA, Stauber JL, King CK, Chapman JC, Hyne RV, Gale SA, Roach AC and Maher WA (2005) *Handbook for Sediment Quality Assessment* (CSIRO) (Simpson et. al. 2005).
- Simpson SL, Batley GB and Chariton AA (2013) *Revision of the ANZECC/ARMCANZ Sediment Quality Guidelines* (Simpson et. al. 2013).
- State Environmental Planning Policy (Resilience and Hazards) (2021) (Hazards SEPP).
- United State Environment Protection Agency (USEPA) (2006) *Guidance on Systematic Planning Using the Data Quality Objectives Process, ref: EPA QA/G-4*.

[2] Available at www.waterquality.gov.au/anz-guidelines.

4 Site Condition and Surrounding Environment

The majority of information provided in the following sections was obtained from Lotsearch Environmental Risk and Planning Report (2017). A copy of the Lotsearch (2017) report is attached as **Appendix A**.

4.1 Current Site Use and Layout

EP Risk undertook a Site inspection on 18 July 2022 comprising of a Site walkover and visual assessment. The general Site features and infrastructure observed during the inspection are presented in **Figure 2**. The Site is currently vacant with a former airstrip located in the east of the Site. The Site inspection revealed no significant changes from 2017 with the exception of some stockpiling of topsoil in the north and an access track built from Jeremiah Drive to the airstrip which is being used as a haul road for the surrounding residential developments. An area of fly-tipping, illegal rubbish dumping, was observed in the northwest of the Site. Site photos of the latest site inspection are attached as **Appendix B**.

4.2 Proposed Site Use

It is understood that the Site is to be redeveloped for a low and medium density residential subdivision with some green open space areas. The dam is to be dewatered and filled in for the redevelopment. The masterplan for the Proposed Development is provided as **Appendix C**.

4.3 Surrounding Land Use

The Site is located within an area primarily zoned for residential land use. As of 15 July 2022, surrounding land uses comprised:

- North: Vacant, vegetated land.
- South: Residential properties (under construction/development).
- East: Avondale School, and vegetated land.
- West: Residential properties (under construction/development).

4.4 Topography and Drainage

The general topography of the Site and surrounding area is relatively flat sloping gently to the south. The elevation of the Site is ranges from approximately 30 metres above Australian Height Datum (mAHD' in the north to 20 mAHD in the south. The Site drainage is considered to consist of overland flow carrying water south of the Site. A plan showing the topographical contours of the Site is provided within the Lotsearch (2017) Report as **Appendix A**. A small dam is present in the central portion of the Site, another small dam is located approximately 240 m to the east of the Site. Streams and tributaries of Jiggle Creek are located approximately 400 m south of the Site.

4.5 Geology

Based on the information contained in the NSW Department of Industry, Resources and Energy 1: 250,000 datasets (Lotsearch, 2017), the Site is underlain by Mesozoic-aged sandstone, interbedded sandstone and siltstone, claystone, conglomerate and sandstone of the Narrabeen Group and Clifton Subgroup.

4.6 Soil Landscapes

Based on the soil landscapes data sourced from the NSW OEH (Lotsearch, 2017) the on-site soil landscape has been identified as Doyalson. The Doyalson soil landscape is erosional and is characterised by gently undulating rises on Monmorah Conglomerate with moderately deep yellow earths, yellow podzolic soils and soloths.

4.7 Natural Occurring Asbestos Potential

No reported naturally occurring asbestos potential has been identified within 1 km of the Site.

4.8 Hydrogeology

A search of the NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation undertaken by Lotsearch (2017) indicated that there were no registered groundwater bores located at the Site and five registered groundwater bores located within 2 km of the Site. The information for the 26 registered groundwater bores located within a 500 m radius of the site is presented in **Table 2**.

Table 2 – Licensed Groundwater Bores

Bore Number	Purpose	Installation Date	Bore Depth (m BGL[3])	SWL[4]	Distance from Site	Direction from Site
GW200765	Domestic	12/10/1980	8.00	6.00	744 m	South
GW064116	Domestic, stock	1/03/1987	21.30	-	916 m	South
GW057310	Farming	1/05/1982	61.00	-	1,520 m	North
GW064033	Domestic, Stock	1/03/1987	49.40	-	1,937 m	Southeast
GW067263	Domestic, stock	20/03/1989	10.00	3.00	1,974 m	Southwest

Further details of the lithology encountered during installation of the groundwater bores are provided in the Lotsearch (2017) report provided as **Appendix A**. Review of the Hydrogeology Map of Australia, Lotsearch (2017) identified fractured or fissured, extensive aquifers of low to moderate productivity are present onsite.

4.9 Acid Sulfate Soils

The Lake Macquarie LEP does not identify the Site to be within an area containing potential acid sulfate soils.

4.10 Mining Subsidence

Lotsearch (2017) identified the West Lake mining subsidence district located approximately 940 m east of the Site.

4.11 Contaminated Land

The *Contaminated Land Management Act 1979* (CLM Act) is not applicable to the land.

4.12 State Environmental Planning Policy Protected Areas

No State Environmental Planning Policy protected area has been identified at the Site or within 1 km of the Site.

[3] m BGL – metres below ground level.
[4] SWL - surface water level (m BGL).

4.13 State Environmental Planning Policy Strategic Land Use Areas

The Biophysical Strategic Agricultural Land has been identified approximately 860 m west of the Site.

4.14 Heritage Items

No state heritage Items have been identified at the Site or within 1km of the Site. One local heritage item (a cottage) has been identified in the Lake Macquarie LEP approximately 680 m south of the Site.

4.15 Contaminated Sites Notified to the NSW EPA

As of 1 August 2017, the Site is not on the NSW EPA database for Contaminated Sites notified to the NSW EPA in accordance with the CLM Act. There are no records of Notices for sites located within 1 km of the Site, except for one site (former poultry farm) which is located approximately 700 m to the southwest of the Site has been notified to the EPA. Further details of the notifications are provided in the Lotsearch (2017) report in **Appendix A**.

4.16 Former Gasworks

No former gasworks are located within 1 km of the Site.

4.17 NSW EPA PFAS Investigation Program

There are no records of sites that are part of the NSW EPA PFAS investigation program within 2 km of the Site.

4.18 Waste Management Facilities and UPSS Sensitive Zones

There are no records of waste management facilities within 1 km of the Site. The underground petroleum storage system (UPSS) regulated environmentally sensitive zone is located approximately 400 m to the east of the Site.

4.19 Licensed Activities Under the Protection of the Environment Operations Act 1997

A summary of the licensed activities under the *Protection of the Environment Operations Act 1997* (POEO Act) being undertaken within 1 km of the Site is provided in **Table 3**.

Table 3 – Licensed Activities Under the POEO Act

EPL[5]	Organisation	Activity	Distance from Site
6332	Lake Macquarie City Council	Other activities	Onsite
3957	Forestry Corporation of New South Wales	Logging operations	664 m west

4.20 Delicensed Activities Still Regulated by the NSW EPA

No delicensed activities still regulated by the NSW EPA have been identified within 1 km of the Site.

[5] EPL – environment protection license

4.21 Former Licensed Activities under the POEO Act, now Surrendered

Former licensed activities under the POEO Act, now surrendered identified onsite and within 1 km of the Site are provided in **Table 4.**

Table 4 – Former licensed activities under the POEO Act, now surrendered

Licence No.	Organisation	Location	Activity	Distance from Site
4653	Luhrmann Environment Management Pty Ltd	Waterways throughout NSW	Application of herbicides	Onsite
4838	Robert Orchard			
6630	Sydney Weed and Pest Management Pty Ltd			

4.22 Sensitive Receptors

Sensitive receptors identified at and in the vicinity of the Site are considered to be:

- Future residential users of the Site (PFAS NEMP 2020 human health screening values – low density residential)[6].
- Terrestrial fauna and flora at the Site (PFAS NEMP 2020 interim soil – ecological direct and indirect exposure).

[6] Low density residential criteria were adopted to be protective of potential future users in a low density residential setting. This includes school children, staff, recreational users and subsurface maintenance workers.

5 Previous Environmental Investigations

EP Risk previously prepared a PSI report in 2017 which addressed other potential contaminants at the Site. A summary of the report is provided below.

5.1 EP Risk, Preliminary Site Investigation, 9 Courin Drive, Cooranbong (EP Risk, 2017)

The report presents the findings of a PSI undertaken at the Site, located at 35 McCullough Street, Cooranbong, NSW (formely known as 9 Courin Drive, Cooranbong). The Site is approximately 18 ha and it is understood that JPG was proposing to redevelop the Site into a low and medium density residential subdivision and a PSI was required for the Development Application process.

The Site history review indicated that the Site was used for recreational aviation activities since prior to the mid 1950s. The site inspection identified a fly-tipping area in the northwest of the Site and potential ACM fragments on the surface of the Site in the northeast.

Based on the results of the analytical testing, the individual or 95% UCL soil concentrations of the COPC were reported below the adopted criteria for low density residential land use. Chrysotile and amosite asbestos were detected in the two potential ACM samples collected in the northeast from the surface of the Site.

Based on the findings of the PSI, EP Risk recommends the following:

- All stored anthropogenic materials from the flytipping areas should be removed from the Site during redevelopment.
- Removal, off-site disposal and clearance of the ACM fragments in the northeast of the Site.
- Prepare and implement an unexpected finds protocol during redevelopment.

Based on the results of the Site history review, Site inspection and analytical results, the Site is considered to present a low risk of contamination. The results of soil analytical testing have been reported at levels that would not preclude the proposed future use of the site as a low and medium density residential subdivision, subject to completion of the recommended works above.

6 Sampling and Analysis

6.1 Data Quality Objectives

To assess whether an appropriate sampling strategy was adopted for the Investigation, EP Risk adopted the data quality objectives (DQOs) planning process as:

- Recommended in the ASC NEPM 2013.
- Required within the NSW EPA (2017) Auditor Guidelines.
- With consideration to technical details outlined in United State Protection Agency: *Guidance on Systematic Planning Using the Data Quality Objectives Process, ref: EPA QA/G-4* (US EPA, 2006) and AS 4482.1 2005, *Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds*.

State the Problem

The objectives of the Investigation are to assess whether PFAS contamination is present at the Site as a result of operation of the former Cooranbong Recreational Aviation Centre.

Identify the Decision

To assess the soil at the Site, the following decisions need to be addressed:

- Do the concentrations of COPC in the soil exceed the relevant health-based and ecological investigation levels?
- Is there any evidence of, or potential for, migration of contaminants off-site?
- Is further investigation required?
- Is a management plan required?

Identify Inputs into the Decision

The inputs required to make the decision include the following:

- Site history investigation.
- Previous environmental investigations.
- Site visit and observations of contamination staining, odours etc.
- Environmental data as collected by sampling and analysis of soil samples and site observations made during this investigation.
- Assessment criteria to be achieved at the Site as based on the intended land use and project objectives, as defined by the Tier 1 assessment criteria nominated in **Section 8**. Confirmation the data generated by sampling and analysis is of an acceptable quality to allow reliable comparison to assessment criteria as undertaken by assessment of quality assurance / quality control (QA/QC) as per the data quality indicators (DQIs) established in **Section 6.1.**

Define the Boundaries of the Study

The spatial boundaries of the assessment comprise Lot 8450 DP1250919 however the soil sampling was limited to the area of the Site immediately surrounding the former hangar and runway locations. It was considered that these are the areas with the highest risk of PFAS contamination from the operation of the former Aviation Centre where PFAS storage and firefighting activities are usually undertaken. The maximum proposed depth for the investigation was set at 1.0 m BGS with the approximate boundaries identified in **Figure 1**.

Develop a Decision Rule to Identify the Decision

Laboratory analytical data was assessed against EPA endorsed criteria as identified in **Section 7**. The decision rules adopted to answer the decisions identified above are summarised in **Table 5** below:

Table 5 – Summary of Decision Rules

Decision	Rule
1. Does the concentration of COPC in the soil exceed the relevant health-based and ecological investigation levels?	The nature and extent of soil impacts was assessed, and soil analytical data was compared against the adopted health and ecological criteria (refer to **Sections 8.1**). The following statistical criteria was adopted with respect to soil: Either: the reported concentrations are all below the adopted site criteria; Or: the average site concentration for each analyte must be below the adopted site criterion; no single analyte concentration exceeds 250% of the adopted site criterion; and the standard deviation of the results must be less than 50% of the site criteria. And: the 95% upper confidence limit (UCL_{mean}) of the average concentration for each analyte must be below the adopted site criterion. If the statistical criteria stated above are satisfied, and an assessment of risk indicates no unacceptable risks, the decision is No. Otherwise, the decision is Yes.
3. Is there any evidence of, or potential for, migration of contaminants off-site?	Are contaminants present within natural soil near the boundary of the Site at concentrations exceeding the adopted site criteria? If yes, the answer to the decision is Yes. Otherwise, the answer to the decision is No. And/or If groundwater and/or surface water analytical results exceed the adopted site assessment criteria and the downgradient groundwater and/or surface water is impacted, the decision is yes. Otherwise, the decision is No.
4. Is further investigation required?	If the 95% UCLs of the soil COPC are detected above the adopted Site criteria, further investigation may be required.
5. Is a site management strategy required?	If the 95% UCLs of the soil COPC are detected above the adopted Site criteria, and a linkage between the source of contamination, pathway and receptor is complete then, a site management strategy may be required.

Specify Acceptable Limits of Decision Errors

The acceptable limits were as follows:

- Individual or 95% UCL_{mean} concentrations to be below the adopted criteria or background concentrations.
- 95% of the data must satisfy the DQIs which were determined for completeness, representativeness, precision and accuracy of both field and laboratory data. Therefore, the limit on the decision error was 5% that a conclusive statement may be incorrect.
- A comprehensive QA/QC program was undertaken including representative sampling and sampling at an appropriate density for the purpose of the investigation.

The acceptable limit of error for sampling techniques and laboratory analysis was defined by the DQIs as follows:

Data Representativeness

Expresses the accuracy and precision with which sample data represents a characteristic of a population or an environmental condition. Data representativeness is achieved by the collection of samples at an appropriate pattern and density as well as consistent and repeatable sampling techniques and procedures.

Completeness

Refers to, the percentage of data that can be considered valid data. The completeness goal is set at there being sufficient valid data generated during the study.

Comparability

A qualitative comparison of the confidence with which one data set can be compared to another. This was achieved through consistent sampling and analytical testing and reporting techniques.

Precision

Is a measure of the reproducibility of on measurements under a given set of conditions. The relative percent difference ('RPD') has been adopted to assess the precision of data between duplicate sample pairs according to the following equation.

$$RPD\% = \frac{[\mathrm{Cp} - \mathrm{Cd}]}{\mathrm{Cp} + \mathrm{Cd}} \times 200$$

Where:
Cp = Primary sample
Cd = Duplicate Sample

An acceptance criterion of ±50% had been adopted for field duplicates and triplicates. However, it should be noted that exceedances of these criteria are common for heterogeneous soil or fill or for low analyte concentrations.

Accuracy

Is a measure of the bias in the analytical results and can often be attributed to field contamination; insufficient preservation or sample preparation; or inappropriate analytical techniques. Accuracy of the analytical data is assessed by consideration of laboratory control samples and laboratory spikes.

The data quality objectives, requirements and indicators for the assessment are presented in **Table 6**.

Table 6 – DQO, Requirements and Indicators

DQO	Requirement	Data Quality Indicator
Precision		
Standard operating procedures appropriate and complied with	The sampling methods comply with industry standards and guidelines	Meet requirement
Intra-laboratory duplicates	1 per 10 samples	RPDs < 50%
Inter-laboratory duplicates	1 per 10 samples	RPDs < 50%
Laboratory duplicates	Minimum of 1 per batch per analyte	RPDs < 50%
Accuracy		
Laboratory matrix spikes	1 per batch per volatile/semi-volatile analyte	Recoveries 50% to 150%
Laboratory surrogate spikes	1 per volatile/semi-volatile analyte sample (as appropriate)	Recoveries 70% to 130%
Laboratory control/method blank samples	At least 1 per batch per analyte tested for	Result < laboratory reporting limit
Representativeness		
Sampling methodology - preservation	Appropriate for the sample type and analytes	Meet requirement
Samples extracted and analysed within holding times	Specific to each analyte	Meet requirement
Field equipment calibration	All field equipment calibrated and calibration records provided	Meet requirement
Laboratory method blanks	At least 1 per batch per analyte tested for	Result < laboratory reporting limit
Trip blanks	1 per lab batch for PFAS analytes	Result < laboratory reporting limit
Field blanks	1 per lab batch for PFAS analytes	Result < laboratory reporting limit
Comparability		
Sampling approach	Consistent for each sample	Meet requirement
Analysis methodology	Consistent methodology for each sample	Meet requirement
Handling conditions and sampler	Consistent for each sample	Meet requirement
Field observations and analytical	Field observations to support analytical results	Meet requirement
Consistent laboratory reporting limit	Consistent between primary and secondary laboratories	Meet requirement
Completeness		
Sampling staff	Consistent sampling staff used.	Meet requirement
Laboratory accreditation	NATA Accredited laboratory for methods used	Meet requirement
Accredited methods	NATA accredited methods used appropriate for each analyte	Meet requirement

Table 6 – DQO, Requirements and Indicators		
DQO	**Requirement**	**Data Quality Indicator**
ASC NEPM 2013 lab methods	Lab methods consistent with the ASC NEPM 2013	Meet requirement
Laboratory reporting limit	Laboratory reporting limit consistent and appropriate	Meet requirement
Consistent weather / field conditions	Consistent	Meet requirement
Chain of custody documentation	Appropriately completed	Meet requirement
Field sampling documentation	Appropriately completed	Meet requirement

Optimise the Design for Obtaining Data

A systematic sampling pattern was used at a reduced sampling density presented in the NSW EPA (1995) *Sampling Design Guidelines*. The reduced sampling density for each portion of the Site is provided in Table 7

Table 7 – Adopted Sampling density				
Area of Environmental Concern	**Area**	**Minimum sampling Density (NSW EPA 1995)**	**Adopted Sampling Density**	**% of Minimum Sampling Density**
Hangar and recreational centre	1.5 ha.	25 sampling locations	10 sampling locations	40%
Runway and adjacent cleared land	6.5 ha	80 sampling locations	10 sampling locations	12.5%

The reduced sampling density was considered appropriate based on the level of risk of PFAS chemicals being used within each area, the location of storage and likely firefighting activities and the preliminary nature of the assessment.

6.2 Sampling and Analysis Methodology

Soil Sampling Methodology

The methodology for soil sampling was outlined as follows:

1 Soil samples were collected from twenty borehole locations advanced via a hand auger. The soil sampling locations are presented in **Figure 2**.

2 At least one sample per location will be collected to satisfy the NSW EPA (1995) sampling density requirements for the approximate area.

3 Soils were logged for type, colour, texture, other characteristics and indications of contamination as presented in the bore logs attached as **Appendix B**.

4 All sampling equipment was decontaminated with de-ionised PFAS-free water and a dedicated pair of nitrile gloves was used for each sample to prevent cross contamination.

5 Sufficient samples were collected and placed into laboratory prepared sampling PFAS-free plastic jars with a unique sample ID added to the label on each jar.

6 The sample jars were preserved in a chilled esky containing ice immediately after sampling and during shipment to the laboratories. The laboratory chain of custody documentation was completed and accompanied the samples during shipment.

6.3 Analytical Testing

EP Risk used Eurofins MGT and Envirolab Services as the primary and secondary laboratories, both of which are NATA registered for the required analysis. The laboratory analysis was undertaken in accordance with **Table 7**.

Table 8 – Analytical Testing of Primary Samples

Media	Sampling locations	Number of Analysis
Soil	20	• PFAS (30 analytes) - 26
Field Blank	1	Water • PFAS (30 analytes) – 1
Rinsate	1	Water • PFAS (30 analytes) – 1
Duplicates and Triplicates	1	Soil • PFAS (30 analytes) – 2

6.4 Field and Laboratory Quality Assurance and Quality Control (QA/QC)

An assessment of the field and laboratory DQI results is presented in **Table 8**.

Table 9 – DQI Results Summary

Parameter	Requirement	Objective Met
Precision		
Standard operating procedures appropriate and complied with	The sampling methods comply with industry standards and guidelines	Yes
Field duplicates	• 1 per 10 samples; and • RPDs < 50%	Yes Yes
Field triplicates	• 1 per 10 samples; and • RPDs < 50%	Yes Yes
Laboratory duplicates	• Minimum of 1 per batch per analyte; • RPDs < 50%; and • >10%, laboratory specified	Yes Yes Yes
Accuracy		
Laboratory matrix spikes	• 1 per batch per volatile/semi-volatile analyte; and • Recoveries >70% to 130%	Yes Yes
Laboratory surrogate spikes	• 1 per volatile/semi-volatile analyte sample (as appropriate); and • Recoveries 70% to 130%	Yes Yes
Laboratory control samples/method blank	• At least 1 per batch for analyte tested; and • 70-130%	Yes Yes
Representativeness		
Sample collection - preservation	Appropriate for the sample type and analytes	Yes
Field equipment calibration	All field equipment calibrated, and calibration records provided	Yes
Decontamination procedures	All sampling equipment to be decontaminated between each sample	Yes
Holding times	Samples extracted and analysed within laboratory prescribed holding times	Yes
Trip blanks	• 1 per field batch for PFAS analytes; and • Result < LOR.	Yes Yes
Field blanks	• 1 per field batch for PFAS analytes; and • Result < LOR.	Yes Yes
Laboratory Method Blanks	• At least 1 per batch per analyte tested for; and • Result < LOR	Yes Yes
Completeness		
Sample logs and groundwater field sheets	Provided	Yes
Chain of custody	Provided	Yes
Sample receipt acknowledgement	Provided	Yes
Laboratory reports	Provided	Yes
Comparability		
Sampling staff	Consistent sampling staff used	Yes

Table 9 – DQI Results Summary

Parameter	Requirement	Objective Met
Laboratory accreditation	NATA Accredited laboratory for methods used	Yes
Accredited methods	NATA accredited methods used appropriate for each analyte	Yes
ASC NEPM 2013 lab methods	Lab methods consistent with the ASC NEPM 2013	Yes
Laboratory reporting limit consistent and appropriate	Meet requirement	Yes
Consistent weather / field conditions	Consistent	Yes

On the basis of the information provided in **Table 8**, EP Risk considers that the DQOs for the project have been met and the data is appropriate for the purposes of this assessment.

7 Environmental Quality Criteria

7.1 Soil Criteria

For the purposes of assessing the results of analytical testing of soils at the Site, the following guidelines were considered:

- ASC NEPM 2013.
- NSW EPA Auditor Guidelines (2017).
- PFAS NEMP (2020)

EP Risk has adopted the Tier 1 Guidelines in the PFAS NEMP 2.0 (2020) in accordance with ASC NEPM 2013 and NSW EPA (2017). In accordance with the decision-making process for assessing urban redevelopment sites (Appendix A, NSW EPA, 2017), soil concentrations were compared against the following soil investigation levels (SILs):

- **Health-based Criteria for the current and proposed land use**: PFAS NEMP 2020 health-based screening values for low density residential land use.
- **Ecological Criteria**: The interim ecological indirect exposure guideline values were recently revised in the PFAS NEMP 2.0 (2020) to include a value independent of land use. However, in accordance with the guideline EP Risk has adopted the residential land use criteria based on the future use.
- **Aesthetics**: The consultant should also consider the need for remediation based on the 'aesthetic' contamination as outlined in Schedule B (1) of the ASC NEPM 2013 that states that *'there are no numeric Aesthetic Guidelines however site assessment requires balanced consideration of the quality, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity*'. Soil odour, discolouration and the presence of anthropogenic materials will need to be assessed during the assessment.

The adopted soil criteria for the site are presented in **Table 9**.

Table 10 – Adopted Soil and Sediment Criteria

Receptor	Guidelines	COPC	Adopted Criteria
Human Health	PFAS NEMP (2020)	PFOS/PFHxS and PFOA	Soil – Human health screening values for low density residential land use.
Ecological	PFAS NEMP (2020)	PFOS and PFOA	Interim soil – Direct and indirect ecological exposure for low density residential land use.

Currently the Site is vacant and proposed to be developed into a residential subdivision. Based on the future land use, EP Risk has adopted the guideline values for a low-density residential land use setting.

8 Results

8.1 Soil Lithology

The soil lithology across the Site generally comprised:

- FILL/TOPSOIL: Silty SAND – Dark grey-black, dry, from the surface to 0.1-0.5 m BGS; overlying
- Silty CLAY: Light grey-brown, dry to moist, medium plasticity.

The former runway comprises a sealed asphalt runway and concrete slabs were present in the location of the former aviation buildings. Groundwater was not observed during the Assessment.

8.2 Analytical Testing

8.2.1 Soil

The results of soil analytical testing are contained in the analytical summary tables section at the rear of the report and the laboratory certificates of analysis are attached as **Appendix D.**

A summary of the analytical results is presented below:

PFOS, PFOA, PFHxS/PFOS

All concentrations of PFOS, PFOA and PFHxS/PFOS were reported below the laboratory limit of reporting and the adopted soil criteria.

9 Site Characterisation

Based on the decision-making process for assessing urban redevelopment sites detailed in EPA (2017) and discussed in **Section 6**, the decisions required to be made are detailed below.

- Do the concentrations of COPC in the soil exceed the relevant health-based and ecological investigation levels?
- Is there any evidence of, or potential for, migration of contaminants off-site?
- Is further investigation required?
- Is a management plan required?

9.1 Do the concentrations of COPC exceed the relevant health-based and ecological investigation levels within Soil?

No, there were no exceedances to the adopted health-based or ecological criteria in soil samples collected from the Site.

9.2 Is there any evidence of, or potential for, migration of contaminants off-site?

As there was no primary source of PFAS observed at the Site (i.e storage or firefighting training areas) and PFAS was below detection levels in soil around the former runway and hangar locations, there is no evidence of migration of contamination offsite.

9.3 Is Further Investigation Required?

Given that there is no source of PFAS, no detection of PFAS in soil at the Site and no identified offsite migration there no further investigation required.

9.4 Is a Site Management Strategy Required?

No Site management is required as PFAS was not detected at levels above the health or ecological criteria at the Site.

10 Refined Conceptual Site Model

The CSM has been refined based upon the information provided in previous sections of this report.

10.1 Potentially Contaminating Activities

The following potentially contaminating activities have been undertaken at the Site:

- Operation of the aviation centre potentially containing PFAS firefighting foams.

10.2 Affected Media

The potential affected media at the Site is soil.

10.3 Sensitive Receptors

Potential sensitive receptors identified onsite were:

- Future residential users of the Site (PFAS NEMP 2020 human health screening values – low density residential)[7].
- Terrestrial fauna and flora at the Site (PFAS NEMP 2020 interim soil – ecological indirect exposure).

10.4 Potential Exposure Pathways

Potential transport pathways for contaminants to the identified health-based receptors include:

- Incidental ingestion of PFAS impacted soil.
- Ingestion of dust containing PFAS impacted soil.
- Dermal contact with PFAS impacted soil.

Potential transport pathways for contaminants to the identified ecological receptors include:

- Direct contact with impacted soil.
- Bioaccumulation and biomagnification

10.5 Potential and Complete Exposure Pathways

An analysis of the potential exposure pathways between the COPC and the identified human and ecological receptors are presented in **Table 10.**

[7] Low density residential criteria was adopted to be protective of potential future users in a low density residential setting. This includes school children, staff, recreational users and subsurface maintenance workers.

Table 11 – Potential Source-Pathway-Receptor Linkages

Sources				Pathways		Receptors	Linkages	Comments
Primary	Secondary	Contaminants	Affected Media	Transport Mechanisms	Exposure Pathways			
AFFF (containing PFAS) storage and firefighting	Impacted soil	PFOS, PFOA, PFHxS	Soil	Spills and leaks from storage areas and AFFF draining to exposed soil areas	Human Health • incidental ingestion • dermal contact	• future residents at the Site • Sub-surface maintenance workers	Not Complete	No detection of PFOS, PFHxS or PFOA were observed in the soil samples and therefore the pathway is not complete.
					Ecological • Dermal contact • bioaccumulation and biomagnification	• Terrestrial fauna and flora at the Site and on adjoining land	Not Complete	No detection of PFOS, PFHxS or PFOA were observed in the soil samples and therefore the pathway is not complete.

11 Conclusions and Recommendations

This report presents the findings of a PFAS Investigation undertaken at 35 McCullough Street, Cooranbong, NSW. The Site is a large irregular shaped lot owned by JPG. It is understood the Site is proposed to be redeveloped into a residential subdivision.

EP Risk were engaged to undertake a Supplementary PFAS Assessment to assist in the preparation of the development application (DA).

Fieldwork investigations for the Supplementary PFAS Assessment comprised the following:

- Collection of soil samples from 20 soil boring locations to a maximum of 1 metre below ground level (m BGL) (or prior refusal). The boreholes were advanced using a hand auger.
- At least one sample per location were collected to satisfy the NSW EPA (1995) sampling density requirements for the approximate area.
- Submit samples to a National Association of Testing Authorities ('NATA') accredited laboratory for selected analysis for the identified COPC.

The Site is underlain by shallow fill between 0.1 m BGL to 0.15 m BGL overlying natural silty clay. The former runway comprises a sealed asphalt runway and concrete slabs were present in the location of the former aviation buildings.

Based upon the results of analytical testing, concentrations of PFAS in soil were below the laboratory detection limits and no exceedances of health or ecological criteria were reported. Therefore, EP Risk considers the former use of the Site as a recreational aviation facility presents a low risk of PFAS contamination to human health and the environment for the proposed residential development.

Figures

EP RISK

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Supplementary PFAS Assessment
35 McCullough Street, Cooranbong, NSW

Figure 1 - Site Location

Job No: EP2743
Date: 22/07/2022
Drawing Ref: Figure 1
Version No: v1

N

0 8 16 24 m

Approximate Scale Only

Coordinate System: MGA 56
Drawn by: LK Checked by: NM
Scale of regional map not shown
Source: Near Maps

APPROVED COMPANY ISO 9001 Quality Management Systems — QMS Certification Services
APPROVED COMPANY AS/NZS 4801 Occupational Health & Safety Management Systems — QMS Certification Services
APPROVED COMPANY ISO 14001 Environmental Management Systems — QMS Certification Services

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Supplementary PFAS Assessment
35 McCullough Street, Cooranbong, NSW

Figure 2 - SiteLayout and Sampling Locations

Job No: EP2743
Date: 22/07/2022
Drawing Ref: Figure 2
Version No: v1

N

0 8 16 24 m

Approximate Scale Only

Coordinate System: MGA 56
Drawn by: LK Checked by: NM
Scale of regional map not shown
Source: Near Maps

APPROVED COMPANY ISO 9001 Quality Management Systems — QMS Certification Services
APPROVED COMPANY AS/NZS 4801 Occupational Health & Safety Management Systems — QMS Certification Services
APPROVED COMPANY ISO 14001 Environmental Management Systems — QMS Certification Services

Analytical Tables

Table 1 - Analytical Summary Table

	Perfluoroalkane Carboxylic Acids											(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkane Sulfonic Acids							Perfluoroalkyl Sulfonamides							PFAS						Inorganics
	Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorononanesulfonic acid (PHNS)	Sum of FTHxS and PFOS	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	Sum of PFAS (PFOS + PFOA)	Moisture Content (dried @ 103°C)
	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	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
EQL	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.005	0.005	0.01	0.005	5	0.005	0.05	0.01	0.005	0.005	1
PFAS NEMP 2020 Ecological direct exposure					10																	1															
PFAS NEMP 2020 Ecological indirect exposure																						0.01															
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)					0.1																											0.007					
Field ID	**Date**																																				
BH01_0.2	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	18
BH01_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	6.2
BH02_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	9.8
BH02_0.15	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	14
BH03_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	20
BH03_0.5	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	16
BH04_0.3	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	17
BH04_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	31
BH05_0.3	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	18
BH05_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	32
BH06_0.2	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	22
BH06_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	14
BH07_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	35
BH08_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	8.1
BH08_0.15	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	16
BH10_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	20
BH11_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	18
BH12_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	16
BH13_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	10
BH14_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	6.8
BH15_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	7.1
BH16_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	6.8
BH17_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	12
BH18_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	13
BH19_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	13
BH20_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	16
QC01	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	34
QC03	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	8.4
Statistics																																					
Number of Results		**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**	**28**
Number of Detects		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**28**
Minimum Concentration		**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.01**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.01**	**<0.005**	**<0.005**	**<0.01**	**<0.005**	**<5**	**<0.005**	**<0.05**	**<0.01**	**<0.005**	**<0.005**	**6.2**
Minimum Detect		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**6.2**
Maximum Concentration		**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.01**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.01**	**<0.005**	**<0.005**	**<0.01**	**<0.005**	**<5**	**<0.005**	**<0.05**	**<0.01**	**<0.005**	**<0.005**	**35**
Maximum Detect		**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**35**
Average Concentration *		**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.005**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.005**	**0.0025**	**0.0025**	**0.005**	**0.0025**	**2.5**	**0.0025**	**0.025**	**0.005**	**0.0025**	**0.0025**	**16**
Median Concentration *		**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.005**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.005**	**0.0025**	**0.0025**	**0.005**	**0.0025**	**2.5**	**0.0025**	**0.025**	**0.005**	**0.0025**	**0.0025**	**16**
Standard Deviation *		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8.2**
95% UCL (Student's-t) *		**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.005**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.0025**	**0.005**	**0.0025**	**0.0025**	**0.005**	**0.0025**	**2.5**	**0.0025**	**0.025**	**0.005**	**0.0025**	**0.0025**	**19.01**
% of Detects		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**100**
% of Non-Detects		**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**0**

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

HEPA, January 2020, PFAS NEMP 2020 Ecological direct exposure

HEPA, January 2020, PFAS NEMP 2020 Ecological indirect exposure

HEPA, January 2020, PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)

Table 2 - Duplicate and Triplicate RPDs

		Perfluoroalkane Carboxylic Acids											(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkane Sulfonic Acids							Perfluoroalkyl Sulfonamides							PFAS						Inorganics
		Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorononanesulfonic acid (PFNS)	Sum of PFHxS and PFOS	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	Sum of PFAS (PFOS + PFOA)	Moisture Content (dried @ 103°C)
		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	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
EQL		0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.005	0.005	0.01	0.005	0.01	5	0.005	0.05	0.01	0.005	0.005	1
Field ID	**Date**																																				
BH07_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	35
QC01	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	34
	RPD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC02	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	34
	RPD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16_0.05	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	6.8
QC03	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	8.4
	RPD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC04	**18/07/2022**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	8.4
	RPD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3 - Rinsate and Field Blank Results

		Perfluoroalkane Carboxylic Acids											(n:2) Fluorotelomer Sulfonic Acids				Perfluoroalkane Sulfonic Acids							Perfluoroalkyl Sulfonamides							PFAS					
		Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	Perfluorononanesulfonic acid (PFNS)	Sum of PFHxS and PFOS	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	Sum of PFAS (PFOS + PFOA)
		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	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		0.05	0.01	0.01	0.01	0.01	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	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.00001	0.01	0.1	0.05	0.01	0.01
Field ID	**Date**																																			
FB01	**18/07/2022**	<0.05	<0.01	<0.01	<0.01	<0.01	<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	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.00001	<0.01	<0.1	<0.05	<0.01	<0.01
RW01	**18/07/2022**	<0.05	<0.01	<0.01	<0.01	<0.01	<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	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.00001	<0.01	<0.1	<0.05	<0.01	<0.01

Appendix A
SITE PHOTOGRAPHS

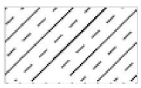
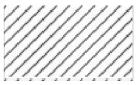
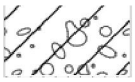
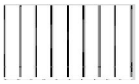
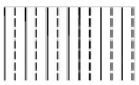
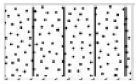
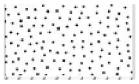
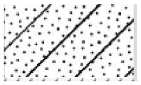
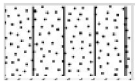
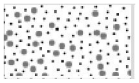
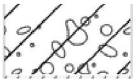
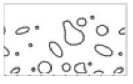
	**Plate 1** **Description:** Concrete slab in the location of the former aviation centre. **Date:** 18/07/22
	**Plate 2** **Description:** Southern end of the former runway. **Date:** 18/07/22

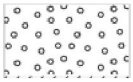
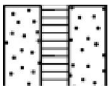
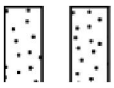
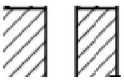
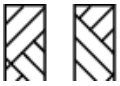
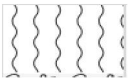
	**Plate 3** **Description:** Bushland located to the west of the Site. **Date:** 18/07/22
	**Plate 4** **Description:** Avondale School located to the east of the Site. **Date:** 18/07/22

	**Plate 5** **Description:** The former runway looking north showing a topsoil stockpile in the northern portion of the Site. **Date:** 18/07/22
	**Plate 6** **Description:** The former runway looking north. **Date:** 18/07/22

Appendix B
BORE LOGS

Soil Logging Symbols

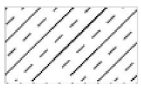
CLAYS		Definition
	CLAY	USCS – CH
	silty CLAY	USCS – OH
	sandy CLAY	USCS – CL
	gravelly CLAY	USCS – GC
SILTS		
	SILT	USCS – ML
	clayey SILT	USCS – OL
	sandy SILT	USCS – SM
	gravelly SILT	USCS – GM
SANDS		
	SAND	USCS – SW
	clayey SAND	USCS – SC
	silty SAND	USCS – SM
	gravelly SAND	USCS – SP
GRAVELS		
	GRAVEL	USCS – GW
	clayey GRAVEL	USCS – GC
	silty GRAVEL	USCS – GM
	sandy GRAVEL	USCS – GP

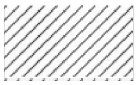
SEDIMENTARY ROCK		Definition
	SANDSTONE	BGS - SNDST
	SILTSTONE	BGS - SLTST
	SHALE	BGS - SHALE
	CONGLOMERATE	BGS - CONG
FILL		
	FILL	OTHER – 01
	CONCRETE	BKFL-41
	ASPHALT	OTHER – 04
GROUNDWATER WELL SYMBOLS		
	WELL SCREEN	BKFL-31
	CASING – filter pack	BKFL-31
	CASING – backfill	BKFL-10
	CASING – bentonite seal	BKFL-22
	CASING – grout seal	BKFL-42
	BACKFILL	BKFL-10
OTHER		
	TOPSOIL – sandy SILT	OTHER – 05
	TOPSOIL – highly organic	USCS – PT

Soil Logging Symbols

CLAYS

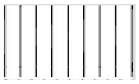

CLAY

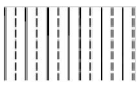

silty CLAY

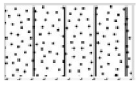

sandy CLAY


gravelly CLAY

SILTS

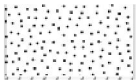

SILT


clayey SILT

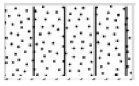

sandy SILT

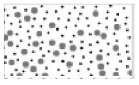

gravelly SILT

SANDS


SAND

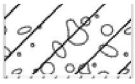

clayey SAND


silty SAND

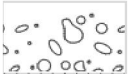

gravelly SAND

GRAVELS


GRAVEL


clayey GRAVEL


silty GRAVEL

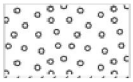

sandy GRAVEL

SEDIMENTARY ROCK

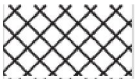

SANDSTONE

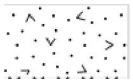

SILTSTONE


SHALE


CONGLOMERATE

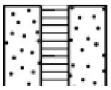
FILL

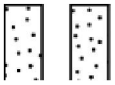

FILL

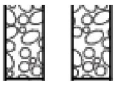

CONCRETE


ASPHALT

GROUNDWATER WELL SYMBOLS


WELL SCREEN


CASING – filter pack


CASING – backfill


CASING – bentonite seal


CASING – grout seal


BACKFILL

OTHER


TOPSOIL – sandy SILT


TOPSOIL – highly organic

Bore Hole BH01

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.2 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.063558°
LONGITUDE 151.462655°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH01_0.05		Y		FILL: Silty GRAVEL: Brown, dry, fine to medium gravel.	
0.1					Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.15						
0.2	BH01_0.2		Y		End of Investigation at 0.2 m.	
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

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Bore Hole BH02

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.2 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.063287°
LONGITUDE 151.462763°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH02_0.05		Y		FILL: Silty GRAVEL: Brown, dry, fine to medium gravel.	
0.1					Silty CLAY: Low plasticity, light brown, slightly moist. Residual.	
0.15	BH02_0.15		Y			
0.2					End of Investigation at 0.2 m.	
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

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Bore Hole BH03

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.5 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.062956°
LONGITUDE 151.462853°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH03_0.05		Y		TOPSOIL: Sandy SILT: Grey, dry, loose.	
0.1					Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.5	BH03_0.5		Y		End of Investigation at 0.5 m.	

Bore Hole BH04

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.3 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.062640°
LONGITUDE 151.462903°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH04_0.05		Y		TOPSOIL: Sandy SILT: Grey, dry, loose.	
0.1					Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.15						
0.2						
0.25						
0.3	BH04_0.3		Y		End of Investigation at 0.3 m.	
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

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Bore Hole BH05

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.3 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.062569°
LONGITUDE 151.462601°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH05_0.05		Y		TOPSOIL: Sandy SILT: Grey, dry, loose.	
0.1					Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.15						
0.2						
0.25						
0.3	BH05_0.3		Y		End of Investigation at 0.3 m.	
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

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Bore Hole BH06

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.2 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.062929°
LONGITUDE 151.462422°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH06_0.05		Y		TOPSOIL: Sandy SILT: Grey, dry, loose.	
0.1					Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.15						
0.2	BH06_0.2		Y		End of Investigation at 0.2 m.	
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

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Bore Hole BH07

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.2 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.063292°
LONGITUDE 151.462455°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH07_0.05		Y		TOPSOIL: Sandy SILT: Grey, dry, loose.	
0.1					Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.15						
0.2	BH07_0.2		Y		End of Investigation at 0.2 m.	
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

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Bore Hole BH08

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.15 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.063532°
LONGITUDE 151.462258°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH08_0.05		Y		FILL: Silty GRAVEL: Brown, dry, fine to medium gravel.	
0.1					Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.15	BH08_0.15		Y		End of Investigation at 0.15 m.	
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

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Bore Hole BH09

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.063447°
LONGITUDE 151.461931°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH09_0.05		Y		Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

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Bore Hole BH10

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.063156°
LONGITUDE 151.462019°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH10_0.05		Y		Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

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Bore Hole BH11

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.062848°
LONGITUDE 151.462058°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH11_0.05		Y		TOPSOIL: Sandy SILT: Grey, dry, loose.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

produced by ESlog.ESdat.net on 28 Jul 2022

Bore Hole BH12

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.062432°
LONGITUDE 151.462032°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH12_0.05		Y		TOPSOIL: Sandy SILT: Grey, dry, loose.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

produced by ESlog.ESdat.net on 28 Jul 2022

Bore Hole BH13

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.062156°
LONGITUDE 151.462448°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH13_0.05		Y		TOPSOIL: Sandy SILT: Grey, dry, loose.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

produced by ESlog.ESdat.net on 28 Jul 2022

Bore Hole BH14

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.061871°
LONGITUDE 151.462036°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH14_0.05		Y		FILL: Silty GRAVEL: Brown, dry, fine to medium gravel.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

produced by ESlog.ESdat.net on 28 Jul 2022

Bore Hole BH15

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.061437°
LONGITUDE 151.462246°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH15_0.05		Y		FILL: Silty GRAVEL: Brown, dry, fine to medium gravel.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

produced by ESlog.ESdat.net on 28 Jul 2022

Bore Hole BH16

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.060954°
LONGITUDE 151.461976°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH16_0.05		Y		FILL: Silty GRAVEL: Brown, dry, fine to medium gravel.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

produced by ESlog.ESdat.net on 28 Jul 2022

Bore Hole BH17

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.060363°
LONGITUDE 151.462344°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH17_0.05		Y		Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

produced by ESlog.ESdat.net on 28 Jul 2022

Bore Hole BH18

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.059669°
LONGITUDE 151.461915°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH18_0.05		Y		Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

produced by ESlog.ESdat.net on 28 Jul 2022

Bore Hole BH19

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.058755°
LONGITUDE 151.462280°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH19_0.05		Y		Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

produced by ESlog.ESdat.net on 28 Jul 2022

Bore Hole BH20

PROJECT NUMBER EP2743
PROJECT NAME PFAS Assessment
CLIENT Johnson Property Group Pty Ltd
ADDRESS 35 McCullough Street, Cooranbong NSW

DRILLING DATE 18/07/2022
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.1 m

LOGGED BY Mathew Cheshire
CHECKED BY Nathan McGuire
LATITUDE -33.057877°
LONGITUDE 151.461756°

COMMENTS

Depth (m)	Samples	PID (ppm)	Analysed?	Graphic Log	Material Description	Additional Observations
0.05	BH20_0.05		Y		Silty CLAY: Low plasticity, orange to light grey, slightly moist. Residual.	
0.1					End of Investigation at 0.1 m.	
0.15						
0.2						
0.25						
0.3						
0.35						
0.4						
0.45						
0.5						
0.55						
0.6						
0.65						

produced by ESlog.ESdat.net on 28 Jul 2022

Appendix C
LABORATORY CERTIFICATES OF ANALYSIS

CHAIN OF CUSTODY RECORD

Sydney Laboratory
Unit F3 Bld F, 16 Mars Rd, Lane Cove West, NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

Brisbane Laboratory
Unit 1, 21 Smallwood Pl., Murarrie, QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

Perth Laboratory
Unit 2, 91 Leach Highway, Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

Melbourne Laboratory
2 Kingston Town Close, Oakleigh, VIC 3166
03 8564 5000 EnviroSampleVic@eurofins.com

Company	EP Risk	Project Nº	EP2743
Address	3/19 Bolton Street, Newcastle, NSW	Project Name	PFAS Assessment
Contact Name	Nathan McGuire	Project Manager	Nathan McGuire
Phone Nº	M: 0422937410	Report Format	Esdat, Excel
Special Direction		Relinquished by	Nathan McGuire 18/07/2022
Purchase Order	EP2743	Email for Results	nathan.mcguire@eprisk.com.au
Quote ID Nº	181023EPR		

Turn Around Requirements: Overnight (9am)* / 1 Day* / 2 Day* / 3 Day* / ■ 5 Day / Other ( )

Containers: 1L Plastic, 250mL Plastic, 125mL Plastic, 200mL Amber Glass, 40mL vial, 125mL Amber Glass, Jar, Other ( )

Nº	Client Sample ID	Date	Matrix	PFAS (30 analytes)	Sample Comments / Hazard Warning	DG
1	BH01_0.05	18/07/22	S	X	Please analyse composite "_C" samples for non-volatiles such as metals, pH, EC and foreign materials as per ENM Order 2014	
2	BH01_0.2	18/07/22	S	X	Please analyse discreet "_D" samples for volatiles such as TPH, PAH and BTEX as per ENM Order 2014	
3	BH02_0.05	18/07/22	S	X		
4	BH02_0.15	18/07/22	S	X		
5	BH03_0.05	18/07/22	S	X		
6	BH03_0.5	18/07/22	S	X		
7	BH04_0.05	18/07/22	S	X		
8	BH04_0.3	18/07/22	S	X		
9	BH05_0.05	18/07/22	S	X		
10	BH05_0.3	18/07/22	S	X		
11	BH06_0.05	18/07/22	S	X		
12	BH06_0.2	18/07/22	S	X		
13	BH07_0.05	18/07/22	S	X		
14	BH08_0.05	18/07/22	S	X		
15	BH08_0.15	18/07/22	S	X		
16	BH09_0.05	18/07/22	S	X		
17	BH10_0.05	18/07/22	S	X		
18	BH11_0.05	18/07/22	S	X		
19	BH12_0.05	18/07/22	S	X		
20	BH13_0.05	18/07/22	S	X		
21	BH14_0.05	18/07/22	S	X		
22	BH15_0.05	18/07/22	S	X		
23	BH16_0.05	18/07/22	S	X		
24	BH17_0.05	18/07/22	S	X		
25	BH18_0.05	18/07/22	S	X		
26	BH19_0.05	18/07/22	S	X		
27	BH20_0.05	18/07/22	S	X		
28	QC01	18/07/22	S	X		
29	QC02	18/07/22	S	X	Please send to Envirolab for Analysis	
30	QC03	18/07/22	S	X		
31	QC04	18/07/22	S	X	Please send to Envirolab for Analysis	
32	FB01	18/07/22	S	X		
33	RW01	18/07/22	S	X		
	Total Counts			33		

Method of	Courier (#)	Hand Delivered	Postal	Name	Signature	Date __/__/__	Time
Laboratory Use Only	Received By	SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature	Date __/__/__	Time	Temperature	
	Received By	SYD | BNE | MEL | PER | ADL | NEW | DAR	Signature	Date __/__/__	Time	Report Nº	

Emma 2pm 18/7/22 4.4°C

Date/Time: 19/07/22 9:00AM
Chilled: Yes / No
Temp: 8.2°C
-0.2°C
Correction: 8.0°C
Final Temp:
PT

#906825

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www.eurofins.com.au EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	4/52 Industrial Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield East NSW 2304
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	PO Box 60 Wickham 2293
Tel: +61 3 8564 5000	Tel: +61 3 8564 5000	Tel: +61 2 9900 8400	Tel: +61 2 6113 8091	Tel: +61 7 3902 4600	Tel: +61 2 4968 8448
NATA# 1261 Site# 1254	NATA# 1261 Site# 1254	NATA# 1261 Site# 18217		NATA# 1261 Site# 20794	NATA# 1261 Site# 25079

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NATA# 2377 Site# 2370

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NZBN: 9429046024954

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Penrose,	Rolleston,
Auckland 1061	Christchurch 7675
Tel: +64 9 526 45 51	Tel: 0800 856 450
IANZ# 1327	IANZ# 1290

Sample Receipt Advice

Company name:	EP Risk Management (NSW)
Contact name:	Nathan McGuire
Project name:	PFAS ASSESSMENT
Project ID:	EP2743
Turnaround time:	5 Day
Date/Time received	Jul 19, 2022 9:00 AM
Eurofins reference	906825

Sample Information

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

Notes

Samples QC02 and QC04 forwarded to Envirolab. Two extra samples received that were not recorded on the COC. The sample IDs are BH07_0.2 and BH11_0.2. These samples have been logged and placed on hold. The sample BH09_0.05 was not received.

Contact

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

Emma Beesley on phone : or by email: EmmaBeesley@eurofins.com

Results will be delivered electronically via email to Nathan McGuire - nathan.mcguire@eprisk.com.au.

Note: A copy of these results will also be delivered to the general EP Risk Management (NSW) email address.

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web: www.eurofins.com.au
email: EnviroSales@eurofins.com

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Tel: 0800 856 450
IANZ# 1290

Company Name: EP Risk Management (NSW)
Address: Level 4 73 Walker St
North Sydney
NSW 2060

Project Name: PFAS ASSESSMENT
Project ID: EP2743

Order No.: EP2743
Report #: 906825
Phone: 02 99225021
Fax:

Received: Jul 19, 2022 9:00 AM
Due: Jul 26, 2022
Priority: 5 Day
Contact Name: Nathan McGuire

Eurofins Analytical Services Manager : Emma Beesley

Sample Detail						HOLD	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	BH01_0.05	Jul 18, 2022		Soil	B22-JI0036569		X	X
2	BH01_0.2	Jul 18, 2022		Soil	B22-JI0036570		X	X
3	BH02_0.05	Jul 18, 2022		Soil	B22-JI0036571		X	X
4	BH02_0.15	Jul 18, 2022		Soil	B22-JI0036572		X	X
5	BH03_0.05	Jul 18, 2022		Soil	B22-JI0036573		X	X
6	BH03_0.5	Jul 18, 2022		Soil	B22-JI0036574		X	X
7	BH04_0.05	Jul 18, 2022		Soil	B22-JI0036575		X	X
8	BH04_0.3	Jul 18, 2022		Soil	B22-JI0036576		X	X
9	BH05_0.05	Jul 18, 2022		Soil	B22-JI0036577		X	X
10	BH05_0.3	Jul 18, 2022		Soil	B22-JI0036578		X	X
11	BH06_0.05	Jul 18, 2022		Soil	B22-JI0036579		X	X
12	BH06_0.2	Jul 18, 2022		Soil	B22-JI0036580		X	X
13	BH07_0.05	Jul 18, 2022		Soil	B22-JI0036581		X	X

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IANZ# 1290

Company Name: EP Risk Management (NSW)
Address: Level 4 73 Walker St
North Sydney
NSW 2060

Project Name: PFAS ASSESSMENT
Project ID: EP2743

Order No.: EP2743
Report #: 906825
Phone: 02 99225021
Fax:

Received: Jul 19, 2022 9:00 AM
Due: Jul 26, 2022
Priority: 5 Day
Contact Name: Nathan McGuire

Eurofins Analytical Services Manager : Emma Beesley

Sample Detail						HOLD	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X
14	BH08_0.05	Jul 18, 2022		Soil	B22-JI0036582		X	X
15	BH08_0.15	Jul 18, 2022		Soil	B22-JI0036583		X	X
16	BH10_0.05	Jul 18, 2022		Soil	B22-JI0036584		X	X
17	BH11_0.05	Jul 18, 2022		Soil	B22-JI0036585		X	X
18	BH12_0.05	Jul 18, 2022		Soil	B22-JI0036586		X	X
19	BH13_0.05	Jul 18, 2022		Soil	B22-JI0036587		X	X
20	BH14_0.05	Jul 18, 2022		Soil	B22-JI0036588		X	X
21	BH15_0.05	Jul 18, 2022		Soil	B22-JI0036589		X	X
22	BH16_0.05	Jul 18, 2022		Soil	B22-JI0036590		X	X
23	BH17_0.05	Jul 18, 2022		Soil	B22-JI0036591		X	X
24	BH18_0.05	Jul 18, 2022		Soil	B22-JI0036592		X	X
25	BH19_0.05	Jul 18, 2022		Soil	B22-JI0036593		X	X
26	BH20_0.05	Jul 18, 2022		Soil	B22-JI0036594		X	X
27	QC01	Jul 18, 2022		Soil	B22-JI0036595		X	X
28	QC03	Jul 18, 2022		Soil	B22-JI0036596		X	X
29	FB01	Jul 18, 2022		Water	B22-JI0036597			X

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ABN: 50 005 085 521

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NATA# 1261 Site# 1254

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NATA# 1261 Site# 1254

Sydney
179 Magowar Road
Girraween
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Tel: +61 2 9900 8400
NATA# 1261 Site# 18217

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Brisbane
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NATA# 1261 Site# 20794

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NATA# 1261 Site# 25079

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NATA# 2377 Site# 2370

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Tel: 0800 856 450
IANZ# 1290

Company Name: EP Risk Management (NSW)
Address: Level 4 73 Walker St
North Sydney
NSW 2060

Project Name: PFAS ASSESSMENT
Project ID: EP2743

Order No.: EP2743
Report #: 906825
Phone: 02 99225021
Fax:

Received: Jul 19, 2022 9:00 AM
Due: Jul 26, 2022
Priority: 5 Day
Contact Name: Nathan McGuire

Eurofins Analytical Services Manager : Emma Beesley

Sample Detail						HOLD	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X
30	RW01	Jul 18, 2022		Water	B22-JI0036598			X
31	BH07_0.2	Jul 18, 2022		Soil	B22-JI0036605	X		
32	BH11_0.2	Jul 18, 2022		Soil	B22-JI0036606	X		
Test Counts						2	28	30

EP Risk Management (NSW)
Level 4 73 Walker St
North Sydney
NSW 2060

NATA Accredited
Accreditation Number 1261
Site Number 20794

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

Attention: **Nathan McGuire**

Report **906825-S**
Project name PFAS ASSESSMENT
Project ID EP2743
Received Date Jul 19, 2022

Client Sample ID			**BH01_0.05**	**BH01_0.2**	**BH02_0.05**	**BH02_0.15**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**B22-JI0036569**	**B22-JI0036570**	**B22-JI0036571**	**B22-JI0036572**
Date Sampled			**Jul 18, 2022**	**Jul 18, 2022**	**Jul 18, 2022**	**Jul 18, 2022**
Test/Reference	LOR	Unit				
% Moisture	1	%	6.2	18	9.8	14
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	103	68	104	101
13C5-PFPeA (surr.)	1	%	124	76	121	118
13C5-PFHxA (surr.)	1	%	107	70	108	107
13C4-PFHpA (surr.)	1	%	93	64	97	91
13C8-PFOA (surr.)	1	%	97	64	94	90
13C5-PFNA (surr.)	1	%	109	69	104	108
13C6-PFDA (surr.)	1	%	151	97	136	148
13C2-PFUnDA (surr.)	1	%	124	86	126	133
13C2-PFDoDA (surr.)	1	%	127	100	131	135
13C2-PFTeDA (surr.)	1	%	125	85	122	120
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	88	93	90	92

Client Sample ID			BH01_0.05	BH01_0.2	BH02_0.05	BH02_0.15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036569	B22-JI0036570	B22-JI0036571	B22-JI0036572
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D3-N-MeFOSA (surr.)	1	%	127	118	118	126
D5-N-EtFOSA (surr.)	1	%	98	95	93	96
D7-N-MeFOSE (surr.)	1	%	104	95	101	107
D9-N-EtFOSE (surr.)	1	%	82	82	87	83
D5-N-EtFOSAA (surr.)	1	%	155	30	152	140
D3-N-MeFOSAA (surr.)	1	%	110	15	99	96
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	125	80	124	126
18O2-PFHxS (surr.)	1	%	114	81	101	102
13C8-PFOS (surr.)	1	%	133	101	144	137
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	137	39	123	93
13C2-6:2 FTSA (surr.)	1	%	105	38	98	72
13C2-8:2 FTSA (surr.)	1	%	100	64	105	97
13C2-10:2 FTSA (surr.)	1	%	98	74	103	104
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50	< 50	< 50	< 50

Client Sample ID			BH03_0.05	BH03_0.5	BH04_0.05	BH04_0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036573	B22-JI0036574	B22-JI0036575	B22-JI0036576
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
% Moisture	1	%	20	16	31	17

Client Sample ID			BH03_0.05	BH03_0.5	BH04_0.05	BH04_0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036573	B22-JI0036574	B22-JI0036575	B22-JI0036576
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	104	109	96	104
13C5-PFPeA (surr.)	1	%	126	122	115	123
13C5-PFHxA (surr.)	1	%	110	107	101	104
13C4-PFHpA (surr.)	1	%	102	97	96	92
13C8-PFOA (surr.)	1	%	99	88	93	89
13C5-PFNA (surr.)	1	%	112	103	110	92
13C6-PFDA (surr.)	1	%	141	158	150	142
13C2-PFUnDA (surr.)	1	%	118	130	112	117
13C2-PFDoDA (surr.)	1	%	129	134	127	121
13C2-PFTeDA (surr.)	1	%	127	121	112	104
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	85	92	88	80
D3-N-MeFOSA (surr.)	1	%	123	123	105	112
D5-N-EtFOSA (surr.)	1	%	92	95	88	87
D7-N-MeFOSE (surr.)	1	%	100	104	90	99
D9-N-EtFOSE (surr.)	1	%	85	93	82	85
D5-N-EtFOSAA (surr.)	1	%	156	99	138	126
D3-N-MeFOSAA (surr.)	1	%	93	63	92	80
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	126	130	120	122

Client Sample ID			BH03_0.05	BH03_0.5	BH04_0.05	BH04_0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036573	B22-JI0036574	B22-JI0036575	B22-JI0036576
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonic acids (PFSAs)						
18O2-PFHxS (surr.)	1	%	112	115	97	105
13C8-PFOS (surr.)	1	%	145	129	130	125
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	174	135	140	130
13C2-6:2 FTSA (surr.)	1	%	140	93	100	101
13C2-8:2 FTSA (surr.)	1	%	104	111	101	92
13C2-10:2 FTSA (surr.)	1	%	96	103	91	84
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50	< 50	< 50	< 50

Client Sample ID			BH05_0.05	BH05_0.3	BH06_0.05	BH06_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036577	B22-JI0036578	B22-JI0036579	B22-JI0036580
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
% Moisture	1	%	32	18	14	22
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	102	104	109	45
13C5-PFPeA (surr.)	1	%	118	122	124	51
13C5-PFHxA (surr.)	1	%	105	96	109	48
13C4-PFHpA (surr.)	1	%	98	100	95	42
13C8-PFOA (surr.)	1	%	94	92	91	43
13C5-PFNA (surr.)	1	%	101	108	100	46
13C6-PFDA (surr.)	1	%	99	146	142	64
13C2-PFUnDA (surr.)	1	%	114	126	127	63

Client Sample ID			BH05_0.05	BH05_0.3	BH06_0.05	BH06_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036577	B22-JI0036578	B22-JI0036579	B22-JI0036580
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
13C2-PFDoDA (surr.)	1	%	110	129	125	63
13C2-PFTeDA (surr.)	1	%	61	119	107	58
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	73	84	90	87
D3-N-MeFOSA (surr.)	1	%	110	125	122	125
D5-N-EtFOSA (surr.)	1	%	83	93	97	91
D7-N-MeFOSE (surr.)	1	%	90	99	103	102
D9-N-EtFOSE (surr.)	1	%	71	87	89	89
D5-N-EtFOSAA (surr.)	1	%	101	105	112	11
D3-N-MeFOSAA (surr.)	1	%	49	63	79	77
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	119	132	115	68
18O2-PFHxS (surr.)	1	%	98	102	100	63
13C8-PFOS (surr.)	1	%	130	140	124	71
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	151	138	115	33
13C2-6:2 FTSA (surr.)	1	%	124	121	97	33
13C2-8:2 FTSA (surr.)	1	%	81	99	101	46
13C2-10:2 FTSA (surr.)	1	%	75	98	92	43
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50	< 50	< 50	< 50

Client Sample ID			BH07_0.05	BH08_0.05	BH08_0.15	BH10_0.05
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036581	B22-JI0036582	B22-JI0036583	B22-JI0036584
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
% Moisture	1	%	35	8.1	16	20
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	93	100	80	97
13C5-PFPeA (surr.)	1	%	110	119	89	106
13C5-PFHxA (surr.)	1	%	99	110	84	100
13C4-PFHpA (surr.)	1	%	88	105	84	102
13C8-PFOA (surr.)	1	%	89	101	84	105
13C5-PFNA (surr.)	1	%	92	101	82	103
13C6-PFDA (surr.)	1	%	126	117	99	112
13C2-PFUnDA (surr.)	1	%	104	126	110	117
13C2-PFDoDA (surr.)	1	%	114	131	99	130
13C2-PFTeDA (surr.)	1	%	103	120	93	118
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	76	94	88	88
D3-N-MeFOSA (surr.)	1	%	110	142	140	128
D5-N-EtFOSA (surr.)	1	%	81	94	92	82
D7-N-MeFOSE (surr.)	1	%	87	98	97	82
D9-N-EtFOSE (surr.)	1	%	80	82	86	75
D5-N-EtFOSAA (surr.)	1	%	123	94	24	87
D3-N-MeFOSAA (surr.)	1	%	76	90	17	81
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5

Client Sample ID			BH07_0.05	BH08_0.05	BH08_0.15	BH10_0.05
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036581	B22-JI0036582	B22-JI0036583	B22-JI0036584
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	111	109	96	100
18O2-PFHxS (surr.)	1	%	91	99	87	95
13C8-PFOS (surr.)	1	%	115	86	76	90
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	123	95	81	115
13C2-6:2 FTSA (surr.)	1	%	106	98	67	123
13C2-8:2 FTSA (surr.)	1	%	87	101	84	102
13C2-10:2 FTSA (surr.)	1	%	76	99	75	105
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50	< 50	< 50	< 50

Client Sample ID			BH11_0.05	BH12_0.05	BH13_0.05	BH14_0.05
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036585	B22-JI0036586	B22-JI0036587	B22-JI0036588
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
% Moisture	1	%	18	16	10	6.8
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	113	105	106	103
13C5-PFPeA (surr.)	1	%	130	107	104	110
13C5-PFHxA (surr.)	1	%	112	107	112	113
13C4-PFHpA (surr.)	1	%	101	105	112	114
13C8-PFOA (surr.)	1	%	100	117	107	114
13C5-PFNA (surr.)	1	%	109	98	110	103

Client Sample ID			BH11_0.05	BH12_0.05	BH13_0.05	BH14_0.05
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036585	B22-JI0036586	B22-JI0036587	B22-JI0036588
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
13C6-PFDA (surr.)	1	%	143	119	123	127
13C2-PFUnDA (surr.)	1	%	132	118	127	133
13C2-PFDoDA (surr.)	1	%	134	138	136	140
13C2-PFTeDA (surr.)	1	%	113	112	114	115
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	94	85	89	94
D3-N-MeFOSA (surr.)	1	%	127	133	136	136
D5-N-EtFOSA (surr.)	1	%	98	92	95	100
D7-N-MeFOSE (surr.)	1	%	114	91	94	94
D9-N-EtFOSE (surr.)	1	%	93	79	82	86
D5-N-EtFOSAA (surr.)	1	%	142	96	91	86
D3-N-MeFOSAA (surr.)	1	%	102	86	97	82
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	119	104	110	105
18O2-PFHxS (surr.)	1	%	107	98	103	96
13C8-PFOS (surr.)	1	%	137	92	85	101
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	134	105	103	101
13C2-6:2 FTSA (surr.)	1	%	104	96	97	101
13C2-8:2 FTSA (surr.)	1	%	97	101	99	100
13C2-10:2 FTSA (surr.)	1	%	94	98	99	103

Client Sample ID			BH11_0.05	BH12_0.05	BH13_0.05	BH14_0.05
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036585	B22-JI0036586	B22-JI0036587	B22-JI0036588
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50	< 50	< 50	< 50

Client Sample ID			BH15_0.05	BH16_0.05	BH17_0.05	BH18_0.05
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036589	B22-JI0036590	B22-JI0036591	B22-JI0036592
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
% Moisture	1	%	7.1	6.8	12	13
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	103	104	105	103
13C5-PFPeA (surr.)	1	%	105	123	123	100
13C5-PFHxA (surr.)	1	%	106	106	102	105
13C4-PFHpA (surr.)	1	%	104	107	94	109
13C8-PFOA (surr.)	1	%	105	103	90	103
13C5-PFNA (surr.)	1	%	109	103	100	100
13C6-PFDA (surr.)	1	%	120	119	146	126
13C2-PFUnDA (surr.)	1	%	125	118	135	125
13C2-PFDoDA (surr.)	1	%	126	129	131	133
13C2-PFTeDA (surr.)	1	%	131	106	119	112
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	90	92	96	90

Client Sample ID			BH15_0.05	BH16_0.05	BH17_0.05	BH18_0.05
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036589	B22-JI0036590	B22-JI0036591	B22-JI0036592
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D3-N-MeFOSA (surr.)	1	%	135	139	124	137
D5-N-EtFOSA (surr.)	1	%	91	93	96	96
D7-N-MeFOSE (surr.)	1	%	86	99	100	103
D9-N-EtFOSE (surr.)	1	%	79	78	91	82
D5-N-EtFOSAA (surr.)	1	%	90	80	120	79
D3-N-MeFOSAA (surr.)	1	%	91	78	77	74
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	103	108	122	107
18O2-PFHxS (surr.)	1	%	98	92	105	103
13C8-PFOS (surr.)	1	%	88	93	141	91
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	110	110	99	96
13C2-6:2 FTSA (surr.)	1	%	104	89	75	82
13C2-8:2 FTSA (surr.)	1	%	102	103	105	97
13C2-10:2 FTSA (surr.)	1	%	98	89	107	96
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50	< 50	< 50	< 50

Client Sample ID			BH19_0.05	BH20_0.05	QC01	QC03
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036593	B22-JI0036594	B22-JI0036595	B22-JI0036596
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
% Moisture	1	%	13	16	34	8.4

Client Sample ID			BH19_0.05	BH20_0.05	QC01	QC03
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036593	B22-JI0036594	B22-JI0036595	B22-JI0036596
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	93	104	97	106
13C5-PFPeA (surr.)	1	%	100	121	112	118
13C5-PFHxA (surr.)	1	%	102	102	96	106
13C4-PFHpA (surr.)	1	%	103	100	89	111
13C8-PFOA (surr.)	1	%	98	90	93	106
13C5-PFNA (surr.)	1	%	90	110	97	100
13C6-PFDA (surr.)	1	%	110	136	127	121
13C2-PFUnDA (surr.)	1	%	116	106	108	124
13C2-PFDoDA (surr.)	1	%	124	123	120	132
13C2-PFTeDA (surr.)	1	%	99	114	101	107
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	88	82	80	92
D3-N-MeFOSA (surr.)	1	%	138	108	114	133
D5-N-EtFOSA (surr.)	1	%	92	87	83	95
D7-N-MeFOSE (surr.)	1	%	98	95	87	91
D9-N-EtFOSE (surr.)	1	%	85	79	78	84
D5-N-EtFOSAA (surr.)	1	%	66	141	136	79
D3-N-MeFOSAA (surr.)	1	%	53	88	90	72
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	104	111	111	110

Client Sample ID			BH19_0.05	BH20_0.05	QC01	QC03
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B22-JI0036593	B22-JI0036594	B22-JI0036595	B22-JI0036596
Date Sampled			Jul 18, 2022	Jul 18, 2022	Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonic acids (PFSAs)						
18O2-PFHxS (surr.)	1	%	92	104	98	100
13C8-PFOS (surr.)	1	%	89	124	121	90
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C2-4:2 FTSA (surr.)	1	%	97	118	124	106
13C2-6:2 FTSA (surr.)	1	%	91	103	97	91
13C2-8:2 FTSA (surr.)	1	%	95	87	87	101
13C2-10:2 FTSA (surr.)	1	%	89	83	79	92
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50	< 50	< 50	< 50

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
% Moisture	Brisbane	Jul 19, 2022	14 Days
- Method: LTM-GEN-7080 Moisture			
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Jul 19, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Jul 19, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Jul 19, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Jul 19, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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Company Name: EP Risk Management (NSW)
Address: Level 4 73 Walker St
North Sydney
NSW 2060

Project Name: PFAS ASSESSMENT
Project ID: EP2743

Order No.: EP2743
Report #: 906825
Phone: 02 99225021
Fax:

Received: Jul 19, 2022 9:00 AM
Due: Jul 26, 2022
Priority: 5 Day
Contact Name: Nathan McGuire

Eurofins Analytical Services Manager : Emma Beesley

Sample Detail						HOLD	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	BH01_0.05	Jul 18, 2022		Soil	B22-JI0036569		X	X
2	BH01_0.2	Jul 18, 2022		Soil	B22-JI0036570		X	X
3	BH02_0.05	Jul 18, 2022		Soil	B22-JI0036571		X	X
4	BH02_0.15	Jul 18, 2022		Soil	B22-JI0036572		X	X
5	BH03_0.05	Jul 18, 2022		Soil	B22-JI0036573		X	X
6	BH03_0.5	Jul 18, 2022		Soil	B22-JI0036574		X	X
7	BH04_0.05	Jul 18, 2022		Soil	B22-JI0036575		X	X
8	BH04_0.3	Jul 18, 2022		Soil	B22-JI0036576		X	X
9	BH05_0.05	Jul 18, 2022		Soil	B22-JI0036577		X	X
10	BH05_0.3	Jul 18, 2022		Soil	B22-JI0036578		X	X
11	BH06_0.05	Jul 18, 2022		Soil	B22-JI0036579		X	X
12	BH06_0.2	Jul 18, 2022		Soil	B22-JI0036580		X	X
13	BH07_0.05	Jul 18, 2022		Soil	B22-JI0036581		X	X

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NSW 2060

Project Name: PFAS ASSESSMENT
Project ID: EP2743

Order No.: EP2743
Report #: 906825
Phone: 02 99225021
Fax:

Received: Jul 19, 2022 9:00 AM
Due: Jul 26, 2022
Priority: 5 Day
Contact Name: Nathan McGuire

Eurofins Analytical Services Manager : Emma Beesley

Sample Detail						HOLD	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X
14	BH08_0.05	Jul 18, 2022		Soil	B22-JI0036582		X	X
15	BH08_0.15	Jul 18, 2022		Soil	B22-JI0036583		X	X
16	BH10_0.05	Jul 18, 2022		Soil	B22-JI0036584		X	X
17	BH11_0.05	Jul 18, 2022		Soil	B22-JI0036585		X	X
18	BH12_0.05	Jul 18, 2022		Soil	B22-JI0036586		X	X
19	BH13_0.05	Jul 18, 2022		Soil	B22-JI0036587		X	X
20	BH14_0.05	Jul 18, 2022		Soil	B22-JI0036588		X	X
21	BH15_0.05	Jul 18, 2022		Soil	B22-JI0036589		X	X
22	BH16_0.05	Jul 18, 2022		Soil	B22-JI0036590		X	X
23	BH17_0.05	Jul 18, 2022		Soil	B22-JI0036591		X	X
24	BH18_0.05	Jul 18, 2022		Soil	B22-JI0036592		X	X
25	BH19_0.05	Jul 18, 2022		Soil	B22-JI0036593		X	X
26	BH20_0.05	Jul 18, 2022		Soil	B22-JI0036594		X	X
27	QC01	Jul 18, 2022		Soil	B22-JI0036595		X	X
28	QC03	Jul 18, 2022		Soil	B22-JI0036596		X	X
29	FB01	Jul 18, 2022		Water	B22-JI0036597			X

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Sample Detail						HOLD	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X
30	RW01	Jul 18, 2022		Water	B22-JI0036598			X
31	BH07_0.2	Jul 18, 2022		Soil	B22-JI0036605	X		
32	BH11_0.2	Jul 18, 2022		Soil	B22-JI0036606	X		
Test Counts						2	28	30

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

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

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

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QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/kg	< 5			5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 5			5	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 5			5	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 5			5	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 5			5	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 5			5	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 5			5	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 5			5	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 5			5	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 5			5	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 5			5	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 5			5	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 5			5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 5			5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/kg	< 5			5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/kg	< 5			5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 10			10	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 10			10	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 5			5	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/kg	< 5			5	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/kg	< 5			5	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 5			5	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 5			5	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 5			5	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 5			5	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 5			5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/kg	< 10			10	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 5			5	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	87			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	84			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	88			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	94			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	90			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	81			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	95			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	87			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	93			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	59			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	88			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	95			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	95			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	90			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	92			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	67			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	85			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	90			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	84			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	83			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	95			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	77			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	87			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	112			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	87			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	71			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	106			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	95			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	93			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	87			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B22-JI0036579	CP	%	86			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B22-JI0036579	CP	%	79			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B22-JI0036579	CP	%	84			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B22-JI0036579	CP	%	89			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B22-JI0036579	CP	%	86			50-150	Pass	
Perfluorononanoic acid (PFNA)	B22-JI0036579	CP	%	87			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B22-JI0036579	CP	%	89			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B22-JI0036579	CP	%	82			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B22-JI0036579	CP	%	86			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B22-JI0036579	CP	%	55			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B22-JI0036579	CP	%	93			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B22-JI0036579	CP	%	86			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B22-JI0036579	CP	%	87			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B22-JI0036579	CP	%	84			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	B22-JI0036579	CP	%	91			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	B22-JI0036579	CP	%	61			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B22-Jl0036579	CP	%	93			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B22-Jl0036579	CP	%	88			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B22-Jl0036579	CP	%	85			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	B22-Jl0036579	CP	%	88			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	B22-Jl0036579	CP	%	93			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B22-Jl0036579	CP	%	79			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B22-Jl0036579	CP	%	86			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B22-Jl0036579	CP	%	118			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B22-Jl0036579	CP	%	94			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B22-Jl0036579	CP	%	75			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B22-Jl0036579	CP	%	97			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	B22-Jl0036579	CP	%	84			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B22-Jl0036579	CP	%	85			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B22-Jl0036579	CP	%	97			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B22-Jl0036590	CP	%	87			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B22-Jl0036590	CP	%	99			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B22-Jl0036590	CP	%	90			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B22-Jl0036590	CP	%	83			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B22-Jl0036590	CP	%	87			50-150	Pass	
Perfluorononanoic acid (PFNA)	B22-Jl0036590	CP	%	89			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B22-Jl0036590	CP	%	95			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B22-Jl0036590	CP	%	101			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B22-Jl0036590	CP	%	94			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B22-Jl0036590	CP	%	92			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B22-Jl0036590	CP	%	84			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B22-Jl0036590	CP	%	96			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B22-Jl0036590	CP	%	102			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B22-Jl0036590	CP	%	106			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	B22-JI0036590	CP	%	126			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	B22-JI0036590	CP	%	81			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B22-JI0036590	CP	%	85			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B22-JI0036590	CP	%	90			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B22-JI0036590	CP	%	76			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	B22-JI0036590	CP	%	120			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	B22-JI0036590	CP	%	80			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B22-JI0036590	CP	%	83			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B22-JI0036590	CP	%	88			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B22-JI0036590	CP	%	93			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B22-JI0036590	CP	%	105			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B22-JI0036590	CP	%	82			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B22-JI0036590	CP	%	99			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	B22-JI0036590	CP	%	104			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B22-JI0036590	CP	%	100			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B22-JI0036590	CP	%	85			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B22-JI0036572	CP	%	14	10	33	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B22-JI0036582	CP	%	8.1	7.1	13	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B22-JI0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B22-JI0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B22-JI0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B22-JI0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B22-JI0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B22-JI0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B22-JI0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B22-JI0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B22-JI0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass	

Duplicate								
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD		
Perfluorotridecanoic acid (PFTrDA)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorotetradecanoic acid (PFTeDA)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
Duplicate								
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD		
Perfluorooctane sulfonamide (FOSA)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B22-Jl0036585	CP	ug/kg	< 10	< 10	<1	30%	Pass
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B22-Jl0036585	CP	ug/kg	< 10	< 10	<1	30%	Pass
Duplicate								
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD		
Perfluorobutanesulfonic acid (PFBS)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorononanesulfonic acid (PFNS)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluoropropanesulfonic acid (PFPrS)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluoropentanesulfonic acid (PFPeS)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorohexanesulfonic acid (PFHxS)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluoroheptanesulfonic acid (PFHpS)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorooctanesulfonic acid (PFOS)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorodecanesulfonic acid (PFDS)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
Duplicate								
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD		
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	B22-Jl0036585	CP	ug/kg	< 10	< 10	<1	30%	Pass
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B22-Jl0036585	CP	ug/kg	< 5	< 5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	B22-Jl0036593	CP	%	13	13	4.7	30%	Pass
Duplicate								
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD		
Perfluorobutanoic acid (PFBA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluoropentanoic acid (PFPeA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorohexanoic acid (PFHxA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluoroheptanoic acid (PFHpA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorooctanoic acid (PFOA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass

Duplicate								
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD		
Perfluorononanoic acid (PFNA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorodecanoic acid (PFDA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluoroundecanoic acid (PFUnDA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorododecanoic acid (PFDoDA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorotridecanoic acid (PFTrDA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorotetradecanoic acid (PFTeDA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Duplicate								
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD		
Perfluorooctane sulfonamide (FOSA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B22-Jl0036596	CP	ug/kg	< 10	< 10	<1	30%	Pass
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B22-Jl0036596	CP	ug/kg	< 10	< 10	<1	30%	Pass
Duplicate								
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD		
Perfluorobutanesulfonic acid (PFBS)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorononanesulfonic acid (PFNS)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluoropropanesulfonic acid (PFPrS)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluoropentanesulfonic acid (PFPeS)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorohexanesulfonic acid (PFHxS)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluoroheptanesulfonic acid (PFHpS)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorooctanesulfonic acid (PFOS)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Perfluorodecanesulfonic acid (PFDS)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
Duplicate								
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD		
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	B22-Jl0036596	CP	ug/kg	< 10	< 10	<1	30%	Pass
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B22-Jl0036596	CP	ug/kg	< 5	< 5	<1	30%	Pass

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Emma Beesley	Analytical Services Manager
Jonathon Angell	Senior Analyst-Sample Properties

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

EP Risk Management (NSW)
Level 4 73 Walker St
North Sydney
NSW 2060

Attention: **Nathan McGuire**

Report **906825-W**
Project name PFAS ASSESSMENT
Project ID EP2743
Received Date Jul 19, 2022

Client Sample ID			**FB01**	**RW01**
Sample Matrix			**Water**	**Water**
Eurofins Sample No.			**B22-JI0036597**	**B22-JI0036598**
Date Sampled			**Jul 18, 2022**	**Jul 18, 2022**
Test/Reference	LOR	Unit		
Perfluoroalkyl carboxylic acids (PFCAs)				
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	133	103
13C5-PFPeA (surr.)	1	%	134	136
13C5-PFHxA (surr.)	1	%	121	129
13C4-PFHpA (surr.)	1	%	85	84
13C8-PFOA (surr.)	1	%	136	133
13C5-PFNA (surr.)	1	%	78	111
13C6-PFDA (surr.)	1	%	105	134
13C2-PFUnDA (surr.)	1	%	88	115
13C2-PFDoDA (surr.)	1	%	89	125
13C2-PFTeDA (surr.)	1	%	49	84
Perfluoroalkyl sulfonamido substances				
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	85	81
D3-N-MeFOSA (surr.)	1	%	67	67
D5-N-EtFOSA (surr.)	1	%	68	69

Client Sample ID			FB01	RW01
Sample Matrix			Water	Water
Eurofins Sample No.			B22-JI0036597	B22-JI0036598
Date Sampled			Jul 18, 2022	Jul 18, 2022
Test/Reference	LOR	Unit		
Perfluoroalkyl sulfonamido substances				
D7-N-MeFOSE (surr.)	1	%	62	61
D9-N-EtFOSE (surr.)	1	%	56	54
D5-N-EtFOSAA (surr.)	1	%	98	149
D3-N-MeFOSAA (surr.)	1	%	75	149
Perfluoroalkyl sulfonic acids (PFSAs)				
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	92	97
18O2-PFHxS (surr.)	1	%	82	95
13C8-PFOS (surr.)	1	%	77	88
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	113	154
13C2-6:2 FTSA (surr.)	1	%	86	159
13C2-8:2 FTSA (surr.)	1	%	75	154
13C2-10:2 FTSA (surr.)	1	%	135	146
PFASs Summations				
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1	< 0.1

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Jul 19, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Jul 19, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Jul 19, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Jul 19, 2022	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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NSW 2060

Project Name: PFAS ASSESSMENT
Project ID: EP2743

Order No.: EP2743
Report #: 906825
Phone: 02 99225021
Fax:

Received: Jul 19, 2022 9:00 AM
Due: Jul 26, 2022
Priority: 5 Day
Contact Name: Nathan McGuire

Eurofins Analytical Services Manager : Emma Beesley

Sample Detail						HOLD	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	BH01_0.05	Jul 18, 2022		Soil	B22-JI0036569		X	X
2	BH01_0.2	Jul 18, 2022		Soil	B22-JI0036570		X	X
3	BH02_0.05	Jul 18, 2022		Soil	B22-JI0036571		X	X
4	BH02_0.15	Jul 18, 2022		Soil	B22-JI0036572		X	X
5	BH03_0.05	Jul 18, 2022		Soil	B22-JI0036573		X	X
6	BH03_0.5	Jul 18, 2022		Soil	B22-JI0036574		X	X
7	BH04_0.05	Jul 18, 2022		Soil	B22-JI0036575		X	X
8	BH04_0.3	Jul 18, 2022		Soil	B22-JI0036576		X	X
9	BH05_0.05	Jul 18, 2022		Soil	B22-JI0036577		X	X
10	BH05_0.3	Jul 18, 2022		Soil	B22-JI0036578		X	X
11	BH06_0.05	Jul 18, 2022		Soil	B22-JI0036579		X	X
12	BH06_0.2	Jul 18, 2022		Soil	B22-JI0036580		X	X
13	BH07_0.05	Jul 18, 2022		Soil	B22-JI0036581		X	X

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Project Name: PFAS ASSESSMENT
Project ID: EP2743

Order No.: EP2743
Report #: 906825
Phone: 02 99225021
Fax:

Received: Jul 19, 2022 9:00 AM
Due: Jul 26, 2022
Priority: 5 Day
Contact Name: Nathan McGuire

Eurofins Analytical Services Manager : Emma Beesley

Sample Detail						HOLD	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X
14	BH08_0.05	Jul 18, 2022		Soil	B22-JI0036582		X	X
15	BH08_0.15	Jul 18, 2022		Soil	B22-JI0036583		X	X
16	BH10_0.05	Jul 18, 2022		Soil	B22-JI0036584		X	X
17	BH11_0.05	Jul 18, 2022		Soil	B22-JI0036585		X	X
18	BH12_0.05	Jul 18, 2022		Soil	B22-JI0036586		X	X
19	BH13_0.05	Jul 18, 2022		Soil	B22-JI0036587		X	X
20	BH14_0.05	Jul 18, 2022		Soil	B22-JI0036588		X	X
21	BH15_0.05	Jul 18, 2022		Soil	B22-JI0036589		X	X
22	BH16_0.05	Jul 18, 2022		Soil	B22-JI0036590		X	X
23	BH17_0.05	Jul 18, 2022		Soil	B22-JI0036591		X	X
24	BH18_0.05	Jul 18, 2022		Soil	B22-JI0036592		X	X
25	BH19_0.05	Jul 18, 2022		Soil	B22-JI0036593		X	X
26	BH20_0.05	Jul 18, 2022		Soil	B22-JI0036594		X	X
27	QC01	Jul 18, 2022		Soil	B22-JI0036595		X	X
28	QC03	Jul 18, 2022		Soil	B22-JI0036596		X	X
29	FB01	Jul 18, 2022		Water	B22-JI0036597			X

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Sample Detail						HOLD	Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Brisbane Laboratory - NATA # 1261 Site # 20794						X	X	X
30	RW01	Jul 18, 2022		Water	B22-JI0036598			X
31	BH07_0.2	Jul 18, 2022		Soil	B22-JI0036605	X		
32	BH11_0.2	Jul 18, 2022		Soil	B22-JI0036606	X		
Test Counts						2	28	30

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
µg/L: micrograms per litre
ppm: parts per million
ppb: parts per billion
%: Percentage
org/100 mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100 mL: Most Probable Number of organisms per 100 millilitres

Terms

APHA	American Public Health Association
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

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

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

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QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/L	< 0.05			0.05	Pass	
Perfluoropentanoic acid (PFPeA)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanoic acid (PFHxA)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Perfluorononanoic acid (PFNA)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanoic acid (PFDA)	ug/L	< 0.01			0.01	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/L	< 0.01			0.01	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/L	< 0.01			0.01	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/L	< 0.01			0.01	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/L	< 0.05			0.05	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/L	< 0.05			0.05	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/L	< 0.05			0.05	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	ug/L	< 0.05			0.05	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	ug/L	< 0.05			0.05	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/L	< 0.05			0.05	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/L	< 0.05			0.05	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/L	< 0.01			0.01	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/L	< 0.01			0.01	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/L	< 0.01			0.01	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/L	< 0.01			0.01	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/L	< 0.01			0.01	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/L	< 0.01			0.01	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/L	< 0.01			0.01	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	82			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	77			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	80			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	77			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	76			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	80			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	75			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	78			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	81			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	69			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	71			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	72			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	74			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	65			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	%	86			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	%	72			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	75			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	81			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	77			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	72			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	94			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	68			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	80			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	84			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	75			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	76			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	78			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	81			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	76			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	66			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	B22-Jl0036598	CP	%	83			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	B22-Jl0036598	CP	%	78			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	B22-Jl0036598	CP	%	80			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	B22-Jl0036598	CP	%	75			50-150	Pass	
Perfluorooctanoic acid (PFOA)	B22-Jl0036598	CP	%	79			50-150	Pass	
Perfluorononanoic acid (PFNA)	B22-Jl0036598	CP	%	75			50-150	Pass	
Perfluorodecanoic acid (PFDA)	B22-Jl0036598	CP	%	74			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	B22-Jl0036598	CP	%	75			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	B22-Jl0036598	CP	%	80			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	B22-Jl0036598	CP	%	66			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B22-Jl0036598	CP	%	79			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	B22-Jl0036598	CP	%	72			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B22-Jl0036598	CP	%	84			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B22-Jl0036598	CP	%	74			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	B22-Jl0036598	CP	%	112			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	B22-Jl0036598	CP	%	81			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B22-Jl0036598	CP	%	75			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B22-Jl0036598	CP	%	75			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	B22-Jl0036598	CP	%	80			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	B22-Jl0036598	CP	%	75			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	B22-Jl0036598	CP	%	85			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B22-Jl0036598	CP	%	65			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B22-Jl0036598	CP	%	87			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B22-Jl0036598	CP	%	82			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	B22-Jl0036598	CP	%	79			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	B22-Jl0036598	CP	%	60			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B22-Jl0036598	CP	%	75			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	B22-Jl0036598	CP	%	84			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B22-Jl0036598	CP	%	72			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B22-Jl0036598	CP	%	68			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B22-Jl0036597	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B22-Jl0036597	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B22-Jl0036597	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B22-Jl0036597	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol(N-MeFOSE)	B22-Jl0036597	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol(N-EtFOSE)	B22-Jl0036597	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B22-Jl0036597	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B22-Jl0036597	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	B22-Jl0036597	CP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B22-Jl0036597	CP	ug/L	< 0.01	< 0.01	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

Emma Beesley	Analytical Services Manager
Jonathon Angell	Senior Analyst-PFAS

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.