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ENVIRONMENTAL SITE INVESTIGATION REPORT

WARATAH SUPER BATTERY SITE

FORMER MUNMORAH POWER STATION

301 SCENIC DRIVE, DOYALSON, NSW

PREPARED FOR GENERATOR PROPERTY MANAGEMENT PTY LTD

CES Document Reference: CES170608-GPM-DP

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Document Control

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Executive Summary

Consulting Earth Scientists Pty Ltd (CES) was commissioned by Generator Property Management Pty Ltd (GPM) to conduct an environmental site investigation for a portion of the GPM landholding located at 301 Scenic Drive, Doyalson NSW 2262 (herein referred to as the site). The Site is legally described as Part Lot 10 in Deposited Plan (DP) 1201414.

This investigation was undertaken to determine the suitability of the site with respect to contamination for the proposed use of the site for the Waratah Super Battery, to identify contamination issues with respect to the proposed site use that require remediation or management, and if required provide suitable environmental data on which remediation and management decisions can be based.

The scope of work included the collection of samples of concrete, soil, groundwater surface water and sediment for analysis for the identified contaminants of concern at a NATA accredited environmental laboratory.

Based on the investigation results and the revised CSM presented in Section 10, the site can be made suitable for the proposed Waratah Super Battery Development provided remediation and/or management of contamination and/or further assessment/investigation as described below are implemented.

A summary of contamination requiring remediation and/or management is presented below:

- Asbestos in surface soils: A hotspot of asbestos fines and fibrous asbestos was detected associated with the residual demolition processing materials on the site surface. Remediation of the asbestos hotspot is required.
- Asbestos in stockpiled materials: Asbestos was detected in excess of the adopted screening criteria in Stockpiles SP3 and SP6. Asbestos was detected below the adopted screening criteria in SP7. Remediation or management of asbestos in this material is required.
- PFAS in stockpiled materials: based on the stockpiled material assessment, concentrations of PFAS in leachate indicate that Stockpiles SP3 and SP7 are unsuitable for re use without a detailed risk assessment. Remediation or management of this material may be required.
- Buried services containing asbestos: the location of disconnected buried services that may contain asbestos has not been determined, and as such the potential for excavation works onsite to disturb asbestos containing materials. Further work to identify and remove the residual buried services should be undertaken, or alternatively the risks posed by the potential asbestos containing materials could be managed under an Environmental Management Plan.

- PFAS in groundwater: to minimise the risk of increased PFAS mobilisation from the offsite Fire Fighting Training Area and the AEC 4 source a restriction on groundwater abstraction should be considered.
- PFAS impacted soils re-use as noted in Section 9.6 where PFAS containing materials are considered for re use onsite, assessment in accordance with PFAS NEMP 2.0 (HEPA 2020) is required.

A thin discontinuous layer of coal fragments was observed on the site surface, within stockpiled materials in SP1, SP2, SP3 (two sample locations), SP4 (one sample location), SP5, SP6 (one sample location) and SP7. Removal of residual coal is included in the scope of work presented in the demolition and site restoration works (refer to Section 3.9) and is an engineering requirement stipulated by the Waratah Super Battery developer. As such the proposed removal of coal from the site is not considered to be a remedial activity.

In addition to the identified contamination requiring remediation and/or management the following areas require further assessment or management:

- Due to the source of the PFAS in AEC 4 not being identified, further investigation may be required. The investigation works may include collection of additional soil and groundwater samples around AEC 4 and submission to a NATA accredited laboratory for analysis of PFAS in soils and PFAS leachate. The data obtained can be used to define the source. Once the source has been identified, an assessment can be undertaken to determine if localised remediation is required.

The proposed remedial options / strategies to manage asbestos impacted materials and PFAS leaching stockpiled materials (SP3 and SP7) include relocation of the materials (with suitable controls) to another area of the GPM Landholding, containment onsite in a designed, engineer containment cell or offsite disposal at a suitably licence waste disposal facility.

Following implementation of the RAP it is likely that an Environmental Management Plan will be required to manage the risk posed by residual buried services containing asbestos, ensure that appropriate controls are maintained for any material retained onsite in an engineered containment cell, to restrict groundwater abstraction and the ensure that materials containing PFAS are suitably assessed prior to onsite reuse.

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LIST OF ABBREVIATIONS

ACM	Asbestos Containing Material
AHD	Australian Height Datum
ASS	Acid Sulfate Soil
BTEX	Benzene, Toluene, Ethylbenzene and Total Xylenes
CES	Consulting Earth Scientists Pty Ltd
CLM	Contaminated Land Management
COPC	Contaminants of Potential Concern

DECCW	Department of Environment and Climate Change and Water
DLWC	Department of Land and Water Conservation
EPA	Environment Protection Authority
ESA	Environmental Site Assessment
km	Kilometre
LGA	Local Government Area
LPI	Land and Property Information Division
LEP	Local Environmental Plan
m	Metre
mm	Millimetre
mbgl	metres Below Ground Level
mAHD	metres Australian Height Datum
MMAD	Munmorah Ash Dam
MPS	Munmorah Power Station
NEPM	National Environment Protection Measure
NSW	New South Wales
OCP	Organochlorine Pesticide
OEH	Office of Environment and Heritage
PAH	Polycyclic Aromatic Hydrocarbon
PSP	Project Safety Plan
SAC	Site Assessment Criteria
TRH	Total Recoverable Hydrocarbons

ENVIRONMENTAL SITE INVESTIGATION REPORT

WARATAH SUPER BATTERY SITE

FORMER MUNMORAH POWER STATION

301 SCENIC DRIVE, DOYALSON, NSW

PREPARED FOR GENERATOR PROPERTY MANAGEMENT PTY LTD

CES Document Reference: CES170608-GPM-DP

1 INTRODUCTION

Consulting Earth Scientists Pty Ltd (CES) was commissioned by Generator Property Management Pty Ltd (GPM) to conduct an environmental site investigation for a portion of the GPM landholding located at 301 Scenic Drive, Doyalson NSW 2262 (herein referred to as the site).

The Site is legally described as Part Lot 10 in Deposited Plan (DP) 1201414. The lot is proposed to be subdivided and a new lot created. A survey of the proposed new lot is presented in Appendix A.

The location and extent of the GPM Landholding is presented as Figure 1. The boundary of the Site is presented with a general site layout plan presented as Figure 2.

The site comprises the former Munmorah Power Station coal stockpile area (Coal Stack) and surrounding lands which include the former coal handling plant (including the coal bunker), coal conveyor systems, coal bulldozer fuelling area and staff amenities, a former gardener's shed, two surface water management and settlement dams, and a surface water collection and conveyancing system (Perimeter Channel). The site also includes Hydrocarbon Area of Environmental Concern (AEC) 4 which was subject to assessment undertaken in 2019, the results of which are presented in *AEC4 – Coal Stack Above Ground Storage Tanks Investigation Report* (CES document reference CES170608-GPM-BL dated 07 June 2019).

The Coal Stack area of the site was used for processing and load-out of demolition waste during the demolition of the Former Munmorah Power Station (which was located offsite to the north). Seven stockpiles of demolition produced materials (including crushed concrete) have been retained and are stockpiled onsite. A separate assessment of the stockpiled materials has been undertaken and the results are reported in *Stockpiled Material Assessment Waratah Super Battery Site* (CES Document Referenced CES170608-GPM-DQ dated 17 October 2022). A summary of the assessment is presented in Section 4.10.

The former Munmorah Power Station fire fighting training area is located offsite to the northeast, adjacent to the site.

This investigation was undertaken to determine the suitability of the site with respect to contamination for the proposed use of the site for the Waratah Super Battery, to identify contamination issues with respect to the proposed site use that require remediation or management, and if required provide suitable environmental data on which remediation and management decisions can be based.

This report relates to the investigation of site for the Waratah Super Battery only and does not include assessment of other areas of the GPM Landholding which have or may have been impacted by historic use.

This report has been prepared in general accordance with reference to:

- NSW EPA *Contaminated Sites Sampling Design Guidelines* (NSW EPA, 1995)
- NSW EPA, *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land* (NSW EPA, 2020).
- NSW EPA, *Contaminated Land Management Guidelines for the NSW Site Auditor Scheme (3rd edition)* (NSW EPA, 2017)
- National Environmental Protection Council, *National Environment Protection Measure (Assessment of Site Contamination) Measure 1999* (as amended 2013) (NEPC, 2013).

It is noted that the *Contaminated Sites Sampling Design Guidelines* (NSW EPA, 1995) have been superseded by the new *Contaminated Land Guidelines Sampling Design Part 1 – Application* (NSW EPA 2022) and *Contaminated Land Guidelines Sampling Design Part 2 – Interpretation* (NSW EPA 2022) which were issued following the commencement of the investigation works. Based on a review of the new guidelines the investigation has been completed in general accordance with the updated guidelines. An assessment of compliance/deviation from the updated guidelines is presented in Section 5.3.

The findings of this report are based on an intrusive investigation of the underlying soil and groundwater, surface water and sediments undertaken in August 2022.

2 OBJECTIVES AND SCOPE OF WORK

2.1 Objectives

The objectives of the work were to characterise the site with respect to contamination, assess the suitability of the site for the proposed Waratah Super Battery use and if required provide environmental data on which remediation and management decisions can be based.

2.2 Scope of Work

To achieve the objective, CES undertook the following scope of work:

- Prepared a SAQP (CES document Reference: CES170608-GPM-DM dated 1 August 2022), which included the seven step Data Quality Objectives (DQO) Assessment and prepared a preliminary conceptual site model (CSM).
- Obtained all necessary permits and approvals prior to commencement of the works including (where applicable) from GPM.
- Prepared a Project Safety Plan (PSP) for the sampling works.
- Completed the following fieldwork programme comprising:
    - Excavation of 12 test pits and drilling of 5 boreholes in the former Coal Stack Area and the collection of 20 soil primary samples.
    - Excavation of 9 test pits and drilling of 2 boreholes in the former adjacent lands and the collection of 11 soil primary samples.
    - Excavation of 1 test pit and drilling of 1 borehole in the footprint of the former gardeners shed and the collection of 3 primary soil samples.
    - Drilling of 1 borehole in the footprint of the former water tank and the collection of 2 primary soil samples.
    - Excavation of 3 test pits and drilling of 6 boreholes adjacent to the battery site boundary with the offsite Fire Fighting Training Area and the collection of 9 primary soil samples.
    - Collection of 2 sediment samples from the Coal Handling Pond.
    - Collection of 2 surface water samples from the Western Settling Basin and the Coal Handling Pond
    - Collection of 15 soil samples from the former location of the AEC 4 Above-ground Storage Tank (AST) concrete pad.
    - Collection of 13 concrete grab samples from the perimeter channel and the coal handling plant “bunker”.

  - Completion of the 15 boreholes with groundwater monitoring wells to allow for the sampling of groundwater.
  - Development of groundwater wells.
  - Collection of 20 groundwater samples using low flow purging and sampling techniques.
- Soil samples were field screened using a calibrated Photoionisation Detector (PID) and fill soil samples will be screened for asbestos in accordance with Table 8 of WA DER 2021 *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.*
- Soils encountered during test pit excavation/drilling were logged in accordance AS 1726- 2017.
- Soil samples were submitted to a NATA accredited laboratory for analysis as follows:
  - PFAS in soils/sediment/concrete (65 samples):
    - 20 samples from the Coal Stack
    - 11 Samples from the adjacent lands.
    - 10 samples from the boundary with the Fire Fighting Training Area
    - 7 samples from the former gardeners shed, former water tank and the Coal Handling Pond
    - 13 samples from the perimeter channel and Coal Handling Plant bunker
    - 4 samples from AEC 4 area.
  - PFAS in Australian Standard Leaching Procedure (ASLP) (12 Samples)
    - 3 samples from the Coal Stack
    - 2 samples from the adjacent lands.
    - 2 samples from the boundary with the Fire Fighting Training Area
    - 3 samples from the former gardeners shed, former water tank and the Coal Handling Pond
    - 2 samples from the perimeter channel and Coal Handling Plant bunker
  - Total Recoverable Hydrocarbons (TRH) Benzene, Toluene Ethylbenzene and Xylene (BTEX), Polycyclic aromatic hydrocarbons (PAHs), Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) Organochlorine pesticides (OCPs) Organophosphates pesticides (OCPs) and Polychlorinated biphenyls (PCBs) (38 samples)
    - 20 samples from the Coal Stack
    - 10 Samples from the adjacent lands.
    - 7 samples from the former gardeners shed, former water tank and Coal Handling Pond.
    - 1 sample from the AEC 4 sub slab sampling.
  - Asbestos in soils (Asbestos Fines/Fibrous Asbestos) (38 samples)
    - 23 samples (20 soil and 3 materials) from the Coal Stack

        - 15 Samples from the adjacent lands.
    - TRH, BTEX, PAHs – 15 samples from the AEC 4 sub-slab sampling.
    - TRH, BTEX, PAHs, Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) OCPs, OPPs, PCBs, in groundwater (14 samples)
    - TRH, BTEX, PAHs, Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) OCPs, OPPs, PCBs, in Western Settling Basin and Water Pond (2 samples)
    - PFAS in groundwater/surface water (22 samples)
    - Combustible content and Sulfur content (9 samples)
    - Quality Assurance and Quality Control Samples:
        - PFAS in soil 14 samples.
        - TRH, BTEX, PAHs, Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) OCPs, OPPs, PCBs in soil 10 samples.
        - PFAS in groundwater and surface water 6 samples
        - TRH, BTEX, PAHs, Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) OCPs, OPPs, PCBs, in groundwater and surface water 4 samples.
        - TRH, BTEX, PAHs, Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) OCPs, OPPs, PCBs, and PFAS in rinsate samples 13 samples.
        - TRH BTEX in soil trip spike and TRH BTEX and PFAS soil in trip blank 8 sample sets.
        - TRH BTEX in water trip spike, TRH BTEX and PFAS in water trip and field blank 4 sample sets.

- Prepared this Environmental Site Investigation Report in accordance with the requirements of a detailed site investigation – Table 2.3 of *Consultants Reporting on Contaminated Land Contaminated Land Guidelines* NSW EPA 2020, which provides the following information and data:

    - A summary of site setting and site history information.
    - Presents a summary of the current understanding of the proposed site layout and preparatory demolition and site restoration works package.
    - Confirmation of the soil, sediment, surface water and groundwater sampling methodology.
    - Discussion of the QA/QC sampling and whether the results of the QA/QC analysis provide robust confidence in the sampling procedures, sample handling and laboratory performance.
    - Presentation of the guideline values for assessment of soil, sediment, surface water and groundwater analysis.

- Presentation of the analytical results, including tabular presentation of the results to allow comparison with the guideline values. Exceedances of the screening criteria will be presented on figures.
- Presentation of the location of residual buried services onsite which may be constructed of asbestos cement, based on site plans or site walkover combined with a survey.
- Assessment and discussion of the analytical results including potential areas of concern or areas requiring further investigation/assessment/remediation/ management, in the event that the detected concentrations are above the currently available guideline values.
- Presents a revised Conceptual Site Model; and
- Presents an assessment of site suitability and makes recommendations for further assessment and/or remedial work if considered to be necessary.

3 SITE IDENTIFICATION AND ENVIRONMENTAL SETTING

3.1 Site Identification

The site, as it is referred to in this report, consists of part of the GPM Landholding at 301 Scenic Drive, Doyalson NSW 2262. The Site is legally described as Part Lot 10 in Deposited Plan (DP) 1201414. The lot is proposed to be subdivided and a new lot created. A survey of the proposed new lot boundary is presented in Appendix A.

The location and extent of the GPM Landholding is presented as Figure 1. The boundary of the Site is presented with a general site layout plan presented as Figure 2.

The Site is located within the Central Coast Council local government area (LGA) on the Central Coast of NSW. The area of the Site is approximately 13.5 ha.

The geographical extent of the site is presented in Table 1 below.

Table 1: Geographical extent of site

Corner/point of site	Eastings	Northings
Northwest corner of site	364012	6323899
Southeast corner of site	364461	6323901
Northeast corner of site	364231	6324209
Southwest corner of site	364317	6323671
Centre of site	364256	6323960

3.2 Site Zoning and land use

The current land use zoning is defined by the Land Zoning Map – Sheet LZN_018, 8550_COM_LZN_018_020_20160615, dated 3 February 2017 to date (Wyong Local Environmental Plan 2013) and is currently SP2 Infrastructure – Electricity Generating Works.

3.3 Site Description

The site is currently vacant and is under care and maintenance by GPM.

The site is irregular in shape.

Site features, as observed by CES on 08 July 2022 include:

- The Coal Stack Area of the site, used during the demolition of the former Munmorah Power Station as a metal processing and load out area, was observed to have small

scrap metal pieces distributed across the site surface. In addition, the historic use of the site for coal stockpiling has resulted in coal fragments visible on the site surface.

- Seven stockpiles of demolition derived materials were observed near the north-eastern boundary of the site. A separate assessment of the stockpiled materials has been undertaken and the results are reported in *Stockpiled Material Assessment Waratah Super Battery Site* (CES Document Referenced CES170608-GPM-DQ dated 17 October 2022). A summary of the assessment is presented in Section 4.10.
- Two dams are located onsite, the Western Settling Basin (near the northwest corner of the site) and the Coal Handling Plant "Clean" Water Pond, near the northern boundary of the site.
- No structures are present on the site, with the exception of the former coal handling plant "bunker" which is comprises a long sub-surface concrete structure located in the centre of the Coal Stack Area. The concrete structure extends above the site surface in two locations, at the northern and southern extents of the structure. A ramp from the site surface down to the bunker entrance is located at the northern end of the bunker.
- The Perimeter Channel, an open concrete lined surface water management channel is located along the boundary of the former Coal Stack Area.
- A shallow unlined dish drain is located along the western boundary, adjacent to the former coal conveyor line. The drain discharges to the western part of the Perimeter Channel and the Western Settling Basin.
- Concrete slabs and bunding associated with the bulldozer Above Ground Storage Tanks (ASTs) are located to the south of the site. An oil-water separator remains insitu adjacent to the concrete slabs.
- Two concrete slabs are located near the northern boundary of the site, one associated with a former gardeners shed and one a former water tank (understood to have provided fire fighting water storage).
- The former Coal Stack and conveyor line areas are sparsely vegetated with grasses and some small bushes/trees, the remaining areas of the site are well vegetated with grasses and established trees.
- The site boundary is fenced, in good condition, in all directions with the exception of the north-western boundary, which is partially fenced, and the northern boundary. The site is bound by other GPM held lands, with the exception of the east, which is owned by Snowy Hydro Limited.

3.4 Surrounding Land Use

The site is bound by other GPM held lands, with the exception of the east, which is owned by Snowy Hydro Limited as part of the Colongra Power Station. The Colongra Power Station is

located approximately 200 m northeast of the site and is also used for electricity generating industrial purposes.

The GPM managed land is surrounded by the following uses presented in Table 2:

Table 2: Surrounding Land Use

Orientation	Description
North	The former Munmorah Power Station, vacant following the demolition. The northern boundary of the former Munmorah Power Station is formed by the Inlet/Outlet Canal.
West	The former Munmorah Power Station buffer lands, Camp Breakaway and residential areas of San Remo and Blue Haven, Doyalson beyond.
South	The former Munmorah Power Station buffer lands lie to the south with the residential areas of Budgewoi, Buff Point and Halekulani with Budgewoi Lake beyond.
East	An area of the Snowy Hydro Limited landholding which used to be part of the Coal Stack followed by former Munmorah Power Station buffer lands and Colongra Swamp Nature Reserve with the residential area of Halekulani and Lake Munmorah beyond.

3.5 Sensitive Nearby Receptors

Sensitive nearby receptors are presented in Table 3:

Table 3: Sensitive Nearby Receptors

Sensitive Receptor	Receptor Type	Orientation and Distance from Site
Lake Munmorah	Human Health – Recreational; Ecological.	1.2 km, East
Budgewoi Lake	Human Health – Recreational; Ecological.	1.3 km, Southwest
Colongra Swamp	Human Health – Recreational; Ecological.	0.5 km, Northeast
GPM Landholding	Human Health – Recreational/Site specific; Ecological.	0 m, North, South, West
Surrounding Residential Areas	Human Health – Residential	0.6 km, East (closest)
Future Site Users	Human Health – Commercial/Industrial	0 m

Sensitive Receptor	Receptor Type	Orientation and Distance from Site
Colongra Power Station Site Workers	Human Health – Commercial/Industrial	0 m, East
Outlet Canal	Ecological	260 m northwest
Inlet Canal	Ecological	270 m northwest

3.6 Planning Certificates

With reference to the Section 10.7(2) and (5) Planning Certificate (issued 13 June 2018) for the Lot 10 DP 1201414 (Refer to appendix B) which includes the site, the following is noted:

- The site is zoned "SP2 Infrastructure".
- The site is located within a proclaimed mine subsidence district under the Mine Subsidence Compensation Act 1961.
- Some of the site is located on bush fire prone land; and
- The site is not prescribed under the Contaminated Land Management Act 1997 ("Nil Prescribed Matters").

3.7 Current Site Use

The site is currently vacant and under care and maintenance by GPM.

3.8 Previous Site Use and Activities

The site forms part of the former Munmorah Power Station and its associated surrounding buffer lands. The following activities have been identified to have been undertaken in areas of the site:

Coal storage and handling – Storage and handling of solid fuels for the power station was undertaken in the Coal Stack area of the site and the former coal conveyor line area of the site. This process involved moving coal that was delivered to the Coal Stack area by conveyor lines, to and from the Coal Handling plant (which delivered coal to the coal mills located offsite). Coal was moved around the Coal Stockpile area using bulldozers.

In addition to mobile plant, this area of the site included fixed plant for the transfer of coal from offsite sources to the power station coal mills (offsite) including the Coal Receiving Hopper and Coal Conveyor system. The Coal Handling bunker, which remains onsite former part of the coal conveyor system.

The Coal Stack area of the site and the former coal conveyor line area comprise approximately 8.2 ha of the site.

Mobile Plant Fuelling – The southern corner of the site contained two Above Ground Tanks used to provide diesel fuel to the coal handling mobile plant.

Coal Stack amenities and associated buildings – in the vicinity of the Mobile Plant Fuel Storage, five buildings (garage, workers shed, sample crusher house (two) and storeroom) were located.

Other areas of the site do not contain areas which were used for a specific process or activity that has been identified to date, with the following exceptions:

- Western Settling Basin and Coal Handling Plant "Clean" Water Pond were used to manage site stormwater.
- The former gardeners shed, and green house used as a storage shed for gardening equipment and potentially low volumes of gardening chemicals.
- Fire water storage tank used to store a water supply for fire fighting activities.

The remaining areas of the site appear to have been landscaped and maintained as buffer lands and gardens.

3.9 Proposed Site Use

The proposed land use is to develop the site to install an 850 MW network standby battery: the Waratah Super Battery. The final design of the development is under development and may include:

- Cut/fill operations and site re profiling to create a suitable surface for the construction of battery infrastructure and battery units.
- Finishing the site surface with a suitable aggregate material in accordance with an engineered specification.
- Filling of the Western Settling Basin and the Coal Handling Plant "Clean" Water Pond. Alternatively, these structures may be retained and/or modified for stormwater management.
- Construction of a suitable site stormwater management system. The system is likely to require the installation of retention storage basins/dams to manage potentially contaminated waters, and modification of the existing site stormwater system.
- Construction of battery storage system, understood to comprise multiple modular battery units and associated infrastructure such as transformers and transmission connections.

It is understood that in the current design iteration the entire proposed development (with the exception of transmission infrastructure will be contained within the Coal Stack area of the site.

3.10 Preparatory Demolition and Site Restoration Works Package

A specification for the demolition and site restoration works package *Munmorah Coal Handling Plant Structures Specification for Demolition and Site Restoration* prepared by Aurecon Pty Ltd dated 21 July 2022 (Referenced 500382-003-014) was provided by GPM. The scope of work "demolition and site restoration works" include:

- *Hazardous material inspection, removal and disposal (e.g. asbestos cement conduits, coal dust).*
- *Demolition, removal and processing of RC for use as engineered material for backfilling the voids following demolition*
- *Excavation and appropriate benching and battering of existing in-situ material to allow demolition of below ground structures.*
- *Option 2* [selected option] - *Complete demolition, removal and processing of all RC items associated with the Coal Live Storage Bunker, Conveyor Tunnels nominated RC slabs (refer Figure 2), foundations, pits, sumps, and concrete surface drain (east of stockpile areas) in the Coal Handling Plant area to a level 2 m below the existing Coal Storage Area ground surface level (including cutting and removal of the reinforcing down to this level). Also, to be demolished are the underlying protruding horizontal RC structures (i.e. plough feeder table, hoppers, stairs and landings etc) below the 2 m level, but above the Coal Live Storage Bunker basement slab, and demolition of the drainage pit kerbing throughout the basement of the void (refer to Figure 4 below) along with all other structures below the 2 m level necessary for the successful backfilling and compaction of the void.*
- *Demolition, removal and disposal to the of the existing backfill, coal and capping of the Coal Live Storage Hoppers to the Principal's disposal area west of the Munmorah Ash Dam.*
- *Processing of the demolished RC to remove steel reinforcing and imbedded items (steel fixtures, water stops etc) and produce 75 mm maximum size concrete rubble for use as backfill material within the Coal Live Storage Bunker voids and Cable Tunnels.*
- *Backfilling the voids following the demolition of the RC structures with processed reinforced concrete in 200 mm compacted layers to 1 m below the existing Coal Storage Area ground surface.*
- *Backfilling of the remaining top 1 m of voids up to the existing Coal Storage Area surface level with clean Excavated Natural Material (ENM) fill sourced from the MPS site at a location specified by the Principal, in 200 mm compacted layers.*

- *Processing and reuse of the existing on-site concrete rubble and fill material stockpiles in the Coal Handling Plant Area as backfill for the voids and tunnels*
- *Safe removal and disposal of asbestos containing material (ACM) down to 2 m below existing ground level on the MPS site as specified by the Principal. Specifically, the ACM embedded downpipes, weep holes and cable conduits (as part of Option 2 demolition works).*
- *Grout plugging asbestos cement conduit weep holes in the bunker, conveyor tunnel walls and entrance ramp retaining walls that are not being demolished.*
- *Grout plugging of asbestos cement drainage down pipes (i.e. top and bottom) in the bunker walls that are not being demolished.*
- *Concrete plug the exiting stormwater drains in the Coal Live Storage Bunker and Conveyor Ramp.*
- *Removal and disposal of all coal, debris and vegetation from within the Coal Live Storage Bunker and ramps to the Principal's disposal area west of the Munmorah Ash Dam.*
- *Removal and disposal of surface coal (varying 0 to 500 mm in depth) from the Coal Storage Area to a designated area near the ash dam.*
- *Site survey of the Coal Storage Area before and after surface coal removal.*
- *Site trimming and grading of demolished and backfilled areas of the WUC* [Works Under Contract].

3.11 Buried Services

Before You Dig plans for the site have been accessed and with the exception of Telstra and Optus which are marked in the northern portion of the site, no buried services are shown onsite.

The site has been subject to demolition works, and all buried services relating to the former coal handling plant and staff amenities have been disconnected and deenergised. It is also noted that based on observations at other areas of the site that site services (stormwater and electrical conduit) will be constructed of asbestos cement.

In regard to AEC4, drawing MM62452_01 Amendment 11B *Munmorah Power Station Units 1-4 Fences, Gates, Street Names, & Hazardous Substances Layout* Dated 13 November 2012 (presented in Appendix L) indicates that the tanks are labelled as a Non-Notified Dangerous Goods Depot "HAZ 10 Bulldozer Fuel Dispensing Diesel Storage".

A spreadsheet provided by GPM indicates that HAZ10 consisted of Above Ground Tanks with maximum storage capacity of 45,000L. It is noted on the spreadsheet that "HAZ10 removed from 'notifiable' (< placarding level)" on 25 November 2010.

No formal decommissioning documentation for the tanks has been provided to CES, however anecdotally, the tanks were decommissioned and disposed of as scrap metal during the power station demolition by the demolition contractor (Liberty Industrial).

Anecdotal evidence provided by GPM indicate that all fuelling infrastructure associated with the ASTs was kept above ground, that is to say that underground pipes are unlikely to have been installed associated with the tanks.

3.12 Coal Stockpiling

Coal was delivered to the coal stack by conveyor from the Munmorah State Mine, Newvale No. 2 Colliery, Endeavor State Mine and later from the Vales Point Power Station. No processing or crushing of coal was undertaken within the Coal Stack, coal was delivered processed to a maximum particle size of 50 mm. Bulldozers were used to manage and store excess coal delivered to the coal stack by pushing coal away from the coal handling plant, and back to the handling plant as required.

3.13 Topography

A Light Detecting and Ranging (LiDAR) survey was provided by GPM. The LiDAR contours indicate that the site elevation is between approximately 10 - 18 m AHD, and the site falls gently to the north, with the exception of the eastern area of the former Coal Stack, which falls to the east.

3.14 Geology

With reference to the Gosford – Lake Macquarie 1:100, 000 Geological Series Map (9131, 9231) the lithology underlying the site is "Rnm", *Conglomerate, pebbly sandstone, grey to green shale (Munmorah Conglomerate) of the Narrabeen Group (Clifton Subgroup) of the Mesozoic age.*

The subsurface profile encountered in CES (2019) is presented in Table 4.

Table 4: Subsurface profile identified in CES (2019c)

Geological Unit	Approximate Depth to Base of Unit (m)	Approximate Thickness (m)	Typical Description
Unit 1: Fill	0.3 to 1.2	0.3 to 1.2	Gravelly sand, medium to coarse, dark grey. Gravel is fine, dark grey, angular. Occasional traces of coal tailings. Moist or dry. Occasional diesel odours, no staining observed.
Unit 2: Residual	7.2 to 7.9	6.3 to 6.7	Sandy clay, low to medium plasticity, mottled pale grey/reddish yellow/reddish brown/red. Moisture content equal to or greater than plastic limit. Firm to very stiff. Occasional diesel odours and dark grey/grey staining. OR; Silty clay, high plasticity, mottled pale grey/reddish brown or pale grey. Moisture content equal to plastic limit. Firm to stiff. Occasional diesel odours and dark grey/grey staining.
Unit 3: Munmorah Conglomerate	Not proven	Greater than 8.7	Highly weathered conglomerate: Sandy clay, medium plasticity, dark grey/reddish yellow. Moisture content greater than plastic limit. Occasional slight diesel odour. No staining observed.

3.15 Soils

With reference to the Gosford – Lake Macquarie 1:100, 000 Soil Landscape Series Map (9131, 9231) the site is underlain by Doyalson Soil Landscape Group.

- The Doyalson Soil Landscape Group is characterised by *"gently undulating rises on Munmorah Conglomerate, broad crests and ridges and long gently inclined slopes. Predominantly cleared eucalyptus forests."*

3.16 Acid Sulfate Soils

With reference to the Catherine Hill Bay Acid Sulphate Soils Risk Map (Department of Natural Resources (CJ Murphy, 1997, Edition 2, 1:25,000), the site is underlain by disturbed terrain in the north of the site and is unmapped in the south of the site (no known occurrence). Disturbed terrain relates to areas that have been extensively modified by anthropogenic activities, and therefore the presence or absence of acid sulfate soils is required to be assessed by soil investigations.

The soil types identified in previous investigations as presented in Table 4 do not comprise soils formed in marine or estuarine sediments, tidal lakes, coastal wetlands, back swamp areas, waterlogged or scalded areas, interdune swales or coastal sand dunes. In addition, the site is located at between 10 to 18 m AHD, elevations at which Acid Sulfate Soils are unlikely to form. In consideration of the above, Acid Sulfate Soils are not considered further.

3.17 Hydrogeology

The relevant hydrogeology of the site consists of a shallow unconfined aquifer, which is likely to have a relatively low permeability due to the formation consisting of clays and sandy clays.

Based on a previous investigation, undertaken by CES, *Munmorah Power Station: Groundwater Flow Assessment* (document reference: CES170608-GPM-AD Rev 2, dated 06 July 2018), groundwater flow around the wider GPM site is centripetal (i.e. groundwater flows towards the site's centre – the location of the power station). Based on this assessment and a review of the topographical information, the groundwater flow direction underlying the site therefore is expected to flow in a northerly direction towards the former Munmorah Power Station.

A search of the Department of Primary Industries Office of Water database (https://www.waternsw.com.au/waterinsights/real-time-data accessed 12 September 2022) indicates there are forty-three registered groundwater abstraction wells located 1 km from the site boundary. These wells are used for monitoring purposes and extend between 2.8 m and 5.80 m bgl. Groundwater levels at the Site were assessed in 2017 for the purposes of the Groundwater Flow Assessment, it was found that groundwater levels across the Site ranged between 3.83 m Australian Height Datum (AHD) in B610 in the south of the Site to 7.88 m AHD in C604 in the north of the Site.

3.18 Hydrology

Run off from the site is likely to be captured by the GPM site's stormwater management system which is divided between the "Clean" stormwater and "Dirty" water systems which have been constructed over the GPM Landholding, including the site as defined in this report:

The "Clean" stormwater system typically drains areas of the site which did not contain potentially contaminating activities within the catchment. These areas include landscaped areas, building roofs, roadways, and the buffer lands. The "Clean" stormwater system discharges offsite directly, to the Outlet Canal (offsite).

The "Dirty" water system is designed to drain areas of the site where that catchment activities have the potential to produce contaminated run off such as within the former power station proper (offsite), maintenance sheds (offsite), the Coal Stack Area (onsite), and the former firefighting training area (offsite).

As such the water in the Coal Stack area and the conveyor line area of the site run off will be collected by the "Dirty" water system and run off from the other areas of the site collected by the "Clean" stormwater system.

As noted above the Coal Stack area drains to the "Dirty" water system, via the Perimeter Channel, which is part of the "Dirty" water system. The Perimeter Channel in the western portion of the Coal Stack area discharges to the Western Settling Basin, and the eastern portion to the offsite Eastern Settling Basin.

Similarly, the conveyor area runoff is collected by an unlined dish drain which discharges to the Perimeter Channel, or directly to the Western Settling Basin.

The exception to the above is the Coal Handling Plan bunker which discharges to the Coal Grit Sump (offsite) which is likely to overflow to the Station "Clean" stormwater system (offsite). During operations the Coal Grit Sump was pumped back to the Perimeter Channel.

The Western Settling Basin, under normal flow conditions also discharges to the Eastern Settling Basin (offsite) via an underground discharge line that discharges to the Perimeter Channel which drains the eastern portion of the Coal Stack area, east of the Coal Handling Plan bunker ramp. The Western Settling Basin has a spillway which discharges to the "Clean" stormwater system in high flow conditions via the S1 Conveyor Pond (offsite) and the offsite Clean Water Channel.

Further details of site drainage are presented on drawing MM638784 *Munmorah Power Station Station Drainage Coal Handling Plant Area Drainage Layout* date 18 April 1995, a copy of which is attached as Appendix C.

3.19 Meteorology

The site is located approximately 6.7 km northwest of the former Commonwealth Bureau of Meteorology Norah Head Lighthouse weather station. The following climatic information was obtained from this data source, based on data recorded from 1971 to 2005:

- Mean monthly rainfall was variable throughout the year, with rainfall being highest during February (142.0 mm) and lowest during August (70.7 mm).
- Highest mean temperatures (recorded at 3 pm) occur during the months of December to March (mean maximum 22.9 to 23.8 degrees Celsius); and
- Cooler temperatures (recorded at 9 am) occur during the months of June to August (mean temperature 12.4 to 13.8 degrees Celsius).

The Commonwealth Bureau of Meteorology Norah Head automatic weather station is located 0.1 km from the former Commonwealth Bureau of Meteorology's Norah Head Lighthouse weather station and presents more recent climate data. The following climatic information was obtained from this data source, based on data recorded from 1989 to 2017:

- Mean monthly rainfall is variable throughout the year, with rainfall being highest during June (146.7 mm) and lowest during October (55.0 mm).
- Highest mean temperatures (recorded at 3 pm) occur during the months of November to March (mean maximum 23.7 to 26.0 degrees Celsius); and
- Cooler temperatures (recorded at 9 am) occur during the months of June to August (mean temperature 12.8 to 14.5 degrees Celsius).

No evapotranspiration data is available for the former Commonwealth Bureau of Meteorology Norah Head Lighthouse weather station or Commonwealth Bureau of Meteorology Norah Head automatic weather station, or any other nearby weather station.

3.20 Environmental Protection Licence (No. 759)

Environmental Protection Licence (EPL) No. 759 has been issued to GPM by the NSW EPA which covers the GPM Landholding and includes the site. The EPL relates to the discharge of miscellaneous discharge to waters (at any time). Various monitoring points are required to be sampled against assessment criteria and reported on an annual basis. No discharge or monitoring points are located on the site as defined in this report.

3.21 NSW EPA Contaminated Site Register

A review of NSW EPA list of notified sites was carried out on the 12 September 2022. The review indicated that four contaminated sites were notified to the NSW EPA are located within one kilometre of the site. Available information relating to the sites is presented in Table 5.

Table 5: NSW EPA Contaminated Sites Register (1 km from site)

Site and Address	Contaminating Activity	EPA Site Management Class	Orientation and Distance from Site
Colongra Power Station Off Scenic Drive, Budgewoi	Other Industry	Under Assessment	0 m Northeast
Endeavour Colliery Scenic Drive, Colongra	Other Industry	Regulation under CLM Act not required	0 m South
Munmorah Colliery Scenic Drive, Doyalson	Other Industry	Regulation under CLM Act not required	20 m West
Former Halekulani Landfill Macleay Drive, Halekulani	Landfill	Regulation under CLM Act not required	500 m East

It should be noted that the site is notified as contaminated on the NSW EPA Contaminated Sites Register and the NSW EPA has indicated its intention to declare a portion of the GPM landholding as significantly contaminated requiring regulation under the Contaminated Land Management Act 1997.

3.22 Environment Protection licences, applications, notices, audits or pollution studies and reduction programs NSW EPA Register (Public Register POEO)

A review of the public register under section 308 of the Protection of the Environment Operations Act 1997 (the POEO Act) including Environment Protection licences, applications, notices, audits or pollution studies and reduction programs was carried out on the 12 September 2022 and a summary presented below:

Table 6: NSW EPA Public Register (POEO)

Number	Name	Location	Type	Status	Issued Date
1598039		OFF SCENIC DRIVE,	s.58 Licence Variation	Issued	26 Aug 2020

		DOYALSON, NSW 2262			
1606232		RUTLEYS ROAD, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	09 Apr 2021
2061	BORAL RESOURCES (COUNTRY) PTY. LIMITED	BUDGEWOI ROAD, DOYALSON, NSW 2262	POEO licence	No longer in force	03 Nov 1999
1024680	CENTENNIAL MANNERING PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	04 Feb 2003
1043601	CENTENNIAL MANNERING PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	14 Jan 2005
1055208	CENTENNIAL MANNERING PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	01 Mar 2006
1105215	CENTENNIAL MANNERING PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	22 Feb 2011
1502466	CENTENNIAL MANNERING PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	21 Dec 2011
1511832	CENTENNIAL MANNERING PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	Compliance Audit	Complete	07 Feb 2013
2316	CENTENNIAL MUNMORAH PTY LIMITED	SCENIC DRIVE, DOYALSON, NSW 2262	POEO licence	Surrendered	06 Apr 2000

1105297	CENTENNIAL MUNMORAH PTY LIMITED	SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	22 Feb 2011
1127305	CENTENNIAL MUNMORAH PTY LIMITED	SCENIC DRIVE, DOYALSON, NSW 2262	s.80 Surrender of a Licence	Issued	03 May 2011
1012998	DELTA ELECTRICITY	OFF SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	26 Sep 2003
1039717	DELTA ELECTRICITY	OFF SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	12 Aug 2004
1104462	DELTA ELECTRICITY	OFF SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	24 Aug 2009
1115371	DELTA ELECTRICITY	OFF SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	07 Jul 2011
1509816	DELTA ELECTRICITY	OFF SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	11 Jan 2013
1516866	DELTA ELECTRICITY	OFF SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	07 Apr 2014
1525902	DELTA ELECTRICITY	OFF SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	21 Jan 2015
1534970	DELTA ELECTRICITY	OFF SCENIC DRIVE,	s.58 Licence Variation	Issued	14 Dec 2015

		DOYALSON, NSW 2262			
1598039		OFF SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	26 Aug 2020
1543547	DELTA ELECTRICITY	OFF SCENIC DRIVE, DOYALSON, NSW 2262	Compliance Audit	Complete	12 Aug 2016
5002	FULTON HOGAN INDUSTRIES PTY LTD	2-4 DAVID STREET, DOYALSON, NSW 2262	POEO licence	No longer in force	26 Apr 2000
1017778	FULTON HOGAN INDUSTRIES PTY LTD	2-4 DAVID STREET, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	04 Mar 2003
759	GENERATOR PROPERTY MANAGEMENT PTY LIMITED	OFF SCENIC DRIVE, DOYALSON, NSW 2262	POEO licence	Issued	14 Jun 2000
1565974	GENERATOR PROPERTY MANAGEMENT PTY LIMITED	OFF SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	26 Jun 2018
1576069	GENERATOR PROPERTY MANAGEMENT PTY LIMITED	OFF SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	26 Mar 2019
1583906	GENERATOR PROPERTY MANAGEMENT PTY LIMITED	OFF SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	24 Sep 2019
191	GREAT SOUTHERN ENERGY PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	POEO licence	Issued	06 Apr 2000

1587330	GREAT SOUTHERN ENERGY PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	25 Nov 2019
1608120	GREAT SOUTHERN ENERGY PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	14 Apr 2021
2190	HANSON CONSTRUCTION MATERIALS PTY LTD	LOT 1 PACIFIC HIGHWAY, DOYALSON, NSW 2262	POEO licence	No longer in force	13 Oct 1999
1006250	HANSON CONSTRUCTION MATERIALS PTY LTD	LOT 1 PACIFIC HIGHWAY, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	23 Apr 2001
1562167	HANSON CONSTRUCTION MATERIALS PTY LTD	LOT 1 PACIFIC HIGHWAY, DOYALSON, NSW 2262	s.91 Clean Up Notice	Issued	23 Feb 2018
3173524999	HANSON CONSTRUCTION MATERIALS PTY LTD	LOT 1 PACIFIC HIGHWAY, DOYALSON, NSW 2262	Penalty Notice	Issued	06 Mar 2018
1502568	KENNETH MARTIN GRAHAM	15 Pacific Highway, DOYALSON, NSW 2262	s.91 Clean Up Notice	Issued	30 Nov 2011
1527523	LAKECOAL PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	13 May 2015
1551540	LAKECOAL PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	12 May 2017

1006168	POWERCOAL PTY LTD	SCENIC DRIVE, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	30 Jul 2001
1005801	POWERCOAL PTY LTD	RUTLEYS ROAD, DOYALSON, NSW 2262	s.58 Licence Variation	Issued	13 Aug 2001

3.23 NSW EPA Contaminated Land Record

A review of NSW EPA Contaminated Land Record was carried out on the 12 September 2022. No records were found for any site in the suburb of Colongra.

4 SITE HISTORY

The following nine reports relating to previous investigations in the investigation area were reviewed:

- Environmental Resources Management Australia (ERM), *Project Symphony – Colongra Power Station Stage 2 Environmental Site Assessment* Reference 0237749, 2014.
- Jacobs (December 2017), *Comprehensive PFAS Investigation, Colongra Power Station: PFAS Investigation Conceptual Model* Reference: IA069200-N-RPT-001 | Rev 3 final.
- Consulting Earth Scientists Pty Ltd, *Per- and Poly-Fluoroalkyl Substances (PFAS) Investigation Report* (CES Document Reference CES170608-GPM-AI, 2019a).
- *Consulting Earth Scientists, Preliminary Site Investigation: Former Munmorah Power Station* (CES Document Reference CES170608-GPM-AW, 2019b)
- *AEC4 – Coal Stack Above Ground Storage Tanks Investigation Report Former Munmorah Power Station* (CES document reference CES170608-GPM-BL, 2019c)
- *Preliminary Sediment Characterisation Report Former Munmorah Power Station* (CES document reference CES170608-GPM-CX, 2021)
- *Surface Water Sampling – Douglas Partners 2021*
- Nation Partners (November 2021), *Former Munmorah Power Station, Ecological Risk Assessment*
- Nation Partners (August 2022) *Former Munmorah Power Station, Ecological Risk Assessment*

4.1 ERM 2014 Project Symphony – Colongra Power Station Stage 2 Environmental Site Assessment Reference

The ERM investigation was carried out to provide baseline contamination data as part of vendor due diligence prior to the sale of Colongra Power Station to Snowy Hydro Ltd (SHL), and as such did not include the site in their assessment. As part of the investigation, however, two groundwater monitoring wells were drilled to the west and southwest of the site, which have been identified as suitable for providing background water quality information, CF_MW05 and CF_MW06.

Laboratory analytical results did not detect Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Polycyclic Aromatic Hydrocarbons (PAH), Phenols, Volatile Organic Compounds (VOCs), Polychlorinated Biphenyls (PCBs) or

Per-and Poly-Fluoroalkyl Substances (PFAS) concentrations in excess of the laboratory Practical Quantitation Limit (PQL). Metals and metalloid concentrations are presented in Table 7.

Table 7: ERM (2014) Metals and Metalloid Concentrations in Groundwater

Filtered Metals	CF_MW05	CF_MW06
Arsenic µg/L	<1	<1
Barium µg/L	82	46
Beryllium µg/L	<1	<1
Boron µg/L	<50	80
Cadmium µg/L	<0.1	<0.1
Chromium µg/L	<1	<1
Cobalt µg/L	4	8
Copper µg/L	4	2
Lead µg/L	10	12
Magnesium µg/L	5,000	2,000
Manganese µg/L	113	387
Mercury µg/L	<0.1	<0.1
Molybdenum µg/L	<1	<1
Nickel µg/L	5	3
Selenium µg/L	<10	<10
Thallium µg/L	<1	<1
Vanadium µg/L	<10	<10
Zinc µg/L	31	38

Borehole logs of CF_MW05 and CF_MW06 were presented in Appendix C of the SAQP prepared for this investigation (CES Reference: CES170608-GPM-DM dated 1 August 2022).

CF_MW05 and CF_MW06 locations are presented on Figure 3.

4.2 Jacobs (December 2017) Comprehensive PFAS Investigation, Colongra Power Station: PPFAS Investigation and Conceptual Model

Jacobs was commissioned by Snowy Hydro Limited (SHL) to undertake a Per- and Poly-Fluoroalkyl Substances (PFAS) Contamination Investigation of the Colongra Power Station. The investigation included the former fire training facility that had historically been used for the training of firefighters from approximately the early 1970's to the early 2000's. Fire training activities could have included the use of aqueous film forming foams (AFFF), which may have contained PFAS, including perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

The aim of the investigation was to gather additional information on the extent and significance of PFAS contamination in groundwater, surface water, sediment and soil at the

Colongra Power Station, to assess potential fate and transport mechanisms for PFAS at the Site.

In summary the Investigation indicated that:

- *Analytical results for PFAS in soils associated with the former fire training facility general area were measured at concentrations in excess of the applied screening criteria.*
- *Analytical results for PFAS in groundwater at locations around and down-hydraulic gradient from the PFAS impacted soils at the former fire training facility indicate that PFAS has leached from soils and into local groundwater reserves.*
- *Analytical results associated with surface water samples collected within settling basins, drains, ponds, retention basins and within the Inlet/Outlet Canal indicate wide-spread migration of PFAS in surface water across these areas.*

The sampling included the Western Settling Basin (WSB-1) and the results summarised below:

Table 8: Summary of Relevant PFAS Results for Western Settling Basing (WSB-1)

Sample ID	Units	PFHxS	PFOS	PFOA	Sum PFAS n=28
WSB-1	µg/L	0.0516	0.158	0.0582	1.12

4.3 CES 20219a Per- and Poly-Fluoroalkyl Substances (PFAS) Investigation Report

The CES investigation was conducted over the whole of the GPM Landholding and included sampling from 10 soil bores from within the site. Soil sample analysis did not detect PFAS concentrations in excess of the adopted screening criteria, however PFAS were detected in excess of the laboratory PQL including PFHxS (2 samples), PFOS (7 samples) and PFOA (1 sample). PFAS detections were not detected in soil samples collected at 0.5 m bgl with the exception of one sample location. With respect to the concentrations of PFAS in soils the following was noted:

"The western area of the former coal stockpile area [the site] *is currently utilised for processing and loading out of demolition materials from the demolition works at the Former Munmorah Power Station. The eastern area* [Snowy Hydro Ltd landholding, offsite] *is currently unused, with managed grass present in this area. Results detected widespread PFAS (not above the screening criteria) in the shallow soils in western area, with only one PFAS detection in the eastern area. Based on observations onsite and discussions with the*

demolition contractor, the western area, which is used for material processing, had been irrigated using water drawn from the Eastern Retention Basin [offsite] *during demolition works, for dust suppression… Based on the above assessment, the PFAS concentrations detected in the former coal stockpile area* [the site] *are not considered to indicate an additional source of PFAS at the site."*

In addition to soil sampling in the Coal Stack area, sampling of surface water and sediment within the Western Settling Basin was conducted. Sediment and surface water sample concentrations were not detected in excess of the adopted screening criteria.

A summary of relevant soil, sediment and surface water samples is presented in Table 9.

Table 9: Summary of Relevant PFAS Investigation Results

Location	Type	Date	Depth	Units	PFHxS	PFOS	PFOA	Sum PFAS n=28
CSA-01-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	0.1	<0.1	0.3
CSA-01-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-02-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	0.5	<0.1	1.4
CSA-02-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-03-01	Soil	20/12/2017	0.05-0.1	µg/kg	<0.1	0.3	<0.1	0.3
CSA-03-02	Soil	20/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-06-01	Soil	19/12/2017	0.05-0.1	µg/kg	1.8	10	1	19
CSA-06-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-07-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-07-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-08-01	Soil	20/12/2017	0.05-0.1	µg/kg	0.1	0.1	<0.1	0.2
CSA-08-02	Soil	20/12/2017	0.5	µg/kg	0.4	0.2	<0.1	0.9
CSA-09-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	<0.1	<0.1	0.1
CSA-09-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-13-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	<0.1	<0.1	0.1
CSA-13-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1

CSA-14-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	0.4	<0.1	0.4
CSA-14-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-15-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-15-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
WSB-01	Sediment	02/02/2018	-	µg/kg	0.2	1.4	<0.1	1.7
WSB-02	Sediment	02/02/2018	-	µg/kg	0.2	1.6	0.1	2.1
WSB-01	Surface Water	02/02/2018	-	µg/L	0.081	0.12	0.04	0.702
WSB-02	Surface Water	02/02/2018	-	µg/L	0.1	0.14	0.033	0.761

Sample locations are presented on Figure 3.

The soil sampling results from the Coal Stack are demonstrated that PFAS were limited to near surface soils, with PFAS not detected in deeper samples collected at 0.5 m depth.

4.4 CES 2019b Preliminary Site Investigation: Former Munmorah Power Station

The investigation area (whole of Lot 10 DP1201414) assessed in the former Munmorah Power Station Preliminary Site Investigation includes the site as defined in this investigation.

The PSI assessment indicates that the site comprised vacant/low intensity agricultural land prior to the development of the Munmorah Power Station, which was commissioned in 1967. A review of the historic aerial photographs contained in the PSI report, with a focus on the site as defined in this investigation is presented as Table 10 and Historical Aerial Photographs presented in Appendix D.

Table 10: Historical Aerial Photograph Review

Year	Description
1954	**Site:** The site generally comprises areas which have been cleared, possibly for agricultural uses. One structure is present on the site, near the centre of the Coal Stack Area. **Surrounds:** The site is surrounded by bush/undeveloped land, with an area to the northeast of the site disturbed through clearing and possible earthworks.
1966	**Site:** The 1966 photograph is of poor quality; however, the site appears to have undergone a major change. **Surrounds:** The MPS (likely under construction) can be seen. The surrounding area of the site has significantly changed. The Inlet/Outlet Canal and TransGrid Switchyard have been constructed to the north of the site. The plant maintenance yard for the Endeavour Colliery (Newvale No. 2 Colliery)
1976	**Site:** The south of the site (the Coal Stack Area) contains a coal stockpile. The coal conveyor line and coal handling infrastructure can be seen running along the southern site boundary and through the centre of the coal stack area towards the Munmorah Power Station. No evidence of environmental controls can be seen in the coal stack area (Perimeter Channel, Western Settling Basin). The lands adjacent to the Coal Stack Area, to the north, appear to have been landscaped, with three to four well defined rows of trees planted. The fire fighting water tank is visible. **Surrounds:** To the north the Munmorah Power Station consisting of the boilers, turbine hall building, chimney stacks and the associated administration buildings and workshops can be seen, located to the north of the site. Transformers are present on the site, to the north of the turbine hall building. Smoke emissions can be seen emitted from both of the station chimney stacks. The northwest corner of the site is landscaped, with a carpark near the northern boundary. Similar to the 1966 photograph, the TransGrid switchyard and the Inlet/Outlet Canal can be seen to the northwest of the site. The above ground infrastructure for the Munmorah State Mine can be seen to the northwest, with a conveyor line extending to the site, which then runs along the southern boundary of the site. A second conveyor line running northwest joins with the line from the Munmorah State Mine, prior to it reaching the site boundary. To the northeast of the site the Munmorah Ash Dam can be seen, with the deposition of ash in the dam visible. Other areas to the north of the site appear to be landscaped or remnant bushland. The coal stack extends off-site to the east, over the site boundary. To the north of the off-site coal stack, some structures have been constructed, along with an area of hardstanding. Some ground improvement works have taken place to the north of the structures. To the southeast of the site the surface infrastructure for the Endeavour Colliery (Newvale No. 2 Colliery) can be seen. A coal conveyor line can be seen extending from the mine portal to the southern corner of the site. The remaining area to the south consists of bushland.

Year	Description
1984	**Site:** The Perimeter Channel has been constructed around the outside of the coal stack area. A waterbody (Western Settling Basin) has been constructed to the northwest of the Coal Stack Area. To the south of the coal stack area two possible ASTs can be observed east of the coal conveyor. The lands adjacent to the Coal Stack Area, to the north, appear unchanged, except some additional vegetation growth, and a small structure located to the northeast of the water tank. **Surrounds:** The power station area of the site is unchanged from the 1976 photograph. Smoke emissions are visible from the eastern stack only. The surrounding area of the subject site is largely unchanged since the previous aerial photograph with the exception of the off-site coal stack area to the east, which has reduced in size. In addition, an area of hardstanding which is being used for storage has been constructed to the northeast of the power station.
1994	**Site:** The Coal Stack area of the site is unchanged. The adjacent lands to the north exhibit additional vegetation growth. Two additional structures have been constructed to the southwest of the water tank, possibly the Gardeners Shed, closest to the water tank. **Surrounds:** The surrounding area of the subject site is largely unchanged since the previous aerial photograph, with the exception of two new water bodies: one to the northeast of the site, which has been constructed adjacent to the Inlet Canal; the second has been constructed to the northeast of the
2001	**Site:** The site is largely unchanged since the previous aerial photograph. **Surrounds:** The surrounding area is largely unchanged since the previous aerial photograph, with the exception of the removal of coal from the off-site coal stack area, and evidence of a bushfire to the south of the site.
2010	**Site:** The site is largely unchanged since the previous aerial photograph, with the exception of the removal of the small structure northeast of the water tank. The volume of coal stored in the coal stack area has reduced. **Surrounds:** The surrounding area of the site shows the Colongra Gas Power Station has been constructed to the northeast of the site. The two mines in the immediate vicinity of the site appear to have been decommissioned, with surface infrastructure removed.
2012	**Site:** The site is largely unchanged since the previous aerial photograph. **Surrounds:** The surrounding area of the site is largely unchanged since the previous aerial
2014	**Site:** The site is largely unchanged since the previous aerial photograph. **Surrounds:** The surrounding area of the site is largely unchanged since the previous aerial
2016	**Site:** The site is largely unchanged since the previous aerial photograph. **Surrounds:** The surrounding area of the site is largely unchanged since the previous aerial

Year	Description
2018	**Site:** The site has undergone significant changes since the 2016 photograph, with the site undergoing demolition work. The Coal Handling Plant, water tank and other structures have been removed. The majority of the site contains stockpiles of material related to the demolition works. **Surrounds:** To the north of the site, the Munmorah Power Station is undergoing demolition works.
2022	**Site:** The site has undergone significant changes since the 2018 photograph, with the removal of most of the demolition works stockpiles. An estimated seven stockpiles remain in the eastern portion of the Coal Stack area of the site. **Surrounds:** To the north of the site, the Munmorah Power Station demolition works have been completed, with the area now vacant.

The Preliminary Conceptual Site Model as presented in the PSI report relevant to this site was presented in Section 4 of the SAQP (CES Reference: CES170608-GPM-DM dated 1 August 2022), with additional information based on further information and investigations undertaken since the PSI incorporated into the CSM as required.

4.5 CES 2019c AEC4 – Coal Stack Above Ground Storage Tanks Investigation Report Former Munmorah Power Station

The purpose of this investigation was to determine if the soil and groundwater in the Coal Stack area of the site had been impacted by the storage and use of hydrocarbon fuels in the bulldozer fuelling area, and if so, does the impact pose a risk to human health or the environment, which would require remediation or management to mitigate risks. As such the investigation area for this assessment is wholly contained within the site as defined in this report.

The above ground storage tanks are first visible in the 1976 aerial photograph; however, it is likely that the tanks were installed around the time of the power station construction which was completed in 1967. The tanks appear similar from the 1976 photograph to 23 February 2016, when the aerial photograph indicates that the tanks have been removed. No formal decommissioning documentation for the tanks was provided, however anecdotally, the tanks were decommissioned and disposed of as scrap metal during the power station demolition.

No hydrocarbon fuel storage infrastructure was observed onsite in the former location of the above ground tanks (ASTs) during the assessment. The concrete slabs remain in place however the low bund walls and surrounding structures have been removed. Anecdotal evidence indicates that all fueling infrastructure associated with the ASTs was kept above ground, that is to say that underground pipes are unlikely to have been installed associated with the tanks.

A small sediment pond was observed adjacent to the concrete slab, which appears to discharge to the perimeter channel. An oil/water separator is located at the discharge point. The oil water separator was observed to contain free LNAPL on 23 January 2019. The oil/water separator was pumped out using a vacuum truck on 28 February 2019 and disposed of at Cleanaway Operations Pty Ltd – Kooragang.

Visual and olfactory evidence (staining and diesel odours) were encountered during test pit excavation and borehole drilling. PID detected VOC concentrations of up to 91 ppm (test pit AEC04_05 4.8-5.1 m).

No soil or groundwater concentrations were detected in excess of the human health or ecological assessment criteria.

Soil concentrations were not detected in excess of the TRH management limits which indicates that there is a low likelihood of the formation of free LNAPL in soil and other aesthetic considerations are unlikely to trigger the requirement to remediate the site.

Dissolved TRH in groundwater was not detected at concentrations which would be indicative of the presence of LNAPL.

With respect to contaminant concentrations which were detected in excess of the laboratory PQL the following is noted in the report:

- *The primary source of potential contamination (the diesel ASTs) has been removed. The soil and groundwater investigation results indicate that it is unlikely that a significant secondary source in soils underlies the location of the former tanks.*
- *The oil/water separator which was observed to contain a hydrocarbon/water mix during fieldwork has been pumped out and is not likely to present an ongoing source and as such no is not considered an environmental risk.*
- *The magnitude and extent of impact detected indicate that concentrations detected are unlikely to represent contamination as a result of a release from the bulk storage tanks, rather may represent the result of incidental/minor spills during tank and plant filling.*
- *The detected concentrations of TRH, BTEX, and VOCs are likely to reduce over time due to physical, chemical and biological processes which occur in soil and groundwater. As the site surface does not contain significant concrete slabs or sealed areas the potential for aerobic biodegradation of organic contaminants is high.*
- *The soil and rock underlying the site consist of materials with likely hydraulic conductivity ranging from 10^{-6} m/s (sandy clay) and 10^{-10} m/s (Munmorah Conglomerate). The low permeability of the subsurface materials and the relatively flat hydraulic gradient in area AEC 4 indicates that detected contaminants are*

unlikely to migrate significant distances, and therefore have a low likelihood for reaching sensitive offsite water bodies.

- *Future development of the site will be subject to development consent and associated environmental site assessment may be required to assess the suitability of the site with respect to the proposed development and may require further investigation, specifically the soil and groundwater quality directly beneath the concrete slab, to confirm the site as suitable.*

A summary of soil and groundwater concentrations detected in AEC 4 is presented in Table 11 and Table 12.

Table 11: AEC 4 Soil Sampling Results

		AEC04-02	AEC04-03	AEC04-03	AEC04-03	AEC04-04	AEC04-05	AEC04-06	AEC04-07	AEC04-08
		2.5	0.5	2.5_S	2.5_N	5	2.5	5	5.5	5
	Units									
Fraction 1 TRH	mg/kg	<25	<25	<25	<25	<25	<25	<25	<25	<25
Fraction 2 TRH	mg/kg	94	490	280	<50	200	<50	<50	<50	<50
TRH >C16-C34	mg/kg	<100	1200	180	<100	140	<100	<100	<100	<100
TRH >C34-C40	mg/kg	<100	<100	<100	<100	<100	<100	<100	<100	<100
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<0.1	1.4	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	<0.05	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total PAH's	mg/kg	0.3	8.5	0.68	<0.05	1.4	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	mg/kg	2	21	4	5	3	3	5	7	5

Table 12: AEC 4 Groundwater Sampling Results

		A4-MW1	A4-MW2	A4-MW3
		27/02/2019	27/02/2019	27/02/2019
Fraction 1 TRH	µg/L	<10	72	<10
Fraction 2 TRH	µg/L	840	870	63
TRH >C16 - C34	µg/L	720	430	<100
TRH >C34 - C40	µg/L	<100	<100	<100
Benzene	µg/L	<1	16	<1
Toluene	µg/L	<1	<1	2
Ethylbenzene	µg/L	<1	8	<1
m+p-xylene	µg/L	<2	<2	<2
o-xylene	µg/L	<1	9	<1
Naphthalene	µg/L	2	10	<1
Benzo(a)pyrene	µg/L	<1	<1	<1
Total PAH's	µg/L	7.8	15	1.2
Dissolved Lead	µg/L	<1	<1	<1

Sample locations are presented on Figure 3.

Borehole logs for wells AEC4_MW01, AEC4_MW02 and AEC4_MW03 were presented in Appendix C of the SAQP (CES Reference: CES170608-GPM-DM dated 1 August 2022).

4.6 CES 2021 Preliminary Sediment Characterisation Report Former Munmorah Power Station

This investigation comprised the assessment of sediment thickness and quality in four dams located in the GPM Landholding, including the Western Settling Basin, located within the site as defined in this report. Two locations in the Western Settling Basin were assessed, with 4 samples collected. Samples were analysed for Per- and Polyfluoroalkyl Substances (PFAS), Total Recoverable Hydrocarbons (TRH), Polyaromatic Hydrocarbons (PAH), Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), Polychlorinated Biphenyls (PCBs), Volatile

Organic Compounds (VOC), Organochlorine/Organophosphate Pesticides (OCP/OPP), and common metals and metalloids.

Contaminant concentrations were not detected in excess of the adopted screening criteria in the samples collected from the Western Settling Basin.

An estimated 5,000 m^3 was identified to be contained within the Western Settling Basin, based on an average sediment thickness of 2.0 m. Sediments were described as *Sandy clay, low plasticity, dark grey/black, sand is fine, with high organic content and coal fragments. Very soft.*

A summary of laboratory analytical results from the Western Settling Basin samples is presented in Table 13.

Table 13: Western Settling Basin Laboratory Analysis

		WSB-101	WSB-101	WSB-102	WSB-102
Parameter	Units	0.0-0.2 m	1.5-1.6 m	0.0-0.4 m	0.6-1.8 m
Perfluorohexanesulfonic acid PFHxS	µg/kg	0.4	0.7	0.2	0.3
Perfluorooctanesulfonic acid PFOS	µg/kg	2.4	2.2	0.8	1.1
Perfluorooctanoic acid PFOA	µg/kg	0.1	<0.1	<0.1	<0.1
Total PFAS n= 28	µg/kg	3.2	3.1	1.4	1.6
Arsenic	mg/kg	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	2	7	5
Copper	mg/kg	10	7	21	11
Lead	mg/kg	70	11	24	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	3	5	4
Zinc	mg/kg	210	46	160	77
Fraction 1 TRH	mg/kg	<25	NT	NT	<25
Fraction 2 TRH	mg/kg	<50	NT	NT	150
TRH >C16-C34	mg/kg	280	NT	NT	890
TRH >C34-C40	mg/kg	<100	NT	NT	260
Benzene	mg/kg	<0.2	NT	NT	<0.2
Toluene	mg/kg	<0.5	NT	NT	<0.5
Ethylbenzene	mg/kg	<1	NT	NT	<1
Total +ve Xylenes	mg/kg	<3	NT	NT	<3
Naphthalene	mg/kg	4.9	NT	NT	2.6
Benzo(a)pyrene	mg/kg	0.4	NT	NT	0.56
Total PAH's	mg/kg	14	NT	NT	20
Benzo(a)pyrene TEQ (PQL)	mg/kg	0.8	NT	NT	1.2
VOC	mg/kg	ND	NT	NT	ND
PCB	mg/kg	ND	NT	NT	ND
OCP	mg/kg	ND	NT	NT	ND
OPP	mg/kg	ND	NT	NT	ND

Sample locations are presented on Figure 3.

4.7 Surface Water Sampling – Douglas Partners 2021

Douglas Partners was commissioned by GPM to collect surface water and run off samples from the GPM landholding, which included samples collected from the site as defined in the SAQP (CES Reference: CES170608-GPM-DM dated 1 August 2022).

Samples were collected during or immediately following rainfall on 24 August 2021 and 26 November 2021.

The results of the sampling have not been formally reported and have been supplied as laboratory analytical reports combined with a sample location plan only, therefore confirmation of sample methodology and assessment of quality assurance and quality control procedures has not been completed. The results should not be relied upon until assessment of data quality is undertaken.

Sample locations are presented on Figure 3, summary analytical results are presented in Table 14.

Table 14: Summary of Surface water and runoff sampling - August and November 2021

Sample ID	Location Description	Date	PFHxS (µg/L)	PFOS (µg/L)	PFOA (µg/L)	Total Positive PFAS (µg/L)
WSB-IC	Western Sediment Basin Inlet Channel	24 August 2021	0.0085	0.027	0.0084	0.29
WSB-IC	Western Sediment Basin Inlet Channel	26 November 2021	0.015	0.044	0.015	0.48
WSB-ST	Western Sediment Basin - Sediment Trap	24 August 2021	0.011	0.023	0.0075	0.36
WSB-ST	Western Sediment Basin - Sediment Trap	26 November 2021	0.0088	0.030	0.0065	0.38
WCC	Western Centre Channel (Sediment Trap)	24 August 2021	0.07	0.12	0.032	0.77
WCC	Western Centre Channel (Sediment Trap)	26 November 2021	0.094	0.18	0.039	0.91
ECC	Eastern Centre Channel (Sediment Trap)	24 August 2021	0.042	0.087	0.016	0.51
ECC	Eastern Centre Channel (Sediment Trap)	26 November 2021	0.030	0.064	0.018	0.49
NCCS	Northern Crushed Concrete Stockpile	24 August 2021	0.0049	0.0088	0.011	0.52
NCCS	Northern Crushed Concrete Stockpile	26 November 2021	0.0020	0.0030	0.0044	0.23
SCCS	Southern Crushed Concrete Stockpile	24 August 2021	0.013	0.038	0.0072	0.22
SCCS	Southern Crushed Concrete Stockpile	26 November 2021	0.0077	0.030	0.0047	0.14
CSS	Coal Stack Sag	24 August 2021	0.019	0.055	0.014	0.33
WCS	Western Channel South	24 August 2021	0.011	0.022	0.0083	0.2
WCS	Western Channel South	26 November 2021	0.0076	0.012	0.0038	0.075
ECS	Eastern Channel South	24 August 2021	0.0093	0.021	0.0043	0.13
ECS	Eastern Channel South	26 November 2021	0.012	0.019	0.0077	0.21
CHP-01	Coal Handling Plant “Clean” Water Pond	26 November 2021	0.0071	0.0097	0.0041	0.097
WSB	Western Settling Basin	26 November 2021	0.0079	0.028	0.0070	0.26
RNC	Runoff Northern Concrete Stockpile	26 November 2021	0.002	0.0034	0.0056	0.32

4.8 Nation Partners (November 2021) Former Munmorah Power Station, Ecological Risk Assessment

Nation Partners Pty Ltd (Nation Partners) was commissioned by GPM to undertake an Ecological Risk Assessment (ERA) to evaluate the potential risks to ecological receptors in off-site receiving environments, including the Inlet and Outlet Canals, Munmorah Ash Dam, and Budgewoi Lake and Lake Munmorah, from the presence of per and poly-fluorinated alkyl substances (PFAS) detected in environmental media and biota samples collected on-site and off-site.

The ERA did not consider potential risks to the environment from contaminants other than PFAS and was based exclusively on third party data.

The CSM identified the following potential ecological receptors and exposure pathways to PFAS contamination in off-site environments:

Ingestion and uptake of PFAS from surface water and sediments by aquatic plants and algae, aquatic organisms, mammals and birds; Uptake of PFAS in groundwater by terrestrial plants; and Ingestion of bioaccumulated PFAS in food by terrestrial and aquatic mammals and birds.

Based on the data set available, review of the analytical data and QA/QC procedures adopted and taking into account the uncertainties and limitations, the ERA concluded:

- *The ecological CSM identified viable source – pathway – receptors linkages for ecological receptors in off-site receiving environments to PFAS contamination migrating from primary and secondary sources on-site, as well as from the surrounding catchment area that drains to the Inlet and Outlet Canals and Munmorah Ash Dam.*
- *Comparison of PFOS and PFOA concentrations present in sediment, surface water and groundwater to direct toxicity screening benchmarks adopted for this ERA indicate a low likelihood for toxic effects to sensitive ecological receptors identified as present or potentially present in the off-site environments being assessed in this ERA.*
- *Based on comparison of predicted [PFOS + PFHxS] concentrations in whole fish in Budgewoi Lake and Lake Munmorah with the adopted screening benchmarks:*
    - *The potential for toxic effects as a result of bioaccumulation to fish and bird species identified as actual or potential receptors to PFAS contamination is unlikely; and*

  - *Potential exists for toxic effects to occur from bioaccumulation of PFAS to actual or potential mammal species who consume 100% of their diet from fish from Budgewoi Lake and Lake Munmorah*
- *In the absence of biota data for the Inlet and Outlet Canals and Munmorah Ash Dam, estimated [PFOS + PFHxS] concentrations in whole fish in these environments indicated:*
  - *The potential for toxic effects from PFAS bioaccumulation in fish in both the Inlet and Outlet Canals and Munmorah Ash Dam is unlikely.*
  - *Potential for toxic effects to occur from bioaccumulation of PFAS to individuals of all bird and all mammal species identified as potential ecological receptors who consume 100% of their diet from fish from the Inlet and Outlet Canals; and*
  - *Potential for toxic effects to occur from bioaccumulation of PFAS to individuals of all mammal species and some bird species (Wilson's Storm-Petrel, Sharp Tailed Sandpiper, Black Winged Stilt, Eastern Great Egret and Australian Pelican) whose diet is comprised entirely of fish from Munmorah Ash Dam.*
- *Whilst the outcomes of this ERA identified the potential for toxic effects to occur from bioaccumulation of PFAS to mammals and birds for which 100% of an individual's diet is comprised of fish from these offsite environments, this assumption is considered highly conservative as it is unlikely that individuals would obtain 100% of their diet from fish in these water bodies alone. Wildlife exposure adjustment can be applied to provide a more realistic estimate of exposure to PFAS, however in this ERA such further analysis was not undertaken as it would have been based on increasing layers of assumptions in the absence of additional biota data.*
- *In the absence of biota data for higher trophic level species, the potential for biomagnification of PFAS up the food chain must also be considered possible in these off-site environments due to the presence of PFAS compounds in environmental media and fish.*
- *Whilst uncertainties and limitations have been identified in undertaking this ERA, conservative, evidence-based assumptions and conversions have been applied to mitigate the potential for the risk assessment outcomes to underestimate potential risks to ecological receptors from PFAS contamination (i.e. concluding there is no risk to receptors when a risk actually exists); and*
- *Despite the presence of PFAS in the off-site environments assessed for this ERA, which has likely been present for over 20 years based on the historical use of AFFF containing PFAS on-site, and which receives PFAS contributions from surrounding catchment areas, recent ecological surveys and assessments by various organisations*

have identified native bushland and diverse and abundant fish populations and waterbird communities present in these off-site environments, indicating the ecology and habitat present in these environments remain functioning and high value.

A summary of onsite data for PFOS, PFOA, PFHxS and Total PFAS is presented for selected results in different environmental media where sufficient sample results were available. Data include statistical analysis noting these are for reference only since information on how the data were selected was not provided.

Table 15: Summary of PFOS, PFOA, PFHxS and Total PFAS Data for On-Site Sample Locations (extract from Nation Partners (November 2021) Report)

Environmental Media	**Units**	**Number of samples**	**Number of detects**	**Range (min-max)**	**Mean[1]**	**Standard deviation**	**95% UCL**
PFOS							
Soil – FFTA	µg/kg	22	22	0.6 – 3860	304.1	812.7	686.6
Soil – Coal Stockpile Area	µg/kg	30	9	0.1 – 10	1.31	NC[2]	NC[2]
Sediment	µg/kg	31	30	0.2 – 81	15.24	20.56	24.23
Surface Water	µg/L	64	64	0.002 – 1.5	0.39	0.33 0	0.49
Groundwater	µg/L	114	114	0.0009 – 58.6	2.00	6.48	6.89
PFOA							
Soil – FFTA	µg/kg	22	18	0.3 – 322	26.08	78.05	87.66
Soil – Coal Stockpile Area	µg/kg	30	1	1	1	NC[2]	NC[2]
Sediment	µg/kg	31	23	0.1 – 3.2	0.80	0.72	0.83

Environmental Media	Units	Number of samples	Number of detects	Range (min-max)	Mean[1]	Standard deviation	95% UCL
Surface Water	µg/L	64	64	0.001 – 0.3	0.05	0.04	0.06
Groundwater	µg/L	114	114	0.0008 – 1.85	0.15	0.30	0.25
PFHxS							
Soil – Coal Stockpile Area	µg/kg	30	4	0.1 – 1.8	0.6	NC[2]	NC[2]
Sediment	µg/kg	31	21	0.1 – 12	2.21	2.80	2.78
Surface Water	µg/L	64	64	0.0021 – 3.4	0.27	0.46	0.35
Groundwater	µg/L	114	114	0.0028 – 15.1	1.4	2.72	4.06
Total PFAS[3]							
Soil – FFTA	µg/kg	22	22	0.8 - 7440	592.1	1613	1344
Soil – Coal Stockpile Area	µg/kg	30	11	0.1 – 19	2.09	NC[2]	NC[2]
Sediment	µg/kg	31	30	0.2 – 108.6	24.3	28.92	36.32
Surface Water	µg/L	64	64	0.0157 – 8.7	1.48	1.43	1.84
Groundwater	µg/L	114	114	0.0252 – 94.51	5.56	12.43	10.87

Notes:
1) Minimum, maximum, mean and standard deviation of detected concentrations
2) NC – Not Calculated
3) Calculated as the sum of detected concentrations in the PFAS suite analysed

In addition, the ERA included offsite data from different environmental media and statistical analysis and was presented in Table 4.2 of the report. These data are not presented as offsite investigation is not part of the scope of this report. However, the following finding is relevant to the investigation: '*This data indicates that alternative sources of PFAS contamination from surrounding catchment areas are contributing to the PFAS concentrations present in these off-site water bodies, meaning any potential risks to ecological receptors from PFAS contamination in these environments would not be entirely attributable to on-site primary and secondary sources.'*

4.9 Nation Partners (August 2022) Former Munmorah Power Station, Ecological Risk Assessment

Nation Partners Pty Ltd (Nation Partners) was commissioned by GPM to undertake an Ecological Risk Assessment (ERA) to evaluate potential risks to ecological receptors in the GPM Landholding water retention basins and off-GPM Landholding receiving environments from the presence of per- and poly-fluorinated alkyl substances (PFAS) detected in environmental media and biota samples using a combination of data collected by Nation Partners and data collected by third party consultants.

The objectives of the ERA were to:

- Assess the potential for PFAS detected in on-site and off-site waterways to pose adverse risks to ecological receptors; and
- Assess the potential for adverse risks to higher order organisms from bioaccumulation of PFAS in terrestrial and aquatic organisms present within on-site and off-site receiving environments.

Following completion of the ERA Nation Partners provided the following conclusions:

- *Through the development of an ecological CSM for the DWRB, ERB, Inlet and Outlet Canals, Inlet Canal Diversion Drain, Munmorah Ash Dam, and Budgewoi Lake and Lake Munmorah* [all offsite]*, viable source – pathway – receptors linkages were identified for ecological receptors in these on-site waterbodies and off-site receiving environments to PFAS contamination migrating from primary and secondary sources on-site, as well as from the surrounding catchment area that drains to the Inlet and Outlet Canals and Munmorah Ash Dam;*
- *Comparison of PFOS and PFOA concentrations present in sediment and surface water to direct toxicity screening benchmarks indicates that there is potential for unacceptable risks to aquatic organisms associated with the reported sediment PFOS concentrations in DWRB.*

- *Reported biota concentrations in fish samples collected from DWRB and ERB indicate that there is potential for unacceptable risks to ecological receptors (birds and mammals) who obtain 100% of their diet from these water bodies. However, the fish populations present in these waterways are considered unlikely to support forage activities for bird and mammal populations due to an observed lack of abundance, biodiversity and absence of benthic invertebrate species.*
- *Comparison of PFOS and PFOA concentrations present in sediment, surface water and groundwater to direct toxicity screening benchmarks adopted for this ERA indicated a low likelihood for unacceptable risks to ecological receptors identified as present or potentially present in the off-site environments being assessed in this ERA.*
- *Based on comparison of reported [PFOS + PFHxS] concentrations in whole fish and benthic invertebrate samples collected from off-site environments with the adopted screening benchmarks:*
- *Unacceptable risks as a result of bioaccumulation to fish species appear unlikely, however the 90% species protection value may not be suitably protective of fish species that do not currently inhabit the assessed waterways, in addition there is uncertainty associated with the use of BAFs to calculate the fish screening benchmarks.*
- *There is potential for unacceptable risks to birds and mammals as a result of bioaccumulation of PFAS into fish and benthic invertebrates where those birds and mammals obtain 100% of their diet from the Inlet and Outlet Canals, the Inlet Canal Diversion Drain and Munmorah Ash Dam.*
- *There is low potential for unacceptable risks to birds from bioaccumulation of PFAS where those birds obtain 100% of their diet from Lake Munmorah, or where birds forage only on benthic invertebrates from Budgewoi Lake. This conclusion is based on the exclusion of data collected from the Australian Mud Whelk, which appears to be a cul-de-sac species, unlikely to be frequently consumed by higher order predators.*
- *Potential exists for unacceptable risks to occur from bioaccumulation of PFAS to actual or potential mammal species who consume 100% of their diet from fish from Budgewoi Lake, and fish and benthic invertebrates from Lake Munmorah.*
- *The outcomes of this ERA identified the potential for unacceptable risks to birds and mammals from bioaccumulation of PFAS for which 100% of an individual's diet is comprised of fish from these off-site environments, this assumption is considered reasonable given the size of these waterways and the potential for birds to nest in surrounding habitats. In addition, there is potential for migratory birds to return to these waterways annually and consume large quantities of aquatic organisms during breeding seasons. The effect of this behaviour on bioaccumulation and potential for toxicity to off-spring is unknown at this stage.*

- *In the absence of biota data for higher trophic level species, the potential for biomagnification of PFAS up the food chain is considered possible in these off-site environments due to the presence of PFAS compounds in environmental media and aquatic organisms.*
- *Whilst uncertainties and limitations have been identified in undertaking this ERA, conservative, evidence-based assumptions have been applied to mitigate the potential for the risk assessment outcomes that underestimate potential risks to ecological receptors from PFAS contamination (i.e., concluding there is no risk to receptors when a risk actually exists); and*
- *Despite the presence of PFAS in the off-site environments assessed for this ERA, which has likely been present for over 20 years based on the historical use of AFFF containing PFAS on-site, and which receives PFAS contributions from surrounding catchment areas, recent ecological surveys and assessments by various organisations have identified native bushland and diverse and abundant fish populations and waterbird communities present in these off-site environments, indicating the ecology and habitat present in these environments remain functioning and high value.*
- *Whilst the presence of PFAS (and potentially other contaminants associated with the historical activities undertaken at the site and within the Munmorah Ash Dam) is indicated to pose potentially unacceptable risks to some ecological receptors, the manifestation of these risks on the wildlife populations is unclear based on currently available information. However, what is currently known is that remediation of these waterways to remove or reduce the PFAS burden would likely result in a far greater impact on the wildlife populations (i.e., as a result of habitat disturbance) than is currently indicated by exposure to PFAS.*

Overall, the identified potential for unacceptable risks to occur in on- and off-site waterways as a result of the presence of PFAS is considered to require management through:

- *Source mass reduction, which is assumed to be addressed as a result of the planned remediation program on-site; and*
- *Reducing, wherever possible, sources of PFAS to off-site waterways (e.g., groundwater, surface run-off and direct discharge of stormwater/surface water).*

4.10 CES 2022 Stockpiled Material Assessment Waratah Super Battery Site (CES Document Referenced CES170608-GPM-DQ dated 17 October 2022)

A total of 57 samples were collected from the stockpiled material on 25 and 26 August 2022 and analysed in general accordance with the Sample Analysis and Quality Plan (CES

Document Reference CES170608-GPM-DI dated 05 August 2022). A summary of stockpiled material observations and samples analysed is presented in Table 16.

Table 16: Stockpile Observations and Sampling Summary

Stockpile Ref	Soil Description	Comments	Stockpile Volume m^3	Samples
SP1	FILL: Gravelly CLAY with coal cutting residue, low plasticity, dark grey/black, gravel is medium, moist. Coarse angular coal fragments throughout. FILL: Gravelly Sandy CLAY, low plasticity, pale orange/brown, sand is fine, gravel medium and includes sandstone, terracotta and concrete fragments.	No asbestos observed. No odour or stains.	140	SP1-1, SP1-2
SP2	FILL: Gravelly Clayey SAND with coal fines, medium to coarse, dark/grey brown, clay is of high plasticity, gravel is fine, moist. Sandstone cobbles and brick fragments observed.	No asbestos observed. No odour or stains	912	SP2-1, SP2-2, SP2-3, SP2-4
SP3	FILL: Gravelly SAND with trace clay and subrounded cobbles, concrete, bricks, tiles fragments and sandstone, medium, dark brown, gravel is medium coarse and angular, clay is fine to medium, moist.	Potential asbestos (PACM) fragment (PACM3 less than 10 g) observed. No odour or stains.	6,050	SP3-1, SP3-2, SP3-2, SP3-3, SP3-4, SP3-5, SP3-6, SP3-7, SP3-8, SP3-9, SP3-10, SP3-11, SP3-12, SP3-13, SP3-14, SP3-15, SP3-16, SP3-17, SP3-18, SP3-19, SP3-20, SP3-21, SP3-22, SP3-23, SP3-24
SP4	FILL: Gravelly SAND with tile and brick fragments, plastic and metal fragments and trace clay, fine to medium, brown, gravel is fine to coarse, clay of low plasticity, moist. FILL: Clayey SAND, medium, pale brown/yellow, low plasticity, moist.	No asbestos observed. No odour or stains.	438	SP4-1, SP4-2,

SP5	FILL: Gravelly sandy CLAY with tile, brick and concrete fragments and coal fines, intermediate plasticity, dark brown/black, sand is medium, gravel is angular.	No asbestos observed. No odour or stains.	879	SP5-1, SP5-2, SP5-3, SP5-4
SP6	FILL: Gravelly Clayey SAND with bricks and concrete fragments and plastic/metal pipes, fine to medium, brown, gravel is fine to coarse, clay of low plasticity, moist.	Potential asbestos (PACM) fragments observed (PACM1:120 g and PACM2 less than 10 g) No odour or stains.	3,598	SP6-1, SP6-2, SP6-3, SP6-4, SP6-5, SP6-6, SP6-7, SP6-8, SP6-9, SP6-10, SP6-11, SP6-12, SP6-13, SP6-14
SP7	FILL: Gravelly SAND with coal fines, glass, tile, brick, metal and plastic pipe fragments, fine to medium, dark brown/black, coal is angular and fine to coarse, gravel is fine to coarse, moist.	No asbestos observed. No odour or stains.	1,541	SP7-1, SP7-2, SP7-3, SP7-4, SP7-5, SP7-6

Based on the laboratory analysis of samples of the stockpiles it was confirmed that the two contaminants of concern for the material found in the seven stockpiles are asbestos and PFAS:

- Screening assessment for Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Total Recoverable Hydrocarbons (TRH), Polycyclic Aromatic Hydrocarbons (PAH), Organochlorine/ Organophosphorus Pesticides (OCP/OPP), Polychlorinated Biphenyls (PCBs), 8 common metals and metalloids indicates that there is a low risk to human health or the environment from these contaminants.
- Coal fragments were observed in samples collected from SP1, SP2, SP3 (two sample locations), SP4 (one sample location), SP5, SP6 (one sample location) and SP7.
- Asbestos fines and fibrous asbestos associated with the residual demolition processing materials were detected in excess of the adopted human health criteria in samples SP3-5 and SP6-1. In addition, asbestos in the form of asbestos fines or fibrous asbestos was detected in SP3 (5) SP6(1) and SP7 (1).
- Remediation or management of the asbestos contamination found in stockpiles 3 (SP3), 6 (SP6) is required during material handling and for potential beneficial reuse.

While asbestos concentrations in excess of the adopted human health screening criteria were not detected in SP7, consideration of the potential for asbestos fibres to be released from the stockpiled materials during materials handling, and appropriate controls and mitigation measures should be implemented.

- PFAS were not detected in excess of the laboratory PQL in samples collected from SP1, nor in ASLP analysis of the sample collected from SP1, as such SP1 is not considered to be PFAS impacted.
- Very low level PFAS concentrations (from below PQL to less than 4 times the laboratory PQL) were detected in SP2 and SP5 samples, similarly very low PFAS concentrations were detected in ASLP samples from SP2 and SP5.
- PFAS concentrations in samples collected from SP4 and SP6 were also low, typically below the laboratory PQL, however PFOS concentrations of up to 0.7 µg/kg (SP4) and 1.2 µg/kg (SP6) were detected. PFAS in ASLP concentrations were not detected in excess of the laboratory PQL is samples analysed from SP6, and less than two times the PQL in samples from SP4.
- PFAS concentrations in excess of the adopted Ecological Investigation Level for indirect toxicity was detected in one sample collected from SP3 (SP3-7).
- PFAS in ASLP concentrations were detected in excess of the adopted screening criteria in samples from SP3 and SP7 as follows:
    - SP3-7 (0.28 µg/L) and SP3-18 (0.15 µg/L) detected PFOS in excess of the PFAS NEMP 2.0 interim marine 95% species protection criteria.
    - All SP3 samples (12) submitted for ASLP analysis detected PFOS + PFHxS concentrations in excess of the Australian Drinking Water Guidelines (NHMRC 2011 updated 2022) ranging from 0.08 to 0.28 µg/L.
    - Two samples analysed from SP7 also exceeded the Australian Drinking Water Guidelines (NHMRC 2011 updated 2022) ranging from 0.1 to 0.13 µg/L.
    - No exceedance of the guidelines for recreational water quality was detected.

Based on an assessment of PFAS concentrations in accordance with Figure 5 of the NEPM 2.0 (HEPA 2020) subject to approval and further guidance from the Regulator, material contained in Stockpiles SP2, SP4, SP5 and SP6 may be suitable for beneficial re use without further assessment of risk. This assessment should be re-considered once the proposed reuse location is identified, to confirm the assessment.

Materials contained within Stockpiles SP3 and SP7 require further, more detailed, risk assessment and may require remediation or management to make them suitable for reuse.

Management of Stockpiles SP3 and SP7 may include relocation of the material to allow for the development of the site. Guidance on the stockpiling, storage and containment of PFAS-contaminated material is presented in Section 10 of the PFAS NEMP 2.0 (HEPA 2020).

5 FIELDWORK AND DEVIATIONS FROM THE SAQP

The seven-step DQO process and fieldwork design rationale details are presented in the investigation SAQP (presented in Appendix N). A summary of the fieldwork programme completed in presented in Section 5.1 and deviations from the SAQP are presented in Section 5.2.

5.1 Fieldwork Summary

A summary for sample and assessment undertaken is presented in Table 17 and Table 18.

Table 17: Summary of Samples and Assessment

Investigation Area	**No. of Locations Investigated**	**Investigation Location Density**	**Depth of investigation**	**Number of Field Screens**	**Number of samples analysed**
Adjacent Lands	10	2.2 samples per ha	0 – 7.0	47	Soil: 11 GW:1 ASLP: 2
Fire Fighting Training Area	9	(Linear) 1 per 25 m	0 – 7.6	77	Soil: 9 GW: 6 ASLP:2
Coal Stack Area	17	2 samples per ha	0 – 9.0	99	Soil: 20 PACM:4 GW: 5 ASLP:3
AEC4	14	1 sample per 25 m^2	0 - 6.0	30	Soil: 15 GW: 4
Perimeter channel and the Coal	13	1 sample per 100 m	0 - 0.1	0	Concrete: 13 ASLP:2

Handling Plant bunker					
Former gardeners shed	2	1 sample per 10 m^2	0 – 6.4	13	Soil: 3 GW: 1 ASLP: 1
Former Water Tank	1	1 sample per 10 m^2	0 – 8.1	12	Soil: 2 GW: 1 ASLP:1
Western Settling Basin	1	1 sample per water body	N/A	1	SW:1
Coal Handling Plant "Clean Water Pond"	3	3 samples per water body	N/A	3	SW: 1 Sediments: 2 ASLP:1

Table 18: List of Samples Analysed

Investigation Area	List of samples analysed
Adjacent Lands	Soil: FI209_0-0.1, FI208_1.5-1.6, FI202_0.5-0.6, FI210_0.1-0.2, FI210_1.0-1.1, FI205_0-0.1, FI203_1-1.0, FI204_0.5-0.6, FI206_0-0.1, FI207_0.1-0,2, FI201_0-0.1
	GW: FI210
	ASLP: FI_205-0-0.1, FI_207-0.1-0.2
Fire Fighting Training Area	Soil: FB308_0-0.1, FB304_0.12-0.22, FB309_0.5-0.6, FB306_1.0-1.1, FB305_0-0.1, FB301_0-0.1, FB302_0.6-0.7, FB303_0-0.1, FB307_0.1-0.2
	GW: FB304, FB301, FB308, FB305, FB306, FB309
	ASLP: FB307-0-0.1, FB303-0-0.1
Coal Stack Area	Soil: CS110_0-01, CS109_0-0.1, CS111_0-01, CS107 0.5-0.6, CS104_0-0.1, CS108_0-0.1, CS105_0.5-0.6, CS113_0.1-0.2, CS102_0-0.1, CS103_0.1-0.2, CS114_0.1-0.2, CS115_0-0.1, CS106_0-0.1, C106_7-7.1, CS101_3.0-3.1, CS112_1.0-1.1, CS116_0.6-0.7, CS116_8.9-9.0, CS117_0.1-0.2, CS117_5.0-5.1
	PACM: CS104_0-0.1 CS104_0.4-0.5, MAT01, MAT02
	GW: CS106, CS101, CS117, CS116, GS502, CS112
	ASLP: CS_110-0-0.1, CS_102- 0-0.1, CS115_-0-0.1
AEC4	Soil: A4410_0-0.1, A4413_0-0.1, A4414_0-0.1, A4404_0.9-1.0, A4409_0.6-0.7, A4411_0.45-0.55, A4411_1.0-1.1, A4412_0.4-0.5, A4401_0-0.1, A4402_0-0.1, A4403_0-0.1, A4405_0-0.1, A4406_0-0.1, A4408_0-0.1, A4407_3.0-3.1
	GW: AEC4-MW02, AEC4-MW01, AEC4-MW03, A4407
Perimeter channel and the Coal	Concrete: CC401_0-0.1, CC402_0-0.1, CC411_0-0.1, CC403__0-0.1, CC404_0-0.1, CC405_0-0.1, CC406_0-0.1, CC407_0-0.1, CC408_0-0.1, CC409_0-0.1, CC410_0-0.1, CC412_0-0.1, CC413_0-0.1

Handling Plant bunker	ASLP: CC401-0.1, CC410-0-0.1
Former gardeners shed	Soil: GS501_0-0.1, GS502_0.15-0.25
	GW: GS502
	ASLP: GS502-0.15-0.25
Former Water Tank	Soil: WT503_0.1-0.2, WT503_0.2-0.3
	GW: WT503
	ASLP: WT503-0.2-0.3
Western Settling Basin	Surface Water: SW-1
Coal Handling Plant “Clean Water Pond”	Sediment: SD-01, SD-02
	Surface Water: SW-2
	ASLP: SD-01
Background Wells	GW: CF-MW05, CF-MW06

A summary of groundwater well details is presented in

Table **19**.

Table 19 New Monitoring Well Construction Details

Well No.	Coordinates		Ground Level (m AHD)	Total Depth (m)	Screened Interval (m)	Screen length (m)	Graded sand pack Interval (m)	Bentonite Plug Interval (m)
	Easting	Northing						
A4407	364322.64	6323784.45	16.37	6.3	3.3 – 6.3	3	2.8 – 6.3	2.3 – 2.8
CS106	364317.40	6323827.70	15.89	7.5	3.5 – 7.5	4	3.0 – 7.5	2.5 – 3.0
CS101	364241.97	6323814.48	17.92	7.1	4.1 – 7.1	3	3.6 – 7.1	3.1- 3.6
CS117	364454.39	6323896.50	11.51	5	2.0 – 5.0	3	1.5 – 5.0	1.0 -1.5
CS116	364331.95	6324114.50	12.64	9	5.0 – 9.0	4	4.5 – 9.0	4.0 – 4.5
FI210	364111.70	6323983.04	13.86	7	4.0 – 7.0	3	3.5 - 7	3 -3.5
CS112	364168.61	6324001.60	14.18	6.8	3.8 – 6.8	3	3.3 – 6.8	2.8 – 3.3
GS502	364105.90	6324086.63	10.87	6.4	3.4 – 6.4	3	2.9 – 6.4	2.4 – 2.9
WT503	364128.38	6324107.02	10.21	8.1	5.1 – 8.1	3	4.6 – 8.1	4.1 – 4.6
FB304	364273*	6324180*	-	7.4	4.4 – 7.4	3	3.9 – 7.4	3.4 – 3.9
FB301	364344.40 6	6324159.28	12.06	7.6	4.6 - 7.6	3	4.1 - 7.6	3.6 - 4.1
FB308	364263.83 6	6324182.70	9.51	7.3	4.3 – 7.3	3	3.8 – 7.3	3.3 – 3.8
FB305	364264.52 6	6324212.00	9.01	7.1	4.1 – 7.1	3	3.6 – 7.1	3.1 – 3.6
FB309	364232.40 6	6324213.91	8.15	6.8	3.8 – 6.8	3	3.3 – 3.8	2.8 – 3.3
FB306	364253.17 6	6324232.27	8.24	6.7	3.7 – 6.7	3	3.2 – 3.7	2.7 – 3.2

Note: *Coordinates obtained from ArcGIS – this well location was not located by the surveyor due to the density of groundwater sampling points in the vicinity of this well, the absence of groundwater elevation data from this location is not considered to have a material effect on the assessment of groundwater flow direction.

5.2 Deviations from the SAQP

Deviations from the investigation programme presented in the SAQP, rationale and comments are presented in Table 20.

Table 20 SAQP Deviations Summary

Investigation Area	Deviation From SAQP	Rationale and Comment
Adjacent Lands	No deviations occurred, with the only exception of relocation of test pit FI205 due to presence of NBN Telstra service line.	FI205 was maintained in close proximity of original proposed location. Two additional samples were collected and analysed for Combustible Content and %Sulfur
Fire Fighting Training Area Boundary	No deviations occurred.	Original SAQP maintained.
Coal Stack Area	No deviations occurred, with the exception of relocation of borehole CS116 due to field conditions limiting access to drill rig and analysis of 5 samples for Combustible Content and %Sulfur instead of 9.	New monitoring well CS116 was installed in close proximity of original proposed location. Coal was observed at various locations and not limited to the Coal Stack Area. Samples were collected at other locations to identify combustible content.
AEC4	No deviations occurred.	Original SAQP maintained. Two additional samples were collected and analysed for Combustible Content and %Sulfur
Perimeter channel and the Coal Handling Plant bunker	No deviations occurred.	Original SAQP maintained.
Former gardeners shed	No deviations occurred, with the only exception of relocation of test pit GS501	GS501 was maintained in close proximity of original proposed location
Former Water Tank	No deviations occurred.	Original SAQP maintained.
Western Settling Basin	No deviations occurred.	Original SAQP maintained.

Investigation Area	Deviation From SAQP	Rationale and Comment
Coal Handling Plant "Clean Water Pond"	No deviations occurred.	Original SAQP maintained.

5.3 Discussion on the Updated Sample Design Guidelines

As noted in Section 1, the Contaminated Sites Sampling Design Guidelines (NSW EPA, 1995) have been superseded by the new *Contaminated Land Guidelines Sampling Design Part 1 – Application* (NSW EPA 2022) and *Contaminated Land Guidelines Sampling Design Part 2 – Interpretation* (NSW EPA 2022) which were issued following the commencement of the investigation works. Based on a review of the new guidelines the investigation has been completed in general accordance with the updated guidelines, consistency/deviation from the new guidelines are presented below:

- There is noted to be considerable overlap between the new *Contaminated Land Guidelines Sampling Design Part 1 – Application* (NSW EPA 2022) and other existing relevant guidelines and documents such as *National Environment Protection (Assessment of Site Contamination) Measure* (NEPC 1999 as amended 2013).
- As part of the investigation design process presented in the SAQP (Appendix N), a preliminary conceptual site model was prepared and the seven step Data Quality Objectives process was adopted, as required by NSW EPA (2022).
- The soil investigation design was based on a combined stratified random sampling pattern for soils and fill, with locations within a regular square grid selected using a random number generator and targeted/judgemental sampling. The grid spacing for each area of the site was selected to achieve a targeted sample density based on risk-based assessment and the preliminary conceptual site model. The sample design adopted is generally supported by the new *Contaminated Land Guidelines Sampling Design Part 1 – Application* (NSW EPA 2022).

  The regular square grid spacings adopted for each of the site areas were based achieving a sample density of 2 samples per hectare, with 70 grid spacing adopted for the Coal Stack area and 90 m spacing for the Adjacent Lands.
- Sediment, surface water and groundwater sample locations were selected on a targeted/judgemental sampling pattern, considering the preliminary conceptual site model, as recommended in NSW EPA (2022).

6 ADOPTED SCREENING CRITERIA

The future use of the site is likely to be classified as commercial/industrial, however it is noted that the standard commercial/industrial exposure model presented in ASC NEPM (NEPC 1999 as amended 2013) is likely to be overly conservative due to the actual site use and occupancy proposed.

6.1 Soil Sediment and Concrete

7.1.1 PFAS

To assess the results of soil sample analysis, primary reference has been made to soil investigation levels from PFAS National Environment Management Plan, (PFAS NEMP 2.0) as listed in Table 21 below.

Table 21: Soil and Sediment Investigation Levels for PFAS

Adopted Guidelines	Rationale	Criteria	
PFAS NEMP 2.0 HILs	**Soil Health Investigation Levels (HILs):** As the site will be used for industrial/commercial purposes, reported PFAS analytical results will be assessed against the commercial/industrial criteria detailed in Table 2 of the PFAS NEMP 2.0 (i.e. HIL-D).	Sum of PFOS and PFHxS: 20 mg/kg PFOA: 50 mg/kg	
PFAS NEMP 2.0 EGVs	**Soil Ecological Guideline Values (EGVs):** Ecological direct & indirect exposure values for PFAS have been adopted that are applicable to all land uses.	Ecological direct exposure	PFOS: 1 mg/kg
			PFOA: 10 mg/Kg
		Ecological indirect exposure	PFOS: 0.01 mg/kg
			PFOA: -
Simpson, S. et al. (2021) Chronic effects and thresholds for estuarine and marine benthic organism exposure to perfluorooctane	**Sediment Ecological Guideline Values (EGVs)** 99% species protection value and considered to be a conservative screening value that accounts for both direct toxicity and secondary poisoning (i.e. bioaccumulation).	PFOS 60 µg/kg	

sulfonic acid (PFOS)-contaminated sediments: Influence of organic carbon and exposure routes		

6.1.2 *Asbestos*

To assess the human health risk presented by potential asbestos soil contamination, reference has been made to the National Environment Protection Council (1999) *National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM) (as amended 2013)* and WA DoH (2021) *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.*

Health screening levels for asbestos contamination in soil are outlined in Table 22 and adopted criteria in Table 223.

Table 22: Rationale for the adopted NEPM Health Screening Levels for Asbestos Contamination in Soil

Adopted Guidelines	**Rationale**
NEPM, 2013 Soil HSLs/WA DoH 2021	Soil Health Screening Levels (HSLs): As the site will be used for industrial/commercial purposes, reported analytical results were assessed against the commercial/industrial criteria detailed in the NEPM 2013 (i.e Commercial/Industrial D).

Table 23: NEPM/ WA DoH 2021 Health Screening Levels for Asbestos Contamination in Soil

	Health Screening Level (w/w)			
Form of Asbestos	**Residential A[1]**	**Residential B[2]**	**Recreational C[3]**	**Commercial/Industrial D[4]**
Bonded ACM	0.01%	0.04%	0.02%	0.05%
FA and AF[5] (friable asbestos)	0.001%			
All forms of asbestos	No visible asbestos for surface soil			

1: Residential A with garden/accessible soil also includes children's day care centres, preschools and primary schools.

2: Residential B with minimal opportunities for soil access; includes dwelling with fully and permanently paved yard space such as high-rise buildings and apartments.
3: Recreational C includes public open space such as park, playground, playing fields (e.g. ovals), secondary schools and unpaved footpaths.
4: Commercial/industrial D includes premises such as shops, offices, factories and industrial sites.
5: The screening level of 0.001% w/w asbestos in soil for friable asbestos only applies where the friable asbestos and asbestos fibres are able to be quantified by gravimetric procedures. This screening level is not applicable for free fibres.

6.1.3 *Other Contaminants of Potential Concern*

To assess the human health risk presented by potential soil contamination, reference has been made to the National Environment Protection Council (1999) *National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM) (as amended 2013)*

Table 24: Soil Investigation Levels for COPC

Adopted Guidelines	Rationale
NEPM, 2013 Soil HILs and HSLs	**Soil Health Investigation Levels (HILs):** As the site will be used for industrial/commercial purposes, reported analytical results will be assessed against the commercial/industrial criteria detailed in the NEPM 2013 (i.e. HIL-D).
	Soil Health Screening Levels (HSLs): Soil concentrations to be assessed against NEPM 2013 HSL-D levels for commercial/industrial sites.
NEPM, 2013 Soil EILs and ESLs	**Ecological Investigation Levels (EILs):** Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) have been adopted in accordance with the NEPM in a commercial/industrial land use acceptance level.
	Ecological Screening Levels (ESLs): ESLs for aged copper, nickel and zinc were calculated in accordance with the NEPM using conservative values for pH (7.0) and cation exchange capacity (CEC) (20 cmolc/kg), organic content (1%) and clay content (>10%) were used in the absence of available data and based to low traffic, unless stated otherwise.

Soil EILs and ESLs have been included in the site screening criteria as formal plans of the proposed site layout and finishing have not been provided. Based on the current understanding of the proposed development, it is unlikely that the site will contain extensive areas of soft landscaping and the site is likely to be completed with an engineered dressing of aggregate. In this case the EIL/ESL criteria should not be applied.

Where guidance is not provided within *National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM) (as amended 2013)* and *PFAS National Environment*

Management Plan, (PFAS NEMP 2.0, HEPA 2020), reference has been made to guideline values from alternate sources (see below).

- Canadian Council of Ministers of the Environment (CCME) (2020) Environmental Quality Guidelines Summary Table.
- United States Environmental Protection Agency (2020) Regional Screening Levels (RSLs) - Generic Tables. Tables as of: May 2020
- Direct contact values from Friebel & Nadebaum (2011) Health screening levels for petroleum hydrocarbons in soil and groundwater: summary, CRC CARE Technical Report 10.

Combustible Content and Sulfur Content criteria presented in Table 1 of *The coal washery rejects order 2014* made under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014.

6.2 Groundwater surface water and Leachate

Results of groundwater/surface water/leachate analysis were compared to Ecological water quality guideline values indicated in *PFAS National Environment Management Plan*, (PFAS NEMP 2.0, HEPA 2020) and human health screening levels (groundwater) as listed in Table 25.

Table 25: Groundwater/Surface water/Leachate analysis Investigation Levels

Adopted Guidelines	Rationale
PFAS NEMP 2.0 Ecological water quality guideline values	Ecological water quality guideline values (EWGVs): Relevant surface water receptors comprise the Inlet and Outlet Canals, onsite water management dams and the Tuggerah Lakes, the reported analytical results will be assessed against the Ecological water quality guideline values for freshwater reported in Table 5 of PFAS NEMP 2.0 - 95% species protection – slightly to moderately disturbed systems for the Canals and Tuggerah Lakes and 95% species protection for onsite water management dams. Use of the 95% species protection for PFAS was considered appropriate for use as the receiving water bodies are slightly to moderately disturbed systems. The PFAS NEMP 2.0 (HEPA 2020) notes that *for bioaccumulative contaminants, which includes many PFAS, the Water Quality Guideline framework specifies that the 99% species protection DGV* [Default Guideline Value] *should be used for…assessing bioaccumulation in slightly to moderately disturbed ecosystems*, based on the recommendation in ANZG (2018) that the application of the next most
ANZG (2018) Default Guideline Values	

	protective DGV for contaminants that have the potential to bioaccumulate. The use of the next most protective DGV was not considered to be required as the secondary exposure effects of bioaccumulation and biomagnification have been assessed directly in the Ecological Risk Assessment (Nation Partners 2022), as such the selection of the 95% species protection is consistent with the wider PFAS Assessment underway at the GPM Landholding. For OCPs/OPPs and PCBs, LORs were used as adopted guideline where ANZG (2018) DGV were below LORs.
Human Health Screening Levels ASC NEPM (NEPC 2013)	Health screening levels (HSLs) have been developed for selected petroleum compounds and carbon bands and are applicable to assessing human health risk via the inhalation pathway. Groundwater HSLs are not applicable in conditions where groundwater is less than 2 m below ground level, due to the limitations of the Johnson and Ettinger Model which was used to derive the groundwater HSLs. The site in its current condition does not contain built structures and as such the groundwater HSLs are considered to be appropriate and conservative screening criteria. The HSLs for commercial/industrial land use for sand soil types at depths of 2-4 m below ground level have been adopted as screening criteria
Guidelines for Managing Risk in Recreational Water (NHMRC, 2008)	For the protection of primary and secondary recreational contact, the Guidelines for Managing Risk in Recreational Water (NHMRC, 2008) recommends that the Australian Drinking Water Guidelines Criteria should be adjusted from the consumption of 2 L/day to the consumption of 0.2 L/day.

7 QAQC DATA EVALUATION

Field and laboratory QA/QC requirements compliant with National Environmental Protection Council (1999 updated 2013) requirements are outlined below. Laboratory certificates of analysis are attached as Appendix J.

7.1 Data Acceptance Criteria

The QA/QC Data was assessed against the Data Acceptance Criteria (DAC) provided in Table I (Refer to Appendix H).

7.2 Field QA/QC Programme

Soil/sediments, surface and groundwater samples were collected by an experienced Environmental Engineer and Scientist, under established CES protocols. CES personnel have been trained in sample collection and handling techniques.

For the purpose of assessing the quality of data presented in this report, CES collected and analysed Quality Control (QC) samples, while the laboratory completed their own QC. Tabulated QC data for soil/sediments and surface/groundwater are provided in Table D and Table E (Refer to Appendix H) respectively. Field QAQC assessment results are discussed in the following sections.

7.2.1 Blind Replicate Samples

7.2.1.1 Soil/Sediment

Seven blind replicate soil/sediment samples for PFAS analysis and eight blind replicate soil/sediment samples for metals and metalloids, asbestos, TRH, BTEX, PAHs, OCPs, OPPs and PCBs analysis were collected during the investigation. The replicate samples were preserved, stored, transported, prepared and analysed in an identical manner to the primary environmental sample.

The RPDs (Relative Percentage Difference) between primary and blind samples were all within the DAC listed in Table I (Refer to Appendix H) with the following few exceptions:

- QAQC1 (primary FI201 0-0.1) for lead.
- QAQC3 (primary CS110-0-0.1) for PFHxS, PFOS and Copper.
- QAQC7 (primary CS106 0-0.1) for Copper, Mercury and Nickel.
- QAQC 15 (primary sample FI205-0-0.1) for Zinc.

RPD exceedances are likely due to concentrations for PFAS being reported at low concentrations rather than been reflective of a material discrepancy in sample collection or laboratory analysis. Moreover, the soil samples submitted for analysis were not homogenised in the field. The RPD exceedances for metals are considered to likely be a result of small-scale soil heterogeneity.

Where the concentration of a contaminant was higher in the field intra-laboratory duplicate or field inter-laboratory split, the higher value was included in the data set.

It is considered that the blind replicate samples confirm that the primary laboratory analyses of the soil/sediment samples are repeatable and accurate.

7.2.1.2 Groundwater/surface water

Three blind replicate groundwater/surface water samples for PFAS analysis and two blind replicate groundwater/surface water samples for metals and metalloids, TRH, BTEX, PAHs, OCPs, OPPs and PCBs analysis were collected during the investigation.

The RPDs between primary and blind samples were all within the DAC listed in Table 15, with the following few exceptions:

- QAQC21 (primary FB309) for PFBS, PFPeS, PFHxS, PFOS, PFHxA, PFHpA, PFOA and 6:2 FTS.

RPD exceedances are likely due to PFAS concentrations being reported at trace concentrations rather than been reflective of a material discrepancy in sample collection or laboratory analysis.

Where the concentration of a contaminant was higher in the field intra-laboratory duplicate or field inter-laboratory split, the higher value was included in the data set.

It is considered that the blind replicate samples confirm that the primary laboratory analyses of the groundwater/surface water samples are repeatable and accurate.

7.2.2 Split Samples

7.2.2.1 Soil/Sediment

Seven split soil/sediment samples were collected for PFAS analysis, and eight split soil/sediment samples were collected for metals and metalloids, asbestos, TRH, BTEX, PAHs, OCPs, OPPs and PCBs during the investigation. The replicate samples were preserved,

stored, transported, prepared and analysed in an identical manner to the primary environmental sample.

The RPD (Relative Percentage Difference) between primary and split samples were all within the DAC listed in Table 15, with the following few exceptions:

- QAQC2 (primary FI201 0-0.1) for Fluoranthene and lead.
- QAQC4 (primary CS110-0-0.1) for PFHxS, Anthracene, Pyrene and lead.
- QAQC6 (primary A4401-0-0.1) for TRH >C16-C34, Total +ve TRH (>C10-C40), Fluorene and Phenanthrene.
- QAQC8 (primary CS106 0-0.1) for TRH C15 - C28, TRH C29 - C36, TRH >C10 - C16 - Naphthalene (F2), TRH >C16-C34, TRH >C34-C40, Total +ve TRH (>C10-C40), chromium and Nickel.
- QAQC10 (primary FB308-0-0.1) for PFHxS and PFOS.

The soil/sediment samples submitted for analysis were not homogenised in the field. The RPD exceedances are considered to likely be a result of small-scale soil heterogeneity and/or differences in LOR and do not represent inconsistencies between the primary and secondary laboratories.

Where the concentration of a contaminant was higher in the field intra-laboratory duplicate or field inter-laboratory split, the higher value was included in the data set.

It is considered that the blind replicate samples confirm that the primary laboratory analyses of the soil/sediment samples are repeatable and accurate.

7.2.2.2 Groundwater

Three split groundwater/surface water samples for PFAS analysis and two split groundwater/surface water samples for metals and metalloids, TRH, BTEX, PAHs, OCPs, OPPs and PCBs analysis were collected during the investigation.

The RPDs between primary and split samples were all within the DAC listed in Table 15, with only one exception for PFOS in QAQC20 (primary GS502):

The RPD exceedance is likely due to PFAS concentrations being reported at trace concentrations rather than been reflective of a material discrepancy in sample collection or laboratory analysis.

Where the concentration of a contaminant was higher in the field intra-laboratory duplicate or field inter-laboratory split, the higher value was included in the data set.

It is considered that the split samples confirm that the primary laboratory analyses of the groundwater/surface water samples are repeatable and accurate.

7.2.3 Trip Blank

Eight trip blank samples were collected with submission of soil/sediment samples and four trip blanks were collected with submission of groundwater/ surface water samples. The trip blanks conform to the DAC listed in Table I (Refer to Appendix H).

7.2.4 Laboratory Prepared Trip Spike

Eight trip spike samples were prepared and submitted with soil/sediment samples and four trip spikes were prepared and submitted with groundwater/surface water samples. The trip spikes recoveries conform to the DAC listed in I (Refer to Appendix H).

7.2.5 Rinsates

Thirteen rinsate blanks were collected during the investigation at the site. The reported concentrations of all analytes (metals and metalloids, PAHs, TRH, BTEX, OCPs, OPPs, PCBs) were below the laboratory detection limits, with the exception of TRH >C10-C16 and Fraction 2 – Naphthalene in samples RIN07, RIN08, RIN09, RIN 11 and RIN12, which reported just above detection and ranged between 54 and 91 µg/L.

Rinsate sample RIN7 was collected from the push tube liners provided by the driller, RIN8 sample was collected from the interface probe after decontamination with tap water followed by distilled water, RIN09 and RIN11 samples were collected from the bladder pump after decontamination with tap water followed by distilled water, and RIN12 sample was collected from the water quality multiparameter after decontamination with tap water followed by distilled water. Neither of these fractions were reported in any of the groundwater wells tested or in surface water samples collected above detection limit or if detected, the reported values were significantly higher (e.g. AEC4-MW02 reported concentration of 1600 and 1400 µg/L, for TRH >C10-C16 and Fraction 2 – Naphthalene, respectively). Therefore, although, the rinsate samples indicated that low concentrations of impact were identified, RH >C10-C16 and Fraction 2 – Naphthalene, impact was not identified in the actual groundwater samples.

Despite these detections of TRH in the rinsate blank samples collected, CES decontamination procedures were followed by all field personnel during the groundwater and surface water investigation and as such CES is confident in the accuracy of the results of groundwater and surface water sampled.

7.2.6 Additional QA/QC Samples

In addition, mains water samples (POT-01 and POT-02) and sand samples (S-1) used for backfilling of new wells were collected and analysed for PFAS, Asbestos (sand sample only), metals and metalloids, PAHs, TRH, BTEX, OCPs, OPPs, PCBs to identify any confounding sources of contamination.

The reported concentrations of all analytes were below the laboratory detection limits, with the exception of slight detection in POT0-01 and POT-02 samples of the following analytes: PFOS and PFOA (0.0005 – 0.0006 µg/L), TRH C6-C9 and TRH C6-C10 (120 - 210 µg/L), TRH> C10 - C16 and TRH >C10 - C16 less Naphthalene (F2) (<50 – 52 µg/L). Background levels for a few metals were also reported in these samples (Copper (100 – 190 µg/L), Lead (1 – 2 µg/L), Zinc (36 – 78 µg/L), Boron (20 µg/L) and Barium (19 µg/L).

These detections are not expected to impact the assessment for the following reasons: detections were below NHMR (2011 Updated September 2022; Version 3.8) *Australian Drinking Water Guidelines*, not reported in rinsates samples (refer to Section 7.2.5), below the levels reported during the groundwater investigation or when reported in much lower concentrations reported to have any impact effect in the reported values.

7.2.7 Laboratory QA/QC Programme

The reliability of test results from the analytical laboratories was monitored according to the QA/QC procedures used by the NATA accredited laboratory. The QA/QC programme employed the primary laboratory specifies holding times, extraction dates, method descriptions, Chain of Custody (COC) requirements, analysis, EQLs and acceptance criteria for the results. Laboratory QA/QC requirements undertaken by the primary and secondary laboratories are based on NEPM requirements and are outlined below (NEPC, 1999).

Laboratory QAQC assessment is provided in the laboratory certificates of analysis presented as Appendix J.

7.3 QAQC Assessment Summary

CES has a high degree of confidence in the quality of the field data (that is to say that the soil/sediments and groundwater/surface water samples were representative of the material sampled, the samples were collected by an experienced sampler and that the chain of custody documentation was accurate) and the laboratory data (that is to say that the primary and secondary are NATA accredited laboratories, and undertake strict internal QA/QC of the results issued, uses appropriate methodology and practical quantification limits (PQL) to analyse soil and groundwater samples and has completed sample documentation).

In consideration of the QAQC assessment, CES has a high degree of confidence in the quality of the data provided, and the data within this report is representative and suitable for the assessment.

8 INVESTIGATION RESULTS

8.1 Soil

8.1.1 Fieldwork

Test pit investigation was undertaken between 2, 3, 4 and 18 of August 2022.

Fifteen boreholes mechanically drilled were advanced using push tube drilling until refusal, followed by solid stem auguring to a targeted depth of 2 m below water strike level or until refusal between 9 and 12 August 2022.

8.1.2 Observations and Field Screening

Field screening and observations recorded during the investigation are provided in the Borehole/Test Pit Log Field sheets in Appendix E.

No stained soils were noted at the site and odorous soils (fuel odour) were noted under AEC4 slab. PID readings ranged between 0.0 and 10.5 ppm (A4404). PID results are presented on Borehole/Test Pit Log Field sheets in Appendix E.

Field screening for asbestos was undertaken on all fill samples recovered during test pit excavations. Results summary of field screening are presented in Table 26 and field data sheets presented in Appendix N. Asbestos containing material (ACM) (Brown woven material) was reported to contain Chrysotile at CS108.

Table 26: Summary of Asbestos Field Screening

Investigation Area	Sampling Location	>7mm ACM samples collected during the bulk sampling	Weight of collected ACM (kg)	% (w/w) asbestos
Adjacent Lands	FI209, FI208, FI202, FI205, FI203, FI204, FI206, FI207, FI201	No Asbestos Observed	-	-
Fire Fighting Training Area	FB302, FB303, FB307	No Asbestos Observed	-	-
Coal Stack Area	CS110, CS109, CS111, CS107, CS104, **CS108**, CS105, CS113, CS102, CS103, CS114, CS115, CS112	CS104_0-0.1	0.01	0.000
		CS104_0.4-0,5	0.01	0.000
		MAT01 (CS108)	0.3	0.000

Investigation Area	Sampling Location	>7mm ACM samples collected during the bulk sampling	Weight of collected ACM (kg)	% (w/w) asbestos
		MAT02 (CS108)	0.1	**0.06**
AEC4	A4410, A4413, A4414, A4404, A4409, A4411, A4412, A4401, A4402, A4403, A4405, A4406, A4408	No Asbestos Observed	-	-
Former gardeners shed	GS501	No Asbestos Observed	-	-

A summary of soils encountered during the investigation is provided in Table 27 below.

Coal fines and sub-angular coal and demolition processing materials (bricks, concrete) were observed across the site, particularly in the Coal Stack Area and varied in depth (ranging from 0 -0.6 m BGL).

Odours soils were reported in AEC4.

Table 27: Summary of soils encountered during the investigation

Area of Concern	Soil Classification	Typical Soil Description	Soil Depth Range (m)
Coal Stack Area	Fill	Gravelly SAND: fine to coarse grained, pale to dark brown/black with coal fines and sub-angular coal fragments. Moist. No odours, no stains. ACM observed at CS108.	0 – 0.6
		Clayey SAND: fine grained, grey with dark orange mottling, low to medium plasticity with trace coal fines. Moist. No odours, no stains.	0 – 1.5

	Natural	Clayey SAND: fine grained, poorly sorted, grey with dark orange mottling, low to medium plasticity. Moist to wet. No odour or staining.	0.1 – 9.0
		Sandy CLAY: high plasticity, stiff, grey with dark orange mottling. No odour or staining.	2.6 – 7.5
AEC4	Fill	Gravelly SAND: fine to coarse grained, well graded, pale to dark brown/black with coal fines and sub-angular coal fragments. Moist. Hydrocarbon odour with no staining.	0.3-0.9
		Clayey SAND: fine to coarse grained, moderately sorted, light brown/grey	0.4 – 1.1
		SAND: moderated grained, poorly sorted, pale brown, with coal fines No staining / faint hydrocarbon odour Moist. Hydrocarbon odour with no staining.	0.5 - 0.7
	Natural	Clayey SAND: fine to coarse grained, moderately sorted, grey with orange mottling	0.7 – 6.0
FFTA boundary	Fill	Gravelly SAND: fine to coarse grained, well graded, dark	0 -0.8

		brown/black with coal fines. No odours, no stains.	
		SAND: fine to coarse grained, well graded, loose, dark brown/black. Moist. No odours, no stains.	0 -0.1
		Clayey SAND: moderately grained, poorly sorted, pale brown, loose. No odour, no staining Moist. No odours, no stains.	0.1 – 1.1
	Natural	Clayey SAND: fine grained, poorly sorted, firm, grey and dark orange mottling.	0.4 – 1.5
		CLAY: moderate to high plasticity, pale grey to white and dark orange	0.7 - 7.6
Adjacent Lands	Fill	Gravelly SAND: moderately sorted, fine to medium grained, loose, dark brown, with trace coal fines and coal gravels. No odours, no stains.	0 - 0.1
		Clayey SAND: fine to coarse grained, moderately graded, dark brown/black with orange mottling, with coal fines.	0 – 1.

		No odours or stains	
		SAND: moderately sorted, fine to medium grained, dark brown/black, trace coal Fragments. No odour, no staining.	0 -0.2
	Natural	Clayey SAND: moderately grained, poorly sorted, pale brown/yellow/orange No odour, no staining No odours, no stains	0.2 – 1.5
		CLAY: moderate to high plasticity, grey to white	2.5 – 7.0
Former Gardener Shed	Fill	Gravelly Clayey SAND: fine grained, poorly sorted, firm, grey and dark orange mottling. No odours or staining	0.15 – 0.5
		Clayey SAND: moderately sorted, fine to medium grained, loose, dark brown/black No odour, no staining	0 – 0.5
	Natural	Clayey SAND: fine to moderately grained, poorly sorted, white and dark orange mottled No odours or staining	0.5 – 2.5
		CLAY: moderate plasticity, white	2.5 – 6.4

		No odours or staining	
Former Water Tank	Fill	SAND: fine to coarse grained, moderately sorted, loose, pale brown/yellow No odours or staining	0 - 0.65
		Clayey SAND: moderately sorted, poorly sorted, grey and orange mottled, firm No odours or staining	0.65 – 0.75
	Natural	Clayey SAND: fine to moderately grained, poorly sorted, grey and orange mottled, with angular pebbles. No odours or staining	0.75 – 1.8
		CLAY: high plasticity, grey with orange mottling. No odours or staining	1.8 - 8.1

Test pit logs and borehole logs are presented as Appendix F.

8.1.3 Soil Laboratory Analytical Results

Soil analytical results are presented as Table A and the laboratory Certificates of Analysis are presented in Appendix J.

A soil exceedance plan has been prepared and is presented as Figure10.

8.1.3.1 PFAS

PFAS results for soil samples were below SAC and/or below the laboratory Practical Quantitation Limit.

8.1.3.2 PFAS in ASLP

Selected samples (9) were tested using the Australian Standard Leachate Procedure (ASLP) for PFAS. Samples were selected for ASLP analysis based on the detected PFAS

concentrations and to provide site coverage. The results are presented in Table B and the laboratory Certificates of Analysis are presented in Appendix J.

PFAS in ASLP concentrations were not detected in excess of the PFAS NEMP 2.0 Freshwater 95% protection of species criteria, the NHMRC (2022) criteria for Primary and Secondary Recreational Contact and/or below the laboratory Practical Quantitation Limit.

8.1.3.3 Asbestos

ACM (Brown woven material) was reported at CS108 at a depth between 0.1 and 0.2 (Refer to plate 6 in Appendix E).

In addition, AF/FA analysis at the same location at a depth between 0-0.1 reported an exceedance (0.0022 %w/w) of adopted health criteria indicating that weathering of existing ACM has resulted in the material becoming friable and impacted the surface soils at the location.

8.1.3.4 TRH and BTEX

TRH results were below the adopted health-based criteria and exceeded the adopted ecological criteria for TRH >C10 - C16 at the following locations:

- Coal Stack Area: CS110 0-0.1 (180 mg/kg) and CS109 0-0.1 (190 mg/kg)
- Adjacent Lands: FI201 0-0.1 (190 mg/kg)
- AEC4: A4410 0-0.1; A4413 0-0.1; A4404 0.9-1; A4409 0.6-0.7; A4411 0.45-0.55; A4411 1-1.1; A4412 0.4-0.5; A4401 0-0.1; A4402 0-0.1; A4405 0-0.1; and A4408 0-0.1 (Refer to Table A).

TRH >C16 - 34 also exceed the adopted ecological criteria at various locations within AEC4 (A4411 0.45-0.55; A4411 1-1.1; A4401 0-0.1; A4402 0-0.1; and A4408 0-0.1) (Refer to Table A).

BTEX results for soil samples were below detection and consequently below the SAC.

8.1.3.5 PAHs

PAH results for soil samples were below detection and/or below the SAC. The highest B(a)P concentration (0.5 mg/kg) was reported at the former garden shed (GS502 0-0.1).

8.1.3.6 Metals and metalloids

Metal and metalloids concentrations for soil samples were below the SAC.

8.1.3.7 OCPs, OCPs and PCBs

OCPs, OCPs and PCBs results for soil samples were below detection and consequently below the SAC.

8.1.3.8 Combustibility and Total Sulphur

Combustibility exceedances of the Absolute Maximum Concentration indicated in The coal washery rejects order 2014 were reported at the following locations:

- Coal Stack Area: CS109 0-0,1 (71%), CS107 0.5-0.6 (53%), CS115 0-0.1 (79%)
- Adjacent Lands: FI201 0-0.1 (57%)

No exceedances of total sulphur were reported.

8.2 Sediment

8.2.1 Fieldwork

Two sediment samples (SD-1 and SD-2) were collected from the Coal Handling Plant "Clean" Water Pond, near the northern boundary of the site on the 23 August 2022.

8.2.2 Sediment Laboratory Analytical Results

8.2.2.1 PFAS

PFAS results for sediment samples were below the SAC. PFOS was reported above detection limit (SD-1: 0.4 µg/kg and SD-2 0.3 µg/kg).

8.2.2.2 PFAS in ASLP

One sample was tested using the Australian Standard Leachate Procedure (ASLP) for PFAS. The results are presented in Table B and the laboratory Certificates of Analysis are presented in Appendix J.

PFAS in ASLP concentrations were not detected in excess of the PFAS NEMP 2.0 Freshwater 95% protection of species criteria, or the NHMRC (2022) criteria for Primary and Secondary Recreational Contact.

8.2.2.3 TRH and BTEX

TRH and BTEX results for sediment samples were below detection and/or below the SAC.

The highest TRH fraction detected was 250 mg/kg for TRH (>C10-C40).

8.2.2.4 PAHs

PAHs results for sediment samples were below detection and consequently below the SAC.

8.2.2.5 Metals and metalloids

Metals and metalloids results for sediment samples were below detection and/or below the SAC.

8.2.2.6 OCPs, OCPs and PCBs

OCPs, OCPs and PCBs results for sediment samples were below detection and consequently below the SAC.

8.3 Concrete Samples

8.3.1.1 PFAS

PFAS results for concrete samples were below the SAC and/or below the laboratory Practical Quantitation Limit.

8.3.1.2 PFAS in ASLP

One sample was tested using the Australian Standard Leachate Procedure (ASLP) for PFAS. The results are presented in Table B and the laboratory Certificates of Analysis are presented in Appendix J.

PFAS in ASLP concentrations were not detected in excess of the PFAS NEMP 2.0 Freshwater 95% protection of species criteria, or the NHMRC (2022) criteria for Primary and Secondary Recreational Contact.

8.4 Groundwater

To allow for the installation of new groundwater wells fifteen boreholes mechanically drilled were advanced using push tube drilling until refusal, followed by solid stem auguring to a targeted depth of 2 m below water strike level or until refusal between 9 and 12 August 2022.

Groundwater well development was completed on 16 and 17 August 2022.

Groundwater gauging and sampling was completed between 22 and 25 August 2022

8.4.1 Groundwater Quality Field Parameters

During purging of the groundwater wells, groundwater quality field parameters were measured using a multi-parameter water quality meter which measured temperature, pH, conductivity (EC), turbidity, total dissolved soils (TDS), dissolved oxygen (DO) and oxidation-reduction potential (ORP). This equipment was calibrated by the equipment supplier prior to use on-site and calibrated daily and did not require adjusting for redox measurements. Groundwater field parameters data is presented in Table 28. Field data sheets and calibration certificates for the water quality meter is presented in Appendix F.

Table 28: Stabilised Field Measured Groundwater Parameters

Well ID	Dissolved Oxygen (mg/L)	Electrical Conductivity (µS/cm)	pH	Redox (mV)	Temperature (ºC)	Turbidity (NTU)	TDS (mg/L)	Observations at time of sampling
CF-MW05	0.15	572	4.12	190	18.8	68.8	420	Colourless, clear, no odour
CF-MW06	1.85	467.6	3.99	239.3	17.9	93.9	351	Colourless, clear, no odour
A4407	4.36	385	5.1	104.2	20	138.6	277	Colourless, clear, no odour
AEC4-MW01	0.004	339.6	4.54	160	20.1	88.4	244	White/Milky colour, no odour
AEC4-MW02	2.2	642	4.6	31	18.2	69	460	White/Milky colour, slight fuel odour
AEC4-MW03	0.26	373.3	4.7	235.8	20.5	1807.3	265	Milky brown colour, turbid, no odour

Well ID	Dissolved Oxygen (mg/L)	Electrical Conductivity (µS/cm)	pH	Redox (mV)	Temperature (°C)	Turbidity (NTU)	TDS (mg/L)	Observations at time of sampling
CS106	1.92	902	4.97	-215	20.4	63.2	642	Clear to Pale milky colour, no odour
CS101	2.26	1856	6.02	-42.3	19.3	29	1354	Colourless, Clear, no odour
CS117	0.03	638	4.93	-59	19.1	2099	468	Grey milky colour, no odour
CS116	1.9	880	4.65	139.3	21	450	612	Brown, turbid, no odour
FI210	3.25	277.9	4.31	197.4	17.9	250	209	Pale brown, turbid, no odour
CS112	5.67	281.4	4.43	228	18	48	48	Colourless, clear, no odour
GS502	2.31	293	5.12	-55	18.4	369	218	Colourless, clear, no odour
WT503	3.18	556	4.62	-58	20	140	395	Grey milky colour, no odour
FB304	0.16	761	4.71	-424	19.9	856	557	Dark brown, very turbid, no odour
FB301	1.28	294.7	4.65	295	18.8	252	218	Colourless, clear, no odour

Well ID	Dissolved Oxygen (mg/L)	Electrical Conductivity (µS/cm)	pH	Redox (mV)	Temperature (°C)	Turbidity (NTU)	TDS (mg/L)	Observations at time of sampling
FB308	0.04	1599	5.81	-541.9	19.2	6161	1161	Brown, very turbid, no odour
FB305	2.14	1067	5.53	-334	18.2	12312	797	Brown, very turbid, no odour
FB309	0.5	504	5.7	-431	19.1	1059	368	Brown, very turbid, no odour
FB306	0.05	1117	6.21	-537	19.6	3630	813	Brown, very turbid, no odour

8.4.2 Groundwater Gauging

Standing groundwater levels were measured in the monitoring wells following stabilisation after development using a calibrated interface probe between 22 and 25 August 2022. No free LNAPL was detected in groundwater monitoring wells. A summary of the groundwater readings is given in Table 29.

Table 29: Summary of Groundwater Levels

Borehole ID / Well ID	Groundwater Depth	
	SWL (m BTOC)	m AHD
CF-MW05	3.14	14.55
CF-MW06	2.56	13.41
A4407	3.825	12.55
AEC4-MW01	4.19	12.65
AEC4-MW02	4.78	12.49
AEC4-MW03	3.88	12.18
CS106	5.09	7.59
CS101	3.28	10.10
CS117	2.57	5.63

Borehole ID / Well ID	Groundwater Depth	
	SWL (m BTOC)	m AHD
CS116	6.97	2.75
FI210	5.15	6.00
CS112	4.62	6.63
GS502	4.96	4.34
WT503	4.74	2.23
FB304	5.12	NS
FB301	6.53	3.69
FB308	5.44	2.06
FB305	5.59	1.80
FB309	4.86	0.71
FB306	5.02	1.40

Note: NS: Not Surveyed

Interpolation of groundwater elevations using the kriging method to calculated inferred groundwater contours was completed using ArcMap 10. The results are presented on Figure 9. The inferred groundwater flow direction is generally to the north with some localised variations.

8.4.3 Laboratory Analytical Results

Groundwater analytical results are presented as Table C. The laboratory Certificates of Analysis are presented in Appendix J.

A groundwater exceedance plan has been prepared and is presented as Figure 11.

8.4.3.1 PFAS

The following exceedances of PFAS NEMP 2.0 Freshwater 95% protection of species criteria were reported:

- PFOS at AEC4-MW01 (0.91 µg/L), AEC4-MW03 (0.91 µg/L), A4407 (0.14 µg/L) CS106 (0.22 µg/L), FB304 (4.9 µg/L), FB305 (6.4 µg/L), FB306 (18 µg/L) and FB309 (8.8 µg/L).

The following exceedances of adopted Guidelines for Managing Risk in Recreational Water (NHMRC, Updated September 2022) were reported:

- Sum of PFOS and PFHxS at AEC4-MW01 (1.57 µg/L), AEC4-MW03 (1.84 µg/L), CS106 (1.13 µg/L), FB304 (8.2 µg/L), FB305 (11 µg/L), FB306 (35 µg/L) and FB309 (9.8 µg/L).

8.4.3.2 TRH and BTEX

TRH results for groundwater samples were all below the SAC. It was noted that several TRH fractions were above detection for wells AEC4-MW01 and AEC4-MW02, which are located beneath AEC4.

One exceedance of adopted Guidelines for Managing Risk in Recreational Water (NHMRC, Updated September 2022) for benzene (14 µg/L) was reported at AEC4-MW02.

8.4.3.3 PAHs

Naphthalene (74 µg/L), Phenanthrene (6.5µg/L) and Anthracene (1.3 µg/L) concentrations exceeded the adopted Freshwater 95% protection of species criteria at AEC4-MW02.

8.4.3.4 Metals and metalloids

Metals and metalloids results for groundwater samples were all below the SAC, with the exception of Zinc, which exceeded the adopted Freshwater 95% protection of species criteria at all monitoring wells (refer to Table C).

8.4.3.5 OCPs, OCPs and PCBs

OCPs, OCPs and PCBs results for groundwater samples were below detection.

8.5 Surface Water

8.5.1 Quality Field Parameters

Surface water samples were collected on the 23 August from the Western Settling Basin and the Coal Handling Plant “Clean” water pond. Water quality field parameters were measured using a multi-parameter water quality meter which measured temperature, pH, conductivity (EC), turbidity, total dissolved soils (TDS), dissolved oxygen (DO) and oxidation-reduction potential (ORP). This equipment was calibrated by the equipment supplier prior to use on-site and calibrated daily and did not require adjusting for redox measurements. Groundwater field parameters data is presented in Table 30. Field data sheets and calibration certificates for the water quality meter is presented in Appendix F.

Table 30: Field Measured Surface Water Parameters

Location	Dissolved Oxygen (mg/L)	Electrical Conductivity (µS/cm)	pH	Redox (mV)	Temperature (°C)	Turbidity (NTU)	TDS (mg/L)	Observations at time of sampling
WSB	7.47	192.4	7.01	136.4	13.7	11.34	160	Colourless, clear, no odour
CWP	9.0	129.4	7.27	134.5	11.9	35.79	112	Colourless, clear, no odour

Note: WSB: Western Settling Basin; CWP: Coal Handling Plant "Clean" water pond

8.5.2 Laboratory Analytical Results

8.5.2.1 PFAS

PFAS results for surface water samples were all below the SAC. A number of PFAS were reported above LOR including PFOS (0.013 µg/L for Western Settling basing and 0.0041 µg/L for Coal handling water pond), PFHxS (0.0077 µg/L for Western Settling basing and 0.0026 µg/L for Coal handling water pond) and PFOA (0.0066 µg/L for Western Settling basing and 0.0021 µg/L for Coal handling water pond).

8.5.2.2 TRH and BTEX

TRH and BTEX results for surface water samples were below detection and consequently below the SAC.

8.5.2.3 PAHs

PAHs results for surface water samples were below detection and consequently below the SAC.

8.5.2.4 Metals and metalloids

Metals and metalloids results for surface water samples were below detection and/or below the SAC.

8.5.2.5 OCPs, OCPs and PCBs

OCPs, OCPs and PCBs results for surface water samples were below detection.

9 DISCUSSION

9.1 Soils

In general soil analytical results indicate that soils at the site have generally not been impacted by the sites previous use and are generally suitable for the proposed development. The following areas of localised impact were identified:

- An asbestos (ACM and AF/FA) hot spot was identified at CS108 due to reported exceedance of adopted health criteria in soil and the identification of a fibrous asbestos containing material (Brown woven material), which may have impacted the surface soils at the location. The material was considered to likely have been deposited on the site surface by the power station demolition works processing which was undertaken in this area of the site. Other residual demolition products were observed in this area of the site, on the site surface.

  It is noted that during the power station demolition works asbestos containing materials were safely removed and disposed of offsite at suitably licenced facilities in accordance with the demolition works asbestos control plan. Asbestos was found imbedded in some of the large concrete structures and planning approval was obtained to dispose of this contaminated concrete in the asbestos disposal area within the GPM Landholding. The asbestos removal work was undertaken prior to the explosive demolition works and the relocation of demolition products to the Coal Stack area for processing and load out.

  This is supported by the absence of asbestos detections in other samples collected and analysed, and site observations during fieldwork, as such this result is likely to represent localised impact and is not indicative of widespread asbestos impacts arising from the use of the site for demolition processing.

  The above area of soil impact requires remediation or management to make the site suitable for the proposed development.

TRH >C10 – C16 and TRH >C16 – C34 which exceeds the adopted ESL at eleven locations in AEC4, two locations in Coal Stack Area and one location in the Adjacent Lands area.

With respect to the ESL exceedances in the AEC 4 area, while TRH concentrations at AEC4 reported during this investigation were higher than previous investigations (CES, 2019c), these exceedances are considered low risk for terrestrial ecological receptors since the current (industrial use) and proposed use (Waratah Super Battery i.e., electricity generation) and is a

moderately disturbed system. In addition, the primary source (Diesel ASTs) has been removed, and no underground pipework was observed during the investigation.

The remaining, localised ESL exceedances were associated with areas of the site where coal materials were observed, and the elevated TRH is likely to be associated with the coal materials.

The localised ecological screening criteria exceedances are not considered to require remediation or management as part of the proposed development and as noted in Section 6.1, the proposed development is not likely to contain extensive areas of soft landscaping and is likely to be completed with an engineered aggregate hardstanding.

PFAS concentrations and PFAS in ASLP concentrations were not detected in excess of the adopted screening criteria.

Low level PFAS concentrations were detected in shallow soils from the Coal Stack Area, with PFAS concentrations not detected in samples collected from depths greater than 0.2 m (with two exceptions CS105 0.5-0.6 m and CS107 0.5-0.6 m). This is consistent with the previous assessment undertaken by CES (2019a) and with the conceptual site model, that PFAS impact withing the soils of the Coal Stack are a result of irrigation of PFAS impacted waters for dust suppression during the demolition works.

PFAS in ASLP concentrations from Coal Stack soils were also low, and less than 2 times the laboratory PQL where detected. Based on the ASLP results it is unlikely that the near surface soils on the Coal Stack area are the source of PFAS concentrations in stormwater detected by Douglas Partners (refer to Section 4.7).

PFAS concentrations detected in soils from the Adjacent Lands and in targeted samples from the Gardeners Shed, Fire Fighter Training Area Boundary were generally lower than samples from the Coal Stack Area. It is noted that samples collected from the footprint of the former firefighting water supply tank did not detect PFAS concentrations in excess of the laboratory PQ, indicating that it is unlikely that PFAS containing water was stored in the tank. The PFAS concentrations in soil are considered to also be a result of dust suppression irrigation, either directly, incidentally or through spray drift.

Similarly, soil samples collected from the AEC 4 area did not detect PFAS concentrations outside of the range detected in the other areas of the site, and it is noted that this area of the site was likely to also be subject to dust suppression irrigation. The exception to the above is sample A4407 3-3.1 m which detected highest concentrations of PFAS (Sum n=28) of 24.4 µg/kg, which may be indicative of an additional historic PFAS release such as the use of AFFF in the AEC 4 area.

It is noted that the proposed development works have the potential to include cut and fill/recontouring the potential for onsite reuse of PFAS impacted soils is discussed in Section 9.6.

With respect to the materials stockpiled onsite it is noted that asbestos was detected in three of the seven stockpiles, stockpile SP3, SP6, and SP7 (noted to be below the human health screening criteria). SP3 and SP7 samples also detected PFAS concentrations in ASLP which exceed the adopted screening criteria. Based on the concentrations detected and the locations of the stockpiles it is likely that the stockpiled material is contributing to the PFAS concentrations detected in site stormwater detected by wet weather sampling (Refer to Section 4.7).

Of the nine samples of coal containing soils submitted for laboratory analysis for combustibility and sulfur content, four samples reported combustibility in excess of the adopted screening criteria. Residual coal fragments on surface soils and in localised areas deeper deposits up to 0.9 m.

The combustible material samples for analysis were selected on the basis of observations in of coal fragments in the sample and as such the results of the assessment may be biased towards detecting a higher combustible material content and is unlikely to be representative of the combustible content of the site surface containing coal fragments as a whole.

In addition, the adopted screening criteria was taken from *The coal washery rejects order 2014* made under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 which is used for the assessment of coal washery rejects for application to land in earthworks for civil engineering applications. The corresponding resource recovery exemption, *The coal washery rejects exemption 2014*, provides for the mass application of coal washery rejects to land. Based on the allowable use, which is not equivalent to the condition of the site surface where a relatively thin discontinuous layer of coal fragments was observed, which reported a wide range of combustible content, the screening criteria is likely to be overly conservative.

As the screening criteria is likely to be overly conservative, risk assessment could be undertaken to assess if remediation or management of the residual coal material is required, however it is noted that removal of residual coal is included in the scope of work presented in the demolition and site restoration works (refer to Section 3.9) and is an engineering requirement stipulated by the Waratah Super Battery developer. As such the proposed removal of coal from the site is not considered to be a remedial activity.

9.2 Sediments

Sediment results from the Coal Handling Water Pond were below the adopted health-based and ecological criteria. Similarly previous investigations did not detect contaminant concentrations in excess of the adopted health-based and ecological criteria in the Western Settling Basin.

There is a low risk to human health or environmental receptors from contaminant concentrations in the sediments within the onsite water bodies.

No chemical contaminants in sediments or leaching of contaminants in excess of the adopted screening criteria were identified, however sediments will require management due to the observed coal fragments within sediments, which are not suitable for the proposed Waratah Super Battery Site, as noted above.

9.3 Concrete

PFAS results for concrete samples were below the adopted health-based and ecological criteria indicating that the perimeter channel and the Coal Handling Plant bunker are unlikely to be impacted by PFAS.

As low level PFAS concentrations were detected in concrete samples, should concrete structures be demolished and crushed in accordance with the demolition and site restoration works the onsite reuse of PFAS impacted crushed concrete will be subject to the considerations discussed in Section 9.6.

9.4 Groundwater

In general, groundwater quality detected at the site indicates that groundwater underlying the site has not been impacted by the site's historic uses. Elevated zinc concentrations in excess of the Freshwater 95% protection of species criteria was detected in all groundwater samples, including up and cross gradient locations, indicating that the elevated zinc concentrations are likely to be a result of natural background concentrations. Zinc concentrations are consistent with previous investigations (ERM, 2014) and considered background concentrations

In addition to elevated zinc, concentrations of hydrocarbons and PFAS in excess of the site screening criteria were detected at discrete locations.

Exceedances of PFAS NEMP 2.0 Freshwater 95% protection of species criteria for PFOS were detected in two areas of the site:

- In the northern corner of the site, near the site boundary with the offsite former fire fighting training area in the FFTA boundary wells (FB304 (4.9 µg/L), FB305 (6.4 µg/L), FB306 (18 µg/L) and FB309 (8.8 µg/L); and
- In the wells installed in AEC 4 (AEC4-MW01 (0.91 µg/L), AEC4-MW03 (0.91 µg/L) and A4407 (0.14 µg/L)) located on the south of the site; and at one location in the coal stack area (CS106 (0.22 µg/L)) in the proximity of AEC4.

Similarly, exceedances of adopted Guidelines for Managing Risk in Recreational Water (NHMRC, Updated September 2022) for Sum of PFOS and PFHxS were detected in two areas of the site:

- In the northern corner of the site, near the site boundary with the offsite former fire fighting training area in the FFTA boundary wells (samples FB304 (8.2 µg/L), FB305 (11 µg/L), FB306 (35 µg/L) and FB309 (9.8 µg/L)); and
- In the wells installed in AEC 4 (samples AEC4-MW01 (1.57 µg/L) and AEC4-MW03 (1.84 µg/L)) located on the south of the site; and at one location in the coal stack area in the proximity AEC4 (sample CS106 (1.13 µg/L)).

PFAS contamination found at the northern corner of site is attributed to Fire-fighting training activities conducted at the offsite FFTA which included the use of AFFF containing PFAS (Jacobs, 2017; Aurecon, 2019; CES, 2019a). The source of PFAS impacts in groundwater in the northern corner of the site area considered to be groundwater migration from the adjacent offsite former fire fighting training area. This assessment is supported by the low level PFAS concentrations detected in near surface soils from the northern are of the site, indicating an onsite source point in that area of the site is unlikely.

Based on the concentrations of PFAS detected in wells FB306 and FB309 and the likely groundwater flow direction it is likely that PFAS are also migrating offsite in the northern corner of the site. As such the PFAS impacts are considered to be migrating through the site from the offsite source of the FFTA. As the PFAS source is located offsite and upgradient, remediation of groundwater is unlikely to permanently the elevated concentrations, and therefore is of limited benefit, however, to minimise the risk of additional PFAS mobilisation, consideration should be given to preventing groundwater abstraction at the site until such time as the offsite source has been remediated.

It is noted that the PFAS concentrations detected in the AEC 4 wells are at least an order of magnitude lower than the concentrations detected in the FFTA boundary wells and the concentrations detected in the former fire fighting training area (up to 58 µg/L PFOS, (Jacobs 2017).

Detection of PFAS in the AEC 4 area of the site, located up hydraulic gradient of the former fire fighting training area, and other known secondary source points previously identified on the GPM Landholding, or migration pathways may indicate a low-level localised source of PFAS impact. Based on the site history, it is possible that AFFF was used in this area of the site to manage a fire incident associated with the former ASTs. A second possible source could comprise the local amenities septic tank which is located upgradient of the AEC 4 wells. Concentrations in the upgradient existing monitoring well CF_MW05 indicate that the impacts are localised to the AEC 4 area of the site.

Soil sample analysis for PFAS (discussed in Section 9.1), particularly sample A4407 3.0-3.1 m which detected the highest Sum PFAS (n=28) concentrations detected in the investigation indicate that the source point is likely to in close vicinity to AEC 4, suggesting that the most likely source is a release associated with the AEC 4 ASTs. Further assessment should be undertaken to confirm the likely source of PFAS in groundwater at AEC 4. Investigation should assess soil and groundwater concentrations up hydraulic gradient of AEC 4.

Given the location of AEC 4, the direction of groundwater flow, there is a low risk of PFAS concentrations detected in AEC 4 groundwater from migration offsite. As with the northern corner of the site consideration should be given to restriction of groundwater abstraction to minimise the risk of additional mobilisation of PFAS identified in AEC 4.

In addition to PFOS in the AEC 4 groundwater wells, Naphthalene (74 µ/L), Phenanthrene (6.5µg/L) and Anthracene (1.3 µg/L) concentrations exceeded the adopted Freshwater 95% protection of species criteria at AEC4-MW02. These concentrations are consistent with previous reported values (CES, 2019c).

The exceedances detected in AEC4-MW02 are considered to be localised (elevated PAH concentrations were not detected in AEC4-MW03 and CS106). PAH are known to strongly absorb to soils and as such the detection of elevated PAH in AEC4-MW02 may be a result of sediments entrained within the sample (noted to be “milky” in appearance during sample collection). Based on the downgradient concentrations, likely PAH fate and transport, and the distance from AEC4-MW02 to a sensitive receiving water body it is unlikely that the PAH concentrations detected at AEC4-MW02 pose a risk to offsite ecological receptors and therefore remediation of groundwater was not considered to be required.

Dissolved TRH in groundwater was not detected at concentrations which would be indicative of the presence of LNAPL (greater than 5,000 µg/L for diesel range contamination *(Box 2.1 CRC CARE (2013) Technical Report 23 Petroleum Hydrocarbon Vapour Intrusion Assessment: Australian Guidance)*) in AEC 4. Reported TRH concentrations are consistent with previous reported values (CES, 2019c).

Well CS106 was located in the vicinity of the highest PID detection of the CES 2019c (AEC4_05) investigation did not detect TRH or BTEX concentrations in excess of the laboratory PQL. In addition, the investigation of groundwater from below the former AST concrete slab, in well A4407 did not detect TRH concentrations in groundwater which would be indicative of the presence of LNAPL.

Based on the above and the results of the previous investigation CES 2019c, there is a low risk to human health or the environment from the use of AEC 4 area from hydrocarbon fuel storage, and further assessment, remediation or management with respect to hydrocarbons is not required.

The detected hydrocarbon concentrations are likely to reduce over time due to natural bioremediation and bioattenuation processes.

9.5 Surface Water

All surface water results were below the adopted health-based and ecological criteria.

When compared to previous investigations (Jacobs, 2017) PFAS concentrations are lower with the vast majority of PFAS reported below detection. The higher concentrations detected by Jacobs (2017) support the conceptual site model, which considers that the likely source of PFAS in the near surface soils is a result of irrigation of PFAS impacted water on the site for dust suppression during demolition works, as the Jacobs (2017) sample collection was undertaken during the demolition works.

There is a low risk to human health or environmental receptors from contaminant concentrations in the Coal Handling Water Pond and the Western Settling Basin.

9.6 Reuse of PFAS Impacted Materials

The reuse of materials containing low levels of PFAS, such as during the proposed cut and fill operations, is considered by Section 12 of the PFAS NEMP 2.0 (HEPA 2020). The reuse of materials containing low levels of PFAS is subject to regulator approval and reuse must not lead to an unacceptable risk to human health and/or the environment, or an increase in the level of risk at or near the location in which it is used.

With respect to the re use of soil the following principals are provided:

- PFAS must be sufficiently low that they will not pose an increased or unacceptable risk to any receptor or to the environmental values of waters – total concentrations and leachability should be assessed.

- Reuse of low level PFAS contaminated soil off-site only occurs after all options for on-site use, waste avoidance, waste treatment and volume reduction have been considered and implemented wherever reasonable and practicable.
- Leachate criteria should be protective of groundwater and surface water quality and aquatic ecosystems both onsite and where a migration pathway exists, noting that PFAS can be transported many tens of kilometres from the originating site.
- Adding soil with low levels of PFAS to areas that have even lower or no levels of PFAS should be considered only in consultation with the relevant regulatory authority in exceptional circumstances where there is no feasible, practicable alternative.

Figure 5 of the PFAS NEMP 2.0 (HEPA 2020) provides a decision tree to assist with the above assessment where PFAS concentrations in the soil are at or below the relevant health and ecological assessment criteria, and where PFAS concentrations in the material can be demonstrated to be lower than concentrations of PFAS in and around the proposed reuse location and a screening risk assessment can be considered.

Considering the soil investigation results with respect to Figure 5 of the PFAS NEMP 2.0 (HEPA 2020) the following is noted:

- PFAS concentrations were not detected in excess of the human health or ecological screening criteria for direct or indirect exposure.
- PFAS in ASLP results did not exceed the Australian Drinking Water Guidelines (NHMRC 2011) or the Interim- Marine 95% species protection (HEPA 2020) criteria.
- PFOS, PFOA and Sum PFOS and PFHxS concentrations in ASLP were within the range of concentrations previously detected in the Western Settling Basin and groundwater underlying the site (excluding the northern corner of the sit which was identified as impacted by the offsite former firefighting training area).

Based on the above assessment onsite re use of soils such as resulting form cut and fill operations and site re contouring may be acceptable, subject to regulator approval. Similarly, the concrete samples collected from the perimeter channel and the Coal Handling bunker indicate that reuse of material may be acceptable.

Based on the assessment of the stockpiled material presented in *Stockpiled Material Assessment Waratah Super Battery Site* (CES Document Referenced CES170608-GPM-DQ dated 17 October 2022) with respect to PFAS material contained in Stockpiles SP2, SP4, SP5 and SP6 may be suitable for beneficial re use without further assessment of risk. This assessment should be re-considered once the proposed reuse location is identified, to confirm the assessment.

Materials contained within Stockpiles SP3 and SP7 require further, more detailed, risk assessment and may require remediation or management to make them suitable for reuse.

Management of Stockpiles SP3 and SP7 may include relocation of the material to allow for the development of the site. Guidance on the stockpiling, storage and containment of PFAS-contaminated material is presented in Section 10 of the PFAS NEMP 2.0 (HEPA 2020).

A key consideration for the reuse of PFAS impacted material is the condition of the environment where the material is to be re-use, as such further assessment may be required once the re-use location has been identified.

This assessment should be included in the remediation validation plan and may require inclusion in an ongoing Environmental Management Plan.

10 REVISED CONCEPTUAL SITE MODEL

The Conceptual Site Model (CSM) presented in the SAQP has been revised based on updated knowledge of the site and the investigation results.

10.1 Sources and Contaminants of Potential Concern

The following contamination sources have been identified:

10.1.1 Coal handling and storage

Residual coal particles have been identified during this and in previous investigations (CES, 2019c) in the Coal Stack area and along the western site boundary, underlying the former coal conveyor line. The residual coal material is noted to be distributed on the site surface in a thin discontinuous layer.

Coal was also observed in the sediments in the Western Settling Basin during previous investigations (CES, 2019c).

As noted in Section 9.1 the adopted screening criteria for combustible material is likely to be overly conservative based on the volume and distribution of residual coal on the site surface. In addition, removal of residual coal is included in the scope of work presented in the demolition and site restoration works (refer to Section 3.9) and is an engineering requirement stipulated by the Waratah Super Battery developer. As such the proposed removal of coal from the site is not considered to be a remedial activity.

Localised areas of elevated TRH concentrations (in excess of the adopted ESL) in the Coal Stack Area and the Adjacent Lands Area are also considered to be associated with the presence of coal fragments.

10.1.2 Demolition works

The Coal Stack area was used for processing of demolition materials during the power station demolition works. Contaminants of concern associated with demolition processing are:

- Asbestos.

One asbestos (fibrous asbestos containing material and asbestos fibres) hotspot CS108 was identified during the investigation. The remaining investigation locations did not detect asbestos in soils arising from the demolition works.

10.1.3 Dust suppression using impacted water

As identified in the CES (2019a) report, during the demolition works PFAS impacted water was used as dust suppression water.

Low level PFAS impacts were detected in soil, surface water, sediment and concrete samples collected from all areas of the site, however the concentrations were below SAC.

PFAS concentrations in ASLP were also detected, at low concentrations below the adopted SAC.

Based on the assessment PFAS in soils (with the exception of AEC 4 soils) are not considered to be a human health or ecological risk, however in accordance with the PFAS NEMP 2.0 (HEPA 2020) where site soils are considered for re use, assessment is required.

10.1.4 Offsite Fire Fighter Training

PFAS investigations results confirmed that groundwater in the boundary of the former FFTA (offsite) (FB304; FB301; FB308; FB305; FB306 and FB309) is impacted by PFAS.

Based on the concentrations of PFAS detected in wells FB306 and FB309 and the likely groundwater flow direction it is likely that PFAS are also migrating offsite in the northern corner of the site.

As the PFAS source is located offsite and upgradient, remediation of groundwater is unlikely to permanently the elevated concentrations, and therefore is of limited benefit, however, to minimise the risk of additional PFAS mobilisation, consideration should be given to preventing groundwater abstraction at the site until such time as the offsite source has been remediated.

10.1.5 AEC 4 PFAS

Elevated PFOS and Sum of PFOS and PFHxS concentrations were detected in wells installed in the AEC 4 area of the site.

Detection of PFAS in the AEC 4 area of the site, located up hydraulic gradient of the former firefighting training area, and other known secondary source points or migration pathways may indicate a low-level localised source of PFAS impact. Based on the site history, it is possible that AFFF was used in this area of the site to manage a fire incident associated with the former ASTs. A second possible source could comprise the local amenities septic tank which is located upgradient of the AEC 4 wells. Concentrations in the upgradient existing monitoring well CF_MW05 indicate that the impacts are localised to the AEC 4 area of the site.

Given the location of AEC 4, the direction of groundwater flow, there is a low risk of PFAS concentrations detected in AEC 4 groundwater from migration offsite. As with the northern corner of the site consideration should be given to restriction of groundwater abstraction to minimise the risk of additional mobilisation of PFAS identified in AEC 4.

10.1.6 AEC 4 Hydrocarbon Fuel Storage

Contaminants of concern in AEC4 are:

- Total Recoverable Hydrocarbons.
- Polycyclic Aromatic Hydrocarbons (naphthalene) and
- Benzene Toluene Ethylbenzene and Xylene.

TRH >C10 – C16 and TRH >C16 – C34 in soil which exceeds the adopted ESL were detected at a number of (eleven) locations in AEC4.

The localised ecological screening criteria exceedances are not considered to require remediation or management as part of the proposed development and as noted in Section 6.1, the proposed development is not likely to contain extensive areas of soft landscaping and is likely to be completed with an engineered aggregate hardstanding.

With respect to groundwater impacts, concentrations of TRH, BTEX and PAH were generally consistent with the concentrations detected previously, and not indicative of the presence of LNAPL or a vapour intrusion risk. In accordance with the findings of CES 2019c, there is a low risk to human health or the environment from the use of AEC 4 area from hydrocarbon fuel storage, and further assessment, remediation or management with respect to hydrocarbons is not required, and as such TRH, BTEX and PAH in AEC 4 are not considered further.

10.1.7 *Gardeners Shed/Amenities buildings*

A number of demolished structures were observed in historic aerial photographs and plans such as sheds and amenities buildings.

Based on analytical results all contaminants of concern were below detection and/or below SAC, as such this is no longer considered a potential source of contamination.

10.1.8 *Water tank that may have contained PFAS treated water*

A water tank that was used to contain fire fighting water was noted on plans and in the aerial photograph review.

PFAS investigations results confirmed that the water tank did not impact soil or groundwater as such this is no longer considered a potential source of contamination.

10.1.9 *Residual services/structures underground*

The demolition works completed to date were limited to above ground structures. Bonded asbestos cement pipe and conduit was used extensively at the former Munmorah Power

Station, and as such there is a potential for asbestos containing materials to be located in the sub surface.

Intrusive investigations did not encounter or identify any residual services/structures underground containing asbestos.

An exhaustive search of available site records and plans undertaken by GPM did not identify plans of the locations or residual buried services.

Service penetrations through the concrete retaining wall at the entrance to the former coal bunker were observed during site investigations to be constructed of ACM conduit.

Based on the site history, it is likely that residual buried services are limited to the vicinity of the former coal bunker, coal conveyor lines, and site amenities and structures (in the south of the site).

The proposed demolition and site restoration works Option 2 include the demolition and removal of structures and services to a minimum of 2 m below ground level, however in the absence of reliable plans confirmation that this work has removed all potential ACM conduit may be difficult to achieve.

Management of the risk posed by residual buried services will be required.

10.1.10 Stockpiled Materials

Coal fragments were observed in samples collected from SP1, SP2, SP3 (two sample locations), SP4 (one sample location), SP5, SP6 (one sample location) and SP7. Material containing coal fragments may be unsuitable for use at the proposed battery site.

Asbestos fines and fibrous asbestos associated with the residual demolition processing materials were detected in excess of the adopted human health criteria in samples SP3-5 and SP6-1. Remediation or management of the asbestos contamination found in stockpiles 3 (SP3), 6 (SP6) is required during material handling and for potential beneficial reuse. It is a requirement for no asbestos to be present within the top 10cm.

In addition, asbestos in the form of asbestos fines or fibrous asbestos was detected in SP3 (5) SP6 (1) and SP7 (1). While asbestos concentrations in excess of the adopted human health screening criteria were not detected in SP7, in consideration of the potential for asbestos fibres to be released from the stockpiled materials during materials handling, and appropriate controls and mitigation measures should be implemented.

PFAS were not detected in excess of the laboratory PQL in samples collected from SP1, nor in ASLP analysis of the sample collected from SP1, as such SP1 is not considered to be PFAS impacted.

Based on the assessment of results in accordance with Figure 5 of the PFAS NEMP 2.0 (HEPA 2020), subject to approval and further guidance from the Regulator, material contained in Stockpiles SP2, SP4, SP5 and SP6 may be suitable for beneficial re use without further assessment of risk. This assessment should be re-considered once the proposed reuse location is identified, to confirm the assessment.

10.2 Receptors

Potential human receptors are:

- Site workers including construction workers, maintenance workers (industrial/commercial).
- Recreational users and workers offsite/downstream residents.
- Recreational users of Budgewoi Lake, Lake Munmorah, Colongra Swamp, Colongra Swamp Nature Reserve.

Potential ecological receptors are:

- Onsite terrestrial flora and fauna.
- Onsite aquatic flora and fauna.
- Potential Off-Site Ecological Receptors to PFAS Contamination identified in Nation Partners (November 2021) Report:
    - Terrestrial Plants
    - Terrestrial Invertebrates
    - Aquatic Plants and Algae
    - Mammals (Aquatic and Terrestrial)
        - Australian Water Rat
        - Long-nosed Potoroo
        - Spot-tailed Quoll
    - Birds (Aquatic and Terrestrial)
        - Wilson's Storm-Petrel
        - Sharp-tailed Sandpiper
        - Black-winged Stilt
        - Chestnut Teal
        - Eastern Great Egret
        - White-bellied
        - Australian Pelican

10.3 Exposure Pathways

Potential exposure pathways for human receptors are:

- Direct dermal contact with impacted soil.
- Direct dermal contact with impacted water.
- Inhalation of impacted soil particles as dust.
- Incidental ingestion of impacted soil.
- Incidental ingestion of impacted water; and
- Consumption of impacted terrestrial produce.

Potential pathways for ecological receptors include:

- Incidental ingestion of PFAS or other contaminant adhered to soils and sediments.
- Ingestion and uptake of PFAS or other contaminant from groundwater and surface water; and
- Ingestion of bioaccumulated PFAS or other contaminant in food sources.

10.4 Source Pathway Receptor Linkages

A key concept in the development and application of contamination CSMs is the source – pathway – receptor relationship informed by known and potential sources of contamination, the environmental media impacted by contamination, potential migration and exposure pathways, and the receptors that may be exposed to contamination. In situations where the source – pathway – receptor relationship is incomplete there can be no risk to receptors from contamination, and as a result remediation and/or management is not required.

Table 31 presents a summary of CSM including source – pathway – receptor linkages.

Table 31: Revised Conceptual Site Model

Potential Area of Environmental Concern (AEC)/ Potential contamination Activity	Primary Contaminant Sources	Contaminants of Concern (COC)	Release Mechanism	Secondary Release Mechanism	Impacted media	Potential Receptors	Exposure Pathways	Completeness of Exposure Pathway (yes/ no)
Whole Site	Impacted soils at former coal handling and storage area	Combustible materials Coal dust	Coal storage and handling	NA	Surface soils	Site users (commercial/ industrial), maintenance workers, site visitors, adjacent site users.	Acute Fire Risk.	Yes – CES understands that coal found in coal stack area will be removed as part of construction/civil works for the Waratah Super Battery site.
						Plant and assets constructed onsite	Acute Fire Risk. and Electrical Hazards	Yes – CES understands that coal found in coal stack area will be removed as part of construction/civil works for the Waratah Super Battery site.
Demolition Works	Asbestos hotspot CS108 was identified	Asbestos (Bonded & Fibrous)	Disturbance and/or	ACM is disturbed releasing	Surface soils	Site users (commercial/ industrial), maintenance	Inhalation of fibres	Yes – Removal/remediation of asbestos contaminated soils from hotspot is required.

Potential Area of Environmental Concern (AEC)/ Potential contamination Activity	Primary Contaminant Sources	Contaminants of Concern (COC)	Release Mechanism	Secondary Release Mechanism	Impacted media	Potential Receptors	Exposure Pathways	Completeness of Exposure Pathway (yes/ no)
Stockpiles SP3, SP6 and SP7	during the investigation.		weathering of ACM	asbestos fibres into the air.		workers, site visitors, adjacent site users		
						Workers offsite/downstream residents	Inhalation of fibres	No – given the localised extent of the hotspot and the distance to the site boundary the risk to offsite workers and residents is low.
Offsite Fire Fighter Training Area AEC 4 Stockpiles SP3, SP7	PFAS impacted soils/materials from the use of AFFF	PFAS	Leaching and infiltration to groundwater,	Groundwater migration and discharge to off-site surface water bodies	Groundwater	Site users (commercial/ industrial), maintenance workers, site visitors, adjacent site users	Extraction and use of groundwater; Incidental ingestion of groundwater; Migration of impacted groundwater.	No - Extraction/use of groundwater onsite does not occur. Consideration should be given to preventing groundwater abstraction at the site until such time as the offsite source has been remediated
						Workers offsite/downstream residents	Extraction and use of groundwater; Incidental ingestion of groundwater; Migration	No - Extraction/use of groundwater onsite does not occur. Groundwater onsite flows towards the remaining areas of

Potential Area of Environmental Concern (AEC)/ Potential contamination Activity	Primary Contaminant Sources	Contaminants of Concern (COC)	Release Mechanism	Secondary Release Mechanism	Impacted media	Potential Receptors	Exposure Pathways	Completeness of Exposure Pathway (yes/ no)
							of impacted groundwater.	the GPM landholding, where groundwater is not extracted, except to manage groundwater contamination.
						Recreational users of Budgewoi Lake, Lake Munmorah, Colongra Swamp, Colongra Swamp Nature Reserve.	Direct dermal contact, incidental ingestion of contaminated water, ingestion of fish.	No – PFAS levels in offsite water bodies are very low due to dispersion and dilution effects. This was confirmed by the following lines of evidence presented in Nation Partners (November 2021): PFAS concentrations reported at Budgewoi Lake and Lake Munmorah are of several orders of magnitude lower than reported onsite concentrations. PFAS concentrations reported at Budgewoi Lake and Lake Munmorah are below SAC.

Potential Area of Environmental Concern (AEC)/ Potential contamination Activity	Primary Contaminant Sources	Contaminants of Concern (COC)	Release Mechanism	Secondary Release Mechanism	Impacted media	Potential Receptors	Exposure Pathways	Completeness of Exposure Pathway (yes/ no)
						Onsite and offsite aquatic ecological receptors	Migration of impacted groundwater; uptake	Nation Partners (2022) determined that potential unacceptable risks may exist associated with bioaccumulation of PFOS and PFHxS to: • birds and mammals as a result of bioaccumulation of PFAS into fish and benthic invertebrates where those birds and mammals obtain 100% of their diet from the Inlet and Outlet Canals, the Inlet Canal Diversion Drain and Munmorah Ash Dam, • birds from bioaccumulation of PFAS where those birds obtain 100% of their diet from Lake

Potential Area of Environmental Concern (AEC)/ Potential contamination Activity	Primary Contaminant Sources	Contaminants of Concern (COC)	Release Mechanism	Secondary Release Mechanism	Impacted media	Potential Receptors	Exposure Pathways	Completeness of Exposure Pathway (yes/ no)
								Munmorah, or where birds forage only on benthic invertebrates from Budgewoi Lake • mammal species who consume 100% of their diet from fish from Budgewoi Lake, and fish and benthic invertebrates from Lake Munmorah from bioaccumulation of PFAS.
Whole Site	Residual services/structures underground	Asbestos	Excavation and disturbance of ACM	Disturbance and/or weathering of ACM	ACM is disturbed releasing asbestos fibres into the air.	Site users (commercial/ industrial), maintenance workers, site visitors, adjacent site users	Inhalation of fibres	Yes – Removal/Management of residual buried services containing ACM is required.

11 SUMMARY AND RECCOMENDATIONS

Based on the investigation results and the revised CSM presented in Section 10, the site can be made suitable for the proposed Waratah Super Battery Development provided remediation and/or management of contamination and/or further assessment/investigation as described below are implemented.

A summary of contamination requiring remediation and/or management is presented below:

- Asbestos in surface soils: A hotspot of asbestos fines and fibrous asbestos was detected associated with the residual demolition processing materials on the site surface. Remediation of the asbestos hotspot is required.
- Asbestos in stockpiled materials: Asbestos was detected in excess of the adopted screening criteria in Stockpiles SP3 and SP6. Asbestos was detected below the adopted screening criteria in SP7. Remediation or management of asbestos in this material is required.
- PFAS in stockpiled materials: based on the stockpiled material assessment, concentrations of PFAS in leachate indicate that Stockpiles SP3 and SP7 are unsuitable for re use without a detailed risk assessment. Remediation or management of this material may be required.
- Buried services containing asbestos: the location of disconnected buried services that may contain asbestos has not been determined, and as such the potential for excavation works onsite to disturb asbestos containing materials. Further work to identify and remove the residual buried services should be undertaken, or alternatively the risks posed by the potential asbestos containing materials could be managed under an Environmental Management Plan.
- PFAS in groundwater: to minimise the risk of increased PFAS mobilisation from the offsite Fire Fighting Training Area and the AEC 4 source a restriction on groundwater abstraction should be considered.
- PFAS impacted soils re-use as noted in Section 9.6 where PFAS containing materials are considered for re use onsite, assessment in accordance with PFAS NEMP 2.0 (HEPA 2020) is required.

A thin discontinuous layer of coal fragments was observed on the site surface, within stockpiled materials in SP1, SP2, SP3 (two sample locations), SP4 (one sample location), SP5, SP6 (one sample location) and SP7. Removal of residual coal is included in the scope of work presented in the demolition and site restoration works (refer to Section 3.9) and is an engineering

requirement stipulated by the Waratah Super Battery developer. As such the proposed removal of coal from the site is not considered to be a remedial activity.

In addition to the identified contamination requiring remediation and/or management the following areas require further assessment or management:

- Due to the source of the PFAS in AEC 4 not being identified, further investigation may be required. The investigation works may include collection of additional soil and groundwater samples around AEC 4 and submission to a NATA accredited laboratory for analysis of PFAS in soils and PFAS leachate. The data obtained can be used to define the source. Once the source has been identified, an assessment can be undertaken to determine if localised remediation is required.

The proposed remedial options / strategies to manage contamination will these be defined/ documented as follows:

- A Remediation Action Plan (RAP) should be prepared due to reported asbestos within soil at hot spot CS108, and asbestos impacted and PFAS leaching stockpiled material. The purpose of the plan would be to mitigate the risk posed by contaminated soil to sensitive receptors (including future site residents/users, current and future offsite receptors including downgradient residents, recreational users of Budgewoi Lake, Lake Munmorah, Colongra Swamp, Colongra Swamp Nature Reserve, maintenance workers and local ecosystems).

  The RAP should be prepared in general accordance with NSW Department of Planning and Environment State Environmental Planning Policy (Resilience and Hazards) 2021 and the provisions described under Chapter 3 – Remediation of Land and NSW EPA (2020) Contaminated Land Guidelines: Consultants Reporting on Contaminated Land. As a minimum the RAP should:
  - assess the potential risk to current and future users at the site.
  - define acceptable remediation objectives.
  - provide consideration of various remediation methodologies.
  - remediation or management of asbestos (ACM and AF/FA) identified at CS108; and
  - document the selected remedial process/management strategy for the site with respect to identified contamination.

- After the site is remediated, CES recommends that a validation assessment of the site is to be conducted. The validation report should be prepared in general accordance with

NSW EPA (2020) *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land* and NSW EPA (2017) *Contaminated Land management: Guidelines for the NSW Site Auditor Scheme (3rd Edition).*

As a minimum the validation report should include the details of the remediation activity performed, off-site disposal documentation and samples collection to validate the site.

Possible remediation options for the asbestos impacted materials and PFAS leaching stockpiled materials (SP3 and SP7) include relocation of the materials (with suitable controls) to another area of the GPM Landholding, containment onsite in a designed, engineer containment cell or offsite disposal at a suitably licence waste disposal facility.

Following implementation of the RAP it is likely that an Environmental Management Plan will be required to manage the risk posed by residual buried services containing ACM, ensure that appropriate controls are maintained for any material retained onsite in an engineered containment cell, to restrict groundwater abstraction and the ensure that materials containing PFAS are suitably assessed prior to onsite reuse.

12 REFERENCES

Catherine Hill Bay Acid Sulphate Soils Risk Map (Department of Natural Resources (CJ Murphy, 1997, Edition 2, 1:25,000

Consulting Earth Scientists 2018, *Munmorah Power Station: Groundwater Flow Assessment* (document reference: CES170608-GPM-AD Rev 2, dated 06 July 2018

Consulting Earth Scientists 2019a, *Per- and Poly-Fluoroalkyl Substances (PFAS) Investigation Report* (CES Document Reference CES170608-GPM-AI, 2019).

Consulting Earth Scientists 2019b, *Preliminary Site Investigation: Former Munmorah Power Station* (CES Document Reference CES170608-GPM-AW, 2019b)

Consulting Earth Scientists 2019c *AEC4 – Coal Stack Above Ground Storage Tanks Investigation Report Former Munmorah Power Station* (CES document reference CES170608-GPM-BL, 2019c)

Consulting Earth Scientists 2021 *Preliminary Sediment Characterisation Report Former Munmorah Power Station* (CES document reference CES170608-GPM-CX, 2021)

Consulting Earth Scientists 2022 *Sampling and Analysis Quality Plan Crushed Concrete Stockpiles Assessment* (CES170608-GPM-DI dated 15 July 2022)

CRC Care, (2017) *Technical Report No.38 – Assessment, management and remediation for PFOS and PFOA.*

Department of Environment and Energy, (2016) *Commonwealth Environmental Management Guidance on Perfluoro-octane Sulfonic Acid (PFOS) and Perfluoro-octonoic Acid (PFOA).*

Department of Health, n.d. *Final Health Based Guidance Values for PFAS For Use in Site Investigations in Australia*.

Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, (2016) *enHealth Guidance Statements on per- and poly-fluoroalkyl substances*.

Environmental Resources Management Australia (ERM), *Project Symphony – Colongra Power Station Stage 2 Environmental Site Assessment* Reference 0237749, 2014.

Freeze, Allan and Cheery John (1979), Original Groundwater, Pearson Publishing.

Gosford – Lake Macquarie 1:100, 000 Geological Series Map (9131, 9231)

Gosford – Lake Macquarie 1:100, 000 Soil Landscape Series Map (9131, 9231)

Government of Western Australia, Department of Environment Regulation, (2016) Interim *Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS).*

Government of Western Australia, Department of Environment Regulation, 2021 *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*

Heads of EPAs Australia and New Zealand (HEPA, 2020). *PFAS National Environment Management Plan*, Version 2.0.

Nation Partners (November 2021), *Former Munmorah Power Station, Ecological Risk Assessment.*

Nation Partners (August 2022) *Former Munmorah Power Station, Ecological Risk Assessment*

National Environment Protection Council (NEPC), 1999 as amended 2013 *National Environment Protection (Assessment of site Contamination) Measure 1999*, as amended 2013 (ASC NEPM).

NSW EPA (1995) *Sampling Design Guidelines.* Note that this sampling guidelines have been updated at the time of writing this report. NSW EPA (August 2022) *Contaminated Land Guidelines: Sampling design part 1 – application & Sampling design part 2 - interpretation*

NSW EPA (2016) *Designing Sampling Programs for Site Potentially Contaminated by PFAS.*

NSW EPA, (2020) *Consultants reporting on contaminated land: Contaminated Land Guidelines*.

National Health Medical Research Council (NHMRC, 1992) *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites.*

NSW OEH Science (2017) *PFAS Screening Criteria*.

13 LIMITATIONS OF THIS REPORT

This report has been prepared for use by the client who commissioned the works in accordance with the project brief and based on information provided by the client. The advice contained in this report relates only to the current project and all results, conclusions and recommendations should be reviewed by a competent person with experience in geotechnical and environmental investigations before being used for any other purpose. CES accepts no liability for use or interpretation by any person or body other than the client. This report must not be reproduced except in full and must not be amended in any way without prior approval by the client and CES.

This report does not provide a complete assessment of the environmental status of the site and is limited to the scope defined therein. It is noted that areas of the site could not be investigated due to permissions for access. Should information become available regarding conditions at the site including previously unknown sources of contamination, CES reserves the right to review the report in the context of the additional information.

Figures



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Figure 1. Site Location Plan

CES Project ID:	Date:
CES170608-GPM	03/11/2022
Prepared By: T. Goodbody	Checked By: D. Lowe



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Figure 2:Site Layout Plan

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N
CHP
WCS
WCC
CSA-03
NCCS
WSB-IC
CSA-02
CSA-07
RNC
WSB-101
WSB
WSB-ST
SCCS
CSA-09
ECC
WSB-102
WSB-02
CSA-13
CSA-01
CSS
ECS
CSA-06
CF-MW06
AEC04_08
AEC04_06
CSA-15
AEC04_05
CSA-14
AEC04_04
AEC04_MW02
AEC04_03
AEC04_07
AEC04_02
AEC04_01
CF-MW05
AEC04_MW03
AEC04_MW01
Legend
Soil Borehole
Sediment/Surface Water
Soil Test Pit
Groundwater
Coal Conveyor Area
Coal Handling Plant Bunker
Stockpiles
Water Bodies
Gardners Shed
Perimeter Channel
AEC 4 Slab
Adjacent Lands
Coal Stack Area
Approximate Site Boundary
0 15 30 60 90 120 150
Metres
Source: NearMap
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Figure 3: Previous Sample Locations
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CES170608-GPM
Date:
30/09/2022
Prepared By:
T. Goodbody
Checked By:
D. Lowe


N
FB306
FB309
FB305
FB304
FB308
FB303
FB307
FB301
FB302
FI206
FI207
CS116
FI205
FI203
FI204
CS113
CS112
CS114
CS115
FI210
CS109
CS110
CS108
CS111
CS103
CS107
CS104
CS105
CS106
CS101
FI209
CS102
FI208
FI201
FI202
A4412 A4413 A4414
CS102
A4409 A4410 A4411
A4406
A4408
A4407
A4403 A4404 A4405
A4401 A4402
Legend
Fire Fighting Training Area Boundary Samples
Coal Stack Samples
Adjacent Lands Samples
Gardners Shed Samples
AEC 4 Slab Samples
Approximate Site Boundary
Stockpiles
Water Bodies
Gardners Shed
Perimeter Channel
AEC 4 Slab
Adjacent Lands
Coal Stack Area
0 20 40 80 120 160 200
Metres
Source: Nearmap
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Figure 4: Soil Sample Locations
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30/09/2022
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Figure 5: Groundwater Sample Locations

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Figure 6:Surface water and Sediment Sample Locations

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Figure 7: Concrete Sample Locations

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Figure 8: Sample Locations Combined Plan

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N
FB306
FB309
FB305
FB304
FB308
FB301
CS116
WT503
12 m AHD
4 m AHD
GS502
CS112
FI210
6 m AHD
8 m AHD
10 m AHD
12 m AHD
CF_MW06
CS106
CS101
AEC4_MW03
AEC4_MW02
AEC4_MW01
A4407
14 m AHD
CF_MW05
Legend
Groundwater Wells
Groundwater Contours
Approximate Site Boundary
Stockpiles
Water Bodies
Gardners Shed
Perimeter Channel
AEC 4 Slab
Adjacent Lands
Coal Stack Area
0 15 30 60 90 120 150
Metres
Source: NearMap
CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble, NSW, 2073
ph 8569 2200 fax 9983 0582
Title
Figure 9: Groundwater Contour Plan
CES Project ID: CES170608-GPM
Date: 03/11/2022
Prepared By: T. Goodbody
Checked By: D. Lowe



CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble, NSW, 2073
ph 8569 2200 fax 9983 0582

Title

Figure 10: Soil Exceedance Plan

CES Project ID:	Date:
CES170608-GPM	03/11/2022
Prepared By: T. Goodbody	Checked By: D. Lowe



CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble, NSW, 2073
ph 8569 2200 fax 9983 0582

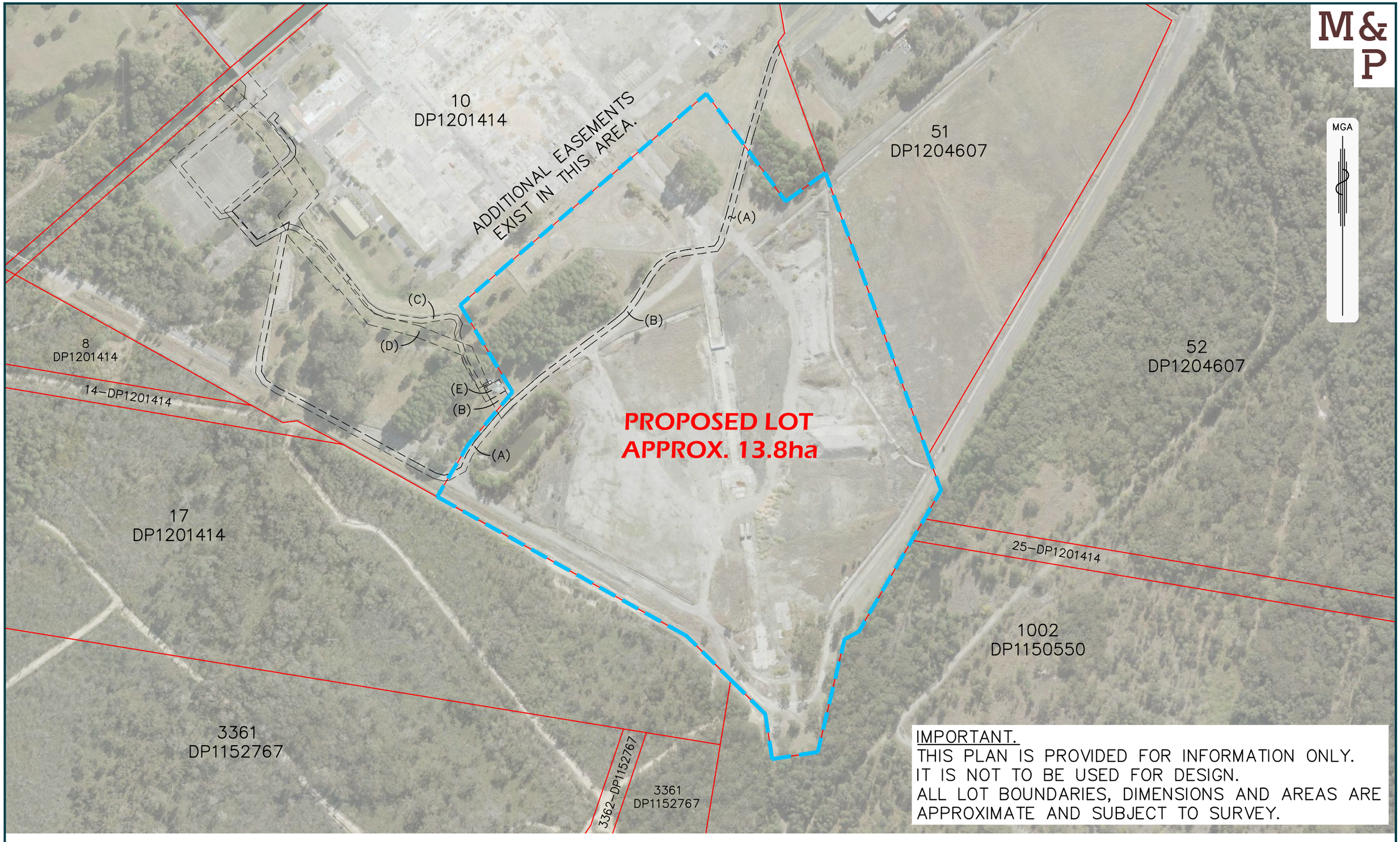
Title

Figure 10: Soil Exceedance Plan

CES Project ID:	Date:
CES170608-GPM	03/11/2022
Prepared By: T. Goodbody	Checked By: D. Lowe

Appendix A

Proposed Site Boundary



IMPORTANT.
THIS PLAN IS PROVIDED FOR INFORMATION ONLY.
IT IS NOT TO BE USED FOR DESIGN.
ALL LOT BOUNDARIES, DIMENSIONS AND AREAS ARE APPROXIMATE AND SUBJECT TO SURVEY.

(A) – RIGHT OF ACCESS (5 WIDE) (DP 1198575)
(B) – EASEMENT FOR ACCESS (DP 1203848)
(C) – RIGHT OF CARRIAGEWAY (DP 1195040)
(D) – EASEMENT FOR ELECTRICITY & OTHER PURPOSES (DP 1195040)
(E) – LEASE VIDE (3461716) (7213454) (3643903) (8153333) (3461717) (7213455) (7643904) (DP 1195040)

REVISIONS

No	REVISION				
1	ISSUE TO CLIENT	M&P	MAK	BJB	15/07/22

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P (02) 4926 1388
NEWCASTLE SYDNEY GUNNEDAH MUSWELLBROOK

Surveyed	Drafted	Checked
M&P	JS	BJB

REGISTERED SURVEYOR

@A3 :	Original Size
1:3000	A3
DO NOT SCALE	

Client: GENERATOR PROPERTY MANAGEMENT

Title: PROPOSED SUBDIVISION PLAN
BATTERY SITE
MUNMORAH

CAD File: 170050K_01 | Ref No: 170050 | Date: 09/06/2022

Sheet No. 1/1

Revision 1

Appendix B

Titles Certificates

ABN 73 149 644 003
Certificate No:17517
Reference No: 2000N-14017:123668

Electronic Search Services
GPO Box 2235
BRISBANE QLD 4001

SECTION 10.7(2) AND (5) PLANNING CERTIFICATE

This Planning Certificate is issued on 27 April 2018 in respect to the land described below, pursuant to s.10.7 of the Environmental Planning and Assessment Act 1979

Fee paid:	$133.00
Receipt No:	12731153
Receipt Date:	24 April 2018

DESCRIPTION OF LAND
COUNTY OF NORTHUMBERLAND

Property Address:	Old Munmorah Power Station Site, 301 Scenic Dr, COLONGRA NSW 2259
Property Description:	Lot 10 DP 204437, Lot 1 DP 212276, Lot 2 DP 212276, Lot 1 DP 212277, Lot 34 DP 215875, Lot 3 DP 229395, Lot 2 DP 240685, Lot 4 DP 240685, Lot 5 DP 240685, Lot 6 DP 240685, Lot 8 DP 240685, Lot 10 DP 240685, Lot 1 DP 437280, Lot 1 DP 517862, Lot 1 DP 518575, Lot 1 DP 518791, Lot 4 DP 518791, Lot 1 DP 520033, Lot 2 DP 520033, Lot 1 DP 520034, Lot 421 DP 578194, Lot 106 DP 755266, Lot 107 DP 755266, Lot 110 DP 755266, Lot 161 DP 755266, Lot 10 DP 913335, Lot 254 DP 914502, Lot 1 DP 1120393, Lot 1 DP 1141938, Lot 1002 DP 1150550, Lot 3361 DP 1152767, Lot 3362 DP 1152767, Lot 2 DP 1153674, Lot 3 DP 1153674, Lot 1 DP 1201414, Lot 2 DP 1201414, Lot 3 DP 1201414, Lot 4 DP 1201414, Lot 6 DP 1201414, Lot 7 DP 1201414, Lot 8 DP 1201414, Lot 9 DP 1201414, Lot 10 DP 1201414, Lot 11 DP 1201414, Lot 12 DP 1201414, Lot 13 DP 1201414, Lot 14 DP 1201414, Lot 15 DP 1201414, Lot 16 DP 1201414, Lot 17 DP 1201414, Lot 18 DP 1201414, Lot 19 DP 1201414, Lot 20 DP 1201414, Lot 21 DP 1201414, Lot 25 DP 1201414, Lot 101 DP 1202394, Lot 104 DP 1202394, Lot 52 DP 1204607
Property Owner:	Generator Property Management Pty Ltd

The information contained within this certificate relates to the land.

1 RELEVANT PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS

1.1 Environmental Planning Instruments which apply to the land

Wyong Local Environmental Plan 2013

State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004
State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
State Environmental Planning Policy No 65 – Design Quality of Residential Flat Development
State Environmental Planning Policy No 36 – Manufactured Home Estates
State Environmental Planning Policy No 64 – Advertising and Signage
State Environmental Planning Policy No 62 – Sustainable Aquaculture
State Environmental Planning Policy No 44 – Koala Habitat Protection
State Environmental Planning Policy No 21 – Caravan Parks
State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007
State Environmental Planning Policy No 30 – Intensive Agriculture
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004
State Environmental Planning Policy No 50 – Canal Estate Development
State Environmental Planning Policy No 55 – Remediation of Land
State Environmental Planning Policy (State Significant Precincts) 2005
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007
State Environmental Planning Policy (Infrastructure) 2007
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy (Affordable Rental Housing) 2009
State Environmental Planning Policy (State and Regional Development) 2011
State Environmental Planning Policy (Coastal Management) 2018 (part of lot)
State Environmental Planning Policy (Coastal Management) 2018 (whole of lot)

1.2 Proposed Environmental Planning Instruments which will apply to the land and is or has been the subject the subject of community consultation or public exhibition

The land is not subject to any Draft Local Environmental Plans.

Draft Amendment to State Environmental Planning Policy (Infrastructure) 2007
Draft Amendment to State Environmental Planning Policy No 44 – Koala Habitat Protection

1.3 Development Control Plans

Development Control Plan 2013 applies to this land.

2 ZONING AND LAND USE

a Identity of the Zone

Lot 7 DP 1201414 Lot 11 DP 1201414

SP2 Infrastructure

Lot 161 DP 755266, Lot 254 DP 914502, Lot 1 DP 437280

SP2 Infrastructure
E2 Environmental Conservation

For each of the environmental planning instruments referred to in clause 1, please refer to the attached land use table to determine (b), (c) and (d) listed below:

b development that may be carried out within the zone without the need for development consent,

c development which may not be carried out within the zone except with development consent and

d development which is prohibited within the zone

e Development Standards applying to the land

Development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on this land.

The minimum land dimension so fixed is 40ha.

f Critical Habitat

Nil

g Conservation Area

Nil

h Environmental Heritage

Nil

2A ZONING AND LAND USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGION GROWTH CENTRES) 2006

Not applicable

3 COMPLYING DEVELOPMENT

Whether or not the land is land on which complying development can be carried out under each of the codes for complying development because of the provisions of clause 1.17A (c) and (d) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008?*

1. PART 3 – HOUSING CODE

a **Lot 161 DP 755266 & Lot 1 DP 437280**
Complying Development under the General Housing Code **may** be carried out on the land.

Lot 254 DP 914502, Lot 7 DP 1201414 & Lot 11 DP 1201414
Complying development under the General Housing Code **may not** be carried out on the land unless the complying development is carried out on the part of the lot to which clause 1.19 or 1.17A of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 does not apply.

b The land is affected by specific land conditions:

- Part of the land is identified on an Acid Sulphate Soils map as Class 1 or Class 2. Council does not have sufficient information to ascertain the extent of Acid Sulphate Soils Class 1 or Class 2.

2. PART 3A – RURAL HOUSING CODE

a **Lot 161 DP 755266 & Lot 1 DP 437280**
Complying Development under the General Housing Code **may** be carried out on the land.

Lot 254 DP 914502, Lot 7 DP 1201414 & Lot 11 DP 1201414
Complying development under the General Housing Code **may not** be carried out on the land unless the complying development is carried out on the part of the lot to which clause 1.19 or 1.17A of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 does not apply.

b The land is affected by specific land conditions:

- Part of the land is identified on an Acid Sulphate Soils map as Class 1 or Class 2. Council does not have sufficient information to ascertain the extent of Acid Sulphate Soils Class 1 or Class 2.

3. PART 4 – HOUSING ALTERATIONS CODE

a Complying development under the Housing Alterations Code **may** be carried out on the land.

4. PART 4A – GENERAL DEVELOPMENT CODE

a Complying development under the General Development Code **may** be carried out on the land.

5. PART 5 – COMMERCIAL AND INDUSTRIAL ALTERATIONS CODE

a Complying development under the Commercial and Industrial Alterations Code **may** be carried out on the land.

6. PART 5A – COMMERCIAL AND INDUSTRIAL (NEW BUILDINGS AND ADDITIONS) CODE

a **Lot 161 DP 755266 & Lot 1 DP 437280**
Complying Development under the General Housing Code **may** be carried out on the land.

Lot 254 DP 914502, Lot 7 DP 1201414 & Lot 11 DP 1201414
Complying development under the General Housing Code **may not** be carried out on the land unless the complying development is carried out on the part of the lot to which clause 1.19 or 1.17A of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 does not apply.

b The land is affected by specific land conditions:

- Part of the land is identified on an Acid Sulphate Soils map as Class 1 or Class 2. Council does not have sufficient information to ascertain the extent of Acid Sulphate Soils Class 1 or Class 2.

7. PART 6 – SUBDIVSIONS CODE

a Complying development under the Subdivisions Code **may** be carried out on the land.

8. PART 7 – DEMOLITION CODE

a Complying development under the Demolition code **may** be carried out on the land.

9. PART 8 – FIRE SAFETY CODE

a Complying development under the Fire Safety Code **may** be carried out on the land.

4B ANNUAL CHARGES UNDER LOCAL GOVERNMENT ACT 1993 FOR COASTAL PROTECTION SERVICES THAT RELATE TO EXISTING COASTAL PROTECTION WORKS

The owner (or any previous owner) of the land has not consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works.

5 MINE SUBSIDENCE

The land is within a proclaimed mine subsidence district under the Mine Subsidence Compensation Act 1961.

6 ROAD WIDENING OR ROAD ALIGNMENT

1. DIVISION 2 SECTION 25 OF THE ROADS ACT 1993

   The land is not affected by road realignment or road widening under the above.

2. ENVIRONMENTAL PLANNING INSTRUMENT

   The land is not affected by road widening or road re-alignment under the above.

3. COUNCIL RESOLUTIONS

   The land is not affected by road widening or road re-alignment under the above.

   However, it should be noted that **Lot 7 DP 1201414** either fronts or abuts a road under the control of the Roads and Maritime Services. For further details regarding road widening please refer to that agency.

7 COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES TO RESTRICT DEVELOPMENT DUE TO RISK

This land is affected by a policy adopted by the council or other public authority that restricts the development of the land because of the likelihood of risk restrictions. This land is affected because:

Lot 1 DP 437280, Lot 161 DP 755266, Lot 254 DP 914502, Lot 7 DP 1201414 & Lot 11 DP 1201414

The land is classed as being Acid Sulfate Soil Class 5

Lot 1 DP 437280, Lot 161 DP 755266 & Lot 7 DP 1201414

The land is classed as being Acid Sulfate Soil Class 4

Lot 7 DP 1201414

The land is classed as being Acid Sulfate Soil Class 3

Lot 254 DP 914502, Lot 7 DP 1201414 & Lot 11 DP 1201414

The land is classed as being Acid Sulfate Soil Class 1

7A FLOOD RELATED DEVELOPMENT CONTROLS

1. **Lot 1 DP 437280, Lot 161 DP 755266, Lot 254 DP 914502**
   Development on this land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or senior housing) and for other purposes is **not** subject to flood related development controls.

   Lot 7 DP 1201414 & Lot 11 DP 1201414
   Development on this land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or senior housing) and for other purposes is subject to flood related development controls.

2. **Lot 1 DP 437280, Lot 161 DP 755266, Lot 254 DP 914502**
   Development on this land or part of the land for any other purpose is **not** subject to flood related development controls.

   Lot 7 DP 1201414 & Lot 11 DP 1201414
   Development on this land or part of the land for any other purpose is subject to flood related development controls.

A word or expression used in this clause has the same meaning as it has in the *Floodplain Development Manual* (ISBN 0 7347 5476 0), published by the NSW Government in April 2005, unless it is otherwise defined in this Plan.

8 LAND RESERVED FOR ACQUISITION

The following environmental planning instruments and proposed environmental planning instruments make provisions for the acquisition of land by a public authority as referred to in Section 3.15 of the Act:

Nil

9 CONTRIBUTION PLANS

This land is subject to the Wyong Shire Section 94A Levy Development Contributions Plan.

The land is subject to Northern Districts Section 94 Development Contributions Plan.

This land is subject to the Section 94 Contributions Plan for Wyong Shire No. 11 - Shirewide Infrastructure, Services and Facilities.

The land is subject to Budgewoi District Development Contributions Plan.

9A BIODIVERSITY CERTIFIED LAND

The land **is not** biodiversity certified land within the meaning of Part 7AA of the *Threatened Species Conservation Act 1995*.

10 BIOBANKING AGREEMENTS

Council has not been notified by the Director-General of the Department of Planning and Environment of an agreement issued under Part 7A of the *Threatened Species Conservation Act 1995*.

11 BUSHFIRE PRONE LAND

Lot 1 DP 437280 & Lot 161 DP 755266,
The information currently available to Council indicates **all** of the land is shown as bush fire prone land according to the Act.

Lot 254 DP 914502, Lot 7 DP 1201414 & Lot 11 DP 1201414

The information currently available to Council indicates **some** of the land is shown as bush fire prone land according to the Act.

12 PROPERTY VEGETATION PLAN

This land is not subject to a property vegetation plan under the Native Vegetation Act 2003.

NOTE: The advice provided in this section is based on notification by the Local Land Services - Greater Sydney of the approval of a plan. Further information about property vegetation plans should be obtained from that Authority.

13 ORDER UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Council has not been notified of an Order issued under the Trees (Disputes between Neighbours) Act 2006.

NOTE: This advice is based on information provided by the Land and Environment Court.

14 DIRECTIONS UNDER PART 3A

Not Applicable

15 SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

Council is not aware of there being a valid Site Compatibility Certificate issued by the Director-General of the Department of Planning and Environment in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning and Environment.

16 SITE COMPATIBILITY CERTIFICATES FOR INFRASTUCTURE

Council is not aware of there being a valid Site Compatibility Certificate issued by the Director-General of the Department of Planning and Environment in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning and Environment.

17 SITE COMPATIBILITY CERTIFICATES FOR AFFORDABLE RENTAL HOUSING

Council is not aware of there being a valid Site Compatibility Certificate issued by the Director-General of the Department of Planning and Environment in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning and Environment.

18 PAPER SUBDIVISION INFORMATION

1. THE NAME OF ANY DEVELOPMENT PLAN ADOPTED BY A RELEVANT AUTHORITY THAT APPLIES TO THIS LAND OR THAT IS PROPOSED TO BE SUBJECT TO A CONSENT BALLOT.

   Nil

2. THE DATE OF ANY SUBDIVISION ORDER THAT APPLIES TO THIS LAND.

   Not applicable

Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

19 SITE VERIFICATION CERTIFICATE

Council is not aware of a Site Verification Certificate having been issued by the Director-General of the Department of Planning and Environment in respect to this land.

Note: A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land—see Division 3 of Part 4AA of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*.

20 LOOSE-FILL ASBESTOS INSULATION

This land does not include any residential premises (within the meaning of Division 1A of Part 8 of the *Home Building Act 1989*) that are listed on the register that is required to be maintained under that Division. That register lists residential premises that contain or have contained loose-fill asbestos insulation.

21 CONTAMINATED LAND MANAGEMENT ACT 1997

Nil Prescribed Matters

22 ADVICE PROVIDED PURSUANT TO S.10.7(5) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

22.1 Prescribed Streams

Approval of the NSW Office of Water is required before the removal of any native vegetation within 20 metres of a prescribed stream. Contact the Office of Water for details.

*****

For any enquiries regarding this Certificate please contact Council's Customer Contact Centre on 4350 5555.

T Blenheim

Toni Blenheim
Signed on Behalf of Council

LAND USE TABLE

Zone SP2 Infrastructure
Wyong Local Environmental Plan 2013

1 Objectives of zone

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.
- To recognise existing railway land and to enable future development for railway and associated purposes.
- To recognise major roads and to enable future development and expansion of major road networks and associated purposes.
- To recognise existing land and to enable future development for utility undertakings and associated purposes.

2 Permitted without consent

Nil

3 Permitted with consent

Roads; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose

4 Prohibited

Any development not specified in item 2 or 3

LAND USE TABLE

Zone E2 Environmental Conservation
Wyong Local Environmental Plan 2013

1 Objectives of zone

- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.
- To prevent development that could destroy, damage or otherwise have an adverse effect on those values.
- To protect endangered ecological communities, coastal wetlands and littoral rainforests.
- To enable development of public works and environmental facilities if such development would not have a detrimental impact on ecological, scientific, cultural or aesthetic values.

2 Permitted without consent

Nil.

3 Permitted with consent

Eco-tourist facilities; Environmental facilities; Environmental protection works; Flood mitigation works; Recreation areas; Research stations; Roads; Water reticulation systems.

4 Prohibited

Business premises; Hotel or motel accommodation; Industries; Multi dwelling housing; Recreation facilities (major); Residential flat buildings; Restricted premises; Retail premises; Seniors housing; Service stations; Warehouse or distribution centres; Any other development not specified in item 2 or 3.

Appendix C

MM638784 Munmorah Power Station Drainage Coal Handling Plant Area Drainage Layout date 18 April 1995.

FOR STATION AREA DRAINAGE REFER TO:
MM638781....FOR CLEAN WATER DRAINAGE - SYSTEMS D1, D13 & ROOF
MM638782....FOR DIRTY WATER DRAINAGE - SYSTEMS D2 TO D12
MM638783....FOR OTHER MISC. DRAINAGE SYSTEMS

FOR DRAINAGE AND PONDS EAST OF MAIN STATION
REFER TO DRG.....MM639044

CONVEYOR ROAD
CLEAN WATER CHANNEL
DIRTY WATER POND
PUMP PIT
CHIMNEY STACK No1
CHIMNEY STACK No2
DEMINERALISING PLANT AREA
TO PIT D513
SEWERAGE PUMPING STN. 2
GARDENERS WAY
GARDENERS STORAGE SHED
GREEN HOUSE
SHED
CLEAN STORMWATER COLLECTION POND
COAL CONVEYOR OVER
COAL RISING MAIN
COAL PLANT ROAD
RETENTION ROAD
COAL PLANT ROAD
WEIGHER ST
POZZO ST
C.C.COAL OFFICES
OIL STORE
GARAGE
CONCRETE PAVING
C.C.COAL WORKSHOP
PUMP PIT T8
SOIL TESTING LABORATORY
STORE BUILDING
RAMP
VEHICLE GARAGE
DRAIN PIT
TRAP T28
BULLDOZER WASHDOWN AREA
BUND DRAINS
FIRE DRILL AREA
TO TRANSPIRATION POND
OIL TRAP
COLLECTION POND
DISCHARGE FROM 8ML DIRTY WATER RETENTION BASIN
EASTERN SETTLING BASIN
OVERFLOW OUTLET BLOCKED OFF
NEW OVERFLOW
WESTERN SETTLING BASIN
DISH DRAIN ACROSS ROAD
DISUSED CHANNEL
COAL STORAGE AREA
COAL STACK ROAD
PERIMETER CHANNEL
DOZER CROSSING
PERIMETER CHANNEL
DISH DRAIN ACROSS ROAD
SAMPLE CRUSHER HOUSE
VALVE PIT
RAISED HUMP
DEISEL PUMP
DRAIN PIT
OIL TRAP T21
MAIN RECEIVING HOPPER
DEISEL BUND
WORKERS SHED
SEPTIC TANK
GARAGE
ST ROOM
TRANSFORMER CUBICLES
SAMPLE CRUSHER HOUSE
ROAD
EXISTING CREEK

LEGEND

- GRATED PIT
- GATIC COVERED PIT
- COVERED PIT
- OIL TRAPS
- WELL
- GRATED DRAINS
- EXISTING LAYOUT
- STORMWATER PIPELINES
- SEWER PIPELINES
- CABLE TUNNELS
- ASH/DUST PIPELINE TRENCH
- ASH/DUST SLUICEWAY
- PUMPED LINES
- Ø150 AG AGRICULTURAL DRAINAGE LINES
- DEMINERALISED EFFLUENT LINE
- DIRTY WATER LINE (OIL/GRIT)

REFERENCE DRAWING

MM638780.....KEY PLAN FOR STATION DRAINAGE DRAWINGS

1:1000 0 20 40 60 80 100 m

THIS PRINT MAY BE OF REDUCED SIZE

4

The Electricity Commission of New South Wales trading as Pacific Power.

AMENDMENTS

PACIFIC POWER SERVICES

CONTRACT No.	DRAWN	DM		KKS CODING	UG
	DESIGN			ORIGINAL DRAWING APPROVED BY	
	CHECKED DO	RT		C STARK per	VI
	CHECKED ENG			MANAGER/PPE	18-APR-1995
	PASSED	VI		APPROVED	
	cad	DO NOT AMEND MANUALLY		DRAWING STATUS	
				SCALE	1:1000

PACIFIC POWER

MUNMORAH POWER STATION
STATION DRAINAGE
COAL HANDLING PLANT AREA
DRAINAGE
LAYOUT

B1 | MM638784 | PREFIX NUMBER SHEET | AMDT

671x950mm

PLOT ISSUE No. 10 | PLOT ISSUE DATE 18APR95 | COPIED FROM | SUPERSEDES | SUPERSEDED BY | INDEX CLASS'N –

Appendix D

Historical Aerial Photographs



ATTACHMENT B

Historical Imagery



Land Insight & Resources do no warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that this company shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information.



LIR-00153 Aerial Photograph 1954 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

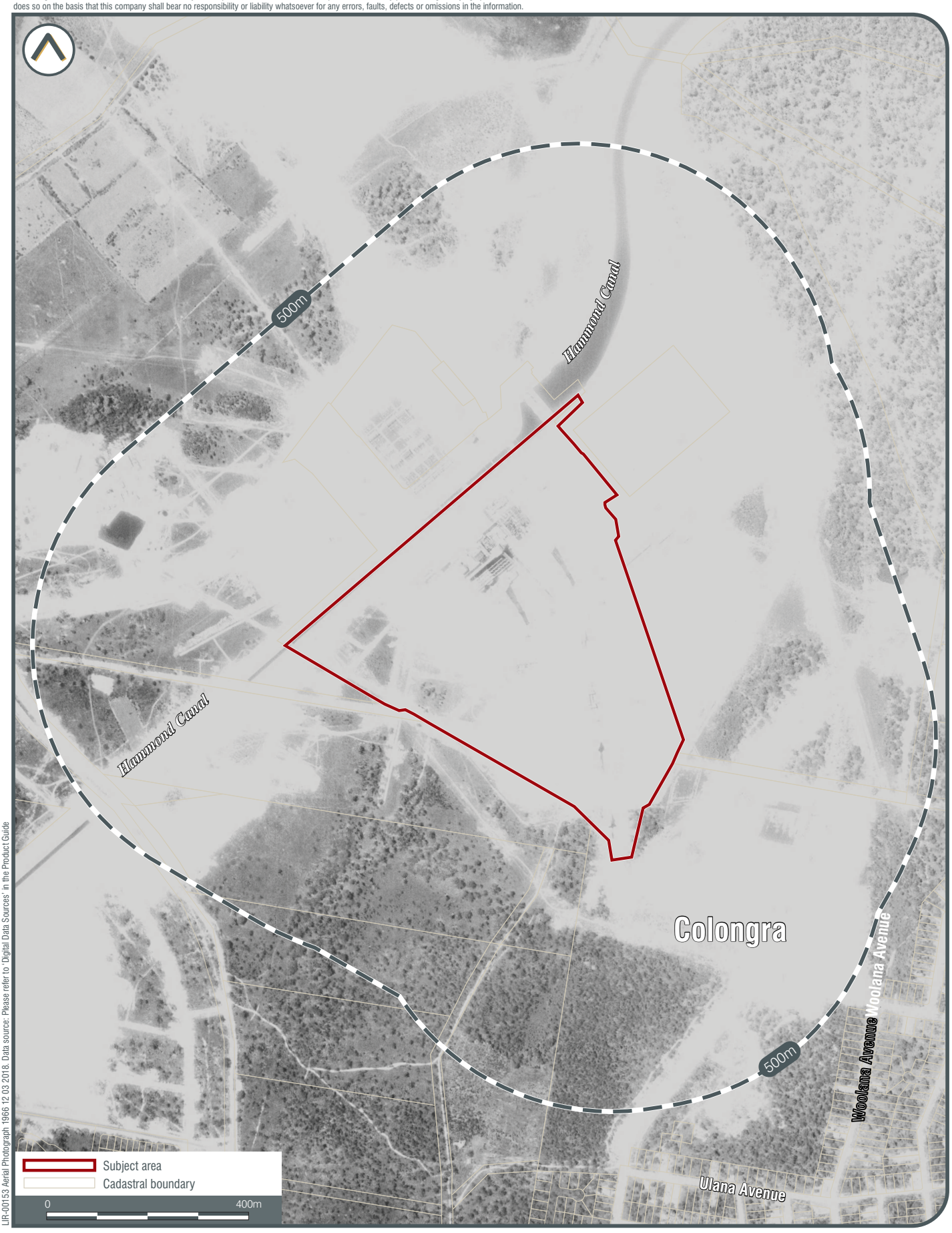
HISTORICAL AERIAL PHOTOGRAPH - 1954

LAND INSIGHT & RESOURCES

MAP 11



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LIR-00153 Aerial Photograph 1966 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORICAL AERIAL PHOTOGRAPH - 1966

LAND INSIGHT & RESOURCES

MAP 12



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LIR-00153 Aerial Photograph 197612 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORICAL AERIAL PHOTOGRAPH - 1976

LAND INSIGHT & RESOURCES

MAP 13



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LIR-00153 Aerial Photograph 1984 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORICAL AERIAL PHOTOGRAPH - 1984

LAND INSIGHT & RESOURCES

MAP 14



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LIR-00153 Aerial Photograph 1994 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORICAL AERIAL PHOTOGRAPH - 1994

LAND INSIGHT & RESOURCES

MAP 15



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LIR-00153 Aerial Photograph 2001 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORICAL AERIAL PHOTOGRAPH - 2001

LAND INSIGHT & RESOURCES

MAP 16



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LIR-00153 Aerial Photograph 2010 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORICAL AERIAL PHOTOGRAPH - 2010

LAND INSIGHT & RESOURCES

MAP 17



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LIR-00153 Aerial Photograph 2012 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORICAL AERIAL PHOTOGRAPH - 2012

LAND INSIGHT & RESOURCES

MAP 18



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LIR-00153 Aerial Photograph 2014 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORICAL AERIAL PHOTOGRAPH - 2014

LAND INSIGHT & RESOURCES

MAP 19



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LIR-00153 Aerial Photograph 2016 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORICAL AERIAL PHOTOGRAPH - 2016

LAND INSIGHT & RESOURCES

MAP 20



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LIR-00153 Aerial Photograph 2018 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

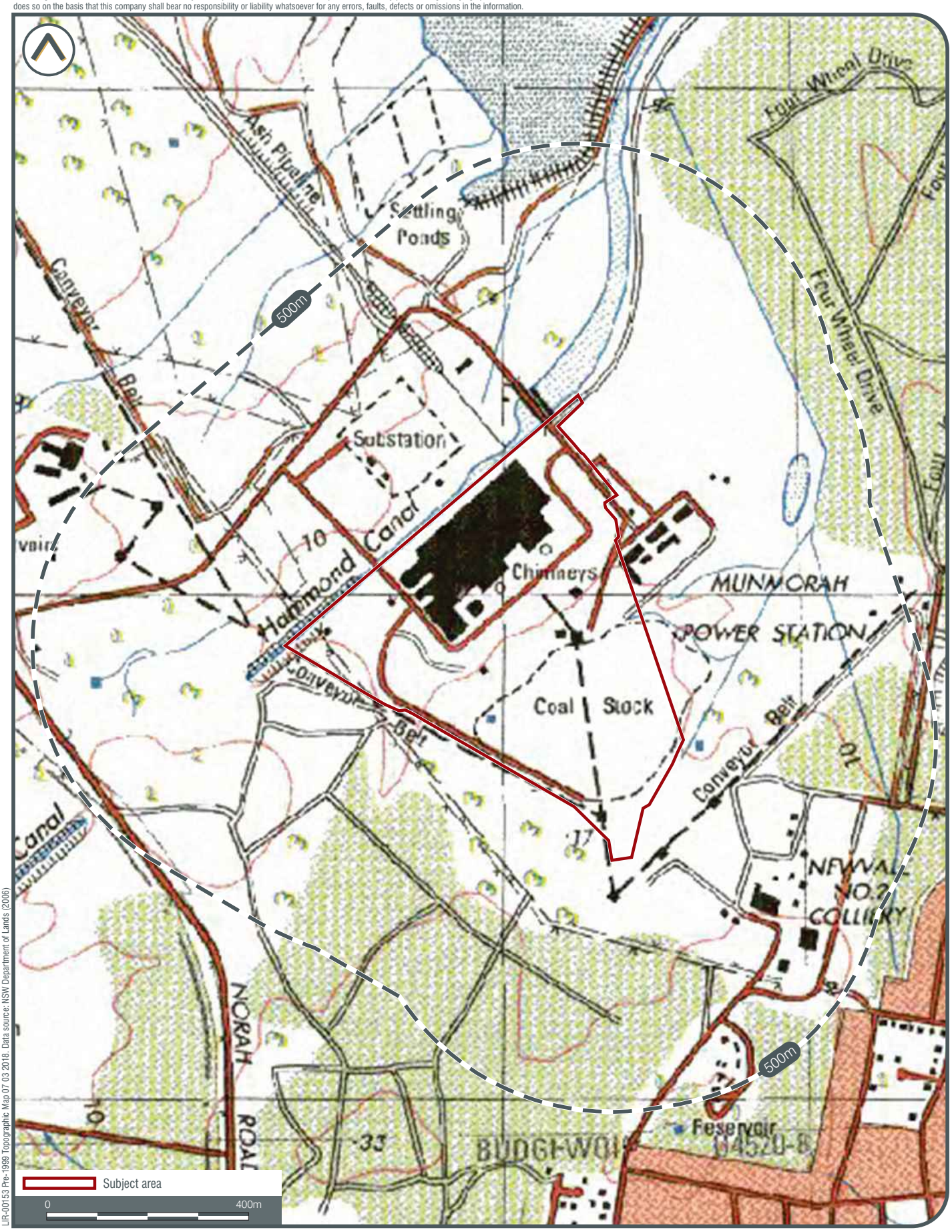
HISTORICAL AERIAL PHOTOGRAPH - 2018

LAND INSIGHT & RESOURCES

MAP 21



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LIR-00153 Pre-1999 Topographic Map 07.03.2018. Data source: NSW Department of Lands (2006)

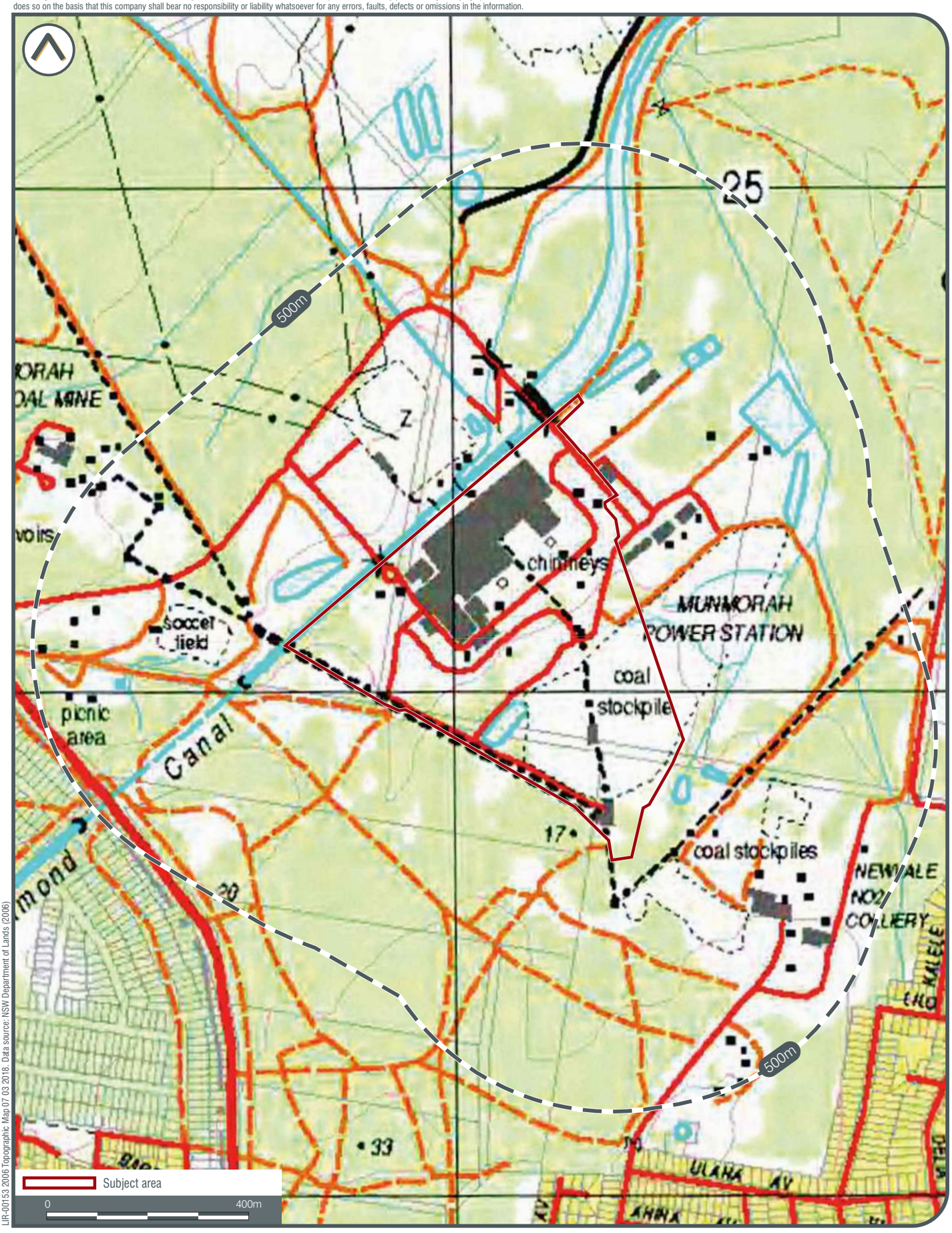
PRE-1999 TOPOGRAPHIC MAP

LAND INSIGHT & RESOURCES



MAP 22

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LIR-00153 2006 Topographic Map 07 03 2018. Data source: NSW Department of Lands (2006)

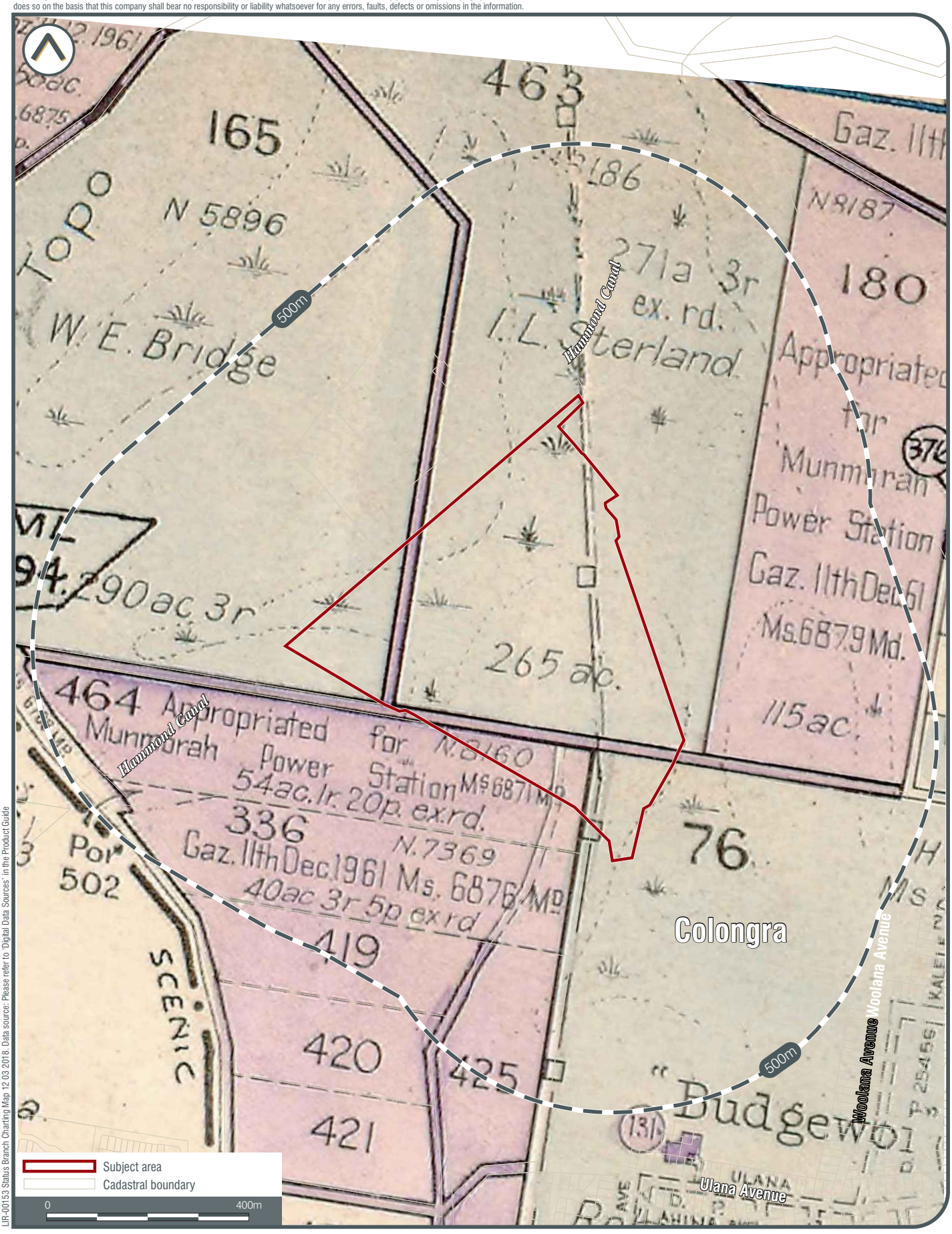
2006 TOPOGRAPHIC MAP

LAND INSIGHT & RESOURCES

MAP 23



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LIR-00153 Status Branch Charting Map 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

STATUS BRANCH CHARTING MAP (UN-DATED)

LAND INSIGHT & RESOURCES

MAP 24



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LIR-00153 Parish Map 1932 12 03 2018. Data source: Please refer to 'Digital Data Sources' in the Product Guide

PARISH MAP - 1932

LAND INSIGHT & RESOURCES

MAP 25





HISTORICAL AERIAL PHOTOGRAPH – 11 AUGUST 2022

Appendix E

Investigation Plates

CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
02/08/22	**Plate 1**

Description:
Typical Test Pit Adjacent Lands (FI201)

Direction Photo Taken:
N/A



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
02/08/22	**Plate 2**

Description:
Typical Test Pit Coal Stack Area (CS109)

Direction Photo Taken:
N/A



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
02/08/22	**Plate 3**

Description:
10 L sample (CS109-0-0.1) over contrasting material.

Direction Photo Taken:
N/A



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
30 April 2018	**Plate 4**

Description:
Sieving (7 mm) of 10 L sample (CS109-0-0.1).

Direction Photo Taken:
N/A



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
02/08/22	**Plate 5**

Description:
Test Pit CS108 – Asbestos (AF/FA & ACM) reported

Direction Photo Taken:
N/A



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
02/08/22	**Plate 6**

Description:
Brown woven Material found at CS108 (Sample Ref: MAT02) -Chrysotile asbestos detected

Direction Photo Taken:
N/A



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
04/08/22	**Plate 7**

Description:
AEC4

Direction Photo Taken:
North-west



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
04/08/22	**Plate 8**

Description:
AEC4 slab sample (A4405-0-0.1)

Direction Photo Taken:
NA



Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
04/08/22	**Plate 9**

Description:
Test pit A4412

Direction Photo Taken:
N/A



Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
04/08/22	**Plate 10**

Description:
Coal layer found during excavation of test pit A4212 in the AEC4.

Direction Photo Taken:
North



Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
03/08/22	**Plate 11**

Description:
Western Settling Basin

Direction Photo Taken:
South



Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
09/08/22	**Plate 12**

Description:
Rig/Geoprobe used for drilling and installation of wells

Direction Photo Taken:
East



Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
09/08/22	**Plate 13**

Description:
Push Tube Liners – Typical soil profile Coal Stack Area (CS106)

Direction Photo Taken:
N/A



Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
10/08/22	**Plate 14**

Description:
Typical Well Screen and Casing used for installation of monitoring wells

Direction Photo Taken:
N/A



Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
10/08/22	**Plate 15**

Description:
Typical Well Installation

Direction Photo Taken:
N/A



Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM

Date:	Plate No:
30 April 2018	**Plate 16**

Description:
Typical backfilling of wells – Holcim Sand

Direction Photo Taken:
NA



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
10/08/22	**Plate 17**

Description:
Typical backfilling of wells – Bentonite

Direction Photo Taken:
N/A



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
10/08/22	**Plate 18**

Description:
Typical backfilling of wells – Cement grout

Direction Photo Taken:
N/A



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
10/08/22	**Plate 19**

Description:
Typical finished well - Monument (CS116)

Direction Photo Taken:
N/A



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
17/08/22	**Plate 20**

Description:
Typical finished well - Flush Mounted well cover (WT503)

Direction Photo Taken:
N/A



Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
18/08/22	**Plate 21**

Description:
Foreign material (bricks) found at test pit FB307 located in the boundary of former Fire Fighting Training Area

Direction Photo Taken:
East



Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
18/08/22	**Plate 22**

Description:
Coal layer found at FB302 in the former fire fighting training area

Direction Photo Taken:
West



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
25/08/22	**Plate 23**

Description:
Low-flow purge equipment in use during groundwater sampling incl. bladder pump, flow controller, CO_2 gas, interphase meter, multiparameter, and dedicated HDPE tubing.

Direction Photo Taken:
East



CONSULTING EARTH SCIENTISTS

Photographic Log

Client Name:	Site Location:	Project Number:
GPM	301 SCENIC DRIVE, DOYALSON, NSW	CES170608-GPM-DO

Date:	Plate No:
25/08/22	**Plate 24**

Description:
Coal Handling Plant "Clean" water pond

Direction Photo Taken:
North-east



Appendix F

Borehole and Test Pit Logs

CONSULTING EARTH SCIENTISTS

BOREHOLE ID FI210

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 10.08.2022
TOTAL DEPTH 7.0 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364111.70
UTM Northing 6323983.04
COORD SYS GDA94

AREA Adjacent Lands

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	USCS	Material Description	Standing Water Level (mBTOC)	Samples	Analysed	Moisture	PID	Additional Comments
0	Push Tube	SW	(FILL) Clayey SAND: fine to coarse grained, moderately graded, dark brown/black with orange mottling, with coal fines. No odours or staining		FI210_0-0.1	Y	M	0.1	Samples not marked with a 'Y' are on hold
					FI210_0.1-0.2			0.1	
0.5		SC	Transition to grey with orange mottling		FI210_0.5-0.6		M	0.1	
1			(NATURAL) Clayey SAND: fine grained, poorly sorted, firm, grey and dark orange mottling		FI210_1-1.1	Y		0.1	
1.5			No odours or staining						
2					FI210_2-2.1			0.1	
2.5		CL	(NATURAL) CLAY: moderate to high plasticity, grey to white						
3	Solid Stem Auger		No odours or staining		FI210_3-3.1				
3.5									
4					FI210_4-4.1				
4.5									
5			Transition to red with orange mottling	▽	FI210_5-5.1		W		
5.5									
6					FI210_5.9-6				
6.5									
7			BH terminated at 7.0 mbgl						
7.5									

Well Diagram: monument; grout; bentonite; gravel pack

Disclaimer This bore log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 29 Sep 2022

CONSULTING EARTH SCIENTISTS

TEST PIT ID FI207

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 18.08.2022
TOTAL DEPTH 1.3 mbgl
DIAMETER NA

UTM Easting 364292
UTM Northing 6324135
COORD SYS GDA94

AREA Adjacent Lands

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SC	(FILL) Clayey SAND: moderately sorted, fine to medium grained, dark brown/black, loose, with gravel fragments No odour, no staining. No asbestos observed in 10L sample.	FI207_0-0.1		M	0.3	Samples not marked with a 'Y' are on hold
0.1					FI207_0.1-0.2	Y		0.4	
0.2			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, pale brown, loose. No odour, no staining			M		
0.3									
0.4									
0.5					FI207_0.5-0.6			0.3	
0.6									
0.7									
0.8				Transition to pale brown and dark orange					
0.9									
1					FI207_1.0-1.1			0.3	
1.1									
1.2									
1.3				TP terminated at 1.3 mbgl					

Disclaimer This bore log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 29 Sep 2022

CONSULTING EARTH SCIENTISTS

TEST PIT ID FI205

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 18.08.2022
TOTAL DEPTH 1.4 mbgl
DIAMETER NA

UTM Easting 364233
UTM Northing 6324095
COORD SYS GDA94

AREA Adjacent Lands

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SC	(FILL) Clayey SAND: moderately sorted, fine to medium grained, dark brown/black, loose, with metal fragments, gravels and pebbles No odour, no staining. No asbestos observed in 10L sample.	FI205_0-0.1	Y	M	0.0	Samples not marked with a 'Y' are on hold
0.1					FI205_0.1-0.2			0.0	
0.2									
0.3									
0.4				(FILL) Clayey SAND: moderately sorted, moderately grained, grey with dark orange mottling, firm No odours or staining					
0.5					FI205_0.5-0.6			0.0	
0.6									
0.7									
0.8			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, pale grey with dark orange/red mottling, firm No odour, no staining			M		
0.9									
1					FI205_1.0-1.1			0.0	
1.1									
1.2									
1.3									
1.4				TP terminated at 1.4 mbgl					

Disclaimer This bore log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 29 Sep 2022

CONSULTING EARTH SCIENTISTS

TEST PIT ID FI206

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 18.08.2022
TOTAL DEPTH 1.4 mbgl
DIAMETER NA

UTM Easting 364160
UTM Northing 6324139
COORD SYS GDA94

AREA Adjacent Lands

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SP	(FILL) SAND: moderately sorted, fine to medium grained, dark brown/black, loose, with rocks, gravels and metal fragments No odour, no staining. No asbestos observed in 10L sample.	FI206_0-0.1	Y	M	0.1	Samples not marked with a 'Y' are on hold
0.1					FI206_0.1-0.2			0.1	
0.2									
0.3									
0.4			SC	(FILL) Clayey SAND: moderately sorted, moderately grained, pale brown, loose No odours or staining					
0.5					FI206_0.5-0.6			0.1	
0.6									
0.7									
0.8				(NATURAL) Clayey SAND: moderately grained, poorly sorted, grey with dark orange mottling, firm No odour, no staining			M		
0.9									
1					FI206_1.0-1.1			0.1	
1.1									
1.2									
1.3									
1.4				TP terminated at 1.4 mbgl					

Disclaimer This bore log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 29 Sep 2022

CONSULTING EARTH SCIENTISTS

TEST PIT ID FI201

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 03.08.2022
TOTAL DEPTH 0.6 mbgl
DIAMETER NA

UTM Easting 364308
UTM Northing 6323739
COORD SYS GDA94

AREA Adjacent Lands

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0.05	Excavator		SW	(FILL) Gravelly SAND: moderately sorted, fine to medium grained, dark brown/black, with coal fines and angular coal fragments No odour, no staining. No asbestos observed in 10L sample.	FI201_0-0.1	Y	M	0.3	Primary sample of QAQC1/QAQC2
0.1			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, orange, firm No odour, no staining	FI201_0.1-0.2		M	0.3	
0.5					FI201_0.5-0.6			0.2	Samples not marked with a 'Y' are on hold
0.6				TP terminated at 0.6 mbgl					
0.65									

Disclaimer This bore log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 29 Sep 2022

CONSULTING EARTH SCIENTISTS

TEST PIT ID FI202

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 02.08.2022
TOTAL DEPTH 1.3 mbgl
DIAMETER NA

UTM Easting 364339
UTM Northing 6323700
COORD SYS GDA94

AREA Adjacent Lands

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SP	(FILL) SAND: moderately sorted, fine to medium grained, dark brown/black, trace coal fragments No odour, no staining. No asbestos observed in 10L sample.	FI202_0-0.1		M	0.7	Samples not marked with a 'Y' are on hold
0.1					FI202_0.1-0.2			0.3	
0.2			SC	(FILL) Clayey SAND: moderately sorted, fine to medium grained, pale brown with orange mottling, trace sandstone cobbles No odours or staining					
0.3									
0.4									
0.5					FI202_0.5-0.6	Y		0.3	
0.6			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, pale brown/yellow/orange No odour, no staining			M		
0.7									
0.8									
0.9									
1					FI202_1.0			0.3	
1.1									
1.2					FI202_1.2-1.3			0.4	
1.3				TP terminated at 1.3 mbgl					

Disclaimer This bore log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 29 Sep 2022

CONSULTING EARTH SCIENTISTS

TEST PIT ID FI209

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 02.08.2022
TOTAL DEPTH 1.0 mbgl
DIAMETER NA

UTM Easting 364394
UTM Northing 6323803
COORD SYS GDA94

AREA Adjacent Lands

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SC	(FILL) Clayey SAND: moderately sorted, fine to medium grained, dark brown/black, trace coal fines and angular coal fragments No odour, no staining. No asbestos observed in 10L sample.	FI209_0-0.1	Y	M	0.2	Samples not marked with a 'Y' are on hold
0.05									
0.1					FI209_0.1-0.2				
0.15								0.1	
0.2									
0.25									
0.3			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, brown/grey No odours or staining			M		
0.35									
0.4									
0.45									
0.5					FI209_0.5-0.6				
0.55								0.1	
0.6									
0.65									
0.7									
0.75									
0.8									
0.85									
0.9					FI209_1.0				
0.95								0.1	
1				TP terminated at 1.0 mbgl					
1.05									

Disclaimer This bore log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 29 Sep 2022

CONSULTING EARTH SCIENTISTS

TEST PIT ID FI203

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 18.08.2022
TOTAL DEPTH 1.5 mbgl
DIAMETER NA

UTM Easting 364054
UTM Northing 6324053
COORD SYS GDA94

AREA Adjacent Lands

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SC	(FILL) Clayey SAND: moderately sorted, fine to medium grained, dark brown/black, with roots No odour, no staining. No asbestos observed in 10L sample.	FI203_0-0.1		M	0.1	Samples not marked with a 'Y' are on hold
0.1					FI203_0.1-0.2			0.2	
0.2			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, loose, brown No odours or staining			M		
0.3									
0.4									
0.5					FI203_0.5-0.6			0.1	
0.6									
0.7									
0.8									
0.9									
1				Transition to firm and pale grey with orange mottling	FI203_1.0-1.1	Y	V M	0.1	
1.1									
1.2									
1.3									
1.4					FI203_1.4-1.5			0.1	
1.5				TP terminated at 1.5 mbgl					

Disclaimer This bore log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 29 Sep 2022

CONSULTING EARTH SCIENTISTS

TEST PIT ID FI204

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 18.08.2022
TOTAL DEPTH 1.0 mbgl
DIAMETER NA

UTM Easting 364129
UTM Northing 6324044
COORD SYS GDA94

AREA Adjacent Lands

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SC	(FILL) Clayey SAND: moderately sorted, fine to medium grained, dark brown, loose, with roots No odour, no staining. No asbestos observed in 10L sample.	FI204_0-0.1		M	0.0	Samples not marked with a 'Y' are on hold
0.05									
0.1					FI204_0.1-0.2				
0.15								0.0	
0.2			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, loose, pale brown No odours or staining			M		
0.25									
0.3									
0.35									
0.4									
0.45									
0.5					FI204_0.5-0.6				
0.55								0.0	
0.6									
0.65									
0.7									
0.75									
0.8				Transition to firm and grey with orange mottling					
0.85									
0.9					FI203_1.0-1.1				
0.95								0.1	
1				TP terminated at 1.0 mbgl		Y	V M		
1.05									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID FI208

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 02.08.2022
TOTAL DEPTH 1.6 mbgl
DIAMETER NA

UTM Easting 364350
UTM Northing 6323751
COORD SYS GDA94

AREA Adjacent Lands

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SC	(FILL) Clayey SAND: moderately sorted, fine to medium grained, dark brown/yellow/red, loose, with rootlets No odour, no staining. No asbestos observed in 10L sample.	FI208_0-0.1		M	0.2	Samples not marked with a 'Y' are on hold
0.1					FI208_0.1-0.2			0.2	
0.2									
0.3									
0.4									
0.5					FI208_0.5-0.6			0.2	
0.6									
0.7									
0.8									
0.9									
1			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, loose, pale brown and yellow No odours or staining	FI208_1.0-1.1		M	0.1	
1.1									
1.2									
1.3									
1.4									
1.5					FI208_1.5-1.6	Y		0.1	
1.6				TP terminated at 1.0 mbgl					

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID A4407

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 09.08.2022
TOTAL DEPTH 6.0 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364322.64
UTM Northing 6323784.45
COORD SYS GDA94

AREA Area of Environmental Concern 4 (AEC4)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Coring	CON	Concrete					Samples not marked with a 'Y' are on hold
0.5		SC	(FILL) Clayey SAND: fine to coarse grained, moderately sorted, light brown/grey No staining; Fuel odour	A4407_0.4-0.5 A4407_0.5-0.6		M	0.9 0.8	
1		SC	(NATURAL) Clayey SAND: fine to medium grained, poorly sorted, grey with orange mottling No odours or staining	A4407_1.1-1.2 A4407_1.5-1.6		M	0.2 0.2	
2			(NATURAL) CLAY: moderate to high plasticity, grey with red mottling No odours or staining	A4407_2.0-2.1			0.1	
3				A4407_3.0-3.1	Y		0.1	
4				A4407_4-4.1		W	0.1	
5				A4407_5.0-5.1			0.1	
6				A4407_6.0-6.1			0.1	
			BH terminated at 6.0 mbgl					

Well Diagram: monument; grout; bentonite; gravel pack

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CONSULTING EARTH SCIENTISTS

TEST PIT ID A4404

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 09.08.2022
TOTAL DEPTH 2.6 mbgl
DIAMETER NA

UTM Easting 364322
UTM Northing 6323780
COORD SYS GDA94

AREA Area of Environmental Concern (AEC4)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		CON	Concrete					Samples not marked with a 'Y' are on hold
0.2									
0.4									
0.5			SW	(FILL) Gravelly SAND: fine to coarse grained, moderate grained, brown, loose No staining, hydrocarbon odour No asbestos detected following 10L screen	A4404_0.5-0.6		M	10.5	
0.6					A4404_0.6-0.7			1.7	
0.8									
0.9			SC	(NATURAL) Clayey SAND: moderated grained, poorly sorted, pale brown/orange No odours or staining	A4404_0.9-1.0	Y	M	2.7	
1.2									
1.4					A4404_1.5-1.6			1.4	
1.6									
1.8									
1.9				Transition to grey and dark orange mottled					
2					A4404_2-2.1			1.1	
2.2									
2.4									
2.5					A4404_2.5-2.6			0.4	
2.6				TP terminated at 2.6 mbgl					

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CONSULTING EARTH SCIENTISTS

TEST PIT ID A4409

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 09.08.2022
TOTAL DEPTH 1.9 mbgl
DIAMETER NA

UTM Easting 364317
UTM Northing 6323790
COORD SYS GDA94

AREA Area of Environmental Concern (AEC4)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		CON	Concrete					Samples not marked with a 'Y' are on hold
0.1									
0.2									
0.3			SW	(FILL) Gravelly SAND: fine to coarse grained, moderate grained, pale brown No staining / no odour No asbestos detected following 10L screen	A4409_0.3-0.4		M	0.2	
0.4					A4409_0.4-0.5			0.3	
0.5				(FILL) SAND: moderated grained, poorly sorted, pale brown, with coal fines No staining / faint hydrocarbon odour					
0.6					A4409_0.6-0.7	Y		2.0	
0.7			SC	(NATURAL) Clayey SAND: fine to coarse grained, moderately sorted, grey with orange mottling No odours or staining			M		
0.8									
0.9									
1					A4409_1-1.1			4.5	
1.1									
1.2									
1.3									
1.4									
1.5					A4409_1.5-1.6			0.6	
1.6									
1.7									
1.8									
1.9				TP terminated at 1.9 mbgl					
2									
2.1									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID A4411

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 04.08.2022
TOTAL DEPTH 2.2 mbgl
DIAMETER NA

UTM Easting 364327
UTM Northing 6323790
COORD SYS GDA94

AREA Area of Environmental Concern (AEC4)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		CON	Concrete					Samples not marked with a 'Y' are on hold
0.4			SW	(FILL) Gravelly SAND: fine to coarse grained, moderate grained, pale brown, loose Coal fines layer between 0.45-0.55 mbgl No staining / faint hydrocarbon odour No asbestos detected following 10L screen	A4411_0.35-0.45		M	0.1	
0.5					A4411_0.45-0.55	Y		0.3	
0.8					A4411_0.8-097			0.9	
1			SC	(NATURAL) Clayey SAND: fine to coarse grained, moderately sorted, grey with orange mottling No staining/ faint hydrocarbon odour	A4411_1-1.1	Y	M	9.2	
1.5					A4411_1.5-1.6			0.5	
2					A411_2-2.1			0.3	
2.2				TP terminated at 2.2 mbgl					

CONSULTING EARTH SCIENTISTS

TEST PIT ID A4412

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 04.08.2022
TOTAL DEPTH 1.8 mbgl
DIAMETER NA

UTM Easting 364317
UTM Northing 6323800
COORD SYS GDA94

AREA Area of Environmental Concern (AEC4)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		CON	Concrete					Samples not marked with a 'Y' are on hold
0.1									
0.2									
0.3			SW	(FILL) Gravelly SAND: fine to coarse grained, moderate grained, pale brown/grey/black, with coal fines and angular gravels, loose No staining / faint hydrocarbon odour No asbestos detected following 10L screen	A4412_0.3-0.4		M	1.0	
0.4					A4412_0.4-0.5	Y		3.3	
0.5									
0.6									
0.7									
0.8									
0.9			SC	(NATURAL) Clayey SAND: fine to coarse grained, moderately sorted, grey with orange mottling No staining/ faint hydrocarbon odour			M		
1					A4412_1-1.1			3.5	
1.1									
1.2									
1.3									
1.4									
1.5					A4412_1.5-1.6			0.3	
1.6									
1.7									
1.8				TP terminated at 1.8 mbgl					
1.9									

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID CS116

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 10.08.2022
TOTAL DEPTH 9.0 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364331.95
UTM Northing 6324114.50
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Push Tube	SW	(FILL) Gravelly SAND: fine to coarse grained, well graded, dark brown/black, with coal fines and sub-angular coal fragments. Moist. No odour, no staining	CS116_0-0.1		M	0.1	Samples not marked with a 'Y' are on hold
0.5				CS116_0.1-0.2			0.0	
		SC	(FILL) Clayey SAND: fine grained, poorly sorted, mottled red/dark orange, trace coal fines, firm. Moist. No odour, no staining	CS116_0.6-0.7	Y	M	0.1	
1				CS116_1.0-1.1			0.1	
1.5		SC	Transition to pale grey	CS116_1.5-1.6		M	0.1	
2			Transition to grey and mottled dark orange	CS116_2-2.1			0.1	
2.5			(NATURAL) Clayey SAND: fine grained, poorly sorted, grey with dark orange mottling, high plasticity. No odour, no staining					
3				CS116_3-3.1			0.1	
3.5								
4				CS116_4-4.1			0.1	
4.5	Solid Stem Auger							
5				CS116_5-5.1			0.1	
5.5								
6				CS116_6-6.1			0.1	
6.5								
7			▽	CES116_7-7.1			0.1	
7.5								
8				CES116_8-8.1			0.1	
8.5								
9				CES116_8.9-9.0	Y		0.1	
			BH terminated at 9.0 mbgl					
9.5								

Well Diagram: monument; grout; bentonite; gravel pack

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID CS112

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 10.08.2022
TOTAL DEPTH 6.8 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 36418.61
UTM Northing 6324001.60
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Standing Water Level (mBTOC)	Samples	Analysed	Moisture	PID	Well Diagram	Additional Comments
-0.5										monument	Samples not marked with a 'Y' are on hold
0			SW	(FILL) Gravelly Clayey SAND: fine to coarse grained, dark brown/black, with coal fines and sub-angular coal fragments		CS112_0-0.1		M	0.1		
						CS112_0.1-0.2			0.2		
0.5						CS112_0.5-0.6			0.1		
			SC	No odour or staining Transition to grey and mottled orange				M			
1				(NATURAL) Clayey SAND: fine grained, poorly sorted, grey with dark orange mottling, firm, high plasticity		CS112_1.0-1.1	Y		0.1		
1.5				No odours or staining					0.1	grout	
2						CS112_2-2.1			0.1		
2.5											
3						CS112_3-3.1			0.1	bentonite	
3.5											
4						CS112_4-4.1			0.1		
4.5					▽						
5						CS112_5-5.1			0.2	gravel pack	
5.5											
6						CS112_6-6.1			0.1		
6.5											
7				BH terminated at 6.8 mbgl							
7.5											

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID CS117

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 10.08.2022
TOTAL DEPTH 5.0 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364454.39
UTM Northing 6323896.50
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	USCS	Material Description	Samples	Analysed	Moisture	PID
0	Push Tube	SW	(FILL) Gravelly Clayey SAND: fine to coarse grained, dark brown/black, with coal fines and sub-angular gravels. No odour or staining	CS117_0-0.1 CS117_0.1-0.2	Y	M	0.0 0.0
0.5				CS117_0.5-0.6			0.0
1		SC	(FILL) Clayey SAND: fine to coarse grained, poorly sorted, grey, with coal fines, firm, high plasticity. No odour or staining	CS117_1.0-1.1		M	0.0
1.5		SC	(NATURAL) Clayey SAND: fine grained, poorly sorted, dark brown, firm, high plasticity. No odour or staining	CS117_1.5-1.6		M to W	0.0
2				CS117_2-2.1			0.0
2.5			▽				
3				CS117_3-3.1			0.0
3.5							
4	Solid Stem Auger			CS117_4-4.1			0.0
4.5							
5			BH terminated at 5.1 mbgl	CS117_5.0	Y		0.0
5.5							

Well Diagram: monument; grout; bentonite; gravel pack

Additional Comments: Samples not marked with a 'Y' are on hold

CONSULTING EARTH SCIENTISTS

BOREHOLE ID CS101

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 09.08.2022
TOTAL DEPTH 7.1 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364241.97
UTM Northing 6323814.48
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Standing Water Level (mBTOC)	Samples	Analysed	Moisture	PID	Well Diagram	Additional Comments
-0.5										monument	Samples not marked with a 'Y' are on hold
0	Push Tube		SW	(FILL) Gravelly Clayey SAND: fine to coarse grained, dark brown/black, with coal fines and sub-angular coal fragments. No odour or staining		CS101_0-0.1		M	0.2		
						CS101_0.1-0.2			0.1		
0.5						CS101_0.5-0.6			0.1		
			SC	(FILL) Clayey SAND: coarse grained, moderately sorted, grey with dark orange mottling, trace coal fines, soft. No odour or staining				M			
1						CS101_1.0-1.1			0.1		
			SC	(NATURAL) Clayey SAND: fine grained, poorly sorted, grey, firm, moderate plasticity. No odour or staining				M to W			
1.5						CS101_1.5-1.6			0.1	grout	
2						CS101_2-2.1			0.1		
2.5	Solid Flight Auger										
3						CS101_3-3.1	Y		0.1		
			CL	(NATURAL) Sandy CLAY: high plasticity, very stiff, fine grained, light to dark grey with orange mottling. No odour or staining	▽					bentonite	
3.5											
4						CS101_4-4.1			0.1		
4.5											
5						CS101_5-5.1			0.3	gravel pack	
5.5											
6						CS101_6-6.1			2.3		
6.5											
7						CS101_7-7.1			0.1		
				BH terminated at 7.1 mbgl							
7.5											

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID CS106

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 09.08.2022
TOTAL DEPTH 7.5 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364317.40
UTM Northing 6323827.70
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Standing Water Level (mBTOC)	Samples	Analysed	Moisture	PID	Well Diagram	Additional Comments
0			SW	(FILL) Gravelly SAND: fine to coarse grained, dark brown, with coal fines and sub-angular gravels. No odour or staining		CS106_0-0.1	Y	M	0.1	monument	Samples not marked with a 'Y' are on hold
						CS106_0.1-0.2			0.1		
0.5			SC	(FILL) Clayey SAND: fine to coarse grained, mottled orange. No odour or staining.		CS106_0.5-0.6		M	0.1		
1				(NATURAL) Clayey SAND: moderate grained, poorly sorted, grey with dark orange mottling, firm. No odour, no staining		CS106_1.0-1.1			0.1	grout	
1.5						CS106_1.5-1.6			0.1		
2						CS106_1.9-2			0.1		
2.5			CL	(NATURAL) Sandy CLAY: high plasticity, stiff, grey with dark orange mottling. No odour or staining				M to W		bentonite	
3						CS106_3-3.1			0.1		
3.5											
4						CS106_4-4.1			0.1		
4.5											
5					▽	CS106_5-5.1			0.1	gravel pack	
5.5											
6						CS106_6-6.1			0.1		
6.5											
7						CS106_7-7.1	Y		0.1		
7.5				BH terminated at 7.5 mbgl							
8											
8.5											

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CONSULTING EARTH SCIENTISTS

TEST PIT ID CS103

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 04.08.2022
TOTAL DEPTH 1.1 mbgl
DIAMETER NA

UTM Easting 364094
UTM Northing 6323886
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SM	(FILL) SAND: moderately sorted, fine to medium grained, loose, trace coal fines. No odour, no staining. No asbetsos observed in 10L sample.	CS103_0-0.1		M	0.1	Samples not marked with a 'Y' are on hold
0.1			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, grey with orange to dark orange mottling, firm. No odour, no staining	CS103_0.1-0.2	Y	M	0.1	
0.5				Transition to grey with orange mottling. No odour, no staining.	CS103_0.5-0.6			0.2	
1					CS103_1.0-1.1			0.1	
1.1				TP terminated at 1.1 mbgl					

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CONSULTING EARTH SCIENTISTS

TEST PIT ID CS107

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 10.08.2022
TOTAL DEPTH 1.6 mbgl
DIAMETER NA

UTM Easting 364372
UTM Northing 6323888
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0.1	Excavator		SW	(FILL) Gravelly SAND: moderately sorted, fine to medium grained, loose, dark brown, trace coal fines, with coal gravels. No odour, no staining No asbestos observed in 10L sample.	CS107_0-0.1		W	0.1	Samples not marked with a 'Y' are on hold
0.2					CS107_0.1-0.2			0.1	
0.3									
0.4									
0.5					CS107_0.5-0.6	Y		0.1	
0.6			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, pale brown with orange to dark orange mottling, firm. No odour, no staining			M		
0.7									
0.8									
0.9									
1					CS107_1.0-1.1			0.1	
1.1									
1.2									
1.3									
1.4									
1.5					CS107_1.5-1.6			0.1	
1.6				TP terminated at 1.6 mbgl					

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CONSULTING EARTH SCIENTISTS

TEST PIT ID CS111

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 03.08.2022
TOTAL DEPTH 1.1 mbgl
DIAMETER NA

UTM Easting 364372
UTM Northing 6323950
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) Gravelly SAND: moderately sorted, fine to medium grained, loose, light brown/grey, with concrete and brick fragments. No odour, no staining. No asbestos observed in 10L sample	CS111_0-0.1	Y	M	0.1	Samples not marked with a 'Y' are on hold
0.05									
0.1					CS111_0.1-0.2			0.1	
0.15									
0.2			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, grey with orange mottling, firm. No odour, no staining			M		
0.25									
0.3									
0.35									
0.4									
0.45				Transition to grey with orange mottling. No odour, no staining					
0.5					CS111_0.5-0.6				
0.55								0.1	
0.6									
0.65									
0.7									
0.75									
0.8									
0.85									
0.9									
0.95									
1					CS111_1.0-1.1				
1.05								0.1	
1.1				TP terminated at 1.1 mbgl					
1.15									
1.2									
1.25									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID CS115

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 03.08.2022
TOTAL DEPTH 0.8 mbgl
DIAMETER NA

UTM Easting 364371
UTM Northing 6324010
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) Gravelly SAND: moderately sorted, fine to medium grained, loose, dark brown/black with coal fines, with coal angular gravels. No odour, no staining. No asbestos observed in 10L sample	CS115_0-0.1	Y	M	0.2	Samples not marked with a 'Y' are on hold
0.05									
0.1					CS115_0.1-0.2				
0.15								0.2	
0.2			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, grey with orange mottling, firm No odours or staining			M		
0.25									
0.3									
0.35									
0.4									
0.45									
0.5					CS115_0.5-0.6				
0.55								0.2	
0.6									
0.65									
0.7									
0.75									
0.8				TP terminated at 1.1 mbgl					
0.85									
0.9									
0.95									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID CS110

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 03.08.2022
TOTAL DEPTH 1.0 mbgl
DIAMETER NA

UTM Easting 364311
UTM Northing 6323965
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) Gravelly SAND: moderately sorted, fine to medium grained, loose, dark brown/black with coal fines, with coal angular gravels. No odour, no staining. No asbestos observed in 10L sample	CS110_0-0.1	Y	M	0.3	Samples not marked with a 'Y' are on hold
0.05									
0.1					CS110_0.1-0.2				
0.15								0.3	
0.2									
0.25									
0.3									
0.35			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, grey with orange mottling, firm No odours or staining			M		
0.4									
0.45									
0.5					CS110_0.5-0.6				
0.55								0.3	
0.6									
0.65									
0.7									
0.75									
0.8									
0.85									
0.9					CS110_0.9-1				
0.95								0.0	
1				TP terminated at 1.0 mbgl					
1.05									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID CS114

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 03.08.2022
TOTAL DEPTH 1.1 mbgl
DIAMETER NA

UTM Easting 364322
UTM Northing 6324003
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) Gravelly SAND: moderately sorted, fine to medium grained, loose, dark brown/black with coal fines, with coal angular gravels. No odour, no staining. No asbestos observed in 10L sample	CS114_0-0.1		M	0.1	Samples not marked with a 'Y' are on hold
0.05									
0.1					CS114_0.1-0.2	Y			
0.15								0.2	
0.2									
0.25									
0.3									
0.35									
0.4			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, grey with orange mottling, firm No odours or staining			M		
0.45									
0.5					CS114_0.5-0.6				
0.55								0.2	
0.6									
0.65									
0.7									
0.75									
0.8									
0.85									
0.9									
0.95									
1					CS114_1.0-1.1				
1.05								0.2	
1.1				TP terminated at 1.1 mbgl					
1.15									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID CS109

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 03.08.2022
TOTAL DEPTH 0.8 mbgl
DIAMETER NA

UTM Easting 364282
UTM Northing 6323978
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) Gravelly SAND: moderately sorted, fine to medium grained, loose, dark brown/black, trace coal fines, with coal angular gravels. No odour, no staining. No asbestos observed in 10L sample	CS109_0-0.1	Y	M	0.1	Samples not marked with a 'Y' are on hold
0.05									
0.1					CS109_0.1-0.2				
0.15								0.1	
0.2									
0.25			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, grey with orange mottling, firm No odours or staining			M		
0.3									
0.35									
0.4									
0.45									
0.5					CS109_0.5-0.6				
0.55								0.1	
0.6									
0.65									
0.7									
0.75									
0.8				TP terminated at 0.8 mbgl					
0.85									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID CS113

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 02.08.2022
TOTAL DEPTH 1.0 mbgl
DIAMETER NA

UTM Easting 364242
UTM Northing 6324021
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) Gravelly SAND: moderately sorted, fine to medium grained, loose, dark brown/black, trace coal fines, with coal angular gravels. No odour, no staining. No asbestos observed in 10L sample	CS113_0-0.1		M	0.1	Samples not marked with a 'Y' are on hold
0.1			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, grey with orange mottling, firm No odours or staining	CS113_0.1-0.2	Y	M	0.1	
0.5				Transition to grey with orange mottling	CS113_0.5-0.6			0.0	
0.9					CS113_0.9-1.0			0.1	
1				TP terminated at 1.0 mbgl					
1.05									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID CS108

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 02.08.2022
TOTAL DEPTH 1.1 mbgl
DIAMETER NA

UTM Easting 364187
UTM Northing 6323951
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) Gravelly SAND: moderately sorted, fine to medium grained, loose, dark brown/black, trace coal fines, with coal angular gravels. No odour, no staining.	CS108_0-0.1	<-- Y -->	M	0.1	PACM sample MAT01 (<10g) was collected following 10L screen
0.1					CS108_0.1-0.2	Y -->		0.2	PACM sample MAT02 (<10g) was collected following 10L screen
0.25			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, mottled pale brown to yellow, firm No odours or staining			M		
0.5					CS108_0.5-0.6			0.1	Samples not marked with a 'Y' are on hold
0.6				Transition to grey					
1					CS108_1.0-1.1			0.1	
1.1				TP terminated at 1.1 mbgl					
1.15									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID CS104

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 02.08.2022
TOTAL DEPTH 1.0 mbgl
DIAMETER NA

UTM Easting 364215
UTM Northing 6323847
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) SAND: moderately sorted, fine to medium grained, loose, brown/grey No odour or staining.	CS104_0-0.1	Y -->	M	0.3	PACM sample CS104-MAT01 (<10g) was collected following 10L screen
0.1				Transition to dark brown	CS104_0.1-0.2	Y		0.1	
0.2				(FILL) Clayey SAND: fine grained, moderately sorted, mottled pale brown to yellow/orange, firm No odours or staining			M		Samples not marked with a 'Y' are on hold
0.4					CS104_0.4-0.5	Y -->		0.1	PACM sample CS104-MAT02 (300g) was collected following 10L screen
0.5			SC	(NATURAL) Clayey SAND: medium grained, poorly sorted, mottled pale brown to yellow/orange No odours or staining					
0.9					CS104_0.9-1			0.1	
1				TP terminated at 1.0 mbgl					
1.05									

CONSULTING EARTH SCIENTISTS

TEST PIT ID CS105

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 02.08.2022
TOTAL DEPTH 0.7 mbgl
DIAMETER NA

UTM Easting 364274
UTM Northing 6323853
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) SAND: moderately sorted, fine to medium grained, loose, dark brown. No odour, no staining. No asbestos observed in 10L sample	CS105_0-0.1		M	0.5	Samples not marked with a 'Y' are on hold
0.1			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, grey with orange mottling, firm No odours or staining	CS105_0.1-0.2		M	0.3	
0.5					CS105_0.5-0.6	Y		0.2	
0.7				TP terminated at 0.7 mbgl					

CONSULTING EARTH SCIENTISTS

TEST PIT ID CS102

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 02.08.2022
TOTAL DEPTH 1.0 mbgl
DIAMETER NA

UTM Easting 364305
UTM Northing 6323793
COORD SYS GDA94

AREA Coal Stack (CS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) Gravelly SAND: moderately sorted, fine to medium grained, loose, dark brown, with coal fragments No odour or staining.	CS102_0-0.1	Y	M	0.2	Samples not marked with a 'Y' are on hold
0.05									
0.1					CS102_0.1-0.2			0.1	
0.15									
0.2									
0.25									
0.3									
0.35									
0.4				(FILL) Clayey SAND: moderately sorted, fine to coarse grained, loose, mottled orange. No odour or staining					
0.45									
0.5					CS102_0.5-0.6				
0.55								0.0	
0.6			SC	(NATURAL) Clayey SAND: medium grained, poorly sorted, mottled pale brown to yellow/orange			M		
0.65									
0.7									
0.75									
0.8									
0.85									
0.9					CS102_0.9-1				
0.95								0.0	
1				TP terminated at 1.0 mbgl					
1.05									

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID FB301

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 12.08.2022
TOTAL DEPTH 7.6 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364344.40
UTM Northing 6324159.28
COORD SYS GDA94

AREA Fire Fighting Training Area (FFTA)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Standing Water Level (mBTOC)	Samples	Analysed	Moisture	PID	Well Diagram	Additional Comments
-0.5										monument	Samples not marked with a 'Y' are on hold
0	Push Tube		SW	(FILL) Gravelly SAND: fine to coarse grained, well graded, dark brown/black, with coal fines and sub-angular coal fragments. No odour or staining		FB301_0-0.1	Y	M			
0.5						FB301_0.1-0.2					
0.5						FB301_0.5-0.6					
1			SC	(FILL) Clayey SAND: fine grained, poorly sorted, dark brown, firm No odour or staining		FB301_1-1.1					
1			SC					M			
1.5			CL	(NATURAL) Clayey SAND: fine grained, poorly sorted, firm, grey and dark orange mottling. No odours or staining		FB301_1.5-1.6				grout	
2				(NATURAL) CLAY: moderate to high plasticity, pale grey to white and dark orange		FB301_2-2.1					
2.5				No odours or staining							
3				Transition to dark orange and grey		FB301_3-3.1					
3.5										bentonite	
4	Solid Stem Auger					FB301_4-4.1					
4.5											
5						FB301_5-5.1					
5.5								W			
6						FB301_6-6.1				gravel pack	
6.5					▽						
7						FB301_7-7.1					
7.5											
				BH terminated at 7.6 mbgl							
8											

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID FB305

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

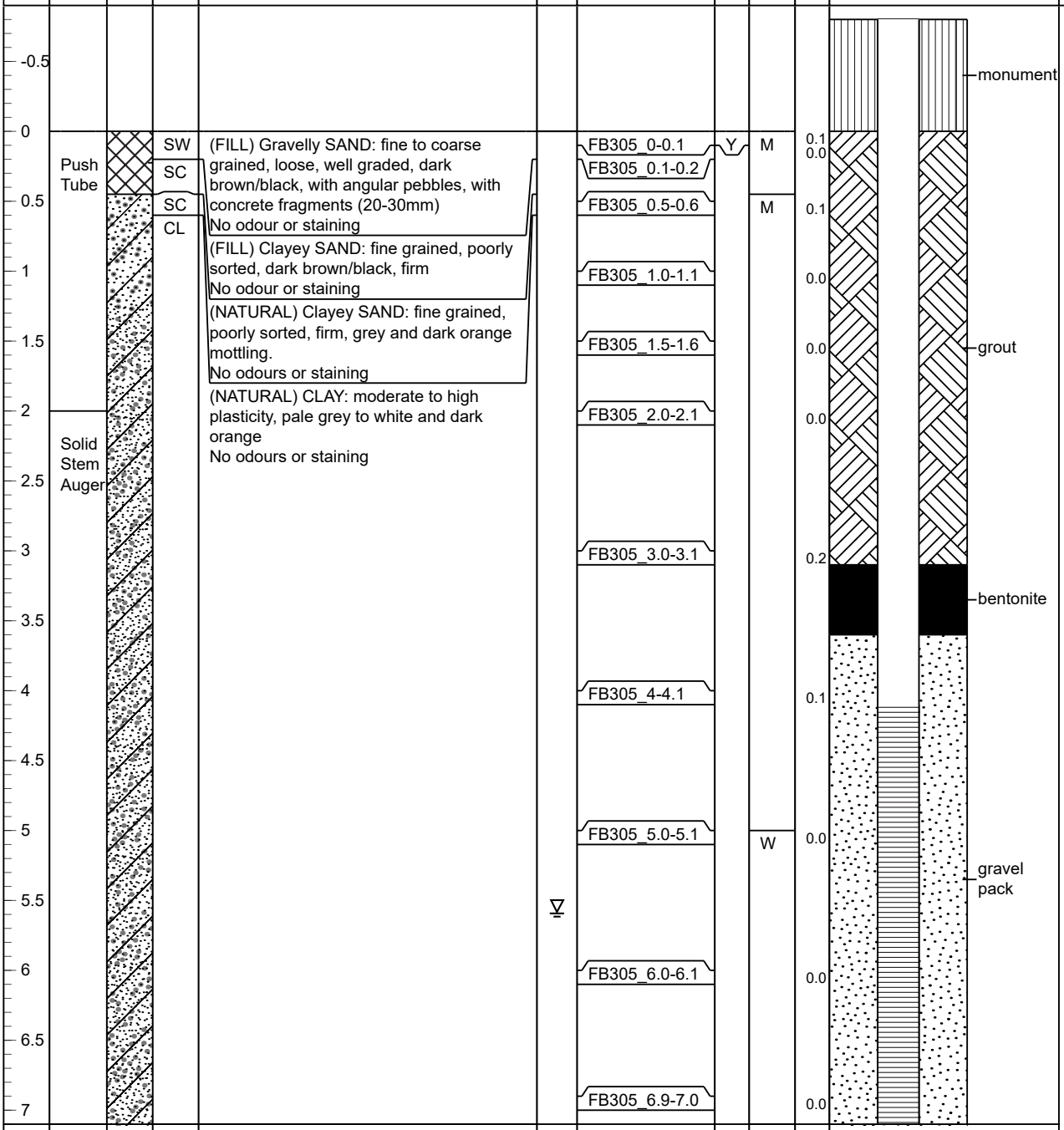
DRILLING DATE 12.08.2022
TOTAL DEPTH 7.1 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364264.52
UTM Northing 6324212.00
COORD SYS GDA94

AREA Fire Fighting Training Area (FFTA)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Push Tube	SW	(FILL) Gravelly SAND: fine to coarse grained, loose, well graded, dark brown/black, with angular pebbles, with concrete fragments (20-30mm) No odour or staining	FB305_0-0.1	Y	M	0.1	Samples not marked with a 'Y' are on hold
		SC		FB305_0.1-0.2			0.0	
0.5		SC		FB305_0.5-0.6		M	0.1	
		CL	(FILL) Clayey SAND: fine grained, poorly sorted, dark brown/black, firm No odour or staining					
1				FB305_1.0-1.1			0.0	
1.5			(NATURAL) Clayey SAND: fine grained, poorly sorted, firm, grey and dark orange mottling. No odours or staining	FB305_1.5-1.6			0.0	
2	Solid Stem Auger		(NATURAL) CLAY: moderate to high plasticity, pale grey to white and dark orange No odours or staining	FB305_2.0-2.1			0.0	
3				FB305_3.0-3.1			0.2	
4				FB305_4-4.1			0.1	
5				FB305_5.0-5.1		W	0.0	
6				FB305_6.0-6.1			0.0	
7				FB305_6.9-7.0			0.0	
7.5			BH terminated at 7.1 mbgl					



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CONSULTING EARTH SCIENTISTS

BOREHOLE ID FB306

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 12.08.2022
TOTAL DEPTH 6.7 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364253.17
UTM Northing 632232.27
COORD SYS GDA94

AREA Fire Fighting Training Area (FFTA)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Push Tube	SW	(FILL) Gravelly SAND: fine to coarse grained, loose, well graded, dark brown/black, with angular pebbles No odour or staining	FB306_0-0.1		M	0.0	Samples not marked with a 'Y' are on hold
				FB306_0.1-0.2			0.0	
0.5		SC		FB306_0.5-0.6			0.1	
		CL	(FILL) Clayey SAND: fine grained, poorly sorted, dark brown, firm No odour or staining					
1				FB306_1.0-1.1	Y		0.0	
			(NATURAL) Clayey SAND: fine grained, poorly sorted, firm, grey and dark orange mottling No odours or staining					
1.5				FB306_1.5-1.6			0.1	
	Solid Stem Auger		(NATURAL) CLAY: moderate to high plasticity, pale grey to white and dark orange No odours or staining			M		
2				FB306_2.0-2.1			0.0	
			Transition to dark orange					
3				FB306_3.0-3.1			0.0	
4				FB306_4-4.1			0.0	
5			▽	FB306_5.0-5.1			0.0	
						W		
6				FB306_6.0-6.1			0.0	
7			BH terminated at 6.7 mbgl					

Well Diagram: monument; grout; bentonite; gravel pack

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID FB309

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 12.08.2022
TOTAL DEPTH 6.8 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364232.40
UTM Northing 6324213.91
COORD SYS GDA94

AREA Fire Fighting Training Area (FFTA)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Standing Water Level (mBTOC)	Samples	Analysed	Moisture	PID	Well Diagram	Additional Comments
-0.5										monument	Samples not marked with a 'Y' are on hold
0			SW	(FILL) Gravelly SAND: fine to coarse grained, loose, well graded, dark brown/black, with angular pebbles No odour or staining		FB309_0-0.1		M	0.0		
0.5			SC			FB309_0.1-0.2			0.0		
			SC			FB309_0.5-0.6	Y		0.0		
1			CL	(FILL) Clayey SAND: fine grained, poorly sorted, dark brown, firm No odour or staining		FB309_1.0-1.1		M	0.0	grout	
1.5				(NATURAL) Clayey SAND: fine grained, poorly sorted, firm, grey and dark orange mottling No odours or staining							
2				(NATURAL) CLAY: moderate to high plasticity, pale grey to white and dark orange No odours or staining		FB309_2.0-2.1			0.0		
2.5											
3				Transition to dark orange		FB309_3.0-3.1			0.0	bentonite	
3.5											
4						FB309_4-4.1			0.0		
4.5								W			
5					▽	FB309_5.0-5.1			0.0	gravel pack	
5.5											
6						FB309_6.0-6.1			0.0		
6.5											
7				BH terminated at 6.8 mbgl							
7.5											

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID FB308

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 11.08.2022
TOTAL DEPTH 7.3 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364263.83
UTM Northing 6324182.70
COORD SYS GDA94

AREA Fire Fighting Training Area (FFTA)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Push Tube	SW	(FILL) SAND: fine to coarse grained, loose, well graded, dark brown/black No odour or staining	FB308_0-0.1	Y	M	0.1	QAQC9 & QAQC10 collected at 0.0-0.1 mbgl
				FB308_0.1-0.2			0.0	
0.5		SC	(FILL) Clayey SAND: fine grained, poorly sorted, dark brown/black, firm No odour or staining	FB308_0.5-0.6		M	0.0	
1			(NATURAL) Clayey SAND: fine grained, poorly sorted, firm, grey and dark orange mottling No odour or staining	FB308_1.0-1.1			0.1	
1.5		CL	(NATURAL) CLAY: moderate to high plasticity, pale grey to white and dark orange No odour or staining	FB308_1.5-1.6			0.0	
2				FB308_2.0-2.1			0.1	
2.5			Transition to dark orange					
3	Solid Stem Auger			FB308_3.0-3.1			0.0	Samples not marked with a 'Y' are on hold
3.5								
4				FB308_4-4.1			0.0	
4.5								
5				FB308_5.0-5.1		W	0.0	
5.5								
6				FB308_6.0-6.1			0.0	
6.5								
7							0.0	
7.5			BH terminated at 7.3 mbgl					
8								

Well Diagram: monument; grout; bentonite; gravel pack

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID FB304

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 11.08.2022
TOTAL DEPTH 7.4 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364273
UTM Northing 6324180
COORD SYS GDA94

AREA Fire Fighting Training Area (FFTA)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Push Tube	SW	(FILL) Clayey SAND: fine to coarse grained, moderately graded, orange, firm No odours or staining	FB304_0.02-0.1 FB304_0.12-0.2	Y	M	0.0 0.0	Samples not marked with a 'Y' are on hold
0.5		SC	(NATURAL) Clayey SAND: fine grained, poorly sorted, firm, grey and dark orange/red mottling No odours or staining	FB304_0.5-0.6		M	0.0	
1		CL	(NATURAL) CLAY: medium to high plasticity, grey with orange mottling No odours or staining	FB304_1-1.1			0.0	
1.5				FB304_1.5-1.6			0.0	
2				FB304_2-2.1			0.0	
2.5								
3	Solid Stem Auger		Transition to red	FB304_3-3.1			0.0	
3.5								
4				FB304_4-4.1			0.0	
4.5								
5				FB304_5-5.1			0.0	
5.5								
6				FB304_6-6.1		W	0.0	
6.5								
7				FB304_7-7.1			0.0	
7.5			BH terminated at 7.4 mbgl					
8								

Well Diagram: grout; bentonite; gravel pack

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CONSULTING EARTH SCIENTISTS

TEST PIT ID FB307

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 18.08.2022
TOTAL DEPTH 1.2 mbgl
DIAMETER NA

UTM Easting 364269
UTM Northing 6324160
COORD SYS GDA94

AREA Fire Fighting Training Area (FFTA)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SM	(FILL) SAND: moderately sorted, fine to medium grained, loose, with rocks and roots No odour, no staining. No asbestos observed in 10L sample.	FB307_0-0.1	Y	M	0.1	Samples not marked with a 'Y' are on hold
0.1			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, pale brown, loose. No odour, no staining			M	0.1	
0.2					FB307_0.1-0.2				
0.3									
0.4									
0.5				Transition to pale grey and orange mottled, firm	FB307_0.5-0.6			0.1	
0.6									
0.7									
0.8									
0.9									
1				Transition to grey and dark orange mottled	FB307_1.0-1.1			0.1	
1.1									
1.2				TP terminated at 1.2 mbgl					
1.3									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID FB303

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 18.08.2022
TOTAL DEPTH 1.5 mbgl
DIAMETER NA

UTM Easting 364292
UTM Northing 6324160
COORD SYS GDA94

AREA Fire Fighting Training Area (FFTA)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) Gravelly SAND: moderately sorted, fine to medium grained, brown/grey, loose, with bricks No odour, no staining. No asbestos observed in 10L sample.	FB303_0-0.1	Y	M	0.1	Samples not marked with a 'Y' are on hold
0.1									
0.2			CL	(FILL) CLAY: high plasticity, orange No odour, no staining	FB303_0.2-0.3			0.1	
0.3									
0.4									
0.5			SC	(NATURAL): Clayey SAND: moderately grained, poorly sorted, loose, pale brown No odours or stainin	FB303_0.5-0.6		M	0.1	
0.6									
0.7									
0.8									
0.9									
1					FB303_1.0-1.1			0.1	
1.1				Transition to pale grey with mottled orange, firm					
1.2									
1.3									
1.4					FB303_1.4-1.5			0.1	
1.5				TP terminated at 1.5 mbgl					
1.6									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID FB302

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 18.08.2022
TOTAL DEPTH 1.8 mbgl
DIAMETER NA

UTM Easting 364322
UTM Northing 6324140
COORD SYS GDA94

AREA Fire Fighting Training Area (FFTA)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SW	(FILL) Clayey SAND: moderately sorted, fine to medium grained, dark brown/black, loose, with gravel fragments No odour, no staining. No asbestos observed in 10L sample.	FB302_0-0.1	Y	M	0.2	Samples not marked with a 'Y' are on hold
0.1									
0.2				(FILL) Clayey SAND: moderately sorted, fine to coarse grained, pale brown, loose No odours or staining	FB302_0.2-0.3			0.1	
0.3									
0.4									
0.5									
0.6			SW	With coal fines	FB302_0.5-0.6			0.1	
0.7									
0.8									
0.9									
1					FB302_1.0-1.1			0.1	
1.1									
1.2									
1.3									
1.4					FB302_1.4-1.5			0.1	
1.5			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, loose, pale brown No odours or staining			M		
1.6									
1.7				Transition to pale grey and dark orange mottled, loose	FB302_1.7-1.8			0.1	
1.8				TP terminated at 1.8 mbgl					
1.9									

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CONSULTING EARTH SCIENTISTS

TEST PIT ID G501

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 18.08.2022
TOTAL DEPTH 1.1 mbgl
DIAMETER NA

UTM Easting 364105
UTM Northing 6324078
COORD SYS GDA94

AREA Fire Fighting Training Area (FFTA)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	Graphic Log	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Excavator		SC	(FILL) Clayey SAND: moderately sorted, fine to medium grained, loose, dark brown/black No odour, no staining. No asbestos observed in 10L sample.	G501_0-0.1	Y	M	0.1	Plastic fibre piece observed
0.05									
0.1					G501_0.1-0.2				
0.15								0.1	
0.2									
0.25									
0.3									
0.35									
0.4									
0.45									Samples not marked with a 'Y' are on hold
0.5			SC	(NATURAL) Clayey SAND: moderately grained, poorly sorted, grey and orange mottled, firm No odours or staining	G501_0.5-0.6		M		
0.55								0.1	
0.6									
0.65									
0.7									
0.75									
0.8									
0.85									
0.9									
0.95									
1					G501_1.0-1.1				
1.05								0.1	
1.1				TP terminated at 1.1 mbgl					
1.15									

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID GS502

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 11.08.2022
TOTAL DEPTH 6.4 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364105.90
UTM Northing 6324086.63
COORD SYS GDA94

AREA Gardeners Shed (GS)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	USCS	Material Description	Standing Water Level (mBTOC)	Samples	Analysed	Moisture	PID	Well Diagram	Additional Comments
0	Coring	CON	Concrete							Samples not marked with a 'Y' are on hold
	Push tube	SW	(FILL) GRAVEL: moderate sized. angular, dark brown/black, road base No odours or staining		GS502_0.15-0.2	Y	M	0.0		
					GS502_0.25-0.3			0.0		
0.5		SC	(FILL) Gravelly Clayey SAND: fine grained, poorly sorted, firm, grey and dark orange mottling No odours or staining		GS502_0.65-0.7		M	0.0		
1			(NATURAL) Clayey SAND: fine to moderately grained, poorly sorted, white and dark orange mottled No odours or staining		GS502_1.0-1.1			0.0	grout	
1.5					GS502_1.5-1.6			0.0		
2					GS502_2.0-2.1			0.0		
2.5			(NATURAL) CLAY: moderate plasticity, white No odours or staining						bentonite	
3					GS502_3.0-3.1			0.0		
3.5			Transition to white and dark orange							
4					GS502_4-4.1			0.0		
4.5	Solid Stem Auger		Transition to high plasticity						gravel pack	
5				▽	GS502_5.0-5.1		W	0.0		
5.5										
6					GS502_6.0-6.1			0.0		
6.5			BH terminated at 6.4 mbgl							

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CONSULTING EARTH SCIENTISTS

BOREHOLE ID WT503

PROJECT NUMBER CES170608-GPM
PROJECT NAME EI - Waratah Super Battery
CLIENT Generator Property Management Pty Ltd
ADDRESS 301 Scenic Drive, Doyalson NSW 2262

DRILLING DATE 11.08.2022
TOTAL DEPTH 8.1 mbgl
DIAMETER 150mm
CASING uPVC
DRILL COMPANY NUMAC

UTM Easting 364128.38
UTM Northing 6324107.02
COORD SYS GDA94

AREA Water Tank (WT)

LOGGED BY C.Rotsides
CHECKED BY V. Arias

Depth (mbgl)	Drilling Method	USCS	Material Description	Samples	Analysed	Moisture	PID	Additional Comments
0	Push tube	Asph	Asphalt	WT503_0.1-0.2	Y	M	0.2	Samples not marked with a 'Y' are on hold
		SP	(FILL) SAND: fine to coarse grained, moderately sorted, loose, pale brown/yellow	WT503_0.2-0.3			0.2	
0.5		SC	No odours or staining	WT503_0.65-0.7			0.1	
		SC	(FILL) Clayey SAND: moderately sorted, poorly sorted, grey and orange mottled, firm			M		
1			No odours or staining	WT503_1.0-1.1			0.1	
			(NATURAL) Clayey SAND: fine to moderately grained, poorly sorted, grey and orange mottled, with angular pebbles					
1.5			No odours or staining	WT503_1.5-1.6			0.1	
	Solid Stem Auger		(NATURAL) CLAY: high plasticity, grey with orange mottling	WT503_2.0-2.1			0.2	
2			No odours or staining					
2.5								
3			Transition to dark orange/red	WT503_3.0-3.1			0.1	
3.5			(NATURAL) Gravelly Clayey SAND: fine to coarse grained, poorly sorted, pale orange, hard, with pebbles				0.1	
4			No odours or staining	WT503_4-4.1			0.1	
4.5								
5				WT503_5.0-5.1			0.0	
5.5								
6				WT503_6.0-6.1			0.1	
6.5						W		
7				WT503_7.0-7.1			0.1	
7.5								
8				WT503_7.9-8.0			0.1	
			BH terminated at 8.1 mbgl					

Standing Water Level (mBTOC): ▽

Well Diagram: grout; bentonite; gravel pack

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Appendix G

Groundwater Sampling Field Data Sheets

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GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	South
Sampler (s):	V Arias **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	CF-MW05	**Sample ID:**	CF-MW05
Purging Date:	22-Aug-22	**Sampling Date:**	22-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	YES/**NO**
Internal obstructions in casing:	YES/**NO**	Well ID visible:	YES/**NO**
Standing water, vegetation around monument:	**YES**/NO	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	3.14 (mBTOC)	Temperature:	14 °C		
Total Well Depth:	4.77 (mBTOC)				
Well volume:	3.20 (L)				
Water level after purging:	3.72 (mBTOC)	**Clear**		Partly Cloudy	Overcast
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	7 (L)	Calm		**Slight breeze**	Moderate Breeze
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
9:56	3.46	1	1.21	515	4.59	144	18.8	580	620	Brown, turbid, no odour
9:58	3.47	2	0.41	516	4.56	139.7	18.8	490	600	Pale brown, slightly turbid, no odour
10:01	3.49	3	0.28	538	4.43	133.7	18.8	193	402	Colourless, clear, no odour
10:03	3.52	4	0.22	559	4.12	192.3	18.8	111.5	414	Colourless, clear, no odour
10:06	3.52	6	0.17	559	4.12	192	18.8	73.8	420	Colourless, clear, no odour
10:08	3.52	7	0.15	572	4.12	190	18.8	68.8	420	Colourless, clear, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	West
Sampler (s):	V Arias **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	CF-MW06	**Sample ID:**	CF-MW06 & QAQC17 & QAQC18
Purging Date:	22-Aug-22	**Sampling Date:**	22-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	YES/**NO**
Standing water, vegetation around monument:	**YES**/NO	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	2.56 (mBTOC)	Temperature:	19 °C		
Total Well Depth:	6.18 (mBTOC)				
Well volume:	7.11 (L)				
Water level after purging:	3.15 (mBTOC)	**Clear**		Partly Cloudy	Overcast
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	8 (L)	Calm		**Slight breeze**	Moderate Breeze
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
11:32	2.97	1	2.46	477.9	3.95	182	18.4	1846	355	Brown, turbid, no odour
11:36	3.05	3	1.83	476.2	3.96	208.9	18.2	314	355	Pale brown, slightly turbid, no odour
11:40	3.07	5	1.86	467.3	3.99	228.3	18	142	352	Colourless, clear, no odour
11:43	3.07	7	1.85	467.9	3.99	239.6	18	102	352	Colourless, clear, no odour
11:44	3.07	8	1.85	467.6	3.99	239.3	17.9	93.9	351	Colourless, clear, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	AEC4
Sampler (s):	V Arias **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	A4407	**Sample ID:**	A4407
Purging Date:	22-Aug-22	**Sampling Date:**	22-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	3.825 (mBTOC)	Temperature:	20 °C		
Total Well Depth:	7 (mBTOC)				
Well volume:	6.23 (L)				
Water level after purging:	6.015 (mBTOC)	**Clear**		Partly Cloudy	Overcast
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5 (L)	**Calm**		Slight breeze	Moderate Breeze
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
14:03	4.31	1	4.56	390.1	5.1	112.7	20.6	70	277	Pale brown, slightly turbid, no odour
14:05	4.33	3	4.3	389.4	5.12	105.1	20.3	75.28	278	Colourless, clear , no odour
14:07	4.34	4	4.37	388	5.11	104.5	20.1	89.42	278	Colourless, clear , no odour
14:09	4.34	5	4.36	385	5.1	104.2	20	138.6	277	Colourless, clear , no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	AEC4
Sampler (s):	V Arias **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	AEC4-MW01	**Sample ID:**	AEC4-MW01
Purging Date:	22-Aug-22	**Sampling Date:**	22-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	**YES**/NO
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	**YES**/NO Sampling tubing	Well ID visible:	YES/**NO**
Standing water, vegetation around monument:	**YES**/NO	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	4.19 (mBTOC)	Temperature:	20 °C		
Total Well Depth:	8.865 (mBTOC)				
Well volume:	9.18 (L)				
Water level after purging:	4.52 (mBTOC)	**Clear**		Partly Cloudy	Overcast
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	6 (L)	**Calm**		Slight breeze	Moderate Breeze
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
15:37	4.515	1	0.39	337	4.49	162.5	20	103.7	242	Colourless, clear no odour
15:39	4.54	2	0.2	337.1	4.49	167.3	20	85.1	242	Pale brown, slightly turbid, no odour
15:42	4.59	3	0.12	338	4.51	167.5	20	90.5	243	White/Milky colour, no odour
15:44	4.59	4	0.007	338.9	4.54	160.6	20.1	96.4	243	White/Milky colour, no odour
15:47	4.59	6	0.004	339.6	4.54	160	20.1	88.4	244	White/Milky colour, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	AEC4
Sampler (s):	V Arias **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	AEC4-MW02	**Sample ID:**	AEC4-MW02
Purging Date:	22-Aug-22	**Sampling Date:**	22-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	**YES**/NO
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	**YES**/NO Sampling tubing	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	**YES**/NO	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	**YES**/NO

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	4.78 (mBTOC)	Temperature:	20 °C		
Total Well Depth:	9.95 (mBTOC)				
Well volume:	10.15 (L)				
Water level after purging:	5.75 (mBTOC)	**Clear**		Partly Cloudy	Overcast
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	6 (L)	**Calm**		Slight breeze	Moderate Breeze
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
17:12	5.17	2	8.27	555	4.55	108	17	63	229	White/Milky colour, slight fuel odour
17:14	5.18	3	3.25	317.6	4.58	58.1	18	61.4	227	White/Milky colour, slight fuel odour
17:18	5.18	4	2.5	652	4.58	35	18	69	466	White/Milky colour, slight fuel odour
17:20	5.19	5	2.25	646	4.6	32	18.2	79	462	White/Milky colour, slight fuel odour
17:22	5.19	6	2.2	642	4.6	31	18.2	69	460	White/Milky colour, slight fuel odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	AEC4
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	AEC4-MW03	**Sample ID:**	AEC4-MW03
Purging Date:	23-Aug-22	**Sampling Date:**	23-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	**YES**/NO
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	**YES**/NO Sampling Tubing	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	**YES**/NO	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	3.88 (mBTOC)	Temperature:	19 °C		
Total Well Depth:	9.09 (mBTOC)				
Well volume:	10.23 (L)				
Water level after purging:	4.05 (mBTOC)	**Clear**	Partly Cloudy	Overcast	
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5 (L)	Calm	**Slight breeze**	Moderate Breeze	
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**	Showers	Rain	

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
8:46	4.17	1	2.07	397.9	4.65	214.1	20.1	4290	286	Milky brown colour, very turbid, no odour
8:50	4.17	2	0.8	396.7	4.61	223.6	20.3	5995	281	Milky brown colour, very turbid, no odour
8:52	4.17	3	0.53	384	4.65	228.4	20.3	5087	272	Milky brown colour, very turbid, no odour
8:54	4.17	4	0.4	379	4.67	231.5	20.5	4300	271	Milky brown colour, very turbid, no odour
8:56	4.17	5	0.26	373.3	4.7	235.8	20.5	1807.3	265	Milky brown colour, turbid, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Coal Stack
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	CS106	**Sample ID:**	CS106
Purging Date:	23-Aug-22	**Sampling Date:**	23-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	5.09 (mBTOC)	Temperature:	20 °C		
Total Well Depth:	8.3 (mBTOC)				
Well volume:	6.30 (L)				
Water level after purging:	6.31 (mBTOC)	**Clear**		Partly Cloudy	Overcast
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	6 (L)	Calm		**Slight breeze**	Moderate Breeze
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
9:50	5.96	1	2.07	908	5	-79.2	20.7	270	642	Clear to Pale milky colour, no odour
9:52	5.96	2	1.65	905	5	-103	20.6	142.6	642	Clear to Pale milky colour, no odour
9:54	5.96	3	1.61	905	5	-130	20.5	90.12	643	Clear to Pale milky colour, no odour
9:56	5.96	4	1.65	904	5	-173.3	20.4	67.5	643	Clear to Pale milky colour, no odour
9:58	5.96	5	1.67	901	4.99	-213.9	20.3	63.1	642	Clear to Pale milky colour, no odour
10:00	5.96	6	1.92	902	4.97	-215	20.4	63.2	642	Clear to Pale milky colour, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Coal Stack
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	CS101	**Sample ID:**	CS101
Purging Date:	23-Aug-22	**Sampling Date:**	23-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	3.28 (mBTOC)	Temperature:	19 °C		
Total Well Depth:	7.82 (mBTOC)				
Well volume:	8.91 (L)				
Water level after purging:	5.04 (mBTOC)	**Clear**		Partly Cloudy	Overcast
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5 (L)	Calm		Slight breeze	**Moderate Breeze**
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
10:56	3.41	1	3.16	2666	6.13	67	21.8	50.5	1500	Colourless, Clear, no odour
10:58	3.43	2	2.77	1878	6.06	58.2	19.8	71.27	1352	Colourless, Clear, no odour
11:00	3.43	3	2.44	1862	6.05	54.3	19.6	56.82	1351	Colourless, Clear, no odour
11:02	3.43	4	2.32	1861	6.04	1.1	19.4	31.45	1353	Colourless, Clear, no odour
11:04	3.43	5	2.26	1856	6.02	-42.3	19.3	29	1354	Colourless, Clear, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Coal Stack
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	CS117	**Sample ID:**	CS117
Purging Date:	23-Aug-22	**Sampling Date:**	23-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	2.57 (mBTOC)	Temperature:	19 °C		
Total Well Depth:	5.88 (mBTOC)				
Well volume:	6.50 (L)				
Water level after purging:	2.55 (mBTOC)	**Clear**	Partly Cloudy	Overcast	
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5 (L)	Calm	**Slight breeze**	Moderate Breeze	
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**	Showers	Rain	

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
11:46	2.8	1	0.68	651	4.94	-31	19.7	9400	474	Grey milky colour, no odour
11:50	2.74	2	0.17	650	4.94	-46.5	19.3	3881	473	Grey milky colour, no odour
11:54	2.7	3	0.07	640	4.93	-55	19.2	2386	469	Grey milky colour, no odour
11:56	2.76	4	0.03	638	4.93	-59	19.1	2099	468	Grey milky colour, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Coal Stack
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	CS116	**Sample ID:**	CS116
Purging Date:	23-Aug-22	**Sampling Date:**	23-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	6.97 (mBTOC)	Temperature:	19 °C		
Total Well Depth:	9.89 (mBTOC)				
Well volume:	5.73 (L)				
Water level after purging:	7.52 (mBTOC)	Clear		Partly Cloudy	**Overcast**
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5 (L)	Calm		**Slight breeze**	Moderate Breeze
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
12:36	7.13	1	0.73	873	4.55	-16.9	21	2212	615	Brown, very turbid, no odour
12:39	7.26	2	0.25	876	4.57	147.9	21	850	617	Brown, turbid, no odour
12:47	7.26	4	1.97	880	4.65	139.6	21.5	536	611	Brown, turbid, no odour
12:49	7.26	5	1.9	880	4.65	139.3	21	450	612	Brown, turbid, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Adjacent Lands
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	FI210	**Sample ID:**	FI210
Purging Date:	24-Aug-22	**Sampling Date:**	24-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	5.15 (mBTOC)	Temperature:	7 °C		
Total Well Depth:	7.86 (mBTOC)				
Well volume:	5.32 (L)				
Water level after purging:	6.21 (mBTOC)	Clear		Partly Cloudy	**Overcast**
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	4 (L)	Calm		**Slight breeze**	Moderate Breeze
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
8:53	5.4	1	4.07	278.8	4.37	158.6	17.8	216	210	Pale brown, turbid, no odour
8:55	5.47	2	3.51	279	4.34	166.7	18.1	174	209	Pale brown, turbid, no odour
8:57	5.51	3	3.34	277.9	4.32	186	17.8	174.5	209	Pale brown, turbid, no odour
8:59	5.62	4	3.25	277.9	4.31	197.4	17.9	250	209	Pale brown, turbid, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Coal Stack
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	CS112	**Sample ID:**	CS112
Purging Date:	24-Aug-22	**Sampling Date:**	24-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	4.62 (mBTOC)	Temperature:	8 °C		
Total Well Depth:	7.55 (mBTOC)				
Well volume:	5.75 (L)				
Water level after purging:	5.27 (mBTOC)	Clear		Partly Cloudy	**Overcast**
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5 (L)	Calm		**Slight breeze**	Moderate Breeze
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
9:54	4.62	1	6.42	290.2	4.82	192.6	17.2	73	224	Colourless, clear, no odour
9:57	4.62	2	5.88	287.8	4.66	207.6	17.5	57.6	57.6	Colourless, clear, no odour
9:59	4.62	3	5.75	291.6	4.53	218.6	17.9	57	57	Colourless, clear, no odour
10:01	4.62	4	5.7	283.7	4.45	228.6	18	49	49	Colourless, clear, no odour
10:03	4.62	5	5.67	281.4	4.43	228	18	48	48	Colourless, clear, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Garden Shed
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	GS502	**Sample ID:**	GS502&QAQC18&QAQC19
Purging Date:	24-Aug-22	**Sampling Date:**	24-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	YES/**NO**
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/NO **NA**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	4.96 (mBTOC)	Temperature:	8 °C		
Total Well Depth:	6.53 (mBTOC)				
Well volume:	3.08 (L)				
Water level after purging:	5.75 (mBTOC)	Clear	**Partly Cloudy**	Overcast	
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	4 (L)	Calm	Slight breeze	**Moderate Breeze**	
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**	Showers	Rain	

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
10:43	4.811	1	3.32	305.3	5.09	10.2	18.1	649.2	229	Colourless, clear, no odour
10:49	4.81	2	2.68	296	5.1	-37.7	18.6	281	219	Colourless, clear, no odour
10:52	4.75	3	2.4	294.3	5.12	-52	18.6	358	218	Colourless, clear, no odour
10:54	4.75	4	2.31	293	5.12	-55	18.4	369	218	Colourless, clear, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Water Tank
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	WT503	**Sample ID:**	WT503
Purging Date:	24-Aug-22	**Sampling Date:**	24-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	YES/**NO**
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/NO **NA**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	4.74 (mBTOC)	Temperature:	10 °C		
Total Well Depth:	7.98 (mBTOC)				
Well volume:	6.36 (L)				
Water level after purging:	5.63 (mBTOC)	**Clear**	Partly Cloudy	Overcast	
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5 (L)	Calm	Slight breeze	**Moderate Breeze**	
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**	Showers	Rain	

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
11:36	5.4	1	3.53	664	4.68	-40	20.1	233	498	Grey milky colour, no odour
11:38	5.41	2	2.74	670	4.52	-48.7	20.1	448	469	Grey milky colour, no odour
11:40	5.4	3	2.82	602	4.58	-53	20.1	298	418	Grey milky colour, no odour
11:43	5.43	4	2.98	553	4.66	-58.4	20	234	398	Grey milky colour, no odour
11:46	5.43	5	3.18	556	4.62	-58	20	140	395	Grey milky colour, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Fire Fighting Training Area
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	FB304	**Sample ID:**	FB304
Purging Date:	24-Aug-22	**Sampling Date:**	24-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	YES/**NO**
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/NO **NA**
Water between PVC and protective casing:	**YES**/NO	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	5.12 (mBTOC)	Temperature:	10 °C		
Total Well Depth:	7.4 (mBTOC)				
Well volume:	4.48 (L)				
Water level after purging:	5.26 (mBTOC)	**Clear**		Partly Cloudy	Overcast
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5 (L)	Calm		Slight breeze	**Moderate Breeze**
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
12:57	5.06	1	4:33	552	5.02	-374	19.6	5300	400	Dark brown, very turbid, no odour
12:59	5.09	2	0.52	583	4.96	-411.2	19.8	3763	433	Dark brown, very turbid, no odour
13:02	5.07	3	0.37	662	4.87	-410	19.9	2003	487	Dark brown, very turbid, no odour
13:05	5.07	4	0.24	761	4.7	-417.3	19.7	1250	524	Dark brown, very turbid, no odour
13:07	5.15	5	0.16	761	4.71	-424	19.9	856	557	Dark brown, very turbid, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Fire Fighting Training Area
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	FB301	**Sample ID:**	FB301
Purging Date:	24-Aug-22	**Sampling Date:**	24-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	YES/**NO**
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	6.53 (mBTOC)	Temperature:	18.5 °C		
Total Well Depth:	8.37 (mBTOC)				
Well volume:	3.61 (L)				
Water level after purging:	5.57 (mBTOC)	**Clear**		Partly Cloudy	Overcast
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5.5 (L)	Calm		Slight breeze	**Moderate Breeze**
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
13:37	6.55	1	0:00	393	5.53	324	19	984	277	Grey/white milky colour, no odour
13:39	6.58	2	0.94	366	5.36	354	19.2	1626	345	Grey/white milky colour, no odour
13:42	6.59	2.5	1.29	323	5	321	19.2	502	232	Grey/white milky colour, no odour
13:45	6.57	3.5	1.54	305	4.8	361	19.1	339	222	Light brown, clear, no odour
13:48	6.66	5	1.36	294.6	4.65	294	18.8	223	218	Colourless, clear, no odour
13:50	6.66	5.5	1.28	294.7	4.65	295	18.8	252	218	Colourless, clear, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Fire Fighting Training Area
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	FB308	**Sample ID:**	FB308
Purging Date:	24-Aug-22	**Sampling Date:**	24-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	YES/**NO**
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	5.44 (mBTOC)	Temperature:	17 °C		
Total Well Depth:	7.45 (mBTOC)				
Well volume:	3.95 (L)				
Water level after purging:	5.84 (mBTOC)	**Clear**	Partly Cloudy	Overcast	
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5 (L)	Calm	Slight breeze	**Moderate Breeze**	
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**	Showers	Rain	

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
14:18	5.77	1	0.8	1822	5.92	-30	18.7	1530	357	Brown, very turbid, no odour
14:21	5.79	2	0.45	1850	5.88	-180	19	2565	1360	Brown, very turbid, no odour
14:23	5.85	3	0.28	1720	5.79	-553	19.1	4085	1880	Brown, very turbid, no odour
14:25	5.88	4	0.07	1570	5.8	-541.6	19.2	5821	1162	Brown, very turbid, no odour
14:27	5.88	5	0.04	1599	5.81	-541.9	19.2	6161	1161	Brown, very turbid, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Fire Fighting Training Area
Sampler (s):	V Arias/ A. Crabtree **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	FB305	**Sample ID:**	FB305
Purging Date:	24-Aug-22	**Sampling Date:**	24-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	5.59 (mBTOC)	Temperature:	10 °C		
Total Well Depth:	7.21 (mBTOC)				
Well volume:	3.18 (L)				
Water level after purging:	5.72 (mBTOC)	**Clear**	Partly Cloudy	Overcast	
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	6 (L)	Calm	Slight breeze	**Moderate Breeze**	
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**	Showers	Rain	

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
14:56	5.63	1	3.52	1159	5.69	-227	17.9	10499	871	Brown, very turbid, no odour
15:00	5.63	2	2.84	1355	5.75	-269	17.9	12433	880	Brown, very turbid, no odour
15:03	5.63	3	2.42	1160	5.74	-308	18.1	12690	867	Brown, very turbid, no odour
15:05	5.63	4	2.36	1143	5.71	-311.6	18.1	12860	852	Brown, very turbid, no odour
15:09	5.63	5	2.01	1043	5.58	-324.3	18.2	12897	804	Brown, very turbid, no odour
15:12	5.63	6	2.14	1067	5.53	-334	18.2	12312	797	Brown, very turbid, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

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GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Fire Fighting Training Area
Sampler (s):	V Arias **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	FB309	**Sample ID:**	FB309&QAQC21&QAQC22
Purging Date:	25-Aug-22	**Sampling Date:**	25-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	4.86 (mBTOC)	Temperature:	18 °C		
Total Well Depth:	7.44 (mBTOC)				
Well volume:	5.07 (L)				
Water level after purging:	5.06 (mBTOC)	**Clear**		Partly Cloudy	Overcast
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5 (L)	Calm		**Slight breeze**	Moderate Breeze
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
12:08	5.06	1	1.88	564	5.9	-430	19.9	2030	412	Brown, very turbid, no odour
12:11	5.085	2	0.34	561	5.86	-485	19.9	281	405	Light brown, very turbid, no odour
12:14	5.07	3	0.47	562	5.71	-429	19.5	846	373	Brown, very turbid, no odour
12:16	5.08	4	0.56	507	5.67	-427	19.2	861	368	Brown, very turbid, no odour
12:18	5.08	5	0.5	504	5.7	-431	19.1	1059	368	Brown, very turbid, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

CONSULTING EARTH SCIENTISTS

GROUNDWATER FIELD DATA SHEET

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Location:**	Fire Fighting Training Area
Sampler (s):	V Arias **Signature(s):**	**Project Manager:**	T. Goodbody
BH ID:	FB306	**Sample ID:**	FB306
Purging Date:	25-Aug-22	**Sampling Date:**	25-Aug-22

Well Status

Well damaged:	YES/**NO**	Well locked:	YES/**NO**
Cement footing damaged:	YES/**NO**	Cap on PVC casing:	**YES**/NO
Internal obstructions in casing:	YES/**NO**	Well ID visible:	**YES**/NO
Standing water, vegetation around monument:	YES/**NO**	Monument damaged:	YES/**NO**
Water between PVC and protective casing:	YES/**NO**	Odours from groundwater:	YES/**NO**

Well purged to dry?	YES/**NO**	Weather Conditions			
Standing Water Level (SWL):	5.02 (mBTOC)	Temperature:	18 °C		
Total Well Depth:	6.84 (mBTOC)				
Well volume:	3.57 (L)				
Water level after purging:	5.23 (mBTOC)	**Clear**		Partly Cloudy	Overcast
Water level at time of sampling:	see below (mBTOC)				
Volume of water purged:	5 (L)	Calm		**Slight breeze**	Moderate Breeze
Purging equipment:	Pump / **micro-Purging** / Bailer / Foot Valve	Windy			
Sampling equipment:	**Pump** / Bailer Bailer / Foot Valve	**Fine**		Showers	Rain

Purging Details

Elapsed time (min)	Water level mBTOC	Cumulative volume (L)	DO (mg.L^{-1})	EC (uS.cm^{-1})	pH -	Eh mV	Temp. (°C)	Turbidity (NTU)	TDS (mg/L)	Comments
13:10	5.26	1	0.29	1161	6.46	-469	19.9	5549	830	Brown, very turbid, no odour
13:12	5.27	2	0.006	1146	6.5	-519	19.7	3754	828	Brown, very turbid, no odour
13:14	5.31	3	0.01	1140	6.42	-533	19.6	3501	829	Brown, very turbid, no odour
13:16	5.32	4	0.03	1130	6.22	-538	19.6	3240	820	Brown, very turbid, no odour
13:18	5.32	5	0.05	1117	6.21	-537	19.6	3630	813	Brown, very turbid, no odour

Groundwater field parameters at the end of purging to be marked "Field Measurements".

Appendix H

Sediment and Surface Water Sampling Field Data Sheets

CONSULTING EARTH SCIENTISTS

FIELD DATA SHEET : Sediment Description

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Date:**	23/08/2022
Sampler (s):	VA **Signature(s):**	**Project Manager:**	T. Goodbody

Sample ID	Location	Date	Sediments Description
SD-1	Water Pond	23/08/2022	Sandy clay, low plasticity,dark brown/brown, sand is fine,Very soft
SD-2	Water Pond	23/08/2022	Sandy clay, low plasticity,dark brown/brown, sand is fine,Very soft

CONSULTING EARTH SCIENTISTS

FIELD DATA SHEET : Surface-Water Monitoring

Client:	**Generator property Management (GPM)**	**CES Project Code:**	CES170608-GPM-DO
Project:	**Munmorah Battery Site**	**Date:**	23/08/2022
Sampler (s):	VA **Signature(s):**	**Project Manager:**	T. Goodbody

Sample ID	Location	Date	DO $mg.l^{-1}$	EC $uS.cm^{-1}$	pH -	Eh mV	Temp. ^{o}C	Turbidity NTU	TDS mg/L	Comments (flow conditions, water odour, algal growth, debris, etc.)
SW-1	Western Settling Basin	44796	7.47	192.4	7.01	136.4	13.7	11.34	160	Colourless, clear, no odour
SW-2	Water Pond	44796	9	129.4	7.27	134.5	11.9	35.79	112	Colourless, clear, no odour

Appendix I

Results and QA/QC Tables

Table A: Soil & Sediments Analytical Results

Area of Environmental Concern			HSL D (sand 2-<4m)	HIL D	ESL/EIL Commercial/ Industrial	The coal washery rejects order 2014 (Absolute Maximum Concentration)	CSA	CSA	CSA	CSA	CSA	CSA	CSA	CSA	CSA	CSA	CSA	CSA	CSA	CSA
Sample Location							CS110	CS109	CS111	CS107	CS104	CS104	CS104	CS108	MAT01	MAT02	CS105	CS113	CS102	CS103
Date Sampled							2-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	2-Aug-22	2-Aug-22	2-Aug-22	2-Aug-22	2-Aug-22	2-Aug-22	2-Aug-22	2-Aug-22	2-Aug-22	4-Aug-22
Depth							0-0.1	0-0.1	0.0-0.1	0.5-0.6	0.1-0.2	0-0.1	0.4-0.5	0.0-0.1	0.0-0.1	0.1-0.2	0.5-0.6	0.1-0.2	0.0-0.1	0.1-0.2
Laboratory report							302231	302231	302231	302231	302231	302231	302231	302231	302231	302231	302231	302231	302231	302351
Parameters	**Unit**	**PQL**																		
Perfluorobutanesulfonic acid	µg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1					1+	<0.1	0.1	0.2	<0.1	-	-	<0.1	-	-	<0.1	<0.1	1.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1			Direct: 1,000 / Indirect:10		0.9	<0.1	1.8	0.4	0.7	-	-	2.8	-	-	0.1	<0.1	1.7	<0.1
Perfluorodecanesulfonic acid	µg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	-	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	-	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.2					0.3	0.2	0.3	0.6	<0.2	-	-	<0.2	-	-	<0.2	<0.2	0.8	<0.2
Perfluorohexanoic acid	µg/kg	0.1					0.3	0.1	0.2	0.6	<0.1	-	-	<0.1	-	-	0.1	<0.1	1	<0.1
Perfluoroheptanoic acid	µg/kg	0.1					0.1	<0.1	<0.1	0.2	<0.1	-	-	<0.1	-	-	<0.1	<0.1	0.4	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.1		50,000	Direct: 10,000		0.5	<0.1	<0.1	0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	0.3	<0.1
Perfluorononanoic acid	µg/kg	0.1					<0.1	<0.1	0.4	0.3	6.6	-	-	0.4	-	-	<0.1	<0.1	0.2	<0.1
Perfluorodecanoic acid	µg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	0.5					<0.5	<0.5	<0.5	<0.5	4	-	-	0.7	-	-	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	0.5					<0.5	<0.5	<0.5	<0.5	1	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	5					<5	<5	<5	<5	<5	-	-	<5	-	-	<5	<5	<5	<5
4:2 FTS	µg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	0.1					<0.1	<0.1	<0.1	0.1	0.5	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	0.2					<0.2	<0.2	<0.2	<0.2	0.4	-	-	<0.2	-	-	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	-	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	1					<1	<1	<1	<1	<1	-	-	<1	-	-	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	1					<1	<1	<1	<1	<1	-	-	<1	-	-	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	1					<1	<1	<1	<1	<1	-	-	<1	-	-	<1	<1	<1	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1					<1	<1	<1	<1	<1	-	-	<1	-	-	<1	<1	<1	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5					<5	<5	<5	<5	<5	-	-	<5	-	-	<5	<5	<5	<5
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	-	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	-	<0.2	<0.2	<0.2	<0.2
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1		20,000			1.9	<0.1	1.9	0.6	0.7	-	-	2.8	-	-	0.1	<0.1	2.8	<0.1
TRH C6 - C9	mg/kg	25					<25	<25	<25	<25	<25	-	-	<25	-	-	<25	<25	<25	<25
TRH C6 - C10	mg/kg	25			215		<25	<25	<25	<25	<25	-	-	<25	-	-	<25	<25	<25	<25
Fraction 1 - BTEX	mg/kg	25	630				<25	<25	<25	<25	<25	-	-	<25	-	-	<25	<25	<25	<25
Benzene	mg/kg	0.2	3		75		<0.2	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	-	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	NL		135		<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	1	NL		165		<1	<1	<1	<1	<1	-	-	<1	-	-	<1	<1	<1	<1
m+p-xylene	mg/kg	2	NL				<2	<2	<2	<2	<2	-	-	<2	-	-	<2	<2	<2	<2
o-Xylene	mg/kg	1	NL				<1	<1	<1	<1	<1	-	-	<1	-	-	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	1	NL		180		<1	<1	<1	<1	<1	-	-	<1	-	-	<1	<1	<1	<1
												-	-		-	-				
TRH C10 - C14	mg/kg	50					130	130	<50	93	<50	-	-	<50	-	-	<50	<50	84	<50
TRH C15 - C28	mg/kg	100					560	590	140	380	<100	-	-	280	-	-	<100	<100	470	140
TRH C29 - C36	mg/kg	100					220	220	<100	120	<100	-	-	130	-	-	<100	<100	210	<100
TRH >C10-C16	mg/kg	50			170		180	190	<50	140	<50	-	-	<50	-	-	<50	<50	130	<50
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	NL				180	190	<50	140	<50	-	-	<50	-	-	<50	<50	130	<50
TRH >C16-C34	mg/kg	100			1,700		660	710	170	420	<100	-	-	400	-	-	<100	<100	590	180
TRH >C34-C40	mg/kg	100			3,300		120	<100	<100	<100	<100	-	-	<100	-	-	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	50					960	900	170	560	<50	-	-	400	-	-	<50	<50	720	180
Naphthalene	mg/kg	0.1	NL		370		2.1	2	<0.1	1.8	0.1	-	-	0.1	-	-	<0.1	<0.1	1.2	0.3
Acenaphthylene	mg/kg	0.1					<0.1	0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	0.1	<0.1
Acenaphthene	mg/kg	0.1					0.1	0.2	<0.1	0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1					0.1	0.2	<0.1	0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1					3.3	3.8	0.2	2.9	0.5	-	-	0.4	-	-	<0.1	<0.1	2.7	0.9
Anthracene	mg/kg	0.1					0.6+	0.3	<0.1	0.3	<0.1	-	-	<0.1	-	-	<0.1	<0.1	0.3	<0.1
Fluoranthene	mg/kg	0.1					1.5	1.6	0.1	1.2	0.4	-	-	0.2	-	-	<0.1	<0.1	1.2	0.5
Pyrene	mg/kg	0.1					1.7+	1.1	0.1	0.9	0.4	-	-	0.2	-	-	<0.1	<0.1	0.9	0.3
Benzo(a)anthracene	mg/kg	0.1					0.8	0.9	<0.1	0.7	0.2	-	-	0.1	-	-	<0.1	<0.1	0.7	0.6
Chrysene	mg/kg	0.1					0.9	1	0.1	0.8	0.2	-	-	0.2	-	-	<0.1	<0.1	0.8	0.3
Benzo(b,j+k)fluoranthene	mg/kg	0.2					0.7	0.7	<0.2	0.6	0.4	-	-	<0.2	-	-	<0.2	<0.2	0.6	0.2
Benzo(a)pyrene	mg/kg	0.1			0.7		0.3	0.4	0.08	0.2	0.2	-	-	0.08	-	-	<0.05	<0.05	0.3	0.09
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1					0.1	0.1	<0.1	<0.1	0.2	-	-	<0.1	-	-	<0.1	<0.1	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1					0.2	0.2	<0.1	0.2	0.1	-	-	<0.1	-	-	<0.1	<0.1	0.2	<0.1
Total +vePAH's	mg/kg	0.05		4,000			11	13	0.63	9.8	2.7	-	-	1.2	-	-	<0.05	<0.05	9.1	3.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5		40			0.5	0.6	<0.5	<0.5	<0.5	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Arsenic	mg/kg	4		3,000	160		<4	<4	<4	<4	<4	-	-	5	-	-	<4	7	<4	<4
Cadmium	mg/kg	0.4		900			<0.4	<0.4	0.7	<0.4	<0.4	-	-	0.8	-	-	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	1					12	9	28	15	19	-	-	39	-	-	12	17	30	4
Copper	mg/kg	1		240,000	320		48	11	54	11	73	-	-	150	-	-	2	<1	29	7
Lead	mg/kg	1		1,500	1,800		95+	50	170	120	39	-	-	100	-	-	27	14	130	13
Mercury	mg/kg	0.1		730			0.2	<0.1	<0.1	<0.1	<0.1	-	-	0.1	-	-	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	1		6,000	460		9	6	14	6	19	-	-	26	-	-	2	<1	27	3
Zinc	mg/kg	1		400,000	1,200		83	190	300	170	150	-	-	220	-	-	97	1	960	69
Boron	mg/kg	3		300,000			<3	<3	5	<3	6	-	-	9	-	-	<3	<3	<3	-
Barium	mg/kg	1					39	36	40	37	42	-	-	57	-	-	5	3	38	-
Beryllium	mg/kg	1		500			<1	<1	<1	<1	<1	-	-	<1	-	-	<1	<1	<1	-
Cobalt	mg/kg	1		4,000			1	2	3	2	5	-	-	7	-	-	<1	<1	5	-
Manganese	mg/kg	1		60,000			95	120	160	98	200	-	-	280	-	-	12	3	410	-
Molybdenum	mg/kg	1					<1	<1	6	<1	1	-	-	5	-	-	<1	<1	3	-
Antimony	mg/kg	7					<7	<7	<7	<7	<7	-	-	<7	-	-	<7	<7	<7	-
Selenium	mg/kg	2		10,000			<2	<2	<4	<2	<2	-	-	<6	-	-	<2	<4	<6	-
Tin	mg/kg	1					1	1	2	1	4	-	-	2	-	-	<1	<1	1	-
Asbestos ID in soil(AS4964) >0.1g/kg	-	-					NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	Chrysotile	NAD	NAD	NAD	NAD
Trace Analysis	-	-					NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	-	NAD	NAD	NAD	NAD
Total Asbestos#1	g/kg	<0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg	-	N/A					NVAD	NVAD	NVAD	Chrysotile	NVAD	-	-	Amosite	-	-	NVAD	NVAD	NVAD	NVAD
ACM >7mm Estimation*	g	--					–	–	–	–	–	-	-	–	-	-	–	–	–	–
FA and AF Estimation*	g	--					–	–	–	0.002	–	-	-	0.0105	-	-	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01		0.05			<0.01	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001		0.001			<0.001	<0.001	<0.001	<0.001	<0.001	-	-	0.0022	-	-	<0.001	<0.001	<0.001	<0.001
Combustibility*	%	0.1				40	-	71	-	53	-			-			-	-	29	-
Total Sulphur	%w/w	0.01				1	-	0.35	-	0.25	-			-			-	-	0.09	-
alpha-BHC	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
HCB	m/Kg	0.1		80			<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
beta-BHC	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
gamma-BHC	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Heptachlor	m/Kg	0.1		50			<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
delta-BHC	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Aldrin	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	m/Kg	0.1		50			<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Endosulfan I	m/Kg	0.1		2,000			<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
pp-DDE	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Dieldrin	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Endrin	m/Kg	0.1		100			<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Endosulfan II	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
pp-DDD	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
pp-DDT	m/Kg	0.1			640		<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Methoxychlor	m/Kg	0.1		2,500			<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	m/Kg	0.1		3,600			<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Dichlorvos	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Dimethoate	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Diazinon	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Ronnel	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Fenitrothion	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Malathion	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Parathion	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Ethion	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Aroclor 1016	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	m/Kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	m/Kg	0.1		7			<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1

Area of Environmental Concern	CSA	CSA	CSA	CSA	CSA	CSA	CSA	CSA	CSA	CSA	Adj Lands	Adj Lands	Adj Lands	Adj Lands	Adj Lands	Adj Lands	Adj Lands	Adj Lands	Adj Lands	Adj Lands	Garden She	Garden She	Garden She	Water Tank	Water Tank
Sample Location	CS114	CS115	CS106	C106	CS101	CS112	CS116	CS116	CS117	CS117	FI209	FI208	FI202	FI210	FI210	FI205	FI203	FI204	FI206	FI207	GS502	GS502	GS501	WT503	WT503
Date Sampled	4-Aug-22	4-Aug-22	9-Aug-22	9-Aug-22	9-Aug-22	10-Aug-22	10-Aug-22	10-Aug-22	10-Aug-22	10-Aug-22	2-Aug-22	2-Aug-22	2-Aug-22	10-Aug-22	10-Aug-22	18-Aug-22	18-Aug-22	18-Aug-22	18-Aug-22	18-Aug-22	11-Aug-22	11-Aug-22	18-Aug-22	11-Aug-22	11-Aug-22
Depth	0.1-0.2	0-0.1	0-0.1	7-7.1	3-3.1	1.0-1.1	0.6-0.7	8.9-9.0	0.1-0.2	5.0-5.1	0.0-0.1	1.5-1.6	0.5-0.6	0.1-0.2	1.0-1.1	0-0.1	1-1.1	0.5-0.6	0-0.1	0.1-0.2	0.25-0.35	0.15-0.25	0-0.1	0.1-0.2	0.2-0.3
Laboratory report	302351	302351	302819	302819	302819	302928	302928	302928	302928	302928	302231	302231	302231	302928	302928	303499	303499	303499	303499	303499	302921	302921	303499	302921	302921
Parameters																									
Perfluorobutanesulfonic acid	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.4	<0.1	0.1	0.2	0.7	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	<0.1	<0.1	1.3	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.9	0.2	<0.1	0.6	1.9	<0.1	<0.1	0.3	<0.1	<0.1
Perfluorodecanesulfonic acid	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	<0.2	<0.2	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	<0.1	<0.1	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	0.4	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.2	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	<0.1	<0.1	0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4:2 FTS	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfonamide	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamidoethanol	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamidoethanol	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MePerfluorooctanesulf-amid oacetic acid	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulfamid oacetic acid	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of PFOS and PFHxS (Added from lab data)	<0.1	<0.1	1.7	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	1.3	0.2	<0.1	0.8	2.6	<0.1	<0.1	0.3	<0.1	<0.1
TRH C6 - C9	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
TRH C6 - C10	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Fraction 1 - BTEX	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Benzene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
o-Xylene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total +ve Xylenes	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TRH C10 - C14	53	70	63	<50	<50	<50	<50	<50	58	<50	<50	<50	<50	64	<50	52	<50	<50	64	120	<50	<50	<50	<50	<50
TRH C15 - C28	300	400	1030+	<100	<100	<100	<100	<100	220	<100	200	<100	<100	270	<100	310	<100	<100	240	520	<100	<100	140	<100	<100
TRH C29 - C36	150	140	750+	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	120	<100	150	<100	<100	<100	200	<100	<100	<100	<100	<100
TRH >C10-C16	81	97	88	<50	<50	<50	<50	<50	75	<50	55	<50	<50	79	<50	64	<50	<50	76	150	<50	<50	<50	<50	<50
TRH >C10 - C16 - Naphthalene (F2)	81	97	16+	<50	<50	<50	<50	<50	75	<50	55	<50	<50	79	<50	64	<50	<50	76	150	<50	<50	<50	<50	<50
TRH >C16-C34	390	490	1600+	<100	<100	<100	<100	<100	250	<100	250	<100	<100	330	<100	410	<100	<100	270	640	<100	<100	200	<100	<100
TRH >C34-C40	<100	<100	350+	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	470	580	2050+	<50	<50	<50	<50	<50	330	<50	310	<50	<50	410	<50	480	<50	<50	350	790	<50	<50	200	<50	<50
Naphthalene	1	0.7	1	<0.1	<0.1	<0.1	<0.1	<0.1	0.7	<0.1	0.6	<0.1	<0.1	0.6	<0.1	0.6	<0.1	<0.1	0.6	1.2	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	<0.1	<0.1
Acenaphthene	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	1.9	1.9	1.8	<0.1	<0.1	<0.1	<0.1	<0.1	1.8	<0.1	1.2	<0.1	<0.1	1.6	<0.1	1.2	<0.1	<0.1	1.2	2.6	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	0.2	2.2	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	0.1	0.3	<0.1	<0.1	0.3	<0.1	<0.1
Fluoranthene	0.9	1.5	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	1	<0.1	0.5	<0.1	<0.1	0.8	<0.1	0.6	<0.1	<0.1	0.6	1.1	<0.1	<0.1	0.2	<0.1	<0.1
Pyrene	0.8	0.9	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	<0.1	0.3	<0.1	<0.1	0.5	<0.1	0.4	<0.1	<0.1	0.4	0.7	<0.1	<0.1	0.3	<0.1	<0.1
Benzo(a)anthracene	1.2	1.2	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	<0.1	0.3	<0.1	<0.1	0.4	<0.1	0.4	<0.1	<0.1	0.4	0.7	<0.1	<0.1	0.3	<0.1	<0.1
Chrysene	0.5	0.7	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	0.3	<0.1	<0.1	0.5	<0.1	0.4	<0.1	<0.1	0.4	0.7	<0.1	<0.1	0.2	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.5	0.7	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	0.9	<0.2	0.2	<0.2	<0.2	0.9	<0.2	0.3	<0.2	<0.2	0.4	0.4	<0.2	<0.2	0.9	<0.2	<0.2
Benzo(a)pyrene	0.4	0.3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	0.2	<0.05	0.1	<0.05	<0.05	0.2	<0.05	0.2	<0.05	<0.05	0.2	0.1	<0.05	<0.05	0.5	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1
Dibenzo(a,h)anthracene	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1
Total +vePAH's	7.4	10	6.4	<0.05	<0.05	<0.05	<0.05	<0.05	6.3	<0.05	3.7	<0.05	<0.05	6	<0.05	4.4	<0.05	<0.05	4.4	7.8	<0.05	<0.05	4.2	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5
Arsenic	<4	<4	9	<4	<4	<4	<4	<4	<4	<4	<4	5	11	<4	<4	6	9	5	5	<4	<4	<8	<4	<4	<4
Cadmium	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	<1	2	91+	20	24	3	2	13	2	4	4	17	20	6	4	29	26	14	15	5	15	29	8	<1	<1
Copper	4	5	167+	6	2	<1	<1	11	5	<1	5	7	<1	4	<1	24	<1	<1	18	7	6	32	2	<1	<1
Lead	5	7	170	7	5	1	3	5	6	1	8	15	9	6	3	32	6	5	22	14	2	2	6	<1	<1
Mercury	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	<1	2	106+	3	<1	<1	<1	3	2	<1	2	7	<1	2	<1	15	<1	<1	10	4	13	55	1	<1	<1
Zinc	6	13	190	15	18	<1	2	11	20	<1	56	37	<1	44	<1	310	1	3	190	47	7	28	47	<1	<1
Boron	-	-	-	-	-	-	-	-	-	-	<3	<3	<3	-	-						-	-	-	-	-
Barium	-	-	-	-	-	-	-	-	-	-	25	2	3	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-	-	-	-	-	1	5	<1	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	-	-	-	-	-	-	-	-	-	-	56	57	2	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	-	-	-	-	-	-	-	-	-	-	<7	<7	<7	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	-	-	-	-	-	-	-	-	-	-	<2	<8	<6	-	-	-	-	-	-	-	-	-	-	-	-
Tin	-	-	-	-	-	-	-	-	-	-	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos ID in soil(AS4964) >0.1g/kg	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Trace Analysis	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Total Asbestos#1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD
ACM >7mm Estimation*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
FA and AF Estimation*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ACM >7mm Estimation*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Combustibility*	-	79	35	-	-	-	-	-	-	-	-	-	-	-	22	-	-	-	-	-	-	-	-	-	-
Total Sulphur	-	0.32	0.17	-	-	-	-	-	-	-	-	-	-	-	0.09	-	-	-	-	-	-	-	-	-	-
alpha-BHC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
Diazinon	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1016	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

* moderate reliability
** low reliability
- Not tested
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
+ QAQC value used

Table A: Soil & Sediments Analytical Results

Area of Environmental Concern						FFTA	FFTA	FFTA	FFTA	FFTA	FFTA	FFTA	FFTA	FFTA	Adj Lands	Per.Channel	Per.Channel	Per.Channel	Per.Channel	Per.Channel	Per.Channel	Per.Channel	Per.Channel	Per.Channel	Per.Channel	Per.Channel	Per.Channel	Per.Channel
Sample Location						FB308	FB304	FB309	FB306	FB305	FB301	FB302	FB303	FB307	FI201	CC401	CC402	CC411	CC403	CC404	CC405	CC406	CC407	CC408	CC409	CC410	CC412	CC413
Date Sampled			HSL D (sand 2-<4m)	HIL D	ESL/EIL Commercial/ Industrial	11-Aug-22	11-Aug-22	12-Aug-22	12-Aug-22	12-Aug-22	12-Aug-22	18-Aug-22	18-Aug-22	18-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22	3-Aug-22
Depth						0-0.1	0.12-0.22	0.5-0.6	1.0-1.1	0-0.1	0-0.1	0.6-0.7	0-0.1	0.1-0.2	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Laboratory report					The coal washery rejects order 2014 (Absolute Maximum Concentration)	302921	302921	303100	303100	303100	303100	303499	303499	303499	302231	302231	302231	302231	302231	302231	302231	302231	302231	302231	302231	302231	302231	302231
Parameters	**Unit**	**PQL**																										
Perfluorobutanesulfonic acid	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1				0.2	0.2	<0.1	<0.1	0.3	0.2	0.1	<0.1	0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.7	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1			Direct: 1,000 / Indirect:10	1+	0.7	<0.1	<0.1	2.5	0.7	0.1	0.3	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.7	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.1		50,000	Direct: 10,000	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	5				<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	4.5	<0.1	<0.1	<0.1	0.1
8:2 FTS	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	1				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	1				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	1				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5				<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1		20,000		1.2	0.9	<0.1	<0.1	2.8	0.9	0.2	0.3	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1	<0.1	<0.1	<0.1	<0.1
TRH C6 - C9	mg/kg	25				-	-	-	-	-	-	-	-	-	<25	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C10	mg/kg	25			215	-	-	-	-	-	-	-	-	-	<25	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 - BTEX	mg/kg	25	630			-	-	-	-	-	-	-	-	-	<25	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	mg/kg	0.2	3		75	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	0.5	NL		135	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	1	NL		165	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
m+p-xylene	mg/kg	2	NL			-	-	-	-	-	-	-	-	-	<2	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	mg/kg	1	NL			-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve Xylenes	mg/kg	1	NL		180	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10 - C14	mg/kg	50				-	-	-	-	-	-	-	-	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C15 - C28	mg/kg	100				-	-	-	-	-	-	-	-	-	510	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C29 - C36	mg/kg	100				-	-	-	-	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	mg/kg	50			170	-	-	-	-	-	-	-	-	-	190	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	NL			-	-	-	-	-	-	-	-	-	190	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	mg/kg	100			1,700	-	-	-	-	-	-	-	-	-	560	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	mg/kg	100			3,300	-	-	-	-	-	-	-	-	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve TRH (>C10-C40)	mg/kg	50				-	-	-	-	-	-	-	-	-	750	-	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.1	NL		370	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluorene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	2.8+	-	-	-	-	-	-	-	-	-	-	-	-	-
Pyrene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Chrysene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j+k)fluoranthene	mg/kg	0.2				-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1			0.7	-	-	-	-	-	-	-	-	-	0.71	-	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibenzo(a,h)anthracene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	mg/kg	0.1				-	-	-	-	-	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +vePAH's	mg/kg	0.05		4,000		-	-	-	-	-	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5		40		-	-	-	-	-	-	-	-	-	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/kg	4		3,000	160										<4	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	0.4		900		-	-	-	-	-	-	-	-	-	<0.4	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/kg	1				-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/kg	1		240,000	320	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/kg	1		1,500	1,800	-	-	-	-	-	-	-	-	-	220	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/kg	0.1		730		-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/kg	1		6,000	460	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/kg	1		400,000	1,200	-	-	-	-	-	-	-	-	-	270	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/kg	3		300,000		-	-	-	-	-	-	-	-	-	<3	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium	mg/kg	1				-	-	-	-	-	-	-	-	-	32	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	mg/kg	1		500		-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/kg	1		4,000		-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	mg/kg	1		60,000		-	-	-	-	-	-	-	-	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	mg/kg	1				-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	mg/kg	7				-	-	-	-	-	-	-	-	-	<7	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/kg	2		10,000		-	-	-	-	-	-	-	-	-	<2	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin	mg/kg	1				-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos ID in soil(AS4964) >0.1g/kg	-	-				-	-	-	-	-	-	-	-	-	NAD	-	-	-	-	-	-	-	-	-	-	-	-	-
Trace Analysis	-	-				-	-	-	-	-	-	-	-	-	NAD	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Asbestos#1	g/kg	<0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos ID in soil <0.1g/kg	-	N/A				-	-	-	-	-	-	-	-	-	NVAD	-	-	-	-	-	-	-	-	-	-	-	-	-
ACM: >7mm Estimation*	g	--				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FA and AF Estimation*	g	--				-	-	-	-	-	-	-	-	-	--	-	-	-	-	-	-	-	-	-	-	-	-	-
ACM >7mm Estimation*	%(w/w)	<0.01		0.05		-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-
FA and AF Estimation*#2	%(w/w)	<0.001		0.001		-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-
Combustibility*	%	0.1			40	-	-	-	-	-	-	-	-	-	57	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Sulphur	%w/w	0.01			1	-	-	-	-	-	-	-	-	-	0.21	-	-	-	-	-	-	-	-	-	-	-	-	-
alpha-BHC	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
HCB	m/Kg	0.1		80		-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
beta-BHC	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-BHC	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	m/Kg	0.1		50		-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
delta-BHC	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Aldrin	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor Epoxide	m/Kg	0.1		50		-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-Chlordane	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
alpha-chlordane	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan I	m/Kg	0.1		2,000		-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
pp-DDE	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	m/Kg	0.1		100		-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan II	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
pp-DDD	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin Aldehyde	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
pp-DDT	m/Kg	0.1			640	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan Sulphate	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	m/Kg	0.1		2,500		-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve DDT+DDD+DDE	m/Kg	0.1		3,600		-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorvos	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Dimethoate	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Diazinon	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorpyriphos-methyl	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Ronnel	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Fenitrothion	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Malathion	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorpyriphos	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Parathion	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromophos-ethyl	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethion	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Azinphos-methyl (Guthion)	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1016	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1221	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1232	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1242	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	m/Kg	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve PCBs (1016-1260)	m/Kg	0.1		7		-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-

* moderate reliability
** low reliability
- Not tested
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
+ QAQC value used

Table A: Soil & Sediments Analytical Results

Area of Environmental Concern							Water Pond	Water Pond	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4
Sample Location							SD-01	SD-02	A4410	A4413	A4414	A4404	A4409	A4411	A4411	A4412	A4401	A4402	A4403	A4405	A4406	A4408	A4407
Date Sampled			HSL D (sand 2-<4m)	HIL D	ESL/EIL Commercial/ Industrial	The coal washery rejects order 2014 (Absolute Maximum Concentration)	23-Aug-22	23-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	4-Aug-22	9-Aug-22
Depth							-	-	0-0.1	0-0.1	0-0.1	0.9-1.0	0.6-0.7	0.45-0.55	1.0-1.1	0.4-0.5	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	0-0.1	3-3.1
Laboratory report							304026	304026	302351	302351	302351	302351	302351	302351	302351	302351	302351	302351	302351	302351	302351	302351	302819
Parameters	**Unit**	**PQL**																					
Perfluorobutanesulfonic acid	µg/kg	0.1					<0.1	<0.1	<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	<0.1
Perfluoropentanesulfonic acid	µg/kg	0.1					<0.1	<0.1	<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1					<0.1	<0.1	<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	<0.1
Perfluoroheptanesulfonic acid	µg/kg	0.1					<0.1	<0.1	<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1			Direct: 1,000 / Indirect:10		0.4	0.3	0.5	-	<0.1	-	-	-	-	-	-	-	0.2	-	-	-	0.9
Perfluorodecanesulfonic acid	µg/kg	0.2					<0.2	<0.2	<0.2	-	<0.2	-	-	-	-	-	-	-	<0.2	-	-	-	<0.2
Perfluorobutanoic acid	µg/kg	0.2					<0.2	<0.2	<0.2	-	<0.2	-	-	-	-	-	-	-	<0.2	-	-	-	0.8
Perfluoropentanoic acid	µg/kg	0.2					<0.2	<0.2	<0.2	-	<0.2	-	-	-	-	-	-	-	<0.2	-	-	-	4.1
Perfluorohexanoic acid	µg/kg	0.1					<0.1	<0.1	0.1	-	<0.1	-	-	-	-	-	-	-	0.2	-	-	-	2.1
Perfluoroheptanoic acid	µg/kg	0.1					<0.1	<0.1	<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	2.3
Perfluorooctanoic acid PFOA	µg/kg	0.1		50,000	Direct: 10,000		<0.1	<0.1	0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	0.8
Perfluorononanoic acid	µg/kg	0.1					0.1	0.3	<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	0.1
Perfluorodecanoic acid	µg/kg	0.5					<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	<0.5	-	-	-	<0.5
Perfluoroundecanoic acid	µg/kg	0.5					<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	<0.5	-	-	-	<0.5
Perfluorododecanoic acid	µg/kg	0.5					<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	<0.5	-	-	-	<0.5
Perfluorotridecanoic acid	µg/kg	0.5					<0.5	<0.5	<0.5	-	<0.5	-	-	-	-	-	-	-	<0.5	-	-	-	<0.5
Perfluorotetradecanoic acid	µg/kg	5					<5	<5	<5	-	<5	-	-	-	-	-	-	-	<5	-	-	-	<5
4:2 FTS	µg/kg	0.1					<0.1	<0.1	<0.1	-	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	<0.1
6:2 FTS	µg/kg	0.1					<0.1	<0.1	1.2	-	<0.1	-	-	-	-	-	-	-	0.6	-	-	-	13
8:2 FTS	µg/kg	0.2					<0.2	<0.2	2.1	-	<0.2	-	-	-	-	-	-	-	0.3	-	-	-	0.3
10:2 FTS	µg/kg	0.2					<0.2	<0.2	<0.2	-	<0.2	-	-	-	-	-	-	-	<0.2	-	-	-	<0.2
Perfluorooctane sulfonamide	µg/kg	1					<1	<1	<1	-	<1	-	-	-	-	-	-	-	<1	-	-	-	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	1					<1	<1	<1	-	<1	-	-	-	-	-	-	-	<1	-	-	-	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	1					<1	<1	<1	-	<1	-	-	-	-	-	-	-	<1	-	-	-	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1					<1	<1	<1	-	<1	-	-	-	-	-	-	-	<1	-	-	-	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5					<5	<5	<5	-	<5	-	-	-	-	-	-	-	<5	-	-	-	<5
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2					<0.2	<0.2	<0.2	-	<0.2	-	-	-	-	-	-	-	<0.2	-	-	-	<0.2
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2					<0.2	<0.2	<0.2	-	<0.2	-	-	-	-	-	-	-	<0.2	-	-	-	<0.2
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1		20,000			0.4	0.3	0.5	-	<0.1	-	-	-	-	-	-	-	0.2	-	-	-	0.9
TRH C6 - C9	mg/kg	25					<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
TRH C6 - C10	mg/kg	25			215		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	37	48	<25	<25	<25	<25	<25
Fraction 1 - BTEX	mg/kg	25	630				<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	37	48	<25	<25	<25	<25	<25
Benzene	mg/kg	0.2	3		75		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	NL		135		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	1	NL		165		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	2	NL				<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
o-Xylene	mg/kg	1	NL				<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	1	NL		180		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TRH C10 - C14	mg/kg	50					53	<50	230	88	<50	300	700	600	830	350	1200	540	<50	240	<50	760	<50
TRH C15 - C28	mg/kg	100					<100	160	1400	520	<100	1400	1900	3500	2900	1300	4200	3700	<100	1300	<100	6600	<100
TRH C29 - C36	mg/kg	100					<100	<100	<100	110	<100	<100	<100	720	130	150	<100	<100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	50			170		<50	50	680	170	<50	890	1500	1400	1700	820	2600	1500	<50	660	<50	2500	<50
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	NL				<50	50	680	170	<50	800	1500	1400	1700	820	2600	1500	<50	660	<50	2500	<50
TRH >C16-C34	mg/kg	100			1,700		<100	200	950	520	<100	860	1100	3300	2600	930	4220+	2700	<100	840	<100	4700	<100
TRH >C34-C40	mg/kg	100			3,300		<100	<100	<100	<100	<100	<100	<100	340	<100	<100	<100	<100	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	50					<50	250	1600	690	<50	1700	2600	5000	3700	1700	7750+	4200	<50	1500	<50	7200	<50
Naphthalene	mg/kg	0.1	NL		370		<0.1	0.4	<0.1	0.7	<0.1	0.5	0.5	2.1	2.1	1	3.1	0.8	<0.1	0.6	0.1	1	<0.1
Acenaphthylene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	2.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	1	0.7	0.5	1.2	0.6	9.1	1	<0.1	0.8	<0.1	6.4	<0.1
Phenanthrene	mg/kg	0.1					<0.1	1.1	<0.1	1	<0.1	2.2	1.5	2.6	2.7	2.1	14.2+	2	<0.1	1.7	0.2	11	<0.1
Anthracene	mg/kg	0.1					<0.1	<0.1	<0.1	0.1	<0.1	0.3	0.3	0.2	0.4	0.2	0.8	<0.5	<0.1	<0.3	<0.1	1.4	<0.1
Fluoranthene	mg/kg	0.1					<0.1	0.6	<0.1	0.5	<0.1	<0.1	<0.1	1.3	0.4	0.7	0.6	<0.2	<0.1	<0.1	0.1	0.1	<0.1
Pyrene	mg/kg	0.1					<0.1	0.4	<0.1	0.4	<0.1	0.2	0.1	1.1	0.4	0.6	0.8	<0.5	<0.1	<0.2	<0.1	1.3	<0.1
Benzo(a)anthracene	mg/kg	0.1					<0.1	0.4	<0.1	0.6	<0.1	0.1	<0.1	1.6	0.5	1	<0.1	<0.2	<0.1	<0.2	0.1	1	<0.1
Chrysene	mg/kg	0.1					<0.1	0.3	<0.1	0.3	<0.1	<0.1	<0.1	0.8	0.2	0.5	0.4	<0.2	<0.1	<0.2	<0.1	0.4	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.2					<0.2	0.3	<0.2	0.2	<0.2	<0.2	<0.2	0.8	0.2	0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.1			0.7		<0.05	0.2	<0.05	0.2	<0.05	0.1	<0.05	0.54	0.2	0.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1					<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total +vePAH's	mg/kg	0.05		4,000			<0.05	3.7	<0.05	3.9	<0.05	4.4	3	12	8.2	7.6	21	3.8	<0.05	3	0.5	23	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5		40			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Arsenic	mg/kg	4		3,000	160		<4	<4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	0.4		900			<0.4	<0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/kg	1					7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/kg	1		240,000	320		5	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/kg	1		1,500	1,800		24	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/kg	0.1		730			<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/kg	1		6,000	460		2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/kg	1		400,000	1,200		50	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/kg	3		300,000			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium	mg/kg	1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	mg/kg	1		500			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/kg	1		4,000			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	mg/kg	1		60,000			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	mg/kg	1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antimony	mg/kg	7					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/kg	2		10,000			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin	mg/kg	1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos ID in soil(AS4964) >0.1g/kg	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trace Analysis	-	-					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Asbestos#1	g/kg	<0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos ID in soil <0.1g/kg	-	N/A					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ACM: >7mm Estimation*	g	--					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FA and AF Estimation*	g	--					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ACM >7mm Estimation*	%(w/w)	<0.01		0.05			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FA and AF Estimation*#2	%(w/w)	<0.001		0.001			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Combustibility*	%	0.1				40	-	-	-	-	-	-	3.2	39	-	-	-	-	-	-	-	-	-
Total Sulphur	%w/w	0.01				1	-	-	-	-	-	-	0.05	0.23	-	-	-	-	-	-	-	-	-
alpha-BHC	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HCB	m/Kg	0.1		80			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
beta-BHC	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-BHC	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	m/Kg	0.1		50			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
delta-BHC	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aldrin	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor Epoxide	m/Kg	0.1		50			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-Chlordane	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
alpha-chlordane	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan I	m/Kg	0.1		2,000			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pp-DDE	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	m/Kg	0.1		100			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan II	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pp-DDD	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin Aldehyde	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pp-DDT	m/Kg	0.1			640		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan Sulphate	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	m/Kg	0.1		2,500			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve DDT+DDD+DDE	m/Kg	0.1		3,600			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichlorvos	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dimethoate	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diazinon	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorpyriphos-methyl	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ronnel	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fenitrothion	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malathion	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorpyriphos	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parathion	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromophos-ethyl	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethion	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Azinphos-methyl (Guthion)	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1016	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1221	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1232	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1242	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	m/Kg	0.1					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve PCBs (1016-1260)	m/Kg	0.1		7			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* moderate reliability
** low reliability
- Not tested
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
+ QAQC value used

Table B: ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	Coal Stack	Coal Stack	Coal Stack	Per. Channel	Per. Channel	Garden Shed	Water Tank	FFTA	FFTA	Adj. Lands	Adj. Lands	Water Pond
Sample Location				CS110-0-0.1	CS102- 0-0.1	CS115-0-0.1	CC401+-0.1	CC410-0-0.1	GS502-0.15-0.25	WT503-0.2-0.3	FB307-0-0.1	FB303-0-0.1	FI205-0-0.1	FI207-0.1-0.2	SD-01
Date Sampled				2-Aug-22	2-Aug-22	4-Aug-22	2-Aug-22	2-Aug-22	11-Aug-22	11-Aug-22	18-Aug-22	18-Aug-22	18-Aug-22	18-Aug-22	23-Aug-22
Laboratory report				302231-A	302231-A	302231-A	302231-A	302231-A	302921-A	302921-A	303100-A	303499-A	303499-A	303499-A	304026-A
Parameters	**Unit**	**PQL**													
Perfluorobutanesulfonic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01		<0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Perfluoroheptanesulfonic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.06	0.06	0.06	0.06	0.06
Perfluorodecanesulfonic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01		<0.01	0.02	0.02	0.02	0.02	0.02	0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	0.01	220	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Table C: Groundwater & Surface Water Results

Purpose			PFAS NEMP 2.0 Interim-Freshwater 95% species protection	NEPM (2013) HSLCommercial / industrial, Sand, 2 m to <4 m [1]	ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality (Freshwater, 95% species protection) [2]	NHMRC, Updated September 2022 (Primary and Secondary Recreational Contact)	Existing Well	Existing Well	Existing Well	Existing Well	Existing Well	New Well	New Well	New Well	New Well	New Well	New Well	New Well	New Well	New Well	New Well	New Well	New Well	New Well	New Well	New Well	Setling Basin	Water Pond
Sample Location							CF-MW06	CF-MW05	AEC4-MW02	AEC4-MW01	AEC4-MW03	A4407	CS106	CS101	CS117	CS116	GS502	CS112	FI210	WT503	FB304	FB301	FB308	FB305	FB306	FB309	SW-1	SW-2
Date Sampled							22-Aug-22	22-Aug-22	22-Aug-22	22-Aug-22	23-Aug-22	22-Aug-22	23-Aug-22	23-Aug-22	23-Aug-22	23-Aug-22	24-Aug-22	24-Aug-22	24-Aug-22	24-Aug-22	24-Aug-22	24-Aug-22	24-Aug-22	24-Aug-22	25-Aug-22	25-Aug-22	23-Aug-22	23-Aug-22
Laboratory report							303924	303924	303924	303924	304026	303924	304026	304026	304026	304026	304142	304142	304142	304142	304142	304142	304142	304142	304214	304214	304026	304026
Parameters	**Unit**	**PQL**																										
Perfluorobutanesulfonic acid	µg/L	0.0004					<0.0004	0.03	<0.01	0.036	0.065	0.022	0.087	0.0058	0.0085	0.0042	<0.0004	0.001	0.002	0.0008	0.18	0.0066	0.022	0.36	0.9	0.28+	0.002	0.0009
Perfluoropentanesulfonic acid	µg/L	0.001					<0.001	0.046	0.014	0.063	0.071	0.027	0.085	0.01	0.008	0.004	<0.001	<0.001	0.001	<0.001	0.27	0.007	0.025	0.45	1.3	0.26+	<0.001	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002					0.0005	0.39	0.16	0.66	0.93	0.36	0.91	0.055	0.059	0.033	0.0003	<0.0002	0.0072	0.0051	3.3	0.051	0.13	4.6	17	1+	0.0077	0.0026
Perfluoroheptanesulfonic acid	µg/L	0.001					<0.001	0.02	0.003	0.044	0.062	0.015	0.035	<0.001	0.002	0.001	<0.001	<0.001	<0.001	<0.001	0.27	0.005	0.006	0.41	1.1	<0.001	<0.001	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	0.13				0.0006	0.026	0.089	0.91	0.91	0.14	0.22	0.0023	0.031	0.014	0.0007	<0.0002	0.0059	0.0021	4.9	0.12	0.081	6.4	18	8.8+	0.013	0.0041
Perfluorodecanesulfonic acid	µg/L	0.002					<0.002	<0.002	<0.02	<0.002	<0.002	<0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.02	<0.020	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	0.002					<0.002	0.008	0.43	0.34	0.28	2.2	0.15	<0.02	0.01	0.005	<0.002	0.004	0.008	0.003	0.071	0.009	0.007	0.12	0.33	0.025	<0.01	<0.01
Perfluoropentanoic acid	µg/L	0.002					<0.004	0.042	2.2	1.6	1.1	13	0.63	0.002	0.048	0.01	<0.002	0.004	0.02	0.007	0.29	0.039	0.02	0.53	1.5	0.046	0.033	0.007
Perfluorohexanoic acid	µg/L	0.0004					<0.0004	0.076	1.3	0.97	0.85	6	0.51	0.0057	0.033	0.011	<0.0004	<0.0004	0.011	0.005	0.64	0.031	0.03	1.1	3.1	0.066+	0.019	0.0047
Perfluoroheptanoic acid	µg/L	0.0004					<0.0004	0.0093	0.81	0.5	0.3	4.4	0.14	0.0008	0.013	0.0069	<0.0004	<0.0004	0.0041	0.001	0.13	0.0068	0.0074	0.21	0.59	0.021+	0.0083	0.003
Perfluorooctanoic acid PFOA	µg/L	0.0002	220			5.6	0.0003	0.012	0.14	0.14	0.095	0.8	0.052	0.0006	0.0055	0.0052	<0.0002	<0.0002	0.0027	0.0007	0.3	0.0052	0.0097	0.41	1.3	0.037+	0.0066	0.0021
Perfluorononanoic acid	µg/L	0.001					<0.001	<0.001	0.01	0.013	0.011	0.033	0.002	0.001	0.006	0.015	<0.001	<0.001	0.003	<0.001	0.94	0.041	0.025	1.2	4	0.003	0.043	0.008
Perfluorodecanoic acid	µg/L	0.002					<0.002	<0.002	<0.02	<0.002	<0.002	<0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	0.004	<0.02	<0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	0.002					<0.002	<0.002	<0.02	<0.002	<0.002	<0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	0.002	<0.02	<0.002	0.008	<0.002
Perfluorododecanoic acid	µg/L	0.005					<0.005	<0.005	<0.05	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.05	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	0.01					<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.10	<0.1	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	0.05					<0.05	<0.05	<0.5	<0.05	<0.05	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<0.5	<0.05	<0.05	<0.05
4:2 FTS	µg/L	0.001					<0.001	<0.001	<0.01	0.002	0.002	0.028	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	0.006	0.011	<0.001	<0.001	<0.001
6:2 FTS	µg/L	0.0004					0.002	0.0081	3.8	1.5	1.3	32	0.86	0.0077	0.058	0.0065	0.002	0.001	0.003	0.002	1.2	0.003	0.02	1.4	4.3	0.0046	<0.0004	<0.0004
8:2 FTS	µg/L	0.0004					<0.0004	0.002	<0.01	0.011	0.0082	0.035	<0.0004	<0.0004	0.0005	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.0081	<0.0004	<0.0004	0.01	0.027	<0.0004	<0.0004	<0.0004
10:2 FTS	µg/L	0.002					<0.002	<0.002	<0.02	<0.002	<0.002	<0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.02	<0.02	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	0.01					<0.01	<0.01	<0.1	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.002					<0.002	<0.002	<0.02	<0.002	<0.002	<0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.02	<0.02	<0.002	<0.002	<0.002
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.002					<0.002	<0.002	<0.02	<0.002	<0.002	<0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.02	<0.02	<0.002	<0.002	<0.002
Sum of PFOS and PFHxS (Added from lab data)	µg/L	0.002				0.7	0.0011	0.416	0.249	1.57	1.84	0.5	1.13	0.0573	0.09	0.047	0.001	<0.0002	0.0131	0.0072	8.2	0.171	0.211	11	35	9.8	0.0207	0.0067
TRH C6 - C9	µg/L	10		-	-	-	<10	<10	74	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	-	-	-	-	-	<10	<10
TRH C6 - C10	µg/L	10		-	-	-	<10	<10	140	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	-	-	-	-	-	<10	<10
FRACTION 1 - BTEX	µg/L	10		6000	-	-	<10	<10	100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	-	-	-	-	-	-	<10	<10
TRH C10 - C14	µg/L	50		-	-	-	<50	<50	920	150	<50	290	97	<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	-	<50	<50
TRH C15 - C28	µg/L	100		-	-	-	<100	<100	1900	410	<100	1000	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-	<100	<100
TRH C29 - C36	µg/L	100		-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-	<100	<100
TRH total C10 - C36	µg/L	100		-	-	-	<50	<50	2900	560	<50	920	100	<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	-	<50	<50
TRH >C10-C16	µg/L	50		-	-	-	<50	<50	1600	240	<50	340	130	<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	-	<50	<50
FRACTION 2 - Naphthalene	µg/L	50		NL	-	-	<50	<50	1400	230	<50	340	130	<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	-	<50	<50
TRH >C16-C34	µg/L	100		-	-	-	<100	<100	1200	320	<100	580	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-	<100	<100
TRH >C34-C40	µg/L	100		-	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	-	-	-	-	-	<100	<100
TRH total >C10-C40	µg/L	50		-	-	-	<50	<50	2700	550	<50	920	130	<50	<50	<50	<50	<50	<50	<50	-	-	-	-	-	-	<50	<50
Benzene	µg/L	1		5000	950	10	<1	<1	14	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	<1	<1
Toluene	µg/L	1		NL	180	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	<1	<1
Ethylbenzene	µg/L	1		NL	80	-	<1	<1	18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	<1	<1
m+p-xylene	µg/L	2		NL	-	-	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-	-	-	-	-	<2	<2
o-Xylene	µg/L	1		NL	350	-	<1	<1	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	<1	<1
Naphthalene	µg/L	1		NL	16	-	<1	<1	150	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	<1	<1
Naphthalene	µg/L	0.2		NL	16	-	<0.2	<0.2	74	2.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Acenaphthylene	µg/L	0.1		-	-	-	<0.1	<0.1	1.2	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Acenaphthene	µg/L	0.1		-	-	-	<0.1	<0.1	4.4	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Fluorene	µg/L	0.1		-	-	-	<0.1	<0.1	8.1	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Phenanthrene	µg/L	0.1		-	2	-	<0.1	<0.1	6.5	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Anthracene	µg/L	0.1		-	0.4	-	<0.1	<0.1	1.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Fluoranthene	µg/L	0.1		-	1.4	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Pyrene	µg/L	0.1		-	-	-	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1		-	-	-	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Chrysene	µg/L	0.1		-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Benzo(b+k)fluoranthene	µg/L	0.2		-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Benzo(a)pyrene	µg/L	0.1		-	0.2	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	0.1		-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	0.1		-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	0.1		-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	0.5		-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<0.5	<0.5
Total +ve	µg/L	0.1		-	-	-	<0.1	<0.1	96	4.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Arsenic-Dissolved	µg/L	1			-	100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	<1	<1
Cadmium-Dissolved	µg/L	0.1			0.2	20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	<0.1	<0.1
Chromium-Dissolved	µg/L	1			-		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	<1	<1
Copper-Dissolved	µg/L	1			1.4	20,000	2	4	<1	<1	<1	2	2	1	<1	<1	3	4	3	3	-	-	-	-	-	-	<1	<1
Lead-Dissolved	µg/L	1			3.4	100	1	2	1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	-	-	-	-	-	-	<1	<1
Mercury-Dissolved	µg/L	0.05			0.6	10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-	-	<0.05	<0.05
Nickel-Dissolved	µg/L	1			70[a]	200	22	16	15	7	12	13	19	10	16	21	32	9	12	29	-	-	-	-	-	-	<1	<1
Zinc-Dissolved	µg/L	1			8		21	32	32	13	17	44	51	68	14	48	33	24	35	25	-	-	-	-	-	-	3	2
alpha-BHC	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
HCB	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
beta-BHC	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
gamma-BHC	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Heptachlor	µg/L	0.2			0.09[b]	3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
delta-BHC	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Aldrin	µg/L	0.2			0.001		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Heptachlor Epoxide	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
gamma-Chlordane	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
alpha-Chlordane	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Endosulfan I	µg/L	0.2			0.2[a]	200	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
pp-DDE	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Dieldrin	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Endrin	µg/L	0.2			0.02[b]		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Endosulfan II	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
pp-DDD	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Endrin Aldehyde	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
pp-DDT	µg/L	0.2			0.01[b]		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Endosulfan Sulphate	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Methoxychlor	µg/L	0.2			0.005[b]	3000[c]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Dichlorvos	µg/L	0.2				50	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Dimethoate	µg/L	0.2			0.15[b]	70	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Diazinon	µg/L	0.2			0.01	40	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Ronnel	µg/L	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Fenitrothion	µg/L	0.2			0.2	70	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Malathion	µg/L	0.2			0.05[b]		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Chlorpyriphos	µg/L	0.2			0.01[b]	100	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Parathion	µg/L	0.2			0.004[b]	200	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Bromophos ethyl	µg/L	0.2				100[c]	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Ethion	µg/L	0.2				4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	0.2				300	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	-	-	-	-	<0.2	<0.2
Aroclor 1016	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-	-	-	-	-	<2	<2
Aroclor 1221	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-	-	-	-	-	<2	<2
Aroclor 1232	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-	-	-	-	-	<2	<2
Aroclor 1242	µg/L	2			0.6[b]		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-	-	-	-	-	<2	<2
Aroclor 1248	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-	-	-	-	-	<2	<2
Aroclor 1254	µg/L	2			0.03[b]		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-	-	-	-	-	<2	<2
Aroclor 1260	µg/L	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	-	-	-	-	-	-	<2	<2

1 (NEPC< 1999, as amended 2013) - Schedule B1, Guideline on Invesitgation Levels For Soil and Groundwater, HSL D (Sand, 2m to <4m)

[2] ANZG (2018) - Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Freshwater, 95% species protection.

a - DGV may not protect key test species from chronic toxicity

Table D: Soil/Sediments QA/QC Tabulated Results

Sample ID:					FI201 0-0.1	QAQC01	QAQC02	Blind Average	Blind RPD %	Split Average	Split RPD %
Sample Type					Primary Sample	Blind Replicate	Split Replicate				
Sample Date					03-Aug-22	03-Aug-22	03-Aug-22				
Laboratory Report No.					302231	302231	ES2227751				
Parameter	Unit	Primary PQL	Blind PQL	Split PQL							
Perfluorobutanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluoropentanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	0.1	0.2	0.2	0.4	0.3	0.3	35.0%	0.3	32.5%
Perfluoroheptanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	0.1	0.2	0.2	0.3	0.03	0.3	16.5%	0.1	20.8%
Perfluorodecanesulfonic acid	µg/kg	0.2	0.2	0.2	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Perfluorobutanoic acid	µg/kg	0.2	0.2	1	<0.2	<0.2	<1	N/A	N/A	N/A	N/A
Perfluoropentanoic acid	µg/kg	0.2	0.2	0.2	0.2	0.3	<0.2	0.3	30.0%	0.3	27.5%
Perfluorohexanoic acid	µg/kg	0.1	0.1	0.2	<0.1	0.2	<0.2	0.2	20.0%	0.2	20.0%
Perfluoroheptanoic acid	µg/kg	0.1	0.1	0.2	<0.1	0.1	<0.2	0.1	10.0%	0.1	10.0%
Perfluorooctanoic acid PFOA	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluorononanoic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluorodecanoic acid	µg/kg	0.5	0.5	0.2	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluoroundecanoic acid	µg/kg	0.5	0.5	0.2	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluorododecanoic acid	µg/kg	0.5	0.5	0.2	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluorotridecanoic acid	µg/kg	0.5	0.5	0.2	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluorotetradecanoic acid	µg/kg	5	5	0.5	<5	<5	<0.5	N/A	N/A	N/A	N/A
4:2 FTS	µg/kg	0.1	0.1	0.5	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
6:2 FTS	µg/kg	0.1	0.1	0.5	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
8:2 FTS	µg/kg	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A
10:2 FTS	µg/kg	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A
Perfluorooctane sulfonamide	µg/kg	1	1	0.2	<1	<1	<0.2	N/A	N/A	N/A	N/A
N-Methyl perfluorooctane sulfonamide	µg/kg	1	1	0.5	<1	<1	<0.5	N/A	N/A	N/A	N/A
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	1	0.5	<1	<1	<0.5	N/A	N/A	N/A	N/A
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1	1	0.5	<1	<1	<0.5	N/A	N/A	N/A	N/A
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5	5	0.5	<5	<5	<0.5	N/A	N/A	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2	0.2	0.2	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2	0.2	0.2	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
TRH C6 - C9	mg/kg	25	25	10	<25	<25	<10	N/A	N/A	N/A	N/A
TRH C6 - C10	mg/kg	25	25	10	<25	<25	<10	N/A	N/A	N/A	N/A
Fraction 1 - BTEX	mg/kg	25	25	25	<25	<25	<10	N/A	N/A	N/A	N/A
Benzene	mg/kg	0.2	0.2	0.2	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Toluene	mg/kg	0.5	0.5	0.5	<0.5	<0.5	<0.5	N/A	N/A	N/A	N/A
Ethylbenzene	mg/kg	1	1	0.5	<1	<1	<0.5	N/A	N/A	N/A	N/A
m+p-xylene	mg/kg	2	2	0.5	<2	<2	<0.5	N/A	N/A	N/A	N/A
o-Xylene	mg/kg	1	1	0.5	<1	<1	<0.5	N/A	N/A	N/A	N/A
Total +ve Xylenes	mg/kg	1	1	0.5	<1	<1	<0.5	N/A	N/A	N/A	N/A
TRH C10 - C14	mg/kg	50	50	50	130	150	80	140.0	14.3%	130.0	38.5%
TRH C15 - C28	mg/kg	100	100	100	510	550	520	530.0	7.5%	510.0	2.0%
TRH C29 - C36	mg/kg	100	100	100	160	220	200	190.0	31.6%	160.0	25.0%
TRH >C10-C16	mg/kg	50	50	50	190	200	130	195.0	5.1%	190.0	31.6%
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	50	50	190	200	130	195.0	5.1%	190.0	31.6%
TRH >C16-C34	mg/kg	100	100	100	560	660	610	610.0	16.4%	560.0	8.9%
TRH >C34-C40	mg/kg	100	100	100	<100	110	100	110.0	N/A	N/A	N/A
Total +ve TRH (>C10-C40)	mg/kg	50	50	50	750	960	840	855.0	24.6%	750.0	12.0%
Naphthalene	mg/kg	0.3	0.3	0.5	3	2.4	3.4	2.7	0.2	3.0	13.3%
Acenaphthylene	mg/kg	0.2	0.2	0.5	0.3	<0.1	<0.5	0.3	N/A	0.3	N/A
Acenaphthene	mg/kg	0.4	0.4	0.5	0.1	<0.1	<0.5	0.1	N/A	0.1	N/A
Fluorene	mg/kg	0.7	0.7	0.5	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A
Phenanthrene	mg/kg	0.6	0.6	0.5	4.4	4.6	6.0	4.5	4.4%	4.4	36.4%
Anthracene	mg/kg	0.2	0.2	0.5	0.6	0.6	0.9	0.6	0.0%	0.6	50.0%
Fluoranthene	mg/kg	0.1	0.1	0.5	1.8	1.8	2.8	1.8	0.0%	1.8	55.6%
Pyrene	mg/kg	0.1	0.1	0.5	2.1	2.1	2.9	2.1	0.0%	2.1	38.1%
Benzo(a)anthracene	mg/kg	0.1	0.1	0.5	1.1	1.1	1.6	1.1	0.0%	1.1	45.5%
Chrysene	mg/kg	0.1	0.1	0.5	1.2	1.2	1.6	1.2	0.0%	1.2	33.3%
Benzo(b,j+k)fluoranthene	mg/kg	0.2	0.2	0.5	1	1	1.0	1.0	0.0%	1.0	0.0%
Benzo(a)pyrene	mg/kg	0.05	0.05	0.5	0.71	0.73	0.7	0.7	2.8%	0.7	1.4%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	0.1	0.5	0.3	0.3	<0.5	0.3	0.0%	0.3	N/A
Dibenzo(a,h)anthracene	mg/kg	0.1	0.1	0.5	0.1	0.1	<0.5	0.1	0.0%	0.1	N/A
Benzo(g,h,i)perylene	mg/kg	0.1	0.1	0.5	0.3	0.3	<0.5	0.3	0.0%	0.3	N/A
Total +vePAH's	mg/kg	2.4	2.4	0.5	17	16	20.9	16.5	6.1%	17.0	22.9%
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5	0.5	0.5	1.1	1.1	1.0	1.1	0.0%	1.1	9.1%
Arsenic	mg/kg	4	4	5	<4	<4	<5	N/A	N/A	N/A	N/A
Cadmium	mg/kg	0.4	0.4	1	<0.4	<0.4	<1	N/A	N/A	N/A	N/A
Chromium	mg/kg	1	1	2	9	8	10	8.5	11.8%	9.0	11.1%
Copper	mg/kg	1	1	5	16	11	15	13.5	37.0%	16.0	6.3%
Lead	mg/kg	1	1	5	220	110	125	165.0	66.7%	220.0	43.2%
Mercury	mg/kg	0.1	0.1	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Nickel	mg/kg	1	1	2	5	6	6	5.5	18.2%	5.0	20.0%
Zinc	mg/kg	1	1	5	270	140	172	205.0	63.4%	270.0	36.3%
Boron	mg/kg	3	3	-	<3	<3	-	N/A	N/A	N/A	N/A
Barium	mg/kg	1	1	-	32	37	-	34.5	14.5%	32.0	N/A
Beryllium	mg/kg	1	1	-	<1	<1	-	N/A	N/A	N/A	N/A
Cobalt	mg/kg	1	1	-	2	2	-	2.0	0.0%	2.0	N/A
Manganese	mg/kg	1	1	-	180	120	-	150.0	40.0%	180.0	N/A
Molybdenum	mg/kg	1	1	-	<1	<1	-	N/A	N/A	N/A	N/A
Antimony	mg/kg	7	7	-	<7	<14	-	N/A	N/A	N/A	N/A
Selenium	mg/kg	2	2	-	<2	<2	-	N/A	N/A	N/A	N/A
Tin	mg/kg	1	1	-	1	<1	-	1.0	N/A	1.0	N/A
alpha-BHC	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
HCB	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
beta-BHC	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
gamma-BHC	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Heptachlor	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
delta-BHC	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Aldrin	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Heptachlor Epoxide	m/Kg	0.1	0.1	-	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
gamma-Chlordane	m/Kg	0.1	0.1	-	<0.1	<0.1	-	N/A	N/A	N/A	N/A
alpha-chlordane	m/Kg	0.1	0.1	0.05	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Endosulfan I	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
pp-DDE	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Dieldrin	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Endrin	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Endosulfan II	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
pp-DDD	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Endrin Aldehyde	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
pp-DDT	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Endosulfan Sulphate	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Methoxychlor	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Total +ve DDT+DDD+DDE	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Dichlorvos	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Dimethoate	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Diazinon	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Chlorpyriphos-methyl	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Ronnel	m/Kg	0.1	0.1	-	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Fenitrothion	m/Kg	0.1	0.1	-	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Malathion	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Chlorpyriphos	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Parathion	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Bromophos-ethyl	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Ethion	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Azinphos-methyl (Guthion)	m/Kg	0.1	0.1	0.05	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
Aroclor 1016	m/Kg	0.1	0.1	-	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1221	m/Kg	0.1	0.1	-	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1232	m/Kg	0.1	0.1	-	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1242	m/Kg	0.1	0.1	-	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1248	m/Kg	0.1	0.1	-	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1254	m/Kg	0.1	0.1	-	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Aroclor 1260	m/Kg	0.1	0.1	-	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Total +ve PCBs (1016-1260)	m/Kg	0.1	0.1	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A

Table E: Groundwater/Surface water QA/QC Tabulated Results

				Sample ID:	CF-MW06	QAQC17	QAQC18					GS502	QAQC19	QAQC20					FB309	QAQC21	QAQC22				
				Sample Type	Primary Sample	Blind Replicatae	Split Replicate	**Average**	**Blind RPD %**	**Average**	**Split RPD %**	Primary Sample	Blind Replicatae	Split Replicate	**Average**	**Blind RPD %**	**Average**	**Split RPD %**	Primary Sample	Blind Replicatae	Split Replicate	**Average**	**Blind RPD**	**Average**	**Split RPD**
				Date	22-Aug-22	22-Aug-22	22-Aug-22					24-Aug-22	24-Aug-22	24-Aug-22					25-Aug-22	25-Aug-22	25-Aug-22				
				Laboratory Report No.	303924	303924	ES2230433					304142	304142	ES2230692					304214	304214	ES2230695				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**																			**%**		**%**
Perfluorobutanesulfonic acid	µg/L	0.0004	0.0004	0.0005	<0.0004	<0.0004	<0.0005	N/A	N/A	N/A	N/A	<0.0004	0.0004	<0.0005	0.0004	N/A	N/A	N/A	0.0062	0.28	<0.02	0.1431	191.3%	0.006	N/A
Perfluoropentanesulfonic acid	µg/L	0.001	0.001	0.0005	<0.001	<0.001	<0.0005	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.0005	N/A	N/A	N/A	N/A	0.004	0.26	<0.02	0.132	193.9%	0.004	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	0.0002	0.0005	0.0005	0.0006	0.0006	0	18.2%	0.0	18.2%	0.0003	0.0003	<0.0005	0.0003	0.0%	0.0003	N/A	0.023	1	0.03	0.5115	191.0%	0.023	30.4%
Perfluoroheptanesulfonic acid	µg/L	0.001	0.001	0.0005	<0.001	<0.001	<0.0005	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.0005	N/A	N/A	N/A	N/A	<0.001	0.23	<0.02	0.23	N/A	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	0.0002	0.0005	0.0006	0.0005	0.0005	0.00055	18.2%	0.00055	18.2%	0.0007	0.0006	0.0003	0.00065	15.4%	0.001	80.0%	0.013	8.8	0.01	4.4065	199.4%	0	23.1%
Perfluorodecanesulfonic acid	µg/L	0.002	0.002	0.0005	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	0.029	<0.02	0.029	N/A	N/A	N/A
Perfluorobutanoic acid	µg/L	0.002	0.002	0.002	<0.002	<0.002	<0.002	N/A	N/A	N/A	N/A	<0.002	<0.002	<0.002	N/A	N/A	N/A	N/A	0.025	0.026	<0.1	0.0255	3.9%	0.0	N/A
Perfluoropentanoic acid	µg/L	0.002	0.002	0.0005	<0.004	<0.004	<0.0005	N/A	N/A	N/A	N/A	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	0.046	0.035	<0.02	0.0405	27.2%	0.0	N/A
Perfluorohexanoic acid	µg/L	0.0004	0.0004	0.0005	<0.0004	<0.0004	<0.0005	N/A	N/A	N/A	N/A	<0.0004	<0.0004	<0.0005	N/A	N/A	N/A	N/A	0.026	0.066	0.02	0.046	87.0%	0	23.1%
Perfluoroheptanoic acid	µg/L	0.0004	0.0004	0.0005	<0.0004	<0.0004	<0.0005	N/A	N/A	N/A	N/A	<0.0004	<0.0004	<0.0005	N/A	N/A	N/A	N/A	0.0083	0.021	<0.02	0.01465	86.7%	0.008	N/A
Perfluorooctanoic acid PFOA	µg/L	0.0002	0.0002	0.0005	0.0003	0.0003	<0.0005	0	0.0%	0.0	N/A	<0.0002	<0.0002	<0.0005	N/A	N/A	N/A	N/A	0.0038	0.037	<0.01	0.0204	162.7%	0.004	N/A
Perfluorononanoic acid	µg/L	0.001	0.001	0.0005	<0.001	<0.001	<0.0005	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.0005	N/A	N/A	N/A	N/A	0.003	<0.01	<0.02	0.003	N/A	0.003	N/A
Perfluorodecanoic acid	µg/L	0.002	0.002	0.0005	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluoroundecanoic acid	µg/L	0.002	0.002	0.0005	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorododecanoic acid	µg/L	0.005	0.005	0.0005	<0.005	<0.005	<0.0005	N/A	N/A	N/A	N/A	<0.005	<0.005	<0.0005	N/A	N/A	N/A	N/A	<0.005	<0.05	<0.02	N/A	N/A	N/A	N/A
Perfluorotridecanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.0005	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.0005	N/A	N/A	N/A	N/A	<0.01	<0.1	<0.02	N/A	N/A	N/A	N/A
Perfluorotetradecanoic acid	µg/L	0.05	0.05	0.0005	<0.05	<0.05	<0.0005	N/A	N/A	N/A	N/A	<0.05	<0.05	<0.0005	N/A	N/A	N/A	N/A	<0.05	<0.5	<0.05	N/A	N/A	N/A	N/A
4:2 FTS	µg/L	0.001	0.001	0.0005	<0.001	<0.001	<0.0005	N/A	N/A	N/A	N/A	<0.001	<0.001	<0.0005	N/A	N/A	N/A	N/A	<0.001	<0.01	<0.05	N/A	N/A	N/A	N/A
6:2 FTS	µg/L	0.0004	0.0004	0.0005	0.002	0.001	<0.0005	0.0015	66.7%	0.002	N/A	0.002	<0.0004	<0.0005	0.002	N/A	0.002	N/A	0.0046	4	<0.05	2.0023	199.5%	0.0	N/A
8:2 FTS	µg/L	0.0004	0.0004	0.0005	<0.0004	<0.0004	<0.0005	N/A	N/A	N/A	N/A	<0.0004	<0.0004	<0.0005	N/A	N/A	N/A	N/A	<0.0004	0.86	<0.05	0.86	N/A	N/A	N/A
10:2 FTS	µg/L	0.002	0.002	0.0005	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	0.29	<0.05	0.29	N/A	N/A	N/A
Perfluorooctane sulfonamide	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.0005	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.0005	N/A	N/A	N/A	N/A	<0.01	<0.1	<0.02	N/A	N/A	N/A	N/A
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	0.05	0.001	<0.05	<0.05	<0.001	N/A	N/A	N/A	N/A	<0.05	<0.05	<0.001	N/A	N/A	N/A	N/A	<0.05	<0.05	<0.05	N/A	N/A	N/A	N/A
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	0.1	0.001	<0.1	<0.1	<0.001	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.001	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	0.05	0.001	<0.05	<0.05	<0.001	N/A	N/A	N/A	N/A	<0.05	<0.05	<0.001	N/A	N/A	N/A	N/A	<0.05	<0.05	<0.05	N/A	N/A	N/A	N/A
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	0.5	0.001	<0.5	<0.5	<0.001	N/A	N/A	N/A	N/A	<0.5	<0.5	<0.001	N/A	N/A	N/A	N/A	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.002	0.002	0.0005	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	<0.02	<0.02	N/A	N/A	N/A	N/A
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.002	0.002	0.0005	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	<0.002	<0.0005	N/A	N/A	N/A	N/A	<0.002	<0.02	<0.02	N/A	N/A	N/A	N/A
TRH C6 - C9	µg/L	10	10		<10	<10	<20	N/A	N/A	N/A	N/A	<10	<10	<20	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
TRH C6 - C10	µg/L	10	10		<10	<10	<20	N/A	N/A	N/A	N/A	<10	<10	<20	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
FRACTION 1 - BTEX	µg/L	10	10		<10	<10	<20	N/A	N/A	N/A	N/A	<10	<10	<20	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
TRH C10 - C14	µg/L	50	50		<50	<50	<50	N/A	N/A	N/A	N/A	<50	<50	<50	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
TRH C15 - C28	µg/L	100	100		<100	<100	<100	N/A	N/A	N/A	N/A	<100	<100	<100	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
TRH C29 - C36	µg/L	100	100		<100	<100	<50	N/A	N/A	N/A	N/A	<100	<100	<50	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
TRH total C10 - C36	µg/L	100	100		<50	<50	<50	N/A	N/A	N/A	N/A	<50	<50	<50	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
TRH >C10-C16	µg/L	50	50		<50	<50	<100	N/A	N/A	N/A	N/A	<50	<50	<100	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
FRACTION 2 - Naphthalene	µg/L	50	50		<50	<50	<100	N/A	N/A	N/A	N/A	<50	<50	<100	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
TRH >C16-C34	µg/L	100	100		<100	<100	<100	N/A	N/A	N/A	N/A	<100	<100	<100	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
TRH >C34-C40	µg/L	100	100		<100	<100	<100	N/A	N/A	N/A	N/A	<100	<100	<100	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
TRH total >C10-C40	µg/L	50	50		<50	<50	<100	N/A	N/A	N/A	N/A	<50	<50	<100	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Benzene	µg/L	1	1	1	<1	<1	<1	N/A	N/A	N/A	N/A	<1	<1	<1	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Toluene	µg/L	1	1	2	<1	<1	<2	N/A	N/A	N/A	N/A	<1	<1	<2	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Ethylbenzene	µg/L	1	1	2	<1	<1	<2	N/A	N/A	N/A	N/A	<1	<1	<2	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
m+p-xylene	µg/L	2	2	2	<2	<2	<2	N/A	N/A	N/A	N/A	<2	<2	<2	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
o-Xylene	µg/L	1	1	2	<1	<1	<2	N/A	N/A	N/A	N/A	<1	<1	<2	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Naphthalene	µg/L	1	1	5	<1	<1	<5	N/A	N/A	N/A	N/A	<1	<1	<5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
															N/A	N/A	N/A	N/A				N/A	N/A	N/A	N/A
Naphthalene	µg/L	0.2	0.2	1	<0.2	<0.2	<1.0	N/A	N/A	N/A	N/A	<0.2	<0.2	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Acenaphthylene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Acenaphthene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Fluorene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Phenanthrene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Anthracene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Fluoranthene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Pyrene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Benzo(a)anthracene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Chrysene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Benzo(b+k)fluoranthene	µg/L	0.2	0.2	1	<0.2	<0.2	<1.0	N/A	N/A	N/A	N/A	<0.2	<0.2	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Benzo(a)pyrene	µg/L	0.1	0.1	0.5	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Dibenzo(a,h)anthracene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Benzo(g,h,i)perylene	µg/L	0.1	0.1	1	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	<0.1	<0.1	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Benzo(a)pyrene TEQ	µg/L	0.5	0.5	1	<0.5	<0.5	<1.0	N/A	N/A	N/A	N/A	<0.5	<0.5	<1.0	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Total +ve	µg/L	0.1	0.1	0.5	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
								N/A	N/A	N/A	N/A				N/A	N/A	N/A	N/A				N/A	N/A	N/A	N/A
Arsenic-Dissolved	µg/L	1	1	1	<1	<1	<1	N/A	N/A	N/A	N/A	<1	<1	<1	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Cadmium-Dissolved	µg/L	0.1	0.1	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Chromium-Dissolved	µg/L	1	1	1	<1	<1	<1	N/A	N/A	N/A	N/A	<1	<1	21	N/A	N/A	21.0	N/A	-	-	-	N/A	N/A	N/A	N/A
Copper-Dissolved	µg/L	1	1	1	2	2	2	2	0.0%	2.0	0.0%	3	5	<1	4	50.0%	3.0	N/A	-	-	-	N/A	N/A	N/A	N/A
Lead-Dissolved	µg/L	1	1	1	1	1	<1	1	0.0%	1.0	N/A	<1	<1	<1	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Mercury-Dissolved	µg/L	0.05	0.05	0.1	<0.05	<0.05	<0.1	N/A	N/A	N/A	N/A	<0.05	<0.05	<0.1	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Nickel-Dissolved	µg/L	1	1	0.1	22	17	24	19.5	25.6%	23.0	8.7%	32	34	24	33	6.1%	28.0	28.6%	-	-	-	N/A	N/A	N/A	N/A
Zinc-Dissolved	µg/L	1	1	0.5	21	17	23	19	21.1%	22.0	9.1%	33	24	23	28.5	31.6%	28.0	35.7%	-	-	-	N/A	N/A	N/A	N/A
alpha-BHC	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
HCB	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
beta-BHC	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
gamma-BHC	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Heptachlor	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
delta-BHC	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Aldrin	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Heptachlor Epoxide	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5					<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-				
gamma-Chlordane	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
alpha-Chlordane	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Endosulfan I	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
pp-DDE	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Dieldrin	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Endrin	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Endosulfan II	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
pp-DDD	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Endrin Aldehyde	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
pp-DDT	µg/L	0.2	0.2	2	<0.2	<0.2	<2	N/A	N/A	N/A	N/A	<0.2	<0.2	<2	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Endosulfan Sulphate	µg/L	0.2	0.2	0.5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Methoxychlor	µg/L	0.2	0.2	2	<0.2	<0.2	<2	N/A	N/A	N/A	N/A	<0.2	<0.2	<2	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Dichlorvos				5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Dimethoate	µg/L	0.2	0.2	5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Diazinon	µg/L	0.2	0.2	5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Chlorpyriphos-methyl	µg/L	0.2	0.2	5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Ronnel	µg/L	0.2	0.2	5	<0.2	<0.2	-	N/A	N/A	N/A	N/A	<0.2	<0.2	-	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Fenitrothion	µg/L	0.2	0.2	5	<0.2	<0.2	-	N/A	N/A	N/A	N/A	<0.2	<0.2	-	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Malathion	µg/L	0.2	0.2	5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Chlorpyriphos	µg/L	0.2	0.2	5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Parathion	µg/L	0.2	0.2		<0.2	<0.2	<2			N/A	N/A	<0.2	<0.2	<2					-	-	-				
Bromophos ethyl	µg/L	0.2	0.2	5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Ethion	µg/L	0.2	0.2	5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Azinphos-methyl (Guthion)	µg/L	0.2	0.2	5	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.5	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Aroclor 1016	µg/L	2	2	5	<2	<2	-	N/A	N/A	N/A	N/A	<2	<2	-	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Aroclor 1221	µg/L	2	2	5	<2	<2	-	N/A	N/A	N/A	N/A	<2	<2	-	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Aroclor 1232	µg/L	2	2	5	<2	<2	-	N/A	N/A	N/A	N/A	<2	<2	-	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Aroclor 1242	µg/L	2	2	5	<2	<2	-	N/A	N/A	N/A	N/A	<2	<2	-	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Aroclor 1248	µg/L	2	2	5	<2	<2	-	N/A	N/A	N/A	N/A	<2	<2	-	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Aroclor 1254	µg/L	2	2	5	<2	<2	-	N/A	N/A	N/A	N/A	<2	<2	-	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A
Aroclor 1260	µg/L	2	2	5	<2	<2	-	N/A	N/A	N/A	N/A	<2	<2	-	N/A	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A

Table F: Soil/Sediments TB/TS Tabulated Results

Sample ID:			TB	TS	TB	TS	TB	TS	TB	TS	TB	TS	TB	TS	TB	TS	TB	TS
Sample Type			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date			2/08/2022	2/08/2022	3/08/2022	3/08/2022	4/08/2022	4/08/2022	9/08/2022	9/08/2022	10/08/2022	10/08/2022	11/08/2022	11/08/2022	12/08/2022	12/08/2022	18/08/2022	18/08/2022
Laboratory Report No.			302231	302231	302231	302231	302351	302351	302819	302819	302928	302928	302921	302921	303100	303100	303499	303499
Parameter	**Unit**	**Primary PQL**																
Perfluorobutanesulfonic acid	µg/kg	0.1	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt
Perfluoropentanesulfonic acid	µg/kg	0.1	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt
Perfluoroheptanesulfonic acid	µg/kg	0.1	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt
Perfluorooctanesulfonic acidPFOS	µg/kg	0.1	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt
Perfluorodecanesulfonic acid	µg/kg	0.2	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt
Perfluorobutanoic acid	µg/kg	0.2	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt
Perfluoropentanoic acid	µg/kg	0.2	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt
Perfluorohexanoic acid	µg/kg	0.1	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt
Perfluoroheptanoic acid	µg/kg	0.1	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt
Perfluorooctanoic acid PFOA	µg/kg	0.1	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt
Perfluorononanoic acid	µg/kg	0.1	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt
Perfluorodecanoic acid	µg/kg	0.5	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt
Perfluoroundecanoic acid	µg/kg	0.5	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt
Perfluorododecanoic acid	µg/kg	0.5	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt
Perfluorotridecanoic acid	µg/kg	0.5	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt	<0.5	nt
Perfluorotetradecanoic acid	µg/kg	5	<5	nt	<5	nt	<5	nt	<5	nt	<5	nt	<5	nt	<5	nt	<5	nt
4:2 FTS	µg/kg	0.1	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt
6:2 FTS	µg/kg	0.1	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt	<0.1	nt
8:2 FTS	µg/kg	0.2	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt
10:2 FTS	µg/kg	0.2	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt
Perfluorooctane sulfonamide	µg/kg	1	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt
N-Methyl perfluorooctane sulfonamide	µg/kg	1	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5	<5	nt	<5	nt	<5	nt	<5	nt	<5	nt	<5	nt	<5	nt	<5	nt
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt	<0.2	nt
TRH C6 - C9	mg/kg	25	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt
TRH C6 - C10	mg/kg	25	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt
vTPH C6 - C10 lessBTEX (F1)	mg/kg	25	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt	<25	nt
Benzene	mg/kg	0.2	<0.2	90%	<0.2	96%	<0.2	88%	<0.2	100%	<0.2	98%	<0.2	110%	<0.2	93%	<0.2	116%
Toluene	mg/kg	0.5	<0.5	80%	<0.5	97%	<0.5	87%	<0.5	101%	<0.5	97%	<0.5	112%	<0.5	91%	<0.5	116%
Ethylbenzene	mg/kg	1	<1	84%	<1	97%	<1	88%	<1	100%	<1	100%	<1	111%	<1	89%	<1	113%
m+p-xylene	mg/kg	2	<2	84%	<2	97%	<2	88%	<2	100%	<2	100%	<2	111%	<2	90%	<2	114%
o-Xylene	mg/kg	1	<1	85%	<1	96%	<1	87%	<1	99%	<1	100%	<1	110%	<1	92%	<1	116%
naphthalene	mg/kg	1	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt	<1	nt

Table G: Groundwater/Surface Water TS/TB Tabulated Results

			Sample ID:	TB	FB	TS	TB	FB	TS	TB	FB	TS	TB	FB	TS
			Sample Type	Trip Blank	Field Blank	Trip Spike	Trip Blank	Field Blank	Trip Spike	Trip Blank	Field Blank	Trip Spike	Trip Blank	Field Blank	Trip Spike
			Date	22/08/2022	22/08/2022	22/08/2022	23/08/2022	23/08/2022	23/08/2022	24/08/2022	24/08/2022	24/08/2022	25/08/2022	25/08/2022	25/08/2022
			Laboratory Report No.	303924	303924	303924	304026	304026	304026	304142	304142	304142			
Parameter	**Unit**	**Primary PQL**													
Perfluorobutanesulfonic acid	µg/L	0.0004	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	
Perfluoropentanesulfonic acid	µg/L	0.001	<0.001	<0.001	nt	<0.001	<0.001	nt	<0.001	<0.001	nt	<0.001	<0.001	nt	
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	<0.0002	<0.0002	nt	<0.0002	<0.0002	nt	<0.0002	<0.0002	nt	<0.0002	<0.0002	nt	
Perfluoroheptanesulfonic acid	µg/L	0.001	<0.001	<0.001	nt	<0.001	<0.001	nt	<0.001	<0.001	nt	<0.001	<0.001	nt	
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	<0.0002	<0.0002	nt	<0.0002	<0.0002	nt	<0.0002	<0.0002	nt	<0.0002	<0.0002	nt	
Perfluorodecanesulfonic acid	µg/L	0.002	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	
Perfluorobutanoic acid	µg/L	0.002	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	
Perfluoropentanoic acid	µg/L	0.002	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	
Perfluorohexanoic acid	µg/L	0.0004	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	
Perfluoroheptanoic acid	µg/L	0.0004	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	
Perfluorooctanoic acid PFOA	µg/L	0.0002	<0.0002	<0.0002	nt	<0.0002	<0.0002	nt	<0.0002	<0.0002	nt	<0.0002	<0.0002	nt	
Perfluorononanoic acid	µg/L	0.001	<0.001	<0.001	nt	<0.001	<0.001	nt	<0.001	<0.001	nt	<0.001	<0.001	nt	
Perfluorodecanoic acid	µg/L	0.002	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	
Perfluoroundecanoic acid	µg/L	0.002	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	
Perfluorododecanoic acid	µg/L	0.005	<0.005	<0.005	nt	<0.005	<0.005	nt	<0.005	<0.005	nt	<0.005	<0.005	nt	
Perfluorotridecanoic acid	µg/L	0.01	<0.01	<0.01	nt	<0.01	<0.01	nt	<0.01	<0.01	nt	<0.01	<0.01	nt	
Perfluorotetradecanoic acid	µg/L	0.05	<0.05	<0.05	nt	<0.05	<0.05	nt	<0.05	<0.05	nt	<0.05	<0.05	nt	
4:2 FTS	µg/L	0.001	<0.001	<0.001	nt	<0.001	<0.001	nt	<0.001	<0.001	nt	<0.001	<0.001	nt	
6:2 FTS	µg/L	0.0004	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	
8:2 FTS	µg/L	0.0004	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	<0.0004	<0.0004	nt	
10:2 FTS	µg/L	0.002	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	
Perfluorooctane sulfonamide	µg/L	0.01	<0.01	<0.01	nt	<0.01	<0.01	nt	<0.01	<0.01	nt	<0.01	<0.01	nt	
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	<0.05	<0.05	nt	<0.05	<0.05	nt	<0.05	<0.05	nt	<0.05	<0.05	nt	
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	<0.1	<0.1	nt	<0.1	<0.1	nt	<0.1	<0.1	nt	<0.1	<0.1	nt	
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	<0.05	<0.05	nt	<0.05	<0.05	nt	<0.05	<0.05	nt	<0.05	<0.05	nt	
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	<0.5	<0.5	nt	<0.5	<0.5	nt	<0.5	<0.5	nt	<0.5	<0.5	nt	
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.002	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.002	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	<0.002	<0.002	nt	
TRH C6 - C9	µg/L	10	<10	nt	nt	<10	nt	nt	<10	<10	nt	<10	<10	nt	
TRH C6 - C10	µg/L	10	<10	nt	nt	<10	nt	nt	<10	<10	nt	<10	<10	nt	
TRH C6 - C10 lessBTEX (F1)	µg/L	10	<10	nt	nt	<10	nt	nt	<10	<10	nt	<10	<10	nt	
Benzene	µg/L	1	<1	nt	111%	<1	nt	113%	<1	<1	109%	<1	<1	112%	
Toluene	µg/L	1	<1	nt	102%	<1	nt	105%	<1	<1	101%	<1	<1	104%	
Ethylbenzene	µg/L	1	<1	nt	110%	<1	nt	113%	<1	<1	107%	<1	<1	110%	
m+p-xylene	µg/L	2	<2	nt	104%	<2	nt	106%	<2	<2	100%	<2	<2	104%	
o-xylene	µg/L	1	<1	nt	107%	<1	nt	108%	<1	<1	103%	<1	<1	106%	
Naphthalene	µg/L	1	<1	nt	nt	<1	nt	nt	<1	<1	nt	<1	<1	nt	
Naphthalene	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Acenaphthylene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Acenaphthene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Fluorene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Phenanthrene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Anthracene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Fluoranthene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Pyrene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Benzo(a)anthracene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Chrysene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Benzo(b+k)fluoranthene	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Benzo(a)pyrene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Dibenzo(a,h)anthracene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Benzo(g,h,i)perylene	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Benzo(a)pyrene TEQ	µg/L	0.5	nt	nt	nt	nt	nt	nt	nt	<0.5	nt	nt	<0.5	nt	
Total +ve	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Arsenic-Dissolved	µg/L	1	nt	nt	nt	nt	nt	nt	nt	<1	nt	nt	<1	nt	
Cadmium-Dissolved	µg/L	0.1	nt	nt	nt	nt	nt	nt	nt	<0.1	nt	nt	<0.1	nt	
Chromium-Dissolved	µg/L	1	nt	nt	nt	nt	nt	nt	nt	<1	nt	nt	<1	nt	
Copper-Dissolved	µg/L	1	nt	nt	nt	nt	nt	nt	nt	<1	nt	nt	<1	nt	
Lead-Dissolved	µg/L	1	nt	nt	nt	nt	nt	nt	nt	<1	nt	nt	<1	nt	
Mercury-Dissolved	µg/L	0.05	nt	nt	nt	nt	nt	nt	nt	<0.05	nt	nt	<0.05	nt	
Nickel-Dissolved	µg/L	1	nt	nt	nt	nt	nt	nt	nt	<1	nt	nt	<1	nt	
Zinc-Dissolved	µg/L	1	nt	nt	nt	nt	nt	nt	nt	<1	nt	nt	<1	nt	
			nt	nt	nt	nt	nt	nt	nt		nt	nt		nt	
alpha-BHC	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
HCB	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
beta-BHC	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
gamma-BHC	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Heptachlor	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
delta-BHC	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Aldrin	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Heptachlor Epoxide	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
gamma-Chlordane	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
alpha-Chlordane	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Endosulfan I	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
pp-DDE	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Dieldrin	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Endrin	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Endosulfan II	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
pp-DDD	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Endrin Aldehyde	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
pp-DDT	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Endosulfan Sulphate	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Methoxychlor	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Dichlorvos			nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Dimethoate	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Diazinon	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Chlorpyriphos-methyl	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Ronnel	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Fenitrothion	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Malathion	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Chlorpyriphos	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Parathion	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Bromophos ethyl	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Ethion	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Azinphos-methyl (Guthion)	µg/L	0.2	nt	nt	nt	nt	nt	nt	nt	<0.2	nt	nt	<0.2	nt	
Aroclor 1016	µg/L	2	nt	nt	nt	nt	nt	nt	nt	<2	nt	nt	<2	nt	
Aroclor 1221	µg/L	2	nt	nt	nt	nt	nt	nt	nt	<2	nt	nt	<2	nt	
Aroclor 1232	µg/L	2	nt	nt	nt	nt	nt	nt	nt	<2	nt	nt	<2	nt	
Aroclor 1242	µg/L	2	nt	nt	nt	nt	nt	nt	nt	<2	nt	nt	<2	nt	
Aroclor 1248	µg/L	2	nt	nt	nt	nt	nt	nt	nt	<2	nt	nt	<2	nt	
Aroclor 1254	µg/L	2	nt	nt	nt	nt	nt	nt	nt	<2	nt	nt	<2	nt	
Aroclor 1260	µg/L	2	nt	nt	nt	nt	nt	nt	nt	<2	nt	nt	<2	nt	

Table H: Rinsate Tabulated Results

Sample ID			R020822	R030822	RIN-02	RIN-03	RIN-04	RIN-05	RIN-06	RIN-07	RIN-08	RIN-09	RIN-10	RIN-11	RIN-12
Sample Type			Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank	Rinsate Blank
Date			02-Aug-22	03-Aug-22	03-Aug-22	04-Aug-22	09-Aug-22	10-Aug-22	11-Aug-22	12-Aug-22	18-Aug-22	22-Aug-22	23-Aug-22	24-Aug-22	25-Aug-22
Laboratory Report No.			302231	302231	302231	302351	302819	302928	302921	303100	303499	303924	304026	304142	
Parameter	**Unit**	**PQL**													
Perfluorobutanesulfonic acid	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Perfluoropentanesulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanesulfonic acid	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorodecanesulfonic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Perfluoroheptanoic acid	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Perfluorooctanoic acid PFOA	µg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid	µg/L	0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorodecanoic acid	µg/L	0.002	<0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	0.002	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid	µg/L	0.005	<0.02	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4:2 FTS	µg/L	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 FTS	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
8:2 FTS	µg/L	0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
10:2 FTS	µg/L	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.002	<0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.002	<0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
TRH C6 - C9	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TRH C6 - C10	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
FRACTION 1 - BTEX	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TRH C10 - C14	µg/L	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH C15 - C28	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH C29 - C36	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH total C10 - C36	µg/L	100	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH >C10-C16	µg/L	50	<50	<50	<50	<50	<50	<50	<50	<50	62	87	80	<50	91	54
FRACTION 2 - Naphthalene	µg/L	50	<50	<50	<50	<50	<50	<50	<50	<50	62	87	83	<50	91	54
TRH >C16-C34	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH >C34-C40	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH total >C10-C40	µg/L	50	<50	<50	<50	<50	<50	<50	<50	<50	60	60	60	<50	90	50
Benzene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
o-Xylene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<0.5	<0.5	<0.5	<0.5
Total +ve	µg/L	1	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	<0.1	<0.1	<0.1	<0.1
Arsenic-Dissolved	µg/L	1	<1	<1	<1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	1	<1	<1	<1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<1	<1	<1	<1
Copper-Dissolved	µg/L	1	<1	3	<1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<1	<1	<1	<1
Lead-Dissolved	µg/L	1	<1	<1	<1	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<1	<1	<1	<1
Mercury-Dissolved	µg/L	0.05	<0.05	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	1	<1	<1	<1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1	<1	<1	<1
Zinc-Dissolved	µg/L	1	8	2	<1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<1	<1	<1	<1
Boron-Dissolved	µg/L	20	<20	<20	<20	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
Barium-Dissolved	µg/L	1	<1	<1	<1	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
Beryllium-Dissolved	µg/L	0.5	<0.5	<0.5	<0.5	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
Cobalt-Dissolved	µg/L	1	<1	2	<1	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
Manganese-Dissolved	µg/L	5	<5	<5	<5	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
Molybdenum-Dissolved	µg/L	1	<1	<1	<1	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
Antimony-Dissolved	µg/L	1	<1	<1	<1	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
Selenium-Dissolved	µg/L	1	<1	<1	<1	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
Tin-Dissolved	µg/L	1	<1	<1	<1	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
alpha-BHC	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dichlorvos	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Aroclor 1016	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Aroclor 1221	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Aroclor 1232	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Aroclor 1242	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Aroclor 1248	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Aroclor 1254	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Aroclor 1260	µg/L	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2

Table I: QC Sample Data Acceptance Criteria

QC Sample Type	Method of Assessment	Acceptable Range
Field QC		
Blind Replicates and Split Samples	The assessment of split replicate is undertaken by calculating the Relative Percent Difference (RPD) of the replicate concentration compared with the original sample concentration. The RPD is defined as: $RPD = 100 \times \frac{\lvert X_1 - X_2 \rvert}{Average}$ Where: X_1 and X_2 are the concentration of the original and replicate samples.	The acceptable range depends upon the levels detected: ▪ 0 – 100% RPD (When the average concentration is < 4 times the LOR/EQL) ▪ 0 – 75% RPD (When the average concentration is 4 to 10 times the LOR/EQL) ▪ 0 – 50% RPD (When the average concentration is > 10 times the LOR/EQL)
Blanks (Rinsate and Trip Blanks)	Each blank is analysed as per the original samples.	Analytical Result < LOR/EQL
Laboratory-prepared Trip Spike	The trip spike is analysed after returning from the field and the % recovery of the known spike is calculated.	70% - 130%
Laboratory QC		
Laboratory Duplicates	Assessment as per Blind Replicates and Split Samples.	The acceptable range depends upon the levels detected: ▪ 0 – 100% RPD (When the average concentration is < 4 times the LOR/EQL) ▪ 0 – 50% RPD (When the average concentration is 4 to 10 times the LOR/EQL) ▪ 0 – 30% RPD (When the average concentration is > 10 times the LOR/EQL)
Surrogates Matrix Spikes Laboratory Control Samples	Assessment is undertaken by determining the percent recovery of the known spike or addition to the sample. $\% \text{ Recovery} = 100 \times \frac{C - A}{B}$ Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; C = Calculated Concentration.	70% - 130% (General Analytes) 50% - 130% (Phenols) 60% - 130% (OP Pesticides) If the result is outside the above ranges, the result must be < 3x Standard Deviation of the Historical Mean (calculated over past 12 months)
Method Blanks	Each blank is analysed as per the original samples.	Analytical Result < LOR/EQL

Note: EQL = Laboratory Estimated Quantitation Limit (EQL) or the minimum detection limit for a particular analyte. LOR = Limit of Reporting or the minimum detectable limit for a particular analyte.

Appendix J

Laboratory Certificates of Analysis

Envirolab Services Pty Ltd
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CERTIFICATE OF ANALYSIS 302231

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias, Tristan Goodbody
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	4 Water, 19 Soil, 4 Material, 15 Concrete
Date samples received	03/08/2022
Date completed instructions received	03/08/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	16/08/2022
Date of Issue	17/08/2022

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Asbestos Approved By
Analysed by Asbestos Approved Analyst: Wonnie Condos
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Giovanni Agosti, Group Technical Manager
Greta Petzold, Assistant Operation Manager
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organic Instruments Team Leader
Lucy Zhu, Asbestos Supervisor
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		302231-4	302231-5	302231-6	302231-7	302231-12
Your Reference	UNITS	TS	TB	TS	TB	CS110
Depth		-	-	-	-	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	3/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
TRH C_6 - C_9	mg/kg	[NA]	<25	[NA]	<25	<25
TRH C_6 - C_{10}	mg/kg	[NA]	<25	[NA]	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	<25	[NA]	<25	<25
Benzene	mg/kg	90%	<0.2	96%	<0.2	<0.2
Toluene	mg/kg	80%	<0.5	97%	<0.5	<0.5
Ethylbenzene	mg/kg	84%	<1	97%	<1	<1
m+p-xylene	mg/kg	84%	<2	97%	<2	<2
o-Xylene	mg/kg	85%	<1	96%	<1	<1
Naphthalene	mg/kg	[NA]	<1	[NA]	<1	<1
Total +ve Xylenes	mg/kg	[NA]	<1	[NA]	<1	<1
Surrogate aaa-Trifluorotoluene	%	114	103	96	98	93

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		302231-13	302231-14	302231-15	302231-16	302231-17
Your Reference	UNITS	QAQC1	FI201	QAQC3	CS109	FI209
Depth		-	0.0-0.1	-	0.0-0.1	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	3/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	96	83	74	101	100

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		302231-18	302231-19	302231-20	302231-21	302231-22
Your Reference	UNITS	FI208	CS111	CS107	CS104	CS108
Depth		1.5-1.6	0.0-0.1	0.5-0.6	0.1-0.2	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	96	99	81	86	99

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		302231-23	302231-24	302231-25	302231-26
Your Reference	UNITS	CS105	CS113	CS102	FI202
Depth		0.5-0.6	0.1-0.2	0.0-0.1	0.5-0.3
Date Sampled		2/08/2022	2/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	99	101	101	108

svTRH (C10-C40) in Soil						
Our Reference		302231-12	302231-13	302231-14	302231-15	302231-16
Your Reference	UNITS	CS110	QAQC1	FI201	QAQC3	CS109
Depth		0.0-0.1	-	0.0-0.1	-	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
TRH C_{10} - C_{14}	mg/kg	97	150	130	85	130
TRH C_{15} - C_{28}	mg/kg	430	550	510	390	590
TRH C_{29} - C_{36}	mg/kg	160	220	160	140	220
Total +ve TRH (C10-C36)	mg/kg	690	920	790	620	950
TRH >C_{10} -C_{16}	mg/kg	130	200	190	120	190
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	130	200	190	120	190
TRH >C_{16} -C_{34}	mg/kg	520	660	560	460	710
TRH >C_{34} -C_{40}	mg/kg	<100	110	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	650	960	750	580	900
Surrogate o-Terphenyl	%	#	#	#	#	#

svTRH (C10-C40) in Soil						
Our Reference		302231-17	302231-18	302231-19	302231-20	302231-21
Your Reference	UNITS	FI209	FI208	CS111	CS107	CS104
Depth		0.0-0.1	1.5-1.6	0.0-0.1	0.5-0.6	0.1-0.2
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	10/08/2022	10/08/2022
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	93	<50
TRH C_{15} - C_{28}	mg/kg	200	<100	140	380	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	120	<100
Total +ve TRH (C10-C36)	mg/kg	200	<50	140	590	<50
TRH >C_{10} -C_{16}	mg/kg	55	<50	<50	140	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	55	<50	<50	140	<50
TRH >C_{16} -C_{34}	mg/kg	250	<100	170	420	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	310	<50	170	560	<50
Surrogate o-Terphenyl	%	109	93	107	128	96

svTRH (C10-C40) in Soil						
Our Reference		302231-22	302231-23	302231-24	302231-25	302231-26
Your Reference	UNITS	CS108	CS105	CS113	CS102	FI202
Depth		0.0-0.1	0.5-0.6	0.1-0.2	0.0-0.1	0.5-0.3
Date Sampled		2/08/2022	2/08/2022	2/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	84	<50
TRH C_{15} - C_{28}	mg/kg	280	<100	<100	470	<100
TRH C_{29} - C_{36}	mg/kg	130	<100	<100	210	<100
Total +ve TRH (C10-C36)	mg/kg	410	<50	<50	760	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	130	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	130	<50
TRH >C_{16} -C_{34}	mg/kg	400	<100	<100	590	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	400	<50	<50	720	<50
Surrogate o-Terphenyl	%	105	94	90	#	92

PAHs in Soil						
Our Reference		302231-12	302231-13	302231-14	302231-15	302231-16
Your Reference	UNITS	CS110	QAQC1	FI201	QAQC3	CS109
Depth		0.0-0.1	-	0.0-0.1	-	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Naphthalene	mg/kg	1.8	2.4	3.0	1.6	2.0
Acenaphthylene	mg/kg	<0.1	<0.1	0.3	<0.1	0.1
Acenaphthene	mg/kg	0.1	<0.1	0.1	<0.1	0.2
Fluorene	mg/kg	0.1	<0.1	<0.1	0.1	0.2
Phenanthrene	mg/kg	2.7	4.6	4.4	2.9	3.8
Anthracene	mg/kg	0.2	0.6	0.6	0.4	0.3
Fluoranthene	mg/kg	1.3	1.8	1.8	1.2	1.6
Pyrene	mg/kg	1	2.1	2.1	0.9	1.1
Benzo(a)anthracene	mg/kg	0.7	1.1	1.1	0.7	0.9
Chrysene	mg/kg	0.8	1.2	1.2	0.8	1
Benzo(b,j+k)fluoranthene	mg/kg	0.6	1	1	0.6	0.7
Benzo(a)pyrene	mg/kg	0.3	0.73	0.71	0.3	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	0.3	0.3	0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	0.1	0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	0.3	0.3	0.2	0.2
Total +ve PAH's	mg/kg	10	16	17	9.8	13
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	1.1	1.1	<0.5	0.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5	1.1	1.1	0.5	0.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.6	1.1	1.1	0.6	0.7
Surrogate p-Terphenyl-d14	%	89	89	89	94	85

PAHs in Soil						
Our Reference		302231-17	302231-18	302231-19	302231-20	302231-21
Your Reference	UNITS	FI209	FI208	CS111	CS107	CS104
Depth		0.0-0.1	1.5-1.6	0.0-0.1	0.5-0.6	0.1-0.2
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Naphthalene	mg/kg	0.6	<0.1	<0.1	1.8	0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Phenanthrene	mg/kg	1.2	<0.1	0.2	2.9	0.5
Anthracene	mg/kg	0.1	<0.1	<0.1	0.3	<0.1
Fluoranthene	mg/kg	0.5	<0.1	0.1	1.2	0.4
Pyrene	mg/kg	0.3	<0.1	0.1	0.9	0.4
Benzo(a)anthracene	mg/kg	0.3	<0.1	<0.1	0.7	0.2
Chrysene	mg/kg	0.3	<0.1	0.1	0.8	0.2
Benzo(b,j+k)fluoranthene	mg/kg	0.2	<0.2	<0.2	0.6	0.4
Benzo(a)pyrene	mg/kg	0.1	<0.05	0.08	0.2	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.2	0.1
Total +ve PAH's	mg/kg	3.7	<0.05	0.63	9.8	2.7
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	95	100	96	92	99

PAHs in Soil						
Our Reference		302231-22	302231-23	302231-24	302231-25	302231-26
Your Reference	UNITS	CS108	CS105	CS113	CS102	FI202
Depth		0.0-0.1	0.5-0.6	0.1-0.2	0.0-0.1	0.5-0.3
Date Sampled		2/08/2022	2/08/2022	2/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Naphthalene	mg/kg	0.1	<0.1	<0.1	1.2	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.4	<0.1	<0.1	2.7	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	0.3	<0.1
Fluoranthene	mg/kg	0.2	<0.1	<0.1	1.2	<0.1
Pyrene	mg/kg	0.2	<0.1	<0.1	0.9	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	0.7	<0.1
Chrysene	mg/kg	0.2	<0.1	<0.1	0.8	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.6	<0.2
Benzo(a)pyrene	mg/kg	0.08	<0.05	<0.05	0.3	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Total +ve PAH's	mg/kg	1.2	<0.05	<0.05	9.1	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	0.6	<0.5
Surrogate p-Terphenyl-d14	%	87	97	95	88	97

Organochlorine Pesticides in soil						
Our Reference		302231-12	302231-13	302231-14	302231-15	302231-16
Your Reference	UNITS	CS110	QAQC1	FI201	QAQC3	CS109
Depth		0.0-0.1	-	0.0-0.1	-	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	87	84	88	88	83

Organochlorine Pesticides in soil						
Our Reference		302231-17	302231-18	302231-19	302231-20	302231-21
Your Reference	UNITS	FI209	FI208	CS111	CS107	CS104
Depth		0.0-0.1	1.5-1.6	0.0-0.1	0.5-0.6	0.1-0.2
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	90	96	95	85	95

Organochlorine Pesticides in soil						
Our Reference		302231-22	302231-23	302231-24	302231-25	302231-26
Your Reference	UNITS	CS108	CS105	CS113	CS102	FI202
Depth		0.0-0.1	0.5-0.6	0.1-0.2	0.0-0.1	0.5-0.3
Date Sampled		2/08/2022	2/08/2022	2/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	87	95	96	84	96

Organophosphorus Pesticides in Soil						
Our Reference		302231-12	302231-13	302231-14	302231-15	302231-16
Your Reference	UNITS	CS110	QAQC1	FI201	QAQC3	CS109
Depth		0.0-0.1	-	0.0-0.1	-	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	87	84	88	88	83

Organophosphorus Pesticides in Soil						
Our Reference		302231-17	302231-18	302231-19	302231-20	302231-21
Your Reference	UNITS	FI209	FI208	CS111	CS107	CS104
Depth		0.0-0.1	1.5-1.6	0.0-0.1	0.5-0.6	0.1-0.2
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	90	96	95	85	95

Organophosphorus Pesticides in Soil						
Our Reference		302231-22	302231-23	302231-24	302231-25	302231-26
Your Reference	UNITS	CS108	CS105	CS113	CS102	FI202
Depth		0.0-0.1	0.5-0.6	0.1-0.2	0.0-0.1	0.5-0.3
Date Sampled		2/08/2022	2/08/2022	2/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	87	95	96	84	96

PCBs in Soil						
Our Reference		302231-12	302231-13	302231-14	302231-15	302231-16
Your Reference	UNITS	CS110	QAQC1	FI201	QAQC3	CS109
Depth		0.0-0.1	-	0.0-0.1	-	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	87	84	88	88	83

PCBs in Soil						
Our Reference		302231-17	302231-18	302231-19	302231-20	302231-21
Your Reference	UNITS	FI209	FI208	CS111	CS107	CS104
Depth		0.0-0.1	1.5-1.6	0.0-0.1	0.5-0.6	0.1-0.2
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	90	96	95	85	95

PCBs in Soil						
Our Reference		302231-22	302231-23	302231-24	302231-25	302231-26
Your Reference	UNITS	CS108	CS105	CS113	CS102	FI202
Depth		0.0-0.1	0.5-0.6	0.1-0.2	0.0-0.1	0.5-0.3
Date Sampled		2/08/2022	2/08/2022	2/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	87	95	96	84	96

Acid Extractable metals in soil						
Our Reference		302231-12	302231-13	302231-14	302231-15	302231-16
Your Reference	UNITS	CS110	QAQC1	FI201	QAQC3	CS109
Depth		0.0-0.1	-	0.0-0.1	-	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Date analysed	-	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	11	8	9	12	9
Copper	mg/kg	18	11	16	19	11
Lead	mg/kg	57	110	220	68	50
Mercury	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Nickel	mg/kg	6	6	5	9	6
Zinc	mg/kg	59	140	270	61	190
Boron	mg/kg	<3	<3	<3	<3	<3
Barium	mg/kg	54	37	32	44	36
Beryllium	mg/kg	<1	<1	<1	<1	<1
Cobalt	mg/kg	1	2	2	1	2
Manganese	mg/kg	85	120	180	80	120
Molybdenum	mg/kg	<1	<1	<1	<1	<1
Antimony	mg/kg	<7	<14	<7	<7	<7
Selenium	mg/kg	<2	<2	<2	<2	<2
Tin	mg/kg	<1	<1	1	<1	1

Acid Extractable metals in soil						
Our Reference		302231-17	302231-18	302231-19	302231-20	302231-21
Your Reference	UNITS	FI209	FI208	CS111	CS107	CS104
Depth		0.0-0.1	1.5-1.6	0.0-0.1	0.5-0.6	0.1-0.2
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Date analysed	-	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Arsenic	mg/kg	<4	5	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	0.7	<0.4	<0.4
Chromium	mg/kg	4	17	28	15	19
Copper	mg/kg	5	7	54	11	73
Lead	mg/kg	8	15	170	120	39
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	7	14	6	19
Zinc	mg/kg	56	37	300	170	150
Boron	mg/kg	<3	<3	5	<3	6
Barium	mg/kg	25	2	40	37	42
Beryllium	mg/kg	<1	<1	<1	<1	<1
Cobalt	mg/kg	1	5	3	2	5
Manganese	mg/kg	56	57	160	98	200
Molybdenum	mg/kg	<1	<1	6	<1	1
Antimony	mg/kg	<7	<7	<7	<7	<7
Selenium	mg/kg	<2	<8	<4	<2	<2
Tin	mg/kg	<1	<1	2	1	4

Acid Extractable metals in soil						
Our Reference		302231-22	302231-23	302231-24	302231-25	302231-26
Your Reference	UNITS	CS108	CS105	CS113	CS102	FI202
Depth		0.0-0.1	0.5-0.6	0.1-0.2	0.0-0.1	0.5-0.3
Date Sampled		2/08/2022	2/08/2022	2/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Date analysed	-	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Arsenic	mg/kg	5	<4	7	<4	11
Cadmium	mg/kg	0.8	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	39	12	17	30	20
Copper	mg/kg	150	2	<1	29	<1
Lead	mg/kg	100	27	14	130	9
Mercury	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	26	2	<1	27	<1
Zinc	mg/kg	220	97	1	960	<1
Boron	mg/kg	9	<3	<3	<3	<3
Barium	mg/kg	57	5	3	38	3
Beryllium	mg/kg	<1	<1	<1	<1	<1
Cobalt	mg/kg	7	<1	<1	5	<1
Manganese	mg/kg	280	12	3	410	2
Molybdenum	mg/kg	5	<1	<1	3	<1
Antimony	mg/kg	<7	<7	<7	<7	<7
Selenium	mg/kg	<6	<2	<4	<6	<6
Tin	mg/kg	2	<1	<1	1	<1

Acid Extractable metals in soil			
Our Reference		302231-43	302231-44
Your Reference	UNITS	CS110 - [TRIPLICATE]	FI208 - [TRIPLICATE]
Depth		0.0-0.1	1.5-1.6
Date Sampled		2/08/2022	2/08/2022
Type of sample		Soil	Soil
Date prepared	-	10/08/2022	10/08/2022
Date analysed	-	11/08/2022	11/08/2022
Arsenic	mg/kg	<4	5
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	18	17
Copper	mg/kg	40	4
Lead	mg/kg	100	12
Mercury	mg/kg	0.2	<0.1
Nickel	mg/kg	10	6
Zinc	mg/kg	100	26
Boron	mg/kg	<3	<3
Barium	mg/kg	43	2
Beryllium	mg/kg	<1	<1
Cobalt	mg/kg	2	4
Manganese	mg/kg	110	47
Molybdenum	mg/kg	<1	<1
Antimony	mg/kg	<7	<7
Selenium	mg/kg	<2	<6
Tin	mg/kg	1	<1

Moisture						
Our Reference		302231-12	302231-13	302231-14	302231-15	302231-16
Your Reference	UNITS	CS110	QAQC1	FI201	QAQC3	CS109
Depth		0.0-0.1	-	0.0-0.1	-	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022
Moisture	%	14	10	9.1	16	11

Moisture						
Our Reference		302231-17	302231-18	302231-19	302231-20	302231-21
Your Reference	UNITS	FI209	FI208	CS111	CS107	CS104
Depth		0.0-0.1	1.5-1.6	0.0-0.1	0.5-0.6	0.1-0.2
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022
Moisture	%	1.1	25	8.4	14	12

Moisture						
Our Reference		302231-22	302231-23	302231-24	302231-25	302231-26
Your Reference	UNITS	CS108	CS105	CS113	CS102	FI202
Depth		0.0-0.1	0.5-0.6	0.1-0.2	0.0-0.1	0.5-0.3
Date Sampled		2/08/2022	2/08/2022	2/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022
Moisture	%	11	26	7.1	6.1	14

Moisture						
Our Reference		302231-27	302231-28	302231-29	302231-30	302231-31
Your Reference	UNITS	CC401	QAQC11	CC402	CC411	CC403
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Date prepared	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022
Moisture	%	4.7	3.8	3.1	2.5	9.1

Moisture						
Our Reference		302231-32	302231-33	302231-34	302231-35	302231-36
Your Reference	UNITS	CC404	CC405	CC406	CC407	CC408
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Date prepared	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022
Moisture	%	2.5	3.0	2.7	3.1	4.6

Moisture						
Our Reference		302231-37	302231-38	302231-39	302231-40	302231-41
Your Reference	UNITS	CC409	CC410	QAQC13	CC412	CC413
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Date prepared	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	06/08/2022	06/08/2022	06/08/2022	06/08/2022	06/08/2022
Moisture	%	3.2	2.8	3.5	3.7	4.2

PFAS in Soils Extended						
Our Reference		302231-5	302231-7	302231-12	302231-13	302231-14
Your Reference	UNITS	TB	TB	CS110	QAQC1	FI201
Depth		-	-	0.0-0.1	-	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	2/08/2022	2/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1	0.4	0.4	0.2
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	<0.1	0.9	0.3	0.2
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	0.3	0.3	0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1	0.3	0.2	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	0.1	0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	0.5	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	94	96	100	98	94
Surrogate $^{13}C_2$ *PFOA*	%	104	102	99	109	104
Extracted ISTD $^{13}C_3$ *PFBS*	%	106	105	87	99	104
Extracted ISTD $^{18}O_2$ *PFHxS*	%	105	104	86	101	104
Extracted ISTD $^{13}C_4$ *PFOS*	%	107	109	93	100	102

PFAS in Soils Extended						
Our Reference		302231-5	302231-7	302231-12	302231-13	302231-14
Your Reference	UNITS	TB	TB	CS110	QAQC1	FI201
Depth		-	-	0.0-0.1	-	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	2/08/2022	2/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	110	111	95	101	101
Extracted ISTD $^{13}C_3$ *PFPeA*	%	105	104	91	99	101
Extracted ISTD $^{13}C_2$ *PFHxA*	%	113	109	107	115	116
Extracted ISTD $^{13}C_4$ *PFHpA*	%	111	111	111	119	122
Extracted ISTD $^{13}C_4$ *PFOA*	%	110	113	117	121	126
Extracted ISTD $^{13}C_5$ *PFNA*	%	119	120	129	134	136
Extracted ISTD $^{13}C_2$ *PFDA*	%	115	116	122	141	144
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	124	118	133	152	142
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	120	123	133	132	132
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	105	103	96	102	104
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	128	134	144	153	166
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	143	128	172	#	#
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	141	154	#	#	#
Extracted ISTD $^{13}C_8$ *FOSA*	%	122	119	113	116	118
Extracted ISTD d_3 *N MeFOSA*	%	107	111	103	110	112
Extracted ISTD d_5 *N EtFOSA*	%	116	118	115	117	121
Extracted ISTD d_7 *N MeFOSE*	%	117	112	106	114	110
Extracted ISTD d_9 *N EtFOSE*	%	111	113	102	103	106
Extracted ISTD d_3 *N MeFOSAA*	%	122	119	152	#	#
Extracted ISTD d_5 *N EtFOSAA*	%	116	118	157	175	#
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	1.4	0.7	0.4
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1	1.5	0.3	0.2
Total Positive PFAS	µg/kg	<0.1	<0.1	2.6	1.4	0.6

PFAS in Soils Extended						
Our Reference		302231-15	302231-16	302231-17	302231-18	302231-19
Your Reference	UNITS	QAQC3	CS109	FI209	FI208	CS111
Depth		-	0.0-0.1	0.0-0.1	1.5-1.6	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	2/08/2022	2/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	<0.1	<0.1	<0.1	0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.5	<0.1	<0.1	<0.1	1.8
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.3	0.2	<0.2	<0.2	0.3
Perfluorohexanoic acid	µg/kg	0.2	0.1	<0.1	<0.1	0.2
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	0.4
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	99	93	95	94	93
Surrogate $^{13}C_2$ *PFOA*	%	100	100	102	105	106
Extracted ISTD $^{13}C_3$ *PFBS*	%	88	102	96	96	101
Extracted ISTD $^{18}O_2$ *PFHxS*	%	95	105	100	102	104
Extracted ISTD $^{13}C_4$ *PFOS*	%	92	105	99	99	104

PFAS in Soils Extended						
Our Reference		302231-15	302231-16	302231-17	302231-18	302231-19
Your Reference	UNITS	QAQC3	CS109	FI209	FI208	CS111
Depth		-	0.0-0.1	0.0-0.1	1.5-1.6	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	2/08/2022	2/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	93	105	99	104	103
Extracted ISTD $^{13}C_3$ *PFPeA*	%	87	98	95	91	94
Extracted ISTD $^{13}C_2$ *PFHxA*	%	104	116	113	111	109
Extracted ISTD $^{13}C_4$ *PFHpA*	%	105	123	115	109	108
Extracted ISTD $^{13}C_4$ *PFOA*	%	109	128	114	101	109
Extracted ISTD $^{13}C_5$ *PFNA*	%	116	135	127	113	116
Extracted ISTD $^{13}C_2$ *PFDA*	%	119	141	132	110	121
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	128	152	130	116	130
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	116	136	116	111	129
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	95	103	77	106	107
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	136	#	156	128	130
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	163	#	#	124	129
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	#	#	#	142	165
Extracted ISTD $^{13}C_8$ *FOSA*	%	104	118	102	108	116
Extracted ISTD d_3 *N MeFOSA*	%	99	115	99	109	107
Extracted ISTD d_5 *N EtFOSA*	%	109	119	84	111	124
Extracted ISTD d_7 *N MeFOSE*	%	102	106	98	110	109
Extracted ISTD d_9 *N EtFOSE*	%	99	104	78	104	106
Extracted ISTD d_3 *N MeFOSAA*	%	134	#	153	111	112
Extracted ISTD d_5 *N EtFOSAA*	%	149	#	148	100	113
Total Positive PFHxS & PFOS	µg/kg	0.7	<0.1	<0.1	<0.1	1.9
Total Positive PFOS & PFOA	µg/kg	0.8	<0.1	<0.1	<0.1	1.8
Total Positive PFAS	µg/kg	1.5	0.4	<0.1	<0.1	2.7

PFAS in Soils Extended						
Our Reference		302231-20	302231-21	302231-22	302231-23	302231-24
Your Reference	UNITS	CS107	CS104	CS108	CS105	CS113
Depth		0.5-0.6	0.1-0.2	0.0-0.1	0.5-0.6	0.1-0.2
Date Sampled		3/08/2022	2/08/2022	2/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.4	0.7	2.8	0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.6	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	0.6	<0.1	<0.1	0.1	<0.1
Perfluoroheptanoic acid	µg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	0.3	6.6	0.4	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	4	0.7	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	1	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	0.1	0.5	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	0.4	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	92	99	96	94	95
Surrogate $^{13}C_2$ *PFOA*	%	104	103	106	102	101
Extracted ISTD $^{13}C_3$ *PFBS*	%	98	98	96	94	103
Extracted ISTD $^{18}O_2$ *PFHxS*	%	101	102	101	101	104
Extracted ISTD $^{13}C_4$ *PFOS*	%	101	98	98	99	104

PFAS in Soils Extended						
Our Reference		302231-20	302231-21	302231-22	302231-23	302231-24
Your Reference	UNITS	CS107	CS104	CS108	CS105	CS113
Depth		0.5-0.6	0.1-0.2	0.0-0.1	0.5-0.6	0.1-0.2
Date Sampled		3/08/2022	2/08/2022	2/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	99	99	103	103	105
Extracted ISTD $^{13}C_3$ *PFPeA*	%	97	88	90	94	96
Extracted ISTD $^{13}C_2$ *PFHxA*	%	110	105	104	105	111
Extracted ISTD $^{13}C_4$ *PFHpA*	%	113	106	108	106	111
Extracted ISTD $^{13}C_4$ *PFOA*	%	116	109	109	106	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	123	115	118	111	115
Extracted ISTD $^{13}C_2$ *PFDA*	%	132	120	129	119	116
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	135	125	134	119	124
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	127	128	125	117	119
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	99	102	101	103	104
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	147	129	131	125	133
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	173	135	144	134	138
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	#	159	#	153	146
Extracted ISTD $^{13}C_8$ *FOSA*	%	112	112	114	114	117
Extracted ISTD d_3 *N MeFOSA*	%	107	110	107	108	108
Extracted ISTD d_5 *N EtFOSA*	%	113	116	120	114	115
Extracted ISTD d_7 *N MeFOSE*	%	108	110	108	106	110
Extracted ISTD d_9 *N EtFOSE*	%	102	105	107	107	108
Extracted ISTD d_3 *N MeFOSAA*	%	152	106	128	115	130
Extracted ISTD d_5 *N EtFOSAA*	%	157	109	138	118	118
Total Positive PFHxS & PFOS	µg/kg	0.6	0.7	2.8	0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	0.5	0.7	2.8	0.1	<0.1
Total Positive PFAS	µg/kg	2.5	13	3.9	0.3	<0.1

PFAS in Soils Extended						
Our Reference		302231-25	302231-26	302231-27	302231-28	302231-29
Your Reference	UNITS	CS102	FI202	CC401	QAQC11	CC402
Depth		0.0-0.1	0.5-0.3	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Concrete	Concrete	Concrete
Date prepared	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	1.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	1.7	<0.1	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	0.2
Perfluoropentanoic acid	µg/kg	0.8	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	1.0	<0.1	<0.1	0.1	<0.1
Perfluoroheptanoic acid	µg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.3	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	0.2	<0.1	<0.1	0.3	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	0.3	0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	91	95	95	97	98
Surrogate $^{13}C_2$ *PFOA*	%	99	100	102	108	103
Extracted ISTD $^{13}C_3$ *PFBS*	%	101	94	100	88	94
Extracted ISTD $^{18}O_2$ *PFHxS*	%	106	97	105	103	101
Extracted ISTD $^{13}C_4$ *PFOS*	%	106	99	103	95	97

PFAS in Soils Extended						
Our Reference		302231-25	302231-26	302231-27	302231-28	302231-29
Your Reference	UNITS	CS102	FI202	CC401	QAQC11	CC402
Depth		0.0-0.1	0.5-0.3	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Concrete	Concrete	Concrete
Extracted ISTD $^{13}C_4$ *PFBA*	%	101	104	104	89	90
Extracted ISTD $^{13}C_3$ *PFPeA*	%	95	94	94	82	84
Extracted ISTD $^{13}C_2$ *PFHxA*	%	113	104	110	92	97
Extracted ISTD $^{13}C_4$ *PFHpA*	%	120	107	110	97	95
Extracted ISTD $^{13}C_4$ *PFOA*	%	127	111	109	102	96
Extracted ISTD $^{13}C_5$ *PFNA*	%	135	114	117	107	107
Extracted ISTD $^{13}C_2$ *PFDA*	%	137	114	111	108	104
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	149	125	113	117	112
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	137	109	111	110	102
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	98	105	99	90	93
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	169	133	123	107	111
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	#	132	121	131	120
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	#	133	136	138	121
Extracted ISTD $^{13}C_8$ *FOSA*	%	112	113	117	104	108
Extracted ISTD d_3 *N MeFOSA*	%	112	107	109	106	107
Extracted ISTD d_5 *N EtFOSA*	%	118	111	118	116	114
Extracted ISTD d_7 *N MeFOSE*	%	111	112	112	113	108
Extracted ISTD d_9 *N EtFOSE*	%	106	103	110	107	109
Extracted ISTD d_3 *N MeFOSAA*	%	#	120	97	68	81
Extracted ISTD d_5 *N EtFOSAA*	%	#	101	99	70	80
Total Positive PFHxS & PFOS	µg/kg	2.8	<0.1	<0.1	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	2.1	<0.1	<0.1	<0.1	<0.1
Total Positive PFAS	µg/kg	5.6	<0.1	0.3	0.6	0.2

PFAS in Soils Extended						
Our Reference		302231-30	302231-31	302231-32	302231-33	302231-34
Your Reference	UNITS	CC411	CC403	CC404	CC405	CC406
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Date prepared	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	95	95	96	94	96
Surrogate $^{13}C_2$ *PFOA*	%	106	110	107	105	101
Extracted ISTD $^{13}C_3$ *PFBS*	%	94	60	97	97	96
Extracted ISTD $^{18}O_2$ *PFHxS*	%	98	73	105	101	103
Extracted ISTD $^{13}C_4$ *PFOS*	%	99	70	104	102	104

PFAS in Soils Extended						
Our Reference		302231-30	302231-31	302231-32	302231-33	302231-34
Your Reference	UNITS	CC411	CC403	CC404	CC405	CC406
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Extracted ISTD $^{13}C_4$ *PFBA*	%	90	57	103	96	107
Extracted ISTD $^{13}C_3$ *PFPeA*	%	85	54	93	89	96
Extracted ISTD $^{13}C_2$ *PFHxA*	%	100	64	108	101	113
Extracted ISTD $^{13}C_4$ *PFHpA*	%	101	65	111	102	113
Extracted ISTD $^{13}C_4$ *PFOA*	%	98	64	112	104	110
Extracted ISTD $^{13}C_5$ *PFNA*	%	103	68	126	111	121
Extracted ISTD $^{13}C_2$ *PFDA*	%	105	71	130	112	110
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	122	74	130	122	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	110	72	118	111	105
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	96	69	100	101	67
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	119	58	138	115	125
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	116	60	150	128	133
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	122	60	#	129	141
Extracted ISTD $^{13}C_8$ *FOSA*	%	111	69	114	112	119
Extracted ISTD d_3 *N MeFOSA*	%	103	86	108	108	108
Extracted ISTD d_5 *N EtFOSA*	%	114	96	119	118	117
Extracted ISTD d_7 *N MeFOSE*	%	99	105	107	110	113
Extracted ISTD d_9 *N EtFOSE*	%	106	104	108	108	105
Extracted ISTD d_3 *N MeFOSAA*	%	96	43	124	88	99
Extracted ISTD d_5 *N EtFOSAA*	%	88	41	122	92	78
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

PFAS in Soils Extended						
Our Reference		302231-35	302231-36	302231-37	302231-38	302231-39
Your Reference	UNITS	CC407	CC408	CC409	CC410	QAQC13
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Date prepared	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	0.7	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	0.7	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	1.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	1.0	4.5	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	100	97	91	97	94
Surrogate $^{13}C_2$ *PFOA*	%	103	106	107	103	110
Extracted ISTD $^{13}C_3$ *PFBS*	%	96	93	93	94	93
Extracted ISTD $^{18}O_2$ *PFHxS*	%	94	97	102	104	102
Extracted ISTD $^{13}C_4$ *PFOS*	%	99	98	104	102	104

PFAS in Soils Extended						
Our Reference		302231-35	302231-36	302231-37	302231-38	302231-39
Your Reference	UNITS	CC407	CC408	CC409	CC410	QAQC13
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Extracted ISTD $^{13}C_4$ *PFBA*	%	96	95	98	101	98
Extracted ISTD $^{13}C_3$ *PFPeA*	%	89	87	90	92	91
Extracted ISTD $^{13}C_2$ *PFHxA*	%	101	101	105	107	105
Extracted ISTD $^{13}C_4$ *PFHpA*	%	102	102	102	109	108
Extracted ISTD $^{13}C_4$ *PFOA*	%	106	101	108	104	101
Extracted ISTD $^{13}C_5$ *PFNA*	%	108	111	120	115	117
Extracted ISTD $^{13}C_2$ *PFDA*	%	99	111	126	112	110
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	108	115	118	115	121
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	110	113	92	107	116
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	93	94	34	93	94
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	111	118	130	122	120
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	110	122	144	126	130
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	131	131	170	137	135
Extracted ISTD $^{13}C_8$ *FOSA*	%	110	109	113	115	114
Extracted ISTD d_3 *N MeFOSA*	%	102	106	105	110	109
Extracted ISTD d_5 *N EtFOSA*	%	111	115	111	118	116
Extracted ISTD d_7 *N MeFOSE*	%	110	105	103	113	108
Extracted ISTD d_9 *N EtFOSE*	%	106	106	101	107	106
Extracted ISTD d_3 *N MeFOSAA*	%	97	94	117	101	100
Extracted ISTD d_5 *N EtFOSAA*	%	91	86	96	98	97
Total Positive PFHxS & PFOS	µg/kg	<0.1	1	<0.1	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Total Positive PFAS	µg/kg	1.0	7.7	<0.1	<0.1	0.2

PFAS in Soils Extended			
Our Reference		302231-40	302231-41
Your Reference	UNITS	CC412	CC413
Depth		0.0-0.1	0.0-0.1
Date Sampled		3/08/2022	3/08/2022
Type of sample		Concrete	Concrete
Date prepared	-	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	0.1
8:2 FTS	µg/kg	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	96	97
Surrogate $^{13}C_2$ *PFOA*	%	101	106
Extracted ISTD $^{13}C_3$ *PFBS*	%	75	86
Extracted ISTD $^{18}O_2$ *PFHxS*	%	80	90
Extracted ISTD $^{13}C_4$ *PFOS*	%	78	93

PFAS in Soils Extended			
Our Reference		302231-40	302231-41
Your Reference	UNITS	CC412	CC413
Depth		0.0-0.1	0.0-0.1
Date Sampled		3/08/2022	3/08/2022
Type of sample		Concrete	Concrete
Extracted ISTD $^{13}C_4$ *PFBA*	%	63	84
Extracted ISTD $^{13}C_3$ *PFPeA*	%	58	76
Extracted ISTD $^{13}C_2$ *PFHxA*	%	70	92
Extracted ISTD $^{13}C_4$ *PFHpA*	%	72	91
Extracted ISTD $^{13}C_4$ *PFOA*	%	73	90
Extracted ISTD $^{13}C_5$ *PFNA*	%	77	97
Extracted ISTD $^{13}C_2$ *PFDA*	%	78	95
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	83	101
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	76	97
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	66	78
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	60	97
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	58	103
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	61	110
Extracted ISTD $^{13}C_8$ *FOSA*	%	83	103
Extracted ISTD d_3 *N MeFOSA*	%	95	100
Extracted ISTD d_5 *N EtFOSA*	%	107	110
Extracted ISTD d_7 *N MeFOSE*	%	113	114
Extracted ISTD d_9 *N EtFOSE*	%	107	104
Extracted ISTD d_3 *N MeFOSAA*	%	50	76
Extracted ISTD d_5 *N EtFOSAA*	%	57	80
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	0.1

Asbestos ID - soils NEPM - ASB-001						
Our Reference		302231-12	302231-13	302231-14	302231-15	302231-16
Your Reference	UNITS	CS110	QAQC1	FI201	QAQC3	CS109
Depth		0.0-0.1	-	0.0-0.1	-	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Sample mass tested	g	656.16	564.82	639.55	695.12	551.46
Sample Description	-	Black fine-grained soil & rocks	Black fine-grained soil & rocks	Black fine-grained soil & rocks	Black fine-grained soil & rocks	Black fine-grained soil &
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		302231-17	302231-18	302231-19	302231-20	302231-21
Your Reference	UNITS	FI209	FI208	CS111	CS107	CS104
Depth		0.0-0.1	1.5-1.6	0.0-0.1	0.5-0.6	0.1-0.2
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Sample mass tested	g	921.52	791.87	879.1	627.42	932.82
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Black fine-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic mineral fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	Chrysotile	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	0.0020	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		302231-22	302231-23	302231-24	302231-25	302231-26
Your Reference	UNITS	CS108	CS105	CS113	CS102	FI202
Depth		0.0-0.1	0.5-0.6	0.1-0.2	0.0-0.1	0.5-0.3
Date Sampled		2/08/2022	2/08/2022	2/08/2022	2/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Sample mass tested	g	480.76	648.53	943.98	799.67	865.22
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Black fine-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	Amosite	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	0.0105	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	0.0022	<0.001	<0.001	<0.001	<0.001

Asbestos ID - materials					
Our Reference		302231-8	302231-9	302231-10	302231-11
Your Reference	UNITS	CS108 MBT-01	CS108 MBT-02	CS104-MAT	MAT
Depth		-	-	-	-
Date Sampled		2/08/2022	2/08/2022	2/08/2022	3/08/2022
Type of sample		Material	Material	Material	Material
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Mass / Dimension of Sample	-	40x30x6mm	50x40x7mm	60x30x6mm	50x25x3mm
Sample Description	-	White insulation board	Brown woven material	Pink mattered material	White insulation material
Asbestos ID in materials	-	No asbestos detected Synthetic mineral fibres detected	Chrysotile asbestos detected Organic fibres detected	No asbestos detected Synthetic mineral fibres detected	No asbestos detected Synthetic mineral fibres detected
Trace Analysis	-	No asbestos detected	[NT]	No asbestos detected	No asbestos detected

Misc Inorg - Soil					
Our Reference		302231-14	302231-16	302231-20	302231-25
Your Reference	UNITS	FI201	CS109	CS107	CS102
Depth		0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1
Date Sampled		3/08/2022	3/08/2022	3/08/2022	2/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Date analysed	-	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Combustibility*	%	57	71	53	29
Total Sulphur	%w/w	0.21	0.35	0.25	0.09

vTRH(C6-C10)/BTEXN in Water					
Our Reference		302231-1	302231-2	302231-3	302231-42
Your Reference	UNITS	R020822	R030822	RIN-02	POT-01
Depth		-	-	-	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	06/08/2022	07/08/2022	07/08/2022	07/08/2022
TRH C_6 - C_9	µg/L	<10	<10	<10	120
TRH C_6 - C_{10}	µg/L	<10	<10	<10	120
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	120
Benzene	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	98	96	97	96
Surrogate toluene-d8	%	95	94	94	94
Surrogate 4-BFB	%	98	99	99	101

svTRH (C10-C40) in Water					
Our Reference		302231-1	302231-2	302231-3	302231-42
Your Reference	UNITS	R020822	R030822	RIN-02	POT-01
Depth		-	-	-	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50
Surrogate o-Terphenyl	%	85	91	99	96

PAHs in Water					
Our Reference		302231-1	302231-2	302231-3	302231-42
Your Reference	UNITS	R020822	R030822	RIN-02	POT-01
Depth		-	-	-	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Naphthalene	µg/L	<1	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	91	87	92	86

Organochlorine Pesticides in Water					
Our Reference	UNITS	302231-1	302231-2	302231-3	302231-42
Your Reference		R020822	R030822	RIN-02	POT-01
Depth		-	-	-	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	87	85	92	86

OP Pesticides in Water					
Our Reference		302231-1	302231-2	302231-3	302231-42
Your Reference	UNITS	R020822	R030822	RIN-02	POT-01
Depth		-	-	-	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	87	85	92	86

PCBs in Water					
Our Reference		302231-1	302231-2	302231-3	302231-42
Your Reference	UNITS	R020822	R030822	RIN-02	POT-01
Depth		-	-	-	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Aroclor 1016	µg/L	<2	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2	<2
Surrogate TCMX	%	87	85	92	86

HM in water - dissolved					
Our Reference		302231-1	302231-2	302231-3	302231-42
Your Reference	UNITS	R020822	R030822	RIN-02	POT-01
Depth		-	-	-	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Water	Water	Water	Water
Date prepared	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Date analysed	-	05/08/2022	05/08/2022	05/08/2022	05/08/2022
Arsenic-Dissolved	µg/L	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	3	<1	290
Lead-Dissolved	µg/L	<1	<1	<1	1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	<1	<1	<1
Zinc-Dissolved	µg/L	8	2	<1	36
Boron-Dissolved	µg/L	<20	<20	<20	20
Barium-Dissolved	µg/L	<1	<1	<1	19
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5
Cobalt-Dissolved	µg/L	<1	2	<1	<1
Manganese-Dissolved	µg/L	<5	<5	<5	<5
Molybdenum-Dissolved	µg/L	<1	<1	<1	<1
Antimony-Dissolved	µg/L	<1	<1	<1	<1
Selenium-Dissolved	µg/L	<1	<1	<1	<1
Tin-Dissolved	µg/L	<1	<1	<1	<1

PFAS in Waters Trace Extended					
Our Reference		302231-1	302231-2	302231-3	302231-42
Your Reference	UNITS	R020822	R030822	RIN-02	POT-01
Depth		-	-	-	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Water	Water	Water	Water
Date prepared	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Perfluorobutanesulfonic acid	µg/L	<0.0004	<0.0004	<0.0004	<0.0004
Perfluoropentanesulfonic acid	µg/L	<0.001	<0.001	<0.001	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002	<0.0002	<0.0002	0.0006
Perfluoroheptanesulfonic acid	µg/L	<0.001	<0.001	<0.001	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002	<0.0002	<0.0002	0.0009
Perfluorodecanesulfonic acid	µg/L	<0.002	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	<0.002	<0.002	<0.002	<0.02
Perfluoropentanoic acid	µg/L	<0.002	<0.002	<0.002	<0.004
Perfluorohexanoic acid	µg/L	<0.0004	<0.0004	<0.0004	<0.0004
Perfluoroheptanoic acid	µg/L	<0.0004	<0.0004	<0.0004	<0.0004
Perfluorooctanoic acid PFOA	µg/L	<0.0002	<0.0002	<0.0002	0.0005
Perfluorononanoic acid	µg/L	<0.005	<0.001	<0.001	<0.001
Perfluorodecanoic acid	µg/L	<0.004	<0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	<0.01	<0.002	<0.002	<0.002
Perfluorododecanoic acid	µg/L	<0.02	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05
4:2 FTS	µg/L	<0.001	<0.001	<0.001	<0.001
6:2 FTS	µg/L	<0.0004	<0.0004	<0.0004	<0.0004
8:2 FTS	µg/L	<0.0004	<0.0004	<0.0004	<0.0004
10:2 FTS	µg/L	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	<0.1	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.002	<0.002	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.002	<0.002	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	111	101	106	97
Surrogate $^{13}C_2$ *PFOA*	%	104	99	101	106
Extracted ISTD $^{13}C_3$ *PFBS*	%	97	82	83	81
Extracted ISTD $^{18}O_2$ *PFHxS*	%	100	93	87	85
Extracted ISTD $^{13}C_4$ *PFOS*	%	50	87	78	89

PFAS in Waters Trace Extended					
Our Reference		302231-1	302231-2	302231-3	302231-42
Your Reference	UNITS	R020822	R030822	RIN-02	POT-01
Depth		-	-	-	0.0-0.1
Date Sampled		2/08/2022	3/08/2022	3/08/2022	3/08/2022
Type of sample		Water	Water	Water	Water
Extracted ISTD $^{13}C_4$ *PFBA*	%	64	100	96	92
Extracted ISTD $^{13}C_3$ *PFPeA*	%	98	90	85	36
Extracted ISTD $^{13}C_2$ *PFHxA*	%	103	98	93	66
Extracted ISTD $^{13}C_4$ *PFHpA*	%	108	94	87	79
Extracted ISTD $^{13}C_4$ *PFOA*	%	77	92	85	86
Extracted ISTD $^{13}C_5$ *PFNA*	%	21	97	89	103
Extracted ISTD $^{13}C_2$ *PFDA*	%	36	96	87	94
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	23	97	92	96
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	26	95	92	95
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	42	84	73	98
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	#	114	107	109
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	#	110	102	136
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	#	137	128	148
Extracted ISTD $^{13}C_8$ *FOSA*	%	60	68	67	60
Extracted ISTD d_3 *N MeFOSA*	%	83	89	91	99
Extracted ISTD d_5 *N EtFOSA*	%	75	95	94	103
Extracted ISTD d_7 *N MeFOSE*	%	74	87	92	110
Extracted ISTD d_9 *N EtFOSE*	%	81	87	92	115
Extracted ISTD d_3 *N MeFOSAA*	%	66	107	109	115
Extracted ISTD d_5 *N EtFOSAA*	%	98	124	122	127
Total Positive PFHxS & PFOS	µg/L	<0.0002	<0.0002	<0.0002	0.002
Total Positive PFOS & PFOA	µg/L	<0.0002	<0.0002	<0.0002	0.001
Total Positive PFAS	µg/L	<0.0002	<0.0002	<0.0002	0.002

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Ext-054	Analysed by MPL Envirolab
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-092	LOI - Sample is dried, then ignited in a furnace.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	302231-13
Date extracted	-			05/08/2022	12	05/08/2022	05/08/2022		05/08/2022	05/08/2022
Date analysed	-			10/08/2022	12	10/08/2022	10/08/2022		10/08/2022	10/08/2022
TRH C_6 - C_9	mg/kg	25	Org-023	<25	12	<25	<25	0	84	100
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	12	<25	<25	0	84	100
Benzene	mg/kg	0.2	Org-023	<0.2	12	<0.2	<0.2	0	85	101
Toluene	mg/kg	0.5	Org-023	<0.5	12	<0.5	<0.5	0	83	99
Ethylbenzene	mg/kg	1	Org-023	<1	12	<1	<1	0	81	97
m+p-xylene	mg/kg	2	Org-023	<2	12	<2	<2	0	86	102
o-Xylene	mg/kg	1	Org-023	<1	12	<1	<1	0	85	100
Naphthalene	mg/kg	1	Org-023	<1	12	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	99	12	93	96	3	85	100

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	05/08/2022	05/08/2022		[NT]	[NT]
Date analysed	-			[NT]	18	10/08/2022	10/08/2022		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	18	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	18	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	18	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	18	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	18	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	18	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	18	96	97	1	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	302231-13
Date extracted	-			05/08/2022	12	05/08/2022	05/08/2022		05/08/2022	05/08/2022
Date analysed	-			09/08/2022	12	09/08/2022	09/08/2022		09/08/2022	09/08/2022
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	12	97	130	29	120	128
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	12	430	560	26	108	128
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	12	160	220	32	86	77
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	12	130	180	32	120	128
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	12	520	660	24	108	128
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	12	<100	120	18	86	77
Surrogate o-Terphenyl	%		Org-020	94	12	#	#		104	#

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	05/08/2022	05/08/2022		[NT]	[NT]
Date analysed	-			[NT]	18	09/08/2022	09/08/2022		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	18	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	18	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	18	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	18	93	92	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	302231-13
Date extracted	-			05/08/2022	12	05/08/2022	05/08/2022		05/08/2022	05/08/2022
Date analysed	-			09/08/2022	12	09/08/2022	09/08/2022		09/08/2022	09/08/2022
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	12	1.8	2.1	15	95	86
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	12	0.1	0.1	0	99	88
Fluorene	mg/kg	0.1	Org-022/025	<0.1	12	0.1	0.1	0	105	105
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	12	2.7	3.3	20	116	#
Anthracene	mg/kg	0.1	Org-022/025	<0.1	12	0.2	0.2	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	12	1.3	1.5	14	106	#
Pyrene	mg/kg	0.1	Org-022/025	<0.1	12	1	1.1	10	113	#
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	12	0.7	0.8	13	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	12	0.8	0.9	12	103	#
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	12	0.6	0.7	15	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	12	0.3	0.3	0	114	#
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	12	0.1	0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	12	0.2	0.2	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	96	12	89	92	3	103	86

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	05/08/2022	05/08/2022		[NT]	[NT]
Date analysed	-			[NT]	18	09/08/2022	09/08/2022		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	18	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	18	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	18	100	98	2	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	302231-13
Date extracted	-			05/08/2022	12	05/08/2022	05/08/2022		05/08/2022	05/08/2022
Date analysed	-			09/08/2022	12	09/08/2022	09/08/2022		09/08/2022	09/08/2022
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	98	78
HCB	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	96	72
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	85	93
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	113	100
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	108	98
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	111	101
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	110	87
Endrin	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	103	100
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	100	95
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	84	82
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	95	12	87	87	0	103	85

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	05/08/2022	05/08/2022		[NT]	[NT]
Date analysed	-			[NT]	18	09/08/2022	09/08/2022		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	18	96	95	1	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	302231-13
Date extracted	-			05/08/2022	12	05/08/2022	05/08/2022		05/08/2022	05/08/2022
Date analysed	-			09/08/2022	12	09/08/2022	09/08/2022		09/08/2022	09/08/2022
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	128	107
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	97	95
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	97	99
Malathion	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	122	138
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	114	112
Parathion	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	86	115
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	115	104
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	95	12	87	87	0	103	85

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	05/08/2022	05/08/2022		[NT]	[NT]
Date analysed	-			[NT]	18	09/08/2022	09/08/2022		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	18	96	95	1	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	302231-13
Date extracted	-			05/08/2022	12	05/08/2022	05/08/2022		05/08/2022	05/08/2022
Date analysed	-			09/08/2022	12	09/08/2022	09/08/2022		09/08/2022	09/08/2022
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	12	<0.1	<0.1	0	118	120
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	95	12	87	87	0	103	85

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	18	05/08/2022	05/08/2022		[NT]	[NT]
Date analysed	-			[NT]	18	09/08/2022	09/08/2022		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	18	96	95	1	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	302231-13
Date prepared	-			10/08/2022	12	10/08/2022	10/08/2022		10/08/2022	10/08/2022
Date analysed	-			11/08/2022	12	11/08/2022	11/08/2022		11/08/2022	11/08/2022
Arsenic	mg/kg	4	Metals-020	<4	12	<4	<4	0	99	93
Cadmium	mg/kg	0.4	Metals-020	<0.4	12	<0.4	<0.4	0	101	91
Chromium	mg/kg	1	Metals-020	<1	12	11	12	9	110	100
Copper	mg/kg	1	Metals-020	<1	12	18	48	91	99	#
Lead	mg/kg	1	Metals-020	<1	12	57	63	10	101	#
Mercury	mg/kg	0.1	Metals-021	<0.1	12	<0.1	0.2	67	114	80
Nickel	mg/kg	1	Metals-020	<1	12	6	9	40	105	93
Zinc	mg/kg	1	Metals-020	<1	12	59	83	34	103	#
Boron	mg/kg	3	Metals-020	<3	12	<3	<3	0	97	73
Barium	mg/kg	1	Metals-020	<1	12	54	39	32	106	101
Beryllium	mg/kg	1	Metals-020	<1	12	<1	<1	0	103	100
Cobalt	mg/kg	1	Metals-020	<1	12	1	1	0	100	93
Manganese	mg/kg	1	Metals-020	<1	12	85	95	11	106	122
Molybdenum	mg/kg	1	Metals-020	<1	12	<1	<1	0	98	70
Antimony	mg/kg	7	Metals-020	<7	12	<7	<7	0	96	##
Selenium	mg/kg	2	Metals-020	<2	12	<2	<2	0	93	84
Tin	mg/kg	1	Metals-020	<1	12	<1	1	0	98	87

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	18	10/08/2022	10/08/2022		[NT]	[NT]
Date analysed	-			[NT]	18	11/08/2022	11/08/2022		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	18	5	6	18	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	18	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	18	17	18	6	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	18	7	4	55	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	18	15	11	31	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	18	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	18	7	5	33	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	18	37	22	51	[NT]	[NT]
Boron	mg/kg	3	Metals-020	[NT]	18	<3	<3	0	[NT]	[NT]
Barium	mg/kg	1	Metals-020	[NT]	18	2	2	0	[NT]	[NT]
Beryllium	mg/kg	1	Metals-020	[NT]	18	<1	<1	0	[NT]	[NT]
Cobalt	mg/kg	1	Metals-020	[NT]	18	5	3	50	[NT]	[NT]
Manganese	mg/kg	1	Metals-020	[NT]	18	57	37	43	[NT]	[NT]
Molybdenum	mg/kg	1	Metals-020	[NT]	18	<1	<1	0	[NT]	[NT]
Antimony	mg/kg	7	Metals-020	[NT]	18	<7	<7	0	[NT]	[NT]
Selenium	mg/kg	2	Metals-020	[NT]	18	<8	<8	0	[NT]	[NT]
Tin	mg/kg	1	Metals-020	[NT]	18	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302231-13
Date prepared	-			08/08/2022	12	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Date analysed	-			08/08/2022	12	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	101	112
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	105	110
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	12	0.4	0.2	67	107	97
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	108	105
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	12	0.9	0.7	25	97	89
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	101	74
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	106	104
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	12	0.3	0.3	0	111	109
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	12	0.3	0.2	40	102	101
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	12	0.1	<0.1	0	107	105
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	12	0.5	0.4	22	106	108
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	99	99
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	12	<0.5	<0.5	0	100	89
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	12	<0.5	<0.5	0	101	93
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	12	<0.5	<0.5	0	102	104
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	12	<0.5	<0.5	0	99	89
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	12	<5	<5	0	101	95
4:2 FTS	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	96	89
6:2 FTS	µg/kg	0.1	Org-029	<0.1	12	<0.1	<0.1	0	103	105
8:2 FTS	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	116	121
10:2 FTS	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	99	122
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	12	<1	<1	0	101	101
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	12	<1	<1	0	105	105
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	12	<1	<1	0	97	95
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	12	<1	<1	0	98	108
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	12	<5	<5	0	108	117
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	102	100
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	12	<0.2	<0.2	0	111	120
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	89	12	100	92	8	93	91
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	102	12	99	107	8	101	106

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302231-13
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	110	12	87	93	7	104	94
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	102	12	86	95	10	101	99
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	112	12	93	94	1	108	101
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	112	12	95	96	1	108	96
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	104	12	91	91	0	101	98
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	112	12	107	108	1	109	112
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	113	12	111	114	3	110	121
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	113	12	117	115	2	109	121
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	113	12	129	128	1	118	130
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	117	12	122	129	6	112	132
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	125	12	133	141	6	118	144
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	121	12	133	130	2	114	132
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	108	12	96	96	0	100	100
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	129	12	144	141	2	126	165
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	143	12	172	169	2	130	#
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	150	12	#	#		136	#
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	121	12	113	111	2	117	114
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	112	12	103	104	1	111	107
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	116	12	115	116	1	116	118
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	116	12	106	111	5	113	107

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302231-13
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	109	12	102	102	0	112	104
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	122	12	152	151	1	119	#
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	117	12	157	159	1	103	170

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302231-28
Date prepared	-			[NT]	18	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Date analysed	-			[NT]	18	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	[NT]	18	<0.1	<0.1	0	105	101
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	[NT]	18	<0.1	<0.1	0	107	99
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	[NT]	18	<0.1	<0.1	0	104	93
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	[NT]	18	<0.1	<0.1	0	108	102
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	[NT]	18	<0.1	<0.1	0	96	88
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	[NT]	18	<0.2	<0.2	0	94	93
Perfluorobutanoic acid	µg/kg	0.2	Org-029	[NT]	18	<0.2	<0.2	0	106	96
Perfluoropentanoic acid	µg/kg	0.2	Org-029	[NT]	18	<0.2	<0.2	0	109	99
Perfluorohexanoic acid	µg/kg	0.1	Org-029	[NT]	18	<0.1	<0.1	0	98	81
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	[NT]	18	<0.1	<0.1	0	108	99
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	[NT]	18	<0.1	<0.1	0	105	95
Perfluorononanoic acid	µg/kg	0.1	Org-029	[NT]	18	<0.1	<0.1	0	98	82
Perfluorodecanoic acid	µg/kg	0.5	Org-029	[NT]	18	<0.5	<0.5	0	98	83
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	[NT]	18	<0.5	<0.5	0	94	80
Perfluorododecanoic acid	µg/kg	0.5	Org-029	[NT]	18	<0.5	<0.5	0	102	104
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	[NT]	18	<0.5	<0.5	0	96	89
Perfluorotetradecanoic acid	µg/kg	5	Org-029	[NT]	18	<5	<5	0	99	94
4:2 FTS	µg/kg	0.1	Org-029	[NT]	18	<0.1	<0.1	0	92	85
6:2 FTS	µg/kg	0.1	Org-029	[NT]	18	<0.1	<0.1	0	101	94
8:2 FTS	µg/kg	0.2	Org-029	[NT]	18	<0.2	<0.2	0	119	112
10:2 FTS	µg/kg	0.2	Org-029	[NT]	18	<0.2	<0.2	0	107	97
Perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	18	<1	<1	0	103	93
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	18	<1	<1	0	103	100
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	[NT]	18	<1	<1	0	95	92
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	[NT]	18	<1	<1	0	107	96
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	[NT]	18	<5	<5	0	111	112
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	[NT]	18	<0.2	<0.2	0	100	94
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	[NT]	18	<0.2	<0.2	0	111	100
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	18	94	98	4	99	96
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	18	105	106	1	104	102

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302231-28
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	[NT]	18	96	91	5	100	96
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	18	102	99	3	104	99
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	18	99	99	0	103	100
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	18	104	101	3	107	97
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	18	91	91	0	99	90
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	18	111	106	5	110	105
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	18	109	104	5	112	103
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	18	101	99	2	110	102
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	18	113	106	6	113	108
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	18	110	111	1	111	114
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	18	116	113	3	121	112
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	18	111	103	7	116	100
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	18	106	102	4	88	71
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	18	128	127	1	133	119
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	18	124	131	5	146	120
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	18	142	135	5	141	130
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	18	108	112	4	117	110
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	18	109	104	5	109	104
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	18	111	111	0	115	111
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	18	110	110	0	108	114

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302231-28
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	[NT]	18	104	102	2	108	107
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	18	111	103	7	125	100
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	18	100	94	6	113	90

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	27	08/08/2022	08/08/2022		[NT]	[NT]
Date analysed	-			[NT]	27	08/08/2022	08/08/2022		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	[NT]	27	<0.1	<0.1	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	[NT]	27	<0.1	<0.1	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	[NT]	27	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	[NT]	27	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	[NT]	27	<0.1	<0.1	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	[NT]	27	<0.2	<0.2	0	[NT]	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	[NT]	27	<0.2	<0.2	0	[NT]	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	[NT]	27	<0.2	<0.2	0	[NT]	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	[NT]	27	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	[NT]	27	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	[NT]	27	<0.1	<0.1	0	[NT]	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	[NT]	27	<0.1	0.2	67	[NT]	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	[NT]	27	<0.5	<0.5	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	[NT]	27	<0.5	<0.5	0	[NT]	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	[NT]	27	<0.5	<0.5	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	[NT]	27	<0.5	<0.5	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	[NT]	27	<5	<5	0	[NT]	[NT]
4:2 FTS	µg/kg	0.1	Org-029	[NT]	27	<0.1	<0.1	0	[NT]	[NT]
6:2 FTS	µg/kg	0.1	Org-029	[NT]	27	0.3	0.2	40	[NT]	[NT]
8:2 FTS	µg/kg	0.2	Org-029	[NT]	27	<0.2	<0.2	0	[NT]	[NT]
10:2 FTS	µg/kg	0.2	Org-029	[NT]	27	<0.2	<0.2	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	27	<1	<1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	27	<1	<1	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	[NT]	27	<1	<1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	[NT]	27	<1	<1	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	[NT]	27	<5	<5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	[NT]	27	<0.2	<0.2	0	[NT]	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	[NT]	27	<0.2	<0.2	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	27	95	92	3	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	27	102	102	0	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	[NT]	27	100	104	4	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	27	105	107	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	27	103	108	5	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	27	104	107	3	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	27	94	99	5	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	27	110	112	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	27	110	111	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	27	109	118	8	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	27	117	129	10	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	27	111	137	21	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	27	113	137	19	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	27	111	127	13	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	27	99	100	1	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	27	123	146	17	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	27	121	167	32	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	27	136	#		[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	27	117	119	2	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	27	109	109	0	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	27	118	116	2	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	27	112	106	6	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	[NT]	27	110	109	1	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	27	97	135	33	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	27	99	135	31	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	39	08/08/2022	08/08/2022		[NT]	[NT]
Date analysed	-			[NT]	39	08/08/2022	08/08/2022		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	[NT]	39	0.2	0.3	40	[NT]	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	[NT]	39	<0.5	<0.5	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	[NT]	39	<0.5	<0.5	0	[NT]	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	[NT]	39	<0.5	<0.5	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	[NT]	39	<0.5	<0.5	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	[NT]	39	<5	<5	0	[NT]	[NT]
4:2 FTS	µg/kg	0.1	Org-029	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
6:2 FTS	µg/kg	0.1	Org-029	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
8:2 FTS	µg/kg	0.2	Org-029	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
10:2 FTS	µg/kg	0.2	Org-029	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	39	<1	<1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	39	<1	<1	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	[NT]	39	<1	<1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	[NT]	39	<1	<1	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	[NT]	39	<5	<5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	39	94	95	1	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	39	110	105	5	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	[NT]	39	93	89	4	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	39	102	100	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	39	104	98	6	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	39	98	88	11	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	39	91	84	8	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	39	105	99	6	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	39	108	99	9	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	39	101	102	1	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	39	117	109	7	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	39	110	114	4	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	39	121	115	5	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	39	116	108	7	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	39	94	89	5	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	39	120	112	7	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	39	130	115	12	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	39	135	130	4	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	39	114	108	5	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	39	109	106	3	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	39	116	114	2	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	39	108	109	1	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	[NT]	39	106	108	2	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	39	100	88	13	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	39	97	84	14	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			11/08/2022	14	11/08/2022	11/08/2022		11/08/2022	[NT]
Date analysed	-			11/08/2022	14	11/08/2022	11/08/2022		11/08/2022	[NT]
Combustibility*	%	0.1	Inorg-092	<0.1	14	57	[NT]		[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date extracted	-			05/08/2022	42	05/08/2022	08/08/2022		05/08/2022	[NT]
Date analysed	-			06/08/2022	42	07/08/2022	09/08/2022		06/08/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	42	120	120	0	107	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	42	120	120	0	107	[NT]
Benzene	µg/L	1	Org-023	<1	42	<1	<1	0	107	[NT]
Toluene	µg/L	1	Org-023	<1	42	<1	<1	0	110	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	42	<1	<1	0	107	[NT]
m+p-xylene	µg/L	2	Org-023	<2	42	<2	<2	0	105	[NT]
o-xylene	µg/L	1	Org-023	<1	42	<1	<1	0	106	[NT]
Naphthalene	µg/L	1	Org-023	<1	42	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	97	42	96	98	2	100	[NT]
Surrogate toluene-d8	%		Org-023	94	42	94	93	1	101	[NT]
Surrogate 4-BFB	%		Org-023	100	42	101	101	0	99	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
Date analysed	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
Surrogate o-Terphenyl	%		Org-020	89	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
Date analysed	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	95	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
Date analysed	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	106	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	96	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	93	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
Date analysed	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	118	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	95	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	118	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	98	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	93	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
Date analysed	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	111	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	93	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			05/08/2022	1	05/08/2022	09/08/2022		05/08/2022	[NT]
Date analysed	-			05/08/2022	1	05/08/2022	10/08/2022		05/08/2022	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		98	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	[NT]		99	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		97	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		97	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		99	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	102	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		96	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	8	[NT]		97	[NT]
Boron-Dissolved	µg/L	20	Metals-022	<20	1	<20	[NT]		108	[NT]
Barium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		100	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	[NT]		103	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		97	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	<5	[NT]		98	[NT]
Molybdenum-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		97	[NT]
Antimony-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		84	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		99	[NT]
Tin-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		97	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	302231-42
Date prepared	-			08/08/2022	42	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Date analysed	-			08/08/2022	42	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	42	<0.0004	<0.0004	0	101	106
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	42	<0.001	<0.001	0	101	102
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	42	0.0006	0.0006	0	100	97
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	42	<0.001	<0.001	0	100	102
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	42	0.0009	0.0009	0	105	105
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	42	<0.002	<0.002	0	86	89
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	42	<0.02	<0.02	0	101	92
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	42	<0.004	<0.004	0	103	105
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	42	<0.0004	<0.0004	0	100	101
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	42	<0.0004	<0.0004	0	106	101
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	42	0.0005	0.0006	18	107	111
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	42	<0.001	<0.001	0	100	96
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	42	<0.002	<0.002	0	103	94
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	42	<0.002	<0.002	0	105	106
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	42	<0.005	<0.005	0	102	106
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	42	<0.01	<0.01	0	104	113
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	42	<0.05	<0.05	0	101	104
4:2 FTS	µg/L	0.001	Org-029	<0.001	42	<0.001	<0.001	0	99	100
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	42	<0.0004	<0.0004	0	108	102
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	42	<0.0004	<0.0004	0	96	101
10:2 FTS	µg/L	0.002	Org-029	<0.002	42	<0.002	<0.002	0	109	101
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	42	<0.01	<0.01	0	101	106
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.005	42	<0.05	<0.05	0	105	99
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.01	42	<0.1	<0.1	0	104	97
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.005	42	<0.05	<0.05	0	105	98
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.05	42	<0.5	<0.5	0	105	109
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	42	<0.002	<0.002	0	113	105
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	42	<0.002	<0.002	0	99	96
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	99	42	97	98	1	98	100
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	101	42	106	105	1	102	105

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	302231-42
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	86	42	81	82	1	89	83
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	93	42	85	88	3	91	87
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	84	42	89	86	3	87	83
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	96	42	92	93	1	97	13
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	87	42	36	38	5	89	39
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	95	42	66	70	6	95	67
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	92	42	79	83	5	93	82
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	94	42	86	89	3	92	86
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	101	42	103	105	2	99	103
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	93	42	94	99	5	94	99
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	96	42	96	97	1	103	97
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	92	42	95	96	1	103	96
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	77	42	98	102	4	80	99
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	121	42	109	122	11	111	121
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	115	42	136	140	3	106	142
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	128	42	148	139	6	138	136
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	72	42	60	59	2	69	61
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	105	42	99	104	5	97	100
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	103	42	103	108	5	97	104
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	109	42	110	120	9	98	117

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	302231-42
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	108	42	115	113	2	96	109
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	105	42	115	112	3	102	106
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	118	42	127	124	2	132	124

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

TRH Soil C10-C40 NEPM -
Percent recovery for the surrogate is not possible to report as the high concentration of analytes in samples 302231-12 to 302231-16 and 302231-13ms have caused interference.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Factual description of asbestos identified in the soil samples: NEPM
Sample 302231-20; Chrysotile asbestos identified in 0.0020g of loose fibre bundles

Sample 302231-22; Amosite asbestos identified in 0.0131g of fibrous matted material

Acid Extractable Metals in Soil:
- The laboratory RPD acceptance criteria has been exceeded for 302231-12 for Cu. Therefore a triplicate result has been issued as laboratory sample number 302231-43.
- The laboratory RPD acceptance criteria has been exceeded for 302231-18 for Cu, Zn and Mn. Therefore a triplicate result has been issued as laboratory sample number 302231-44.
- # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.
- The PQL has been raised for Se due to interferences from analytes (other than those being tested) in sample/s 302231-18,19,22,24-26 and 44.
- ## Low spike recovery was obtained for this sample. Sample matrix interference is suspected. However, an acceptable recovery was obtained for the LCS.
- The PQL for Sb for sample 302231-13 has been raised due to the low spike recovery/recoveries. This may reflect other samples where similar in matrix and similar analytical interferences occur.

Total Sulphur analysed by MPL Laboratories. Report No. PDH0505

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Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No. :	
Sampler:	VA/TG	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Sample information					Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	ASBESTOS ID												Provide as much information about the sample as you can
1	RO20822	-	2/8	W	X																	PLASTIC + EXT
2	RO30822	-	3/8	W	X																	
3	RIN-02	-	3/8	W	X																	
4	TS		2/8	S					X													
5	TB		2/8	S	X				X													EXT
6	TB		3/8	S					X													
7	TB		3/8	S	X				X													EXT
8	CS1006 MAT-01		2/8	MAT						X												
9	-02		2/8	MAT						X												
10	CS104 MAT		2/8	MAT						X												
11	MAT		3/8	MAT						X												

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

Relinquished by (Company):		Received by (Company):	ES&H
Print Name:		Print Name:	Christine
Date & Time:		Date & Time:	03/08/22 16:00
Signature:		Signature:	

Lab Use Only

Job number:	302231
Temperature:	2°C
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	
Cooling: Ice / Ice pack / None	
Security seal: Intact / Broken / None	

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Unit 20/119 Reichardt Road, Winnellie, NT 0820
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Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No.:	
Sampler:	VA/TG	Date results required:	Standard ☑ / Same Day ☐ / 1 day ☐ / 2 day ☐ / 3 day ☐
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Sample Information					Tests Required															Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur												Provide as much information about the sample as you can
12	CS110	0.0-0.1	2/8	soil	X	X	X													PFAS2
13	QAQC1	-	↓	↓	X	X	X													EXTENDED
—	QAQC2	-	↓	↓	PLEASE FORWARD TO ALS FOR ASBESTOS PFAS + COMBO 6															SUITE
14	FI201	0.0-0.1	3/8	soil	X	X	X	X												4
15	QAQC3	-	↓	↓	X	X	X													
—	QAQC4	-	↓	↓	PLEASE FORWARD TO ALS FOR ASBESTOS, PFAS + COMBO 6															
16	CS109	0.0-0.1	3/8	SOIL	X	X	X	X												
17	FI209	0.0-0.1	2/8	SOIL	X	X	X													
18	FI208	1.5-1.6	2/8	SOIL	X	X	X													
NR	CS114	0.1-0.2	3/8	SOIL	X	X	X													
NR	CS115	0.0-0.1	3/8	SOIL	X	X	X	X												

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

Relinquished by (Company):	Received by (Company): ES&YD	Lab Use Only	
Print Name:	Print Name: Christine	Job number: 302231	Cooling: Ice / Ice pack / None
Date & Time:	Date & Time: 03/05/22 1600	Temperature: 2°C	Security seal: Intact / Broken / None
Signature:	Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

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Company:	CES - Consulting Earth Scientists			Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias			PO No. (if applicable):	
Project Mgr:	Tristan Goodbody			Envirolab Quote No. :	
Sampler:	VA/TG			Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073			Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day	
Phone:		Mob:	0439 261 637	*Note: Inform lab in advance if urgent turnaround is required - surcharges apply*	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au			Additional report format: ☐ Esdat ☐ Equis	
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au			Lab Comments:	

Sample Information					Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur														Provide as much information about the sample as you can
19	CS111	0.0-0.1	3/8	Soil	Y	Y	Y															
20	CS107	0.5-0.6	3/8	Soil	X	Y	Y	X														
21	CS104	0.1-0.2	2/8	Soil	X	Y	X															
22	CS108	0.0-0.1	2/8	Soil	X	X	X															
23	CS105	0.5-0.6	2/8	Soil	X	Y	Y															
24	CS113	0.1-0.2	2/8	Soil	X	Y	Y															
25	CS102	0.0-0.1	2/8	Soil	Y	Y	Y	X														
26	FS202	0.5-0.6	2/8	Soil	X	X	X															

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

Relinquished by (Company):		Received by (Company): RSSAN	*Lab Use Only*
Print Name:		Print Name: Christine	Job number: 302231 — Cooling: Ice / Ice pack / None
Date & Time:		Date & Time: 03/08/22 16:00	Temperature: 2.6°C — Security seal: Intact / Broken / None
Signature:		Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD

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Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias		
Project Mgr:	Tristan Goodbody	PO No. (if applicable):	
Sampler:	VA/TG	Envirolab Quote No. :	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Date results required: Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day	
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format: ☐ Esdat ☐ Equis	
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur												Comments
27	CLH01	0.0-0.1	3/9	Concrete	Y															PFAS
28	ASBC11				Y															= EXTENDED
—	ASBC12				PLEASE FORWARD TO ALS FOR PFAS ANALYSIS															Suite
29	CLH02				Y															
30	CLH11				Y															
31	CLH03				Y															
32	CLH04				Y															
33	CLH05				Y															
34	CLH06				Y															
35	CLH07				Y															
36	CLH08				Y															

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

Relinquished by (Company):		Received by (Company): ES&H	Lab Use Only
Print Name:		Print Name: Christine	Job number: 50223 — Cooling: Ice / Ice pack / None
Date & Time:		Date & Time: 03/05/22 16:00	Temperature: 2°C — Security seal: Intact / Broken / None
Signature:		Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD

CHAIN OF CUSTODY FORM - Client

[Copyright and Confidential]

ENVIROLAB GROUP
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Melbourne Lab - Envirolab Services
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08 8967 1201 | darwin@envirolab.com.au

Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No.:	
Sampler:	VA/TG	Date results required:	Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Phone:	Mob: 0439 261 637	Additional report format:	☐ Esdat ☐ Equis
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Lab Comments:	
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au		

Sample information					Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	ASBESTOS (AF/FA) _NEMP Method	Combination 8 Combo	Combustible Content and % Sulfur														Provide as much information about the sample as you can
37	CC409	0-0.1	3/8	Cored'	Y																	PFAS = EXTENDED SUITE
38	CC410	↓	↓	↓	Y																	
39	ANDOC13				Y																	
—	ANDOC14				PLEASE FORWARD TO ALS FOR PFAS ANALYSIS																	
40	CC412				Y																	
41	CC413				Y																	
42	POT-01																					

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

Relinquished by (Company):		Received by (Company):	BSP
Print Name:		Print Name:	Christine
Date & Time:		Date & Time:	03/08/22 16:00
Signature:		Signature:	

Lab Use Only	
Job number:	302231
Temperature:	2°C
Cooling:	Ice / Ice pack / None
Security seal:	Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4	STD

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2227751**	Page	: 1 of 11
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 04-Aug-2022 17:10
Order number	: ----	Date Analysis Commenced	: 08-Aug-2022
C-O-C number	: ----	Issue Date	: 15-Aug-2022 17:55
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Jake Spooner	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG005T: Poor precision was obtained for Zinc on sample ES2227744 # 001. Confirmed by re-digestion and reanalysis.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
  Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
  The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
  Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
  All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.

- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	----
			Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	----
Compound	CAS Number	LOR	Unit	ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	--------
				Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**11.1**	**12.2**	**4.1**	<0.1	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	----	----	----
Asbestos Type	1332-21-4	-	--	**-**	**-**	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	**No**	----	----	----
Sample weight (dry)	----	0.01	g	**618**	**687**	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	**No**	**No**	----	----	----
Organic Fibre	----	0.1	g/kg	**No**	**No**	----	----	----
APPROVED IDENTIFIER:	----	-	--	**J.SPOONER**	**J.SPOONER**	----	----	----
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	<0.0004	----	----	----
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	<0.001	----	----	----
ø Asbestos Containing Material	1332-21-4	0.1	g	<0.1	<0.1	----	----	----
ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)	<0.01	<0.01	----	----	----
ø Weight Used for % Calculation	----	0.0001	kg	**0.618**	**0.687**	----	----	----
ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	<0.0004	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**10**	**18**	----	----	----
Copper	7440-50-8	5	mg/kg	**15**	**21**	----	----	----
Lead	7439-92-1	5	mg/kg	**125**	**95**	----	----	----
Nickel	7440-02-0	2	mg/kg	**6**	**10**	----	----	----
Zinc	7440-66-6	5	mg/kg	**172**	**77**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	**0.1**	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	----
			Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	----
Compound	CAS Number	LOR	Unit	ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	--------
				Result	Result	Result	Result	----
EP068A: Organochlorine Pesticides (OC) - Continued								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	----
			Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	----
Compound	CAS Number	LOR	Unit	ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	--------
				Result	Result	Result	Result	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	**3.4**	**2.0**	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	**6.0**	**3.8**	----	----	----
Anthracene	120-12-7	0.5	mg/kg	**0.9**	**0.6**	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	**2.8**	**2.3**	----	----	----
Pyrene	129-00-0	0.5	mg/kg	**2.9**	**1.7**	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	**1.6**	**1.2**	----	----	----
Chrysene	218-01-9	0.5	mg/kg	**1.6**	**1.3**	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	**1.0**	**0.9**	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**0.7**	**0.5**	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	**20.9**	**14.3**	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	**1.0**	**0.7**	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**1.3**	**1.0**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.6**	**1.3**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	**80**	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	**520**	**480**	----	----	----
C29 - C36 Fraction	----	100	mg/kg	**200**	**250**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	----
			Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	----
Compound	CAS Number	LOR	Unit	ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	--------
				Result	Result	Result	Result	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	**800**	**730**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	**130**	**100**	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	**610**	**580**	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	**100**	**200**	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	**840**	**880**	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	**130**	**100**	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0003**	**0.0010**	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0003**	**0.0009**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	----
				Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	----
Compound	CAS Number	LOR	Unit		ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	--------
					Result	Result	Result	Result	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	**0.0004**	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	**0.0002**	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	**0.0009**	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	----
				Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	----
Compound	CAS Number	LOR	Unit		ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	--------
					Result	Result	Result	Result	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0006**	**0.0034**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0006**	**0.0019**	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0006**	**0.0034**	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**79.9**	**76.6**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**94.0**	**81.4**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**128**	**94.5**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**80.5**	**82.2**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**86.5**	**89.0**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**75.0**	**74.8**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**90.4**	**92.1**	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**84.3**	**88.4**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**89.1**	**91.0**	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**90.4**	**92.5**	----	----	----
Toluene-D8	2037-26-5	0.2	%		**80.0**	**91.0**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**78.6**	**92.0**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**91.0**	**93.0**	----	----	----
13C8-PFOA	----	0.0002	%		**91.5**	**101**	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	QAQC2 - 02-Aug-2022 00:00	Soil sample.
EA200: Description	QAQC4 - 02-Aug-2022 00:00	Soil sample.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200N: Asbestos Quantification (non-NATA)

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2227751**	Page	: 1 of 13
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 04-Aug-2022
Order number	: ----	Date Analysis Commenced	: 08-Aug-2022
C-O-C number	: ----	Issue Date	: 15-Aug-2022
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Jake Spooner	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4507496)									
ES2227744-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	28	24	14.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	28	17	45.8	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	8	37.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	37	24	40.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	38	35	10.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	71	# 34	69.4	0% - 50%
ES2227783-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	10	13	29.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	7	20.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	20	17	19.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	24	16	37.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	23	34.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4507507)									
ES2227751-002	QAQC4	EA055: Moisture Content	----	0.1	%	12.2	11.6	4.7	0% - 20%
ES2227963-002	Anonymous	EA055: Moisture Content	----	0.1	%	6.0	6.7	10.5	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4508702)									
ES2226952-015	Anonymous	EA055: Moisture Content	----	0.1	%	<0.1	<0.1	0.0	No Limit
WN2209374-001	Anonymous	EA055: Moisture Content	----	0.1	%	31.3	29.2	7.1	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4507497)									
ES2227744-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2227783-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4504287)									
ES2227047-003	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 4504286)									
ES2227047-003	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4504286)									
ES2227047-003	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4504286) - continued									
ES2227047-003	Anonymous	EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4504285)									
ES2227047-003	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4504284)									
ES2227047-003	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4504811)									
ES2227047-005	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4504284)									
ES2227047-003	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4504811)									
ES2227047-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 4504811)									
ES2227047-005	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 4504811) - continued									
ES2227047-005	Anonymous	EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4509190)									
ES2226039-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2227355-006	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4509190)									
ES2226039-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2227355-006	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4509190) - continued									
ES2227355-006	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4509190)									
ES2226039-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2227355-006	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4509190)									
ES2226039-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2227355-006	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4509190) - continued									
ES2227355-006	Anonymous	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4507496)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	101	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	96.0	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	115	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	104	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	96.3	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	103	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	88.2	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4507497)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	104	70.0	125
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4504287)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	99.4	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 4504286)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	86.2	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	86.4	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	80.8	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	82.0	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	84.4	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.7	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	94.7	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	87.8	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.2	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	79.5	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	85.4	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	83.8	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4504286)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4504286) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	84.9	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	87.0	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	91.6	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	88.4	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	86.8	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	88.1	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	90.8	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.5	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	92.8	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	107	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.4	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	94.0	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	101	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4504285)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	106	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	106	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	104	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	104	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	107	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	106	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	108	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	107	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	107	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	106	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	101	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	112	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	92.2	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	89.4	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	87.5	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	87.6	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4504284)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	94.2	75.0	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4504284) - continued								
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	91.1	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	92.7	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4504811)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	82.0	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4504284)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	93.0	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	90.9	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	98.8	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4504811)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	81.9	68.4	128
EP080: BTEXN (QCLot: 4504811)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	80.4	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	80.7	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	80.4	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	82.3	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	84.0	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	87.9	63.0	119
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4509190)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4509190)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	92.6	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	121	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.7	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4509190)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4509190) - continued								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	122	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	101	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	106	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4509190)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	111	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	120	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	113	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	113	69.2	143

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4507496)							
ES2227744-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	90.8	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.0	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	94.0	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	97.8	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	96.9	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	87.6	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	97.5	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4507497)							
ES2227744-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	93.9	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4504287)							
ES2227047-003	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	116	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 4504286)							
ES2227047-003	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	84.0	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 4504286) - continued							
ES2227047-003	Anonymous	EP068: Heptachlor	76-44-8	0.5 mg/kg	85.8	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	80.8	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	93.8	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	83.3	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	80.0	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4504286)							
ES2227047-003	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	91.2	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	81.5	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	82.5	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	86.9	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	81.0	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4504285)							
ES2227047-003	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	106	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	110	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4504284)							
ES2227047-003	Anonymous	EP071: C10 - C14 Fraction	----	480 mg/kg	104	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	110	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	116	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4504811)							
ES2227047-005	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	97.3	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4504284)							
ES2227047-003	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	108	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	110	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	126	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4504811)							
ES2227047-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	105	70.0	130
EP080: BTEXN (QCLot: 4504811)							
ES2227047-005	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	88.1	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	90.6	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	96.2	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	99.9	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	100.0	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	109	70.0	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4509190)							
ES2226039-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	106	72.0	128

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4509190) - continued							
ES2226039-001	Anonymous	EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	111	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	102	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	114	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	98.8	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	106	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4509190)							
ES2226039-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	110	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	116	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	110	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	108	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	110	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	115	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	109	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	108	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	103	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	95.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	98.9	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4509190)							
ES2226039-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	118	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	109	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	95.5	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	100	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	99.4	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	118	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	120	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4509190)							
ES2226039-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	116	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	113	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	110	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	117	69.2	143

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2227751**	Page	: 1 of 6
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 04-Aug-2022
Site	: ----	Issue Date	: 15-Aug-2022
Sampler	: VA/TG	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	ES2227744--001	Anonymous	**Zinc**	7440-66-6	69.4 %	0% - 50%	**RPD exceeds LOR based limits**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE Soil Jar (EA055)								
QAQC12,	QAQC14	**02-Aug-2022**	**----**	----	----	**09-Aug-2022**	16-Aug-2022	✓
Soil Glass Jar - Unpreserved (EA055)								
QAQC2,	QAQC4	**02-Aug-2022**	**----**	----	----	**09-Aug-2022**	16-Aug-2022	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag (EA200)								
QAQC2,	QAQC4	**02-Aug-2022**	**----**	----	----	**09-Aug-2022**	29-Jan-2023	✓
EA200N: Asbestos Quantification (non-NATA)								
Snap Lock Bag (EA200N)								
QAQC2,	QAQC4	**02-Aug-2022**	**----**	----	----	**09-Aug-2022**	29-Jan-2023	✓
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
QAQC2,	QAQC4	**02-Aug-2022**	**09-Aug-2022**	29-Jan-2023	✓	**09-Aug-2022**	29-Jan-2023	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
QAQC2,	QAQC4	**02-Aug-2022**	**09-Aug-2022**	30-Aug-2022	✓	**09-Aug-2022**	30-Aug-2022	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**09-Aug-2022**	17-Sep-2022	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**09-Aug-2022**	17-Sep-2022	✓
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**09-Aug-2022**	17-Sep-2022	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**09-Aug-2022**	17-Sep-2022	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**08-Aug-2022**	16-Aug-2022	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**08-Aug-2022**	16-Aug-2022	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**08-Aug-2022**	16-Aug-2022	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**02-Aug-2022**	**10-Aug-2022**	29-Jan-2023	✓	**10-Aug-2022**	19-Sep-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**02-Aug-2022**	**10-Aug-2022**	29-Jan-2023	✓	**10-Aug-2022**	19-Sep-2022	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**02-Aug-2022**	**10-Aug-2022**	29-Jan-2023	✓	**10-Aug-2022**	19-Sep-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**02-Aug-2022**	**10-Aug-2022**	29-Jan-2023	✓	**10-Aug-2022**	19-Sep-2022	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**02-Aug-2022**	**10-Aug-2022**	29-Jan-2023	✓	**10-Aug-2022**	19-Sep-2022	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	4	34	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM with Confirmation of Identification by AS 4964 - Gravimetric determination of Asbestos Containing Material, Fibrous Asbestos, Asbestos Fines and sample weight and calculation of percentage concentrations per NEPM protocols. Asbestos (Fines and Fibrous FA+AF) is reported as the equivalent weight in the sample received after accounting for sub-sampling (where applicable for the <7mm and/or <2mm fractions).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.

CHAIN OF CUSTODY FORM - Client

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08 8967 1201 | darwin@envirolab.com.au

Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias		
Project Mgr:	Tristan Goodbody	PO No. (if applicable):	
Sampler:	VA/TG	Envirolab Quote No.:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Date results required: Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day	
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format: ☐ Esdat ☐ Equis	
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Environmental Division
Sydney
Work Order Reference
ES2227751

Telephone : +61-2-8784 8555

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	ASBESTOS - 1,2	Comments: Provide as much information about the sample as you can
1	RO20822	-	2/8	W	X						TRACE + EXT
2	RO30822	-	3/8	W	X						
3	RIN-02	-	3/8	W	X						
4	TS		2/8	S					X		
5	TB		3/8	S	X				X		EXT
6	TB		3/8	S					X		
7	TB		3/8	S	X				X		EXT
8	CS104 MAT-01		2/8	MAT						X	
9	-02		2/8	MAT						X	
10	CS104 MAT		2/8	MAT						X	
11	MAT		3/8	MAT						X	

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

Relinquished by (Company):	ES SUC	Received by (Company):	ES SYD
Print Name:	C. MCLEAN	Print Name:	Christine
Date & Time:	4/8/22 4:05	Date & Time:	03/08/22 16:00
Signature:	CM	Signature:	

Lab Use Only

Job number:	322231
Temperature:	2°C
Cooling:	Ice / Ice pack / None
Security seal:	Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / (STD)	

Rec: Christine 04/08/22 1710

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

Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No.:	
Sampler:	VA/TG	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) NEMP Method	Combination B Combo	Combustible Content and % Sulfur											Comments: Provide as much information about the sample as you can
12	CS110	0.0-0.1	2/8	soil	X	X	X												PFAS + EXPANDED SUITE
13	QAQC1	-	↓	↓	X	X	X												
—	QAQC2	-	↓	↓	PLEASE FORWARD DATA FOR ASBESTOS, PFAS + COMBO 6 SUITE														
14	FI201	0.0-0.1	3/8	soil	X	X	X	X											
15	QAQC3	-	↓	↓	X	X	X												
—	QAQC4	-	↓	↓	PLEASE FORWARD TO ALL FOR ASBESTOS, PFAS + COMBO 6														
16	CS109	0.0-0.1	3/8	soil	X	X	X	X											
17	FI209	0.0-0.1	2/8	soil	X	X	X												
18	FI209	1.5-1.6	2/8	soil	X	X	X												
NR	CS114	0.1-0.2	3/8	soil	X	X	X												
NR	CS115	0.0-0.1	3/8	soil	X	X	X	X											

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

Relinquished by (Company):	RELINQUISHED BY ENSUG	Received by (Company):	ENSUG
Print Name:	G. MUENIE	Print Name:	Christine
Date & Time:	4/8/22 9:00 AM	Date & Time:	08/04/22 16:00
Signature:		Signature:	

Lab Use Only

Job number:	302231
Temperature:	20
Cooling:	Ice / Ice pack / None
Security seal:	Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Rec'd + COC 04/08/22 17:00

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Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No. :	
Sampler:	VA/TG	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA)_NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	Comments: Provide as much information about the sample as you can
27	CCL01	0.0-0.1	3/8	Concrete	Y				PFAS
28	ASEC11				Y				- EXTENDED
3 —	ASEC12				PLEASE FORWARD TO ALS FOR PFAS ANALYSIS				Suite
29	CCL02				Y				
30	CCL11				Y				
31	CCL03				Y				
32	CCL04				Y				
33	CCL05				Y				
34	CCL06				Y				
35	CCL07				Y				
36	CCL08				Y				

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

Relinquished by (Company):	EW Sydney	Received by (Company):	ALS
Print Name:	C. McLaughlin	Print Name:	Christine
Date & Time:	4/8/22 905	Date & Time:	07/08/22 1600
Signature:		Signature:	

Lab Use Only

Job number:	502231
Temperature:	23C
Cooling:	Ice / Ice pack / None
Security seal:	Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Rec'd 2 Ash 04/08/22 1710

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Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (If applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No. :	
Sampler:	VA/TG	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	Comments: Provide as much information about the sample as you can
37	CC409	0-0.1	3/8	General	Y				PFAS = EXTENDED SUITE
38	CC410	0.1			Y				
39	QABC13				Y				
40	QABC14				PLEASE FORWARD TO ALS FOR PFAS ANALYSIS				
41	CC412				Y				
	CC413				Y				
42	PGT-01								

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

Relinquished by (Company):	ES SMC	Received by (Company):	ESP SYD
Print Name:	CHRISTINE	Print Name:	Christine
Date & Time:	4/8/22 0900	Date & Time:	07/08/22 16:00
Signature:		Signature:	

Lab Use Only

Job number:	302231
Temperature:	2°C
Cooling:	Ice / Ice pack / None
Security seal:	Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Rec: Lab 04/08/22 1710

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2227751**	Page	: 1 of 13
Amendment	: **1**		
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 04-Aug-2022 17:10
Order number	: ----	Date Analysis Commenced	: 08-Aug-2022
C-O-C number	: ----	Issue Date	: 24-Aug-2022 15:30
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Jake Spooner	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG005T: Poor precision was obtained for Zinc on sample ES2227744 # 001. Confirmed by re-digestion and reanalysis.
- Amendment (19/08/2022):This report has been amended to add sample ID QAQC11 & QAQC13 for PFAS analysis.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
  Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
  The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
  Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
  All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.

- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	QAQC11
			Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	03-Aug-2022 00:00
Compound	CAS Number	LOR	Unit	ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	ES2227751-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**11.1**	**12.2**	**4.1**	<0.1	**5.7**
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**----**	**----**	**----**
Asbestos Type	1332-21-4	-	--	**-**	**-**	**----**	**----**	**----**
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	**No**	**----**	**----**	**----**
Sample weight (dry)	----	0.01	g	**618**	**687**	**----**	**----**	**----**
Synthetic Mineral Fibre	----	0.1	g/kg	**No**	**No**	**----**	**----**	**----**
Organic Fibre	----	0.1	g/kg	**No**	**No**	**----**	**----**	**----**
APPROVED IDENTIFIER:	----	-	--	**J.SPOONER**	**J.SPOONER**	**----**	**----**	**----**
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	<0.0004	**----**	**----**	**----**
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	<0.001	**----**	**----**	**----**
ø Asbestos Containing Material	1332-21-4	0.1	g	<0.1	<0.1	**----**	**----**	**----**
ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)	<0.01	<0.01	**----**	**----**	**----**
ø Weight Used for % Calculation	----	0.0001	kg	**0.618**	**0.687**	**----**	**----**	**----**
ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	<0.0004	**----**	**----**	**----**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	**----**	**----**	**----**
Cadmium	7440-43-9	1	mg/kg	<1	<1	**----**	**----**	**----**
Chromium	7440-47-3	2	mg/kg	**10**	**18**	**----**	**----**	**----**
Copper	7440-50-8	5	mg/kg	**15**	**21**	**----**	**----**	**----**
Lead	7439-92-1	5	mg/kg	**125**	**95**	**----**	**----**	**----**
Nickel	7440-02-0	2	mg/kg	**6**	**10**	**----**	**----**	**----**
Zinc	7440-66-6	5	mg/kg	**172**	**77**	**----**	**----**	**----**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	**0.1**	**----**	**----**	**----**
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	**----**	**----**	**----**
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	**----**	**----**	**----**
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	**----**	**----**	**----**
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	**----**	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	QAQC11
				Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	03-Aug-2022 00:00
Compound	CAS Number	LOR	Unit		ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	ES2227751-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	QAQC11
				Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	03-Aug-2022 00:00
Compound	CAS Number	LOR	Unit		ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	ES2227751-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		**3.4**	**2.0**	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		**6.0**	**3.8**	----	----	----
Anthracene	120-12-7	0.5	mg/kg		**0.9**	**0.6**	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		**2.8**	**2.3**	----	----	----
Pyrene	129-00-0	0.5	mg/kg		**2.9**	**1.7**	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		**1.6**	**1.2**	----	----	----
Chrysene	218-01-9	0.5	mg/kg		**1.6**	**1.3**	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		**1.0**	**0.9**	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		**0.7**	**0.5**	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		**20.9**	**14.3**	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		**1.0**	**0.7**	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**1.3**	**1.0**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.6**	**1.3**	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		**80**	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg		**520**	**480**	----	----	----
C29 - C36 Fraction	----	100	mg/kg		**200**	**250**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	QAQC11
			Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	03-Aug-2022 00:00
Compound	CAS Number	LOR	Unit	ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	ES2227751-005
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
^ C10 - C36 Fraction (sum)	----	50	mg/kg	**800**	**730**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	**130**	**100**	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	**610**	**580**	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	**100**	**200**	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	**840**	**880**	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	**130**	**100**	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	<0.0002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	<0.0002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	**0.0003**	**0.0010**	----	----	<0.0002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	<0.0002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	**0.0003**	**0.0009**	----	----	<0.0002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	<0.0002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	----	----	<0.001

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	QAQC11
				Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	03-Aug-2022 00:00
Compound	CAS Number	LOR	Unit		ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	ES2227751-005
					Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	<0.0002	----	----	**0.0002**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	**0.0004**	----	----	**0.0002**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	**0.0002**	----	----	<0.0002
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	**0.0009**	----	----	<0.0002
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	**0.0009**
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	----	----	<0.0002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	**0.0007**
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	<0.0002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	**0.0003**
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	<0.0005
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	<0.0002
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<0.0005	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	<0.0005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	<0.0005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	<0.0002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	<0.0002
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	<0.0005

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	QAQC4	QAQC12	QAQC14	QAQC11
				Sampling date / time	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	02-Aug-2022 00:00	03-Aug-2022 00:00
Compound	CAS Number	LOR	Unit		ES2227751-001	ES2227751-002	ES2227751-003	ES2227751-004	ES2227751-005
					Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	----	----	<0.0005
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0006**	**0.0034**	----	----	**0.0023**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0006**	**0.0019**	----	----	<0.0002
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0006**	**0.0034**	----	----	**0.0004**
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**79.9**	**76.6**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**94.0**	**81.4**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**128**	**94.5**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**80.5**	**82.2**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**86.5**	**89.0**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**75.0**	**74.8**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**90.4**	**92.1**	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**84.3**	**88.4**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**89.1**	**91.0**	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**90.4**	**92.5**	----	----	----
Toluene-D8	2037-26-5	0.2	%		**80.0**	**91.0**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**78.6**	**92.0**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**91.0**	**93.0**	----	----	**113**
13C8-PFOA	----	0.0002	%		**91.5**	**101**	----	----	**108**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC13	----	----	----	----
				Sampling date / time	03-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2227751-006	--------	--------	--------	--------
					Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**4.2**	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0002**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		**0.0018**	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		**0.0018**	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		**0.0016**	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC13	----	----	----	----
				Sampling date / time	03-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2227751-006	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0054**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0002**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0002**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**99.5**	----	----	----	----
13C8-PFOA	----	0.0002	%		**116**	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	QAQC2 - 02-Aug-2022 00:00	Soil sample.
EA200: Description	QAQC4 - 02-Aug-2022 00:00	Soil sample.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200N: Asbestos Quantification (non-NATA)

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2227751**	Page	: 1 of 17
Amendment	: **1**		
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 04-Aug-2022
Order number	: ----	Date Analysis Commenced	: 08-Aug-2022
C-O-C number	: ----	Issue Date	: 24-Aug-2022
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Jake Spooner	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4507496)									
ES2227744-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	28	24	14.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	28	17	45.8	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	8	37.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	37	24	40.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	38	35	10.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	71	# 34	69.4	0% - 50%
ES2227783-008	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	10	13	29.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	7	20.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	20	17	19.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	24	16	37.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	23	34.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4507507)									
ES2227751-002	QAQC4	EA055: Moisture Content	----	0.1	%	12.2	11.6	4.7	0% - 20%
ES2227963-002	Anonymous	EA055: Moisture Content	----	0.1	%	6.0	6.7	10.5	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4508702)									
ES2226952-015	Anonymous	EA055: Moisture Content	----	0.1	%	<0.1	<0.1	0.0	No Limit
WN2209374-001	Anonymous	EA055: Moisture Content	----	0.1	%	31.3	29.2	7.1	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4533016)									
ES2227751-005	QAQC11	EA055: Moisture Content	----	0.1	%	5.7	6.0	5.1	0% - 20%
ES2228735-011	Anonymous	EA055: Moisture Content	----	0.1	%	12.2	12.3	1.5	0% - 20%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4507497)									
ES2227744-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2227783-008	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4504287)									
ES2227047-003	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 4504286)									
ES2227047-003	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4504286)									
ES2227047-003	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4504286) - continued									
ES2227047-003	Anonymous	EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4504285)									
ES2227047-003	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4504284)									
ES2227047-003	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4504811)									
ES2227047-005	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4504284)									
ES2227047-003	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4504811)									
ES2227047-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 4504811)									
ES2227047-005	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4509190)									
ES2226039-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2227355-006	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4535061)									
ES2227751-005	QAQC11	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2229051-009	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	0.0005	0.0005	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	0.0003	0.0004	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0028	0.0026	8.2	0% - 50%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0009	0.0007	19.4	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4509190)									
ES2226039-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4509190) - continued									
ES2226039-001	Anonymous	EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2227355-006	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4535061)									
ES2227751-005	QAQC11	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0002	0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	0.0009	0.0010	10.9	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	0.0007	0.0008	14.7	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	0.0003	0.0004	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2229051-009	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0003	0.0003	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4509190)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4509190) - continued									
ES2226039-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2227355-006	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4535061)									
ES2227751-005	QAQC11	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2229051-009	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4535061) - continued									
ES2229051-009	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4509190)									
ES2226039-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2227355-006	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4535061)									
ES2227751-005	QAQC11	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.0006	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2229051-009	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4535061) - continued									
ES2229051-009	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4507496)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	101	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	96.0	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	115	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	104	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	96.3	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	103	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	88.2	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4507497)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	104	70.0	125
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4504287)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	99.4	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 4504286)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	86.2	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	86.4	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	80.8	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	82.0	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	84.4	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.7	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	94.7	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	87.8	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.2	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	79.5	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	85.4	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	83.8	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4504286)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4504286) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	84.9	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	87.0	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	91.6	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	88.4	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	86.8	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	88.1	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	90.8	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.5	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	92.8	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	107	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.4	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	94.0	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	101	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4504285)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	106	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	106	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	104	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	104	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	107	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	106	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	108	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	107	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	107	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	106	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	101	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	112	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	92.2	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	89.4	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	87.5	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	87.6	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4504284)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	94.2	75.0	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4504284) - continued								
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	91.1	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	92.7	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4504811)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	82.0	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4504284)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	93.0	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	90.9	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	98.8	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4504811)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	81.9	68.4	128
EP080: BTEXN (QCLot: 4504811)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	80.4	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	80.7	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	80.4	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	82.3	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	84.0	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	87.9	63.0	119
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4509190)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4535061)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.4	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4509190)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	92.6	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	69.0	133

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4509190) - continued								
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	121	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	120	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	89.7	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4535061)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	88.2	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	125	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.4	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4509190)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	122	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	101	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	106	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4535061)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	116	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.8	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	108	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	98.9	65.1	134

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4535061) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4509190)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	111	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	120	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	113	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	113	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4535061)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	127	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	125	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	120	69.2	143

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4507496)							
ES2227744-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	90.8	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.0	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	94.0	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	97.8	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	96.9	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	87.6	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	97.5	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4507497)							
ES2227744-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	93.9	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4504287)							
ES2227047-003	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	116	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 4504286)							
ES2227047-003	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	84.0	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	85.8	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 4504286) - continued							
ES2227047-003	Anonymous	EP068: Aldrin	309-00-2	0.5 mg/kg	80.8	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	93.8	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	83.3	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	80.0	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4504286)							
ES2227047-003	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	91.2	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	81.5	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	82.5	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	86.9	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	81.0	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4504285)							
ES2227047-003	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	106	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	110	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4504284)							
ES2227047-003	Anonymous	EP071: C10 - C14 Fraction	----	480 mg/kg	104	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	110	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	116	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4504811)							
ES2227047-005	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	97.3	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4504284)							
ES2227047-003	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	108	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	110	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	126	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4504811)							
ES2227047-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	105	70.0	130
EP080: BTEXN (QCLot: 4504811)							
ES2227047-005	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	88.1	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	90.6	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	96.2	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	99.9	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	100.0	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	109	70.0	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4509190)							
ES2226039-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	106	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	111	73.0	123

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4509190) - continued							
ES2226039-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	102	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	114	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	98.8	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	106	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4535061)							
ES2227751-005	QAQC11	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	80.0	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	103	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	106	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	97.6	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	90.8	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	100	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4509190)							
ES2226039-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	110	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	116	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	110	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	108	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	110	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	115	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	109	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	108	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	103	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	95.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	98.9	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4535061)							
ES2227751-005	QAQC11	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	124	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	110	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	110	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	104	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	123	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	123	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	93.2	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	117	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	134	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	116	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	94.7	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4509190)							
ES2226039-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	118	67.0	137

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4509190) - continued							
ES2226039-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	109	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	95.5	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	100	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	99.4	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	118	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	120	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4535061)							
ES2227751-005	QAQC11	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	110	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	112	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	92.3	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	108	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	97.4	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	134	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	78.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4509190)							
ES2226039-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	116	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	113	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	110	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	117	69.2	143
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4535061)							
ES2227751-005	QAQC11	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	118	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	104	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	94.8	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	84.4	69.2	143

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2227751**	Page	: 1 of 7
Amendment	: **1**		
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 04-Aug-2022
Site	: ----	Issue Date	: 24-Aug-2022
Sampler	: VA/TG	No. of samples received	: 6
Order number	: ----	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	ES2227744--001	Anonymous	**Zinc**	7440-66-6	69.4 %	0% - 50%	**RPD exceeds LOR based limits**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar							
QAQC11,	QAQC13	----	----	----	22-Aug-2022	17-Aug-2022	**5**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
HDPE Soil Jar (EA055)								
QAQC12,	QAQC14	**02-Aug-2022**	**----**	----	----	**09-Aug-2022**	16-Aug-2022	✓
HDPE Soil Jar (EA055)								
QAQC11,	QAQC13	**03-Aug-2022**	**----**	----	----	**22-Aug-2022**	17-Aug-2022	×
Soil Glass Jar - Unpreserved (EA055)								
QAQC2,	QAQC4	**02-Aug-2022**	**----**	----	----	**09-Aug-2022**	16-Aug-2022	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag (EA200)								
QAQC2,	QAQC4	**02-Aug-2022**	**----**	----	----	**09-Aug-2022**	29-Jan-2023	✓
EA200N: Asbestos Quantification (non-NATA)								
Snap Lock Bag (EA200N)								
QAQC2,	QAQC4	**02-Aug-2022**	**----**	----	----	**09-Aug-2022**	29-Jan-2023	✓
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
QAQC2,	QAQC4	**02-Aug-2022**	**09-Aug-2022**	29-Jan-2023	✓	**09-Aug-2022**	29-Jan-2023	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
QAQC2,	QAQC4	**02-Aug-2022**	**09-Aug-2022**	30-Aug-2022	✓	**09-Aug-2022**	30-Aug-2022	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**09-Aug-2022**	17-Sep-2022	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**09-Aug-2022**	17-Sep-2022	✓
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**09-Aug-2022**	17-Sep-2022	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**09-Aug-2022**	17-Sep-2022	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**08-Aug-2022**	16-Aug-2022	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**08-Aug-2022**	16-Aug-2022	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
QAQC2,	QAQC4	**02-Aug-2022**	**08-Aug-2022**	16-Aug-2022	✓	**08-Aug-2022**	16-Aug-2022	✓
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**02-Aug-2022**	**10-Aug-2022**	29-Jan-2023	✓	**10-Aug-2022**	19-Sep-2022	✓
HDPE Soil Jar (EP231X)								
QAQC11,	QAQC13	**03-Aug-2022**	**23-Aug-2022**	30-Jan-2023	✓	**24-Aug-2022**	02-Oct-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**02-Aug-2022**	**10-Aug-2022**	29-Jan-2023	✓	**10-Aug-2022**	19-Sep-2022	✓
HDPE Soil Jar (EP231X)								
QAQC11,	QAQC13	**03-Aug-2022**	**23-Aug-2022**	30-Jan-2023	✓	**24-Aug-2022**	02-Oct-2022	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**02-Aug-2022**	**10-Aug-2022**	29-Jan-2023	✓	**10-Aug-2022**	19-Sep-2022	✓
HDPE Soil Jar (EP231X)								
QAQC11,	QAQC13	**03-Aug-2022**	**23-Aug-2022**	30-Jan-2023	✓	**24-Aug-2022**	02-Oct-2022	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**02-Aug-2022**	**10-Aug-2022**	29-Jan-2023	✓	**10-Aug-2022**	19-Sep-2022	✓
HDPE Soil Jar (EP231X)								
QAQC11,	QAQC13	**03-Aug-2022**	**23-Aug-2022**	30-Jan-2023	✓	**24-Aug-2022**	02-Oct-2022	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**02-Aug-2022**	**10-Aug-2022**	29-Jan-2023	✓	**10-Aug-2022**	19-Sep-2022	✓
HDPE Soil Jar (EP231X)								
QAQC11,	QAQC13	**03-Aug-2022**	**23-Aug-2022**	30-Jan-2023	✓	**24-Aug-2022**	02-Oct-2022	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	6	54	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	35	**11.43**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM with Confirmation of Identification by AS 4964 - Gravimetric determination of Asbestos Containing Material, Fibrous Asbestos, Asbestos Fines and sample weight and calculation of percentage concentrations per NEPM protocols. Asbestos (Fines and Fibrous FA+AF) is reported as the equivalent weight in the sample received after accounting for sub-sampling (where applicable for the <7mm and/or <2mm fractions).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.

Simon Song

From: Victor Arias <victor.arias@consultingearth.com.au>
Sent: Wednesday, 17 August 2022 5:14 PM
To: Simon Song
Cc: Tristan Goodbody
Subject: FW: ALS Workorder ES2227751 (Project CES170608-GPM)
Attachments: ES2227751_COC.pdf

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Hi Simon,

As mentioned ALS lost two triplicate samples. You reference is 302231 CES170608-GPM. I also attached the COC.

After completing the PFAS analysis please submit the following samples or subsample (whatever is easier for you) to ALS for PFAS analysis.

- QAQC11 - 28
- QAQC13 - 39

302231

Relinquished by ELI Such
C. Mulcahy 1200
18/8/22
Um

Thank you.

Cheers,

Dr Victor Arias

Senior Environmental Scientist

CONSULTING EARTH SCIENTISTS

www.consultingearth.com.au

Consulting Earth Scientists Pty Ltd
Newcastle, Hunter & NSW North Coast
Suite 1, 25 Beresford Street
Newcastle West, NSW 2302

Tel:+61 2 49654782 M:+61 439 261 637

ABN 67 151 524 757

Environmental Division
Environmental Division
Sydney
Work Order Reference
ES2227751

Telephone : +61-2-8784 8555

Rec: Lees 18/08/22 1655

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Simon Song

From: Victor Arias <victor.arias@consultingearth.com.au>
Sent: Wednesday, 17 August 2022 5:16 PM
To: Sarah Mathew
Cc: Simon Song
Subject: RE: ES2227751

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relinquished by ES
C. Mulcahy
18/8/22 1200 CM

Hi Sara,

I have requested Envirolab to send you TWO samples to replace those.

Please do not loose them again.

Cheers,

Dr Victor Arias

Senior Environmental Scientist

CONSULTING EARTH SCIENTISTS

Rec: JC 18/08/22 1655

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From: Sarah Mathew <sarah.mathew@ALSGlobal.com>
Sent: Wednesday, 17 August 2022 5:00 PM
To: Victor Arias <victor.arias@consultingearth.com.au>
Subject: ES2227751

Hi Victor,

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 302351

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias, Tristan Goodbody
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	20 Soil, 1 Water
Date samples received	05/08/2022
Date completed instructions received	05/08/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	15/08/2022
Date of Issue	18/08/2022

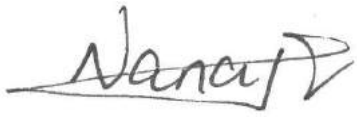
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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Diego Bigolin, Inorganics Supervisor
Giovanni Agosti, Group Technical Manager
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organic Instruments Team Leader
Loren Bardwell, Development Chemist
Lucy Zhu, Asbestos Supervisor
Phalak Inthakesone, Organics Development Manager, Sydney
Steven Luong, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in Soils Extended					
Our Reference		302351-9	302351-10	302351-11	302351-14
Your Reference	UNITS	CS103	CS114	CS115	TB
Depth		0.1-0.2	0.1-0.2	0-0.1	-
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	97	103	101	104
Surrogate $^{13}C_2$ *PFOA*	%	98	98	98	103
Extracted ISTD $^{13}C_3$ *PFBS*	%	101	100	104	107
Extracted ISTD $^{18}O_2$ *PFHxS*	%	95	98	96	99
Extracted ISTD $^{13}C_4$ *PFOS*	%	96	97	99	97

PFAS in Soils Extended					
Our Reference		302351-9	302351-10	302351-11	302351-14
Your Reference	UNITS	CS103	CS114	CS115	TB
Depth		0.1-0.2	0.1-0.2	0-0.1	-
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	93	99	100	105
Extracted ISTD $^{13}C_3$ *PFPeA*	%	91	97	97	98
Extracted ISTD $^{13}C_2$ *PFHxA*	%	93	99	96	101
Extracted ISTD $^{13}C_4$ *PFHpA*	%	98	103	99	101
Extracted ISTD $^{13}C_4$ *PFOA*	%	102	103	106	100
Extracted ISTD $^{13}C_5$ *PFNA*	%	105	114	114	104
Extracted ISTD $^{13}C_2$ *PFDA*	%	109	116	111	102
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	118	120	124	113
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	122	129	127	110
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	128	137	137	131
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	104	107	107	101
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	134	135	132	105
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	134	#	162	107
Extracted ISTD $^{13}C_8$ *FOSA*	%	104	107	106	104
Extracted ISTD d_3 *N MeFOSA*	%	102	99	101	103
Extracted ISTD d_5 *N EtFOSA*	%	104	109	106	111
Extracted ISTD d_7 *N MeFOSE*	%	98	92	94	99
Extracted ISTD d_9 *N EtFOSE*	%	96	93	93	97
Extracted ISTD d_3 *N MeFOSAA*	%	136	156	150	116
Extracted ISTD d_5 *N EtFOSAA*	%	134	166	158	111
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	<0.1	<0.1	<0.1

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		302351-1	302351-2	302351-3	302351-4	302351-5
Your Reference	UNITS	A4410	A4413	A4414	A4404	A4409
Depth		0-0.1	0-0.1	0-0.1	0.9-1.0	0.6-0.7
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	1	2
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	88	89	92	82	92

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		302351-6	302351-7	302351-8	302351-9	302351-10
Your Reference	UNITS	A4411	A4411	A4412	CS103	CS114
Depth		0.45-0.55	1.0-1.1	0.4-0.5	0.1-0.2	0.1-0.2
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	1	1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	89	95	95	91	86

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		302351-11	302351-13	302351-14	302351-15	302351-16
Your Reference	UNITS	CS115	TS	TB	QAQC5	A4401
Depth		0-0.1	-	-	-	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/08/2022	12/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
TRH C_6 - C_9	mg/kg	<25	[NA]	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	[NA]	<25	<25	37
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	[NA]	<25	<25	37
Benzene	mg/kg	<0.2	88%	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	87%	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	88%	<1	<1	<1
m+p-xylene	mg/kg	<2	88%	<2	<2	<2
o-Xylene	mg/kg	<1	87%	<1	<1	<1
Naphthalene	mg/kg	<1	[NA]	<1	4	4
Total +ve Xylenes	mg/kg	<1	[NA]	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	84	88	95	89	84

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		302351-17	302351-18	302351-19	302351-20	302351-21
Your Reference	UNITS	A4402	A4403	A4405	A4406	A4408
Depth		0-0.1	0-0.1	0-0.1	0-0.1	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	48	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	48	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	96	92	88	88	87

svTRH (C10-C40) in Soil						
Our Reference		302351-1	302351-2	302351-3	302351-4	302351-5
Your Reference	UNITS	A4410	A4413	A4414	A4404	A4409
Depth		0-0.1	0-0.1	0-0.1	0.9-1.0	0.6-0.7
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
TRH C_{10} - C_{14}	mg/kg	190	88	<50	300	700
TRH C_{15} - C_{28}	mg/kg	1,100	520	<100	1,400	1,900
TRH C_{29} - C_{36}	mg/kg	<100	110	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	1,300	720	<50	1,700	2,600
TRH >C_{10} -C_{16}	mg/kg	510	170	<50	800	1,500
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	510	170	<50	800	1,500
TRH >C_{16} -C_{34}	mg/kg	760	520	<100	860	1,100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	1,300	690	<50	1,700	2,600
Surrogate o-Terphenyl	%	#	#	83	#	#

svTRH (C10-C40) in Soil						
Our Reference		302351-6	302351-7	302351-8	302351-9	302351-10
Your Reference	UNITS	A4411	A4411	A4412	CS103	CS114
Depth		0.45-0.55	1.0-1.1	0.4-0.5	0.1-0.2	0.1-0.2
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
TRH C_{10} - C_{14}	mg/kg	600	830	350	<50	53
TRH C_{15} - C_{28}	mg/kg	3,500	2,900	1,300	140	300
TRH C_{29} - C_{36}	mg/kg	720	130	150	<100	150
Total +ve TRH (C10-C36)	mg/kg	4,800	3,900	1,800	140	500
TRH >C_{10} -C_{16}	mg/kg	1,400	1,700	820	<50	81
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	1,400	1,700	820	<50	81
TRH >C_{16} -C_{34}	mg/kg	3,300	2,000	930	170	390
TRH >C_{34} -C_{40}	mg/kg	340	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	5,000	3,700	1,700	170	470
Surrogate o-Terphenyl	%	#	#	#	89	108

svTRH (C10-C40) in Soil						
Our Reference		302351-11	302351-15	302351-16	302351-17	302351-18
Your Reference	UNITS	CS115	QAQC5	A4401	A4402	A4403
Depth		0-0.1	-	0-0.1	0-0.1	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
TRH C_{10} - C_{14}	mg/kg	70	1,500	1,200	540	<50
TRH C_{15} - C_{28}	mg/kg	400	4,400	4,200	3,700	<100
TRH C_{29} - C_{36}	mg/kg	140	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	610	6,000	5,300	4,200	<50
TRH >C_{10} -C_{16}	mg/kg	97	3,200	2,600	1,500	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	97	3,200	2,600	1,500	<50
TRH >C_{16} -C_{34}	mg/kg	490	2,600	2,500	2,700	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	580	5,800	5,100	4,200	<50
Surrogate o-Terphenyl	%	118	#	#	#	76

svTRH (C10-C40) in Soil				
Our Reference		302351-19	302351-20	302351-21
Your Reference	UNITS	A4405	A4406	A4408
Depth		0-0.1	0-0.1	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022
TRH C_{10} - C_{14}	mg/kg	240	<50	760
TRH C_{15} - C_{28}	mg/kg	1,300	<100	6,600
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	1,500	<50	7,300
TRH >C_{10} -C_{16}	mg/kg	660	<50	2,500
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	660	<50	2,500
TRH >C_{16} -C_{34}	mg/kg	840	<100	4,700
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	1,500	<50	7,200
Surrogate o-Terphenyl	%	#	83	#

PAHs in Soil						
Our Reference		302351-1	302351-2	302351-3	302351-4	302351-5
Your Reference	UNITS	A4410	A4413	A4414	A4404	A4409
Depth		0-0.1	0-0.1	0-0.1	0.9-1.0	0.6-0.7
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Naphthalene	mg/kg	<0.1	0.7	<0.1	0.5	0.5
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	1	0.7
Phenanthrene	mg/kg	<0.1	1	<0.1	2.2	1.5
Anthracene	mg/kg	<0.1	0.1	<0.1	0.3	0.3
Fluoranthene	mg/kg	<0.1	0.5	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.4	<0.1	0.2	0.1
Benzo(a)anthracene	mg/kg	<0.1	0.6	<0.1	0.1	<0.1
Chrysene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.2	<0.05	0.1	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	3.9	<0.05	4.4	3.0
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	80	81	88	81	80

PAHs in Soil						
Our Reference		302351-6	302351-7	302351-8	302351-9	302351-10
Your Reference	UNITS	A4411	A4411	A4412	CS103	CS114
Depth		0.45-0.55	1.0-1.1	0.4-0.5	0.1-0.2	0.1-0.2
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Naphthalene	mg/kg	2.1	2.1	1.0	0.3	1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.5	1.2	0.6	<0.1	0.1
Phenanthrene	mg/kg	2.6	2.7	2.1	1	1.9
Anthracene	mg/kg	0.2	0.4	0.2	0.1	0.2
Fluoranthene	mg/kg	1.3	0.4	0.7	0.5	0.9
Pyrene	mg/kg	1.1	0.4	0.6	0.3	0.8
Benzo(a)anthracene	mg/kg	1.6	0.5	1	0.5	1.2
Chrysene	mg/kg	0.8	0.2	0.5	0.3	0.5
Benzo(b,j+k)fluoranthene	mg/kg	0.8	0.2	0.4	0.2	0.5
Benzo(a)pyrene	mg/kg	0.54	0.2	0.4	0.09	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	<0.1	0.2	<0.1	0.1
Total +ve PAH's	mg/kg	12	8.2	7.6	3.4	7.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.8	<0.5	0.6	<0.5	0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.8	<0.5	0.6	<0.5	0.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.9	<0.5	0.7	<0.5	0.7
Surrogate p-Terphenyl-d14	%	76	82	77	82	77

PAHs in Soil						
Our Reference		302351-11	302351-15	302351-16	302351-17	302351-18
Your Reference	UNITS	CS115	QAQC5	A4401	A4402	A4403
Depth		0-0.1	-	0-0.1	0-0.1	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	08/08/2022	10/08/2022	10/08/2022	08/08/2022	08/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Naphthalene	mg/kg	0.7	3.0	3.1	0.8	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	2.2	2.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	5.2	4.9	1	<0.1
Phenanthrene	mg/kg	1.9	9.1	8.4	2.0	<0.1
Anthracene	mg/kg	2.2	1.5	0.8	<0.5	<0.1
Fluoranthene	mg/kg	1.5	<0.1	0.6	<0.2	<0.1
Pyrene	mg/kg	0.9	0.9	0.8	<0.5	<0.1
Benzo(a)anthracene	mg/kg	1.2	0.9	<0.1	<0.2	<0.1
Chrysene	mg/kg	0.7	0.4	0.4	<0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.7	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.3	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	10	23	21	3.8	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.6	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	81	82	83	79	87

PAHs in Soil				
Our Reference		302351-19	302351-20	302351-21
Your Reference	UNITS	A4405	A4406	A4408
Depth		0-0.1	0-0.1	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	10/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022
Naphthalene	mg/kg	0.6	0.1	1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.8	<0.1	6.4
Phenanthrene	mg/kg	1.7	0.2	11
Anthracene	mg/kg	<0.3	<0.1	1.4
Fluoranthene	mg/kg	<0.1	0.1	<0.1
Pyrene	mg/kg	<0.2	<0.1	1.3
Benzo(a)anthracene	mg/kg	<0.2	0.1	1.0
Chrysene	mg/kg	<0.2	<0.1	0.4
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	3.0	0.5	23
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	79	83	75

Organochlorine Pesticides in soil				
Our Reference		302351-9	302351-10	302351-11
Your Reference	UNITS	CS103	CS114	CS115
Depth		0.1-0.2	0.1-0.2	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	79	73	76

Organophosphorus Pesticides in Soil				
Our Reference		302351-9	302351-10	302351-11
Your Reference	UNITS	CS103	CS114	CS115
Depth		0.1-0.2	0.1-0.2	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	79	73	76

PCBs in Soil				
Our Reference		302351-9	302351-10	302351-11
Your Reference	UNITS	CS103	CS114	CS115
Depth		0.1-0.2	0.1-0.2	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil
Date extracted	-	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	10/08/2022	10/08/2022	10/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	79	73	76

Acid Extractable metals in soil					
Our Reference		302351-9	302351-10	302351-11	302351-22
Your Reference	UNITS	CS103	CS114	CS115	CS103 - [TRIPLICATE]
Depth		0.1-0.2	0.1-0.2	0-0.1	0.1-0.2
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Arsenic	mg/kg	17	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	<1	2	5
Copper	mg/kg	14	4	5	7
Lead	mg/kg	15	5	7	13
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	<1	2	2
Zinc	mg/kg	84	6	13	65

Moisture						
Our Reference		302351-1	302351-2	302351-3	302351-4	302351-5
Your Reference	UNITS	A4410	A4413	A4414	A4404	A4409
Depth		0-0.1	0-0.1	0-0.1	0.9-1.0	0.6-0.7
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Moisture	%	6.3	8.2	7.8	9.7	9.7

Moisture						
Our Reference		302351-6	302351-7	302351-8	302351-9	302351-10
Your Reference	UNITS	A4411	A4411	A4412	CS103	CS114
Depth		0.45-0.55	1.0-1.1	0.4-0.5	0.1-0.2	0.1-0.2
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Moisture	%	11	5.8	6.5	16	7.9

Moisture						
Our Reference		302351-11	302351-15	302351-16	302351-17	302351-18
Your Reference	UNITS	CS115	QAQC5	A4401	A4402	A4403
Depth		0-0.1	-	0-0.1	0-0.1	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	08/08/2022	08/08/2022	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022	09/08/2022	09/08/2022
Moisture	%	10	13	9.4	11	8.2

Moisture				
Our Reference		302351-19	302351-20	302351-21
Your Reference	UNITS	A4405	A4406	A4408
Depth		0-0.1	0-0.1	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	08/08/2022	08/08/2022	08/08/2022
Date analysed	-	09/08/2022	09/08/2022	09/08/2022
Moisture	%	11	8.3	13

Asbestos ID - soils NEPM - ASB-001				
Our Reference		302351-9	302351-10	302351-11
Your Reference	UNITS	CS103	CS114	CS115
Depth		0.1-0.2	0.1-0.2	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil
Date analysed	-	15/08/2022	15/08/2022	15/08/2022
Sample mass tested	g	1,079.72	539.19	649.73
Sample Description	-	Brown coarse-grained soil and rocks	Black coarse-grained soil and rocks	Black coarse-grained soil and rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–
FA and AF Estimation*	g	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001

Misc Inorg - Soil				
Our Reference		302351-5	302351-6	302351-11
Your Reference	UNITS	A4409	A4411	CS115
Depth		0.6-0.7	0.45-0.55	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	11/08/2022	11/08/2022	11/08/2022
Date analysed	-	11/08/2022	11/08/2022	11/08/2022
Combustibility*	%	3.2	39	79
Total Sulphur	%w/w	0.05	0.23	0.32

vTRH(C6-C10)/BTEXN in Water		
Our Reference		302351-12
Your Reference	UNITS	RIN-03
Depth		-
Date Sampled		4/08/2022
Type of sample		Water
Date extracted	-	07/08/2022
Date analysed	-	07/08/2022
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	101
Surrogate toluene-d8	%	92
Surrogate 4-BFB	%	99

svTRH (C10-C40) in Water		
Our Reference		302351-12
Your Reference	UNITS	RIN-03
Depth		-
Date Sampled		4/08/2022
Type of sample		Water
Date extracted	-	10/08/2022
Date analysed	-	11/08/2022
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	86

PFAS in Waters Trace Extended		
Our Reference		302351-12
Your Reference	UNITS	RIN-03
Depth		-
Date Sampled		4/08/2022
Type of sample		Water
Date prepared	-	09/08/2022
Date analysed	-	09/08/2022
Perfluorobutanesulfonic acid	µg/L	<0.0004
Perfluoropentanesulfonic acid	µg/L	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002
Perfluoroheptanesulfonic acid	µg/L	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002
Perfluorodecanesulfonic acid	µg/L	<0.002
Perfluorobutanoic acid	µg/L	<0.002
Perfluoropentanoic acid	µg/L	<0.002
Perfluorohexanoic acid	µg/L	<0.0004
Perfluoroheptanoic acid	µg/L	<0.0004
Perfluorooctanoic acid PFOA	µg/L	<0.0002
Perfluorononanoic acid	µg/L	<0.001
Perfluorodecanoic acid	µg/L	<0.002
Perfluoroundecanoic acid	µg/L	<0.002
Perfluorododecanoic acid	µg/L	<0.005
Perfluorotridecanoic acid	µg/L	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05
4:2 FTS	µg/L	<0.001
6:2 FTS	µg/L	<0.0004
8:2 FTS	µg/L	<0.0004
10:2 FTS	µg/L	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	97
Surrogate $^{13}C_2$ *PFOA*	%	100
Extracted ISTD $^{13}C_3$ *PFBS*	%	91
Extracted ISTD $^{18}O_2$ *PFHxS*	%	90
Extracted ISTD $^{13}C_4$ *PFOS*	%	93

PFAS in Waters Trace Extended		
Our Reference		302351-12
Your Reference	UNITS	RIN-03
Depth		-
Date Sampled		4/08/2022
Type of sample		Water
Extracted ISTD $^{13}C_4$ *PFBA*	%	103
Extracted ISTD $^{13}C_3$ *PFPeA*	%	91
Extracted ISTD $^{13}C_2$ *PFHxA*	%	97
Extracted ISTD $^{13}C_4$ *PFHpA*	%	99
Extracted ISTD $^{13}C_4$ *PFOA*	%	96
Extracted ISTD $^{13}C_5$ *PFNA*	%	100
Extracted ISTD $^{13}C_2$ *PFDA*	%	100
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	104
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	106
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	89
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	117
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	118
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	143
Extracted ISTD $^{13}C_8$ *FOSA*	%	65
Extracted ISTD d_3 *N MeFOSA*	%	102
Extracted ISTD d_5 *N EtFOSA*	%	114
Extracted ISTD d_7 *N MeFOSE*	%	131
Extracted ISTD d_9 *N EtFOSE*	%	113
Extracted ISTD d_3 *N MeFOSAA*	%	115
Extracted ISTD d_5 *N EtFOSAA*	%	132
Total Positive PFHxS & PFOS	µg/L	<0.0002
Total Positive PFOS & PFOA	µg/L	<0.0002
Total Positive PFAS	µg/L	<0.0002

PAHs in Water		
Our Reference		302351-12
Your Reference	UNITS	RIN-03
Depth		-
Date Sampled		4/08/2022
Type of sample		Water
Date extracted	-	10/08/2022
Date analysed	-	10/08/2022
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	79

Organochlorine Pesticides in Water		
Our Reference		302351-12
Your Reference	UNITS	RIN-03
Depth		-
Date Sampled		4/08/2022
Type of sample		Water
Date extracted	-	10/08/2022
Date analysed	-	10/08/2022
alpha-BHC	µg/L	<0.2
HCB	µg/L	<0.2
beta-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	76

OP Pesticides in Water		
Our Reference		302351-12
Your Reference	UNITS	RIN-03
Depth		-
Date Sampled		4/08/2022
Type of sample		Water
Date extracted	-	10/08/2022
Date analysed	-	10/08/2022
Dichlorvos	µg/L	<0.2
Dimethoate	µg/L	<0.2
Diazinon	µg/L	<0.2
Chlorpyriphos-methyl	µg/L	<0.2
Ronnel	µg/L	<0.2
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.2
Chlorpyriphos	µg/L	<0.2
Parathion	µg/L	<0.2
Bromophos ethyl	µg/L	<0.2
Ethion	µg/L	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2
Surrogate TCMX	%	76

PCBs in Water		
Our Reference		302351-12
Your Reference	UNITS	RIN-03
Depth		-
Date Sampled		4/08/2022
Type of sample		Water
Date extracted	-	10/08/2022
Date analysed	-	10/08/2022
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCMX	%	76

Metals in Water - Dissolved		
Our Reference		302351-12
Your Reference	UNITS	RIN-03
Depth		-
Date Sampled		4/08/2022
Type of sample		Water
Date digested	-	08/08/2022
Date analysed	-	08/08/2022
Arsenic - Dissolved	mg/L	<0.05
Cadmium - Dissolved	mg/L	<0.01
Chromium - Dissolved	mg/L	<0.01
Copper - Dissolved	mg/L	<0.01
Lead - Dissolved	mg/L	<0.03
Mercury - Dissolved	mg/L	<0.0005
Nickel - Dissolved	mg/L	<0.02
Zinc - Dissolved	mg/L	<0.02

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Ext-054	Analysed by MPL Envirolab
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-092	LOI - Sample is dried, then ignited in a furnace.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302351-10
Date prepared	-			09/08/2022	9	09/08/2022	09/08/2022		09/08/2022	09/08/2022
Date analysed	-			09/08/2022	9	09/08/2022	09/08/2022		09/08/2022	09/08/2022
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	95	99
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	105	100
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	103	104
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	109	106
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	93	95
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	100	85
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	103	102
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	106	110
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	109	106
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	103	101
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	102	100
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	104	97
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	9	<0.5	<0.5	0	105	104
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	9	<0.5	<0.5	0	104	104
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	9	<0.5	<0.5	0	101	104
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	9	<0.5	<0.5	0	115	115
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	9	<5	<5	0	105	105
4:2 FTS	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	92	87
6:2 FTS	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	99	94
8:2 FTS	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	103	107
10:2 FTS	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	103	119
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	9	<1	<1	0	104	100
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	9	<1	<1	0	114	105
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	9	<1	<1	0	103	102
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	9	<1	<1	0	109	104
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	9	<5	<5	0	105	104
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	105	98
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	104	102
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	92	9	97	102	5	95	100
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	104	9	98	97	1	98	100

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302351-10
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	100	9	101	104	3	108	99
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	102	9	95	93	2	99	95
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	107	9	96	94	2	106	99
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	103	9	93	95	2	101	99
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	102	9	91	93	2	100	95
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	97	9	93	94	1	97	98
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	101	9	98	97	1	99	100
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	99	9	102	104	2	101	105
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	108	9	105	112	6	99	114
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	101	9	109	109	0	101	115
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	110	9	118	116	2	107	125
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	109	9	122	119	2	105	126
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	123	9	128	130	2	120	138
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	102	9	104	105	1	100	108
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	107	9	134	126	6	106	139
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	101	9	134	142	6	101	163
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	107	9	104	104	0	104	106
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	104	9	102	100	2	100	99
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	111	9	104	105	1	109	103
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	101	9	98	100	2	98	91

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302351-10
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	101	9	96	100	4	101	95
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	116	9	136	130	5	101	154
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	107	9	134	135	1	100	170

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	302351-10
Date extracted	-			08/08/2022	1	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Date analysed	-			15/08/2022	1	15/08/2022	15/08/2022		15/08/2022	15/08/2022
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	84	90
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	84	90
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	82	94
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	82	90
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	82	86
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	87	89
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	88	92
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	69	1	88	92	4	86	90

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	9	08/08/2022	08/08/2022		[NT]	[NT]
Date analysed	-			[NT]	9	15/08/2022	15/08/2022		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	9	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	9	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	9	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	9	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	9	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	9	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	9	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	9	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	9	91	87	4	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	302351-10
Date extracted	-			08/08/2022	1	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Date analysed	-			09/08/2022	1	09/08/2022	09/08/2022		09/08/2022	09/08/2022
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	190	230	19	102	94
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	1100	1400	24	91	95
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	86	130
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	510	680	29	102	94
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	760	950	22	91	95
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	86	130
Surrogate o-Terphenyl	%		Org-020	84	1	#	#		101	104

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	9	08/08/2022	08/08/2022		[NT]	[NT]
Date analysed	-			[NT]	9	09/08/2022	09/08/2022		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	9	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	9	140	140	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	9	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	9	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	9	170	180	6	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	9	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	9	89	91	2	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	302351-10
Date extracted	-			10/08/2022	1	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Date analysed	-			10/08/2022	1	10/08/2022	10/08/2022		10/08/2022	10/08/2022
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	79
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	83	75
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	89
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	103
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	83
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	88
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	71	65
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	112	72
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	73	1	80	85	6	82	80

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	9	08/08/2022	08/08/2022		[NT]	[NT]
Date analysed	-			[NT]	9	10/08/2022	10/08/2022		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	9	0.3	0.3	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	9	1	0.9	11	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	9	0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	9	0.5	0.5	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	9	0.3	0.3	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	9	0.5	0.6	18	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	9	0.3	0.3	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	9	0.2	0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	9	0.09	0.09	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	9	82	85	4	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	302351-10
Date extracted	-			10/08/2022	9	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Date analysed	-			10/08/2022	9	10/08/2022	10/08/2022		10/08/2022	10/08/2022
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	78	66
HCB	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	85	89
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	87	93
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	83	87
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	94	107
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	84	94
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	96	88
Endrin	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	90	96
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	86	108
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	82	104
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	84	9	79	81	2	80	74

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	302351-10
Date extracted	-			10/08/2022	9	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Date analysed	-			10/08/2022	9	10/08/2022	10/08/2022		10/08/2022	10/08/2022
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	106	126
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	85	93
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	91	111
Malathion	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	126	129
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	104	124
Parathion	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	115	132
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	88	133
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	84	9	79	81	2	80	74

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	302351-10
Date extracted	-			10/08/2022	9	08/08/2022	08/08/2022		08/08/2022	08/08/2022
Date analysed	-			10/08/2022	9	10/08/2022	10/08/2022		10/08/2022	10/08/2022
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	135	140
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	9	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	84	9	79	81	2	80	74

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	302351-10
Date prepared	-			15/08/2022	9	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Date analysed	-			15/08/2022	9	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Arsenic	mg/kg	4	Metals-020	<4	9	17	<4	124	110	81
Cadmium	mg/kg	0.4	Metals-020	<0.4	9	<0.4	<0.4	0	111	83
Chromium	mg/kg	1	Metals-020	<1	9	7	4	55	110	84
Copper	mg/kg	1	Metals-020	<1	9	14	7	67	109	86
Lead	mg/kg	1	Metals-020	<1	9	15	13	14	111	80
Mercury	mg/kg	0.1	Metals-021	<0.1	9	<0.1	<0.1	0	92	71
Nickel	mg/kg	1	Metals-020	<1	9	2	3	40	113	85
Zinc	mg/kg	1	Metals-020	<1	9	84	69	20	113	84

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			11/08/2022	[NT]	[NT]	[NT]	[NT]	11/08/2022	[NT]
Date analysed	-			11/08/2022	[NT]	[NT]	[NT]	[NT]	11/08/2022	[NT]
Combustibility*	%	0.1	Inorg-092	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			07/08/2022	[NT]	[NT]	[NT]	[NT]	07/08/2022	[NT]
Date analysed	-			07/08/2022	[NT]	[NT]	[NT]	[NT]	07/08/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	104	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	103	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	94	[NT]	[NT]	[NT]	[NT]	98	[NT]
Surrogate toluene-d8	%		Org-023	93	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-BFB	%		Org-023	102	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Date analysed	-			11/08/2022	[NT]	[NT]	[NT]	[NT]	11/08/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	105	[NT]	[NT]	[NT]	[NT]	94	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302351-12
Date prepared	-			09/08/2022	12	09/08/2022	09/08/2022		09/08/2022	09/08/2022
Date analysed	-			09/08/2022	12	09/08/2022	09/08/2022		09/08/2022	09/08/2022
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	12	<0.0004	<0.0004	0	98	96
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	12	<0.001	<0.001	0	102	112
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	12	<0.0002	<0.0002	0	94	108
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	12	<0.001	<0.001	0	93	103
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	12	<0.0002	<0.0002	0	99	103
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	12	<0.002	<0.002	0	85	85
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	12	<0.002	<0.002	0	96	101
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	12	<0.002	<0.002	0	103	107
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	12	<0.0004	<0.0004	0	100	105
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	12	<0.0004	<0.0004	0	99	99
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	12	<0.0002	<0.0002	0	102	104
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	12	<0.001	<0.001	0	98	103
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	12	<0.002	<0.002	0	99	100
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	12	<0.002	<0.002	0	103	100
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	12	<0.005	<0.005	0	95	97
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	12	<0.01	<0.01	0	114	110
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	12	<0.05	<0.05	0	101	108
4:2 FTS	µg/L	0.001	Org-029	<0.001	12	<0.001	<0.001	0	86	99
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	12	<0.0004	<0.0004	0	96	99
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	12	<0.0004	<0.0004	0	92	94
10:2 FTS	µg/L	0.002	Org-029	<0.002	12	<0.002	<0.002	0	105	104
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	12	<0.01	<0.01	0	102	98
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	12	<0.05	<0.05	0	101	110
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	12	<0.1	<0.1	0	104	99
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	12	<0.05	<0.05	0	104	97
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	12	<0.5	<0.5	0	97	94
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	12	<0.002	<0.002	0	101	102
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	12	<0.002	<0.002	0	98	106
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	102	12	97	96	1	105	106
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	102	12	100	103	3	103	102

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302351-12
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	88	12	91	84	8	88	88
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	93	12	90	82	9	95	95
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	86	12	93	86	8	82	82
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	103	12	103	99	4	103	103
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	92	12	91	88	3	88	88
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	96	12	97	94	3	97	97
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	102	12	99	92	7	98	98
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	97	12	96	88	9	91	91
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	106	12	100	94	6	98	98
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	99	12	100	97	3	93	93
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	98	12	104	97	7	95	95
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	100	12	106	99	7	99	99
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	96	12	89	92	3	95	95
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	126	12	117	115	2	125	125
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	124	12	118	110	7	117	117
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	149	12	143	142	1	131	131
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	59	12	65	61	6	52	52
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	99	12	102	104	2	102	111
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	103	12	114	111	3	103	111
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	110	12	131	120	9	114	115

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302351-12
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	115	12	113	114	1	110	115
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	119	12	115	116	1	101	101
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	135	12	132	132	0	125	125

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Date analysed	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	81	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	76	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	85	[NT]	[NT]	[NT]	[NT]	81	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Date analysed	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	79	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	62	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	83	[NT]	[NT]	[NT]	[NT]	84	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Date analysed	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	87	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	71	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	111	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	101	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	115	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	83	[NT]	[NT]	[NT]	[NT]	84	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Date analysed	-			10/08/2022	[NT]	[NT]	[NT]	[NT]	10/08/2022	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	83	[NT]	[NT]	[NT]	[NT]	84	[NT]

QUALITY CONTROL: Metals in Water - Dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date digested	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
Date analysed	-			08/08/2022	[NT]	[NT]	[NT]	[NT]	08/08/2022	[NT]
Arsenic - Dissolved	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	100	[NT]
Cadmium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	101	[NT]
Chromium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	103	[NT]
Copper - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	103	[NT]
Lead - Dissolved	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	101	[NT]
Mercury - Dissolved	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	96	[NT]
Nickel - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	105	[NT]
Zinc - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

TRH Soil C10-C40 NEPM - # Percent recovery for the surrogate is not possible to report as the high concentration of analytes in samples 302351-1, 1d, 2, 4, 5, 6, 7, 8, 15, 16, 17, 19, 21 have caused interference.

PAHs in Soil - The PQL has been raised due to interferences from analytes (other than those being tested) in sample/s s302351-17,19.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 302351-9 for Cr & Cu. Therefore a triplicate result has been issued as laboratory sample number 302351-22.

Total Sulphur analysed by MPL Laboratories. Report No. PDH0506.

CHAIN OF CUSTODY FORM - Client

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ENVIROLAB GROUP
National phone number 1300 424 344

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

Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias		
Project Mgr:	Tristan Goodbody	PO No. (if applicable):	
Sampler:	VA/TG	Envirolab Quote No. :	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Date results required: Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day	
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format: ☐ Esdat ☐ Equis	
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH	Comments: Provide as much information about the sample as you can
1	AA410	0-0.1	04/05/22	SOIL					X	X	X	
2	AA413	↓							X	X	X	
3	AA414	↓							X	X	X	
4	AA404	0.9-1.0	↓						X	X	X	
5	AA409	0.6-0.7	04/05/22					X	X	X	X	
6	AA411	0.45-0.5						X	X	X	X	
7	AA411	1.0-1.1							X	X	X	
8	AA412	0.4-0.5							X	X	X	
9	CS103	0.1-0.2	↓		X	X	X					
10	CS114	0.1-0.2	04/05/22		X	X	X					
11	CS115	0-0.1	03/05/22	↓	X	X	X	X				

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

Relinquished by (Company):	CES	Received by (Company):	ELS
Print Name:	VICTOR ARIAS	Print Name:	Tanya Doherty / KW
Date & Time:	05/05/22 8:45am	Date & Time:	05/05/2022 09:19
Signature:		Signature:	

Lab Use Only

Job number: 302351	Cooling: Ice / Ice pack / None
Temperature: 14°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

CHAIN OF CUSTODY FORM - Client

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ENVIROLAB GROUP
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Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias		
Project Mgr:	Tristan Goodbody	PO No. (if applicable):	
Sampler:	VA/TG	Envirolab Quote No.:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Date results required: Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day	
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format: ☐ Esdat ☐ Equis	
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH	Comments
12	RIN-03	—	04/08/22	WATER	X		X		X			PFAS - TRACE and EX BTEX - TRACE
13	TS	—	ck	SOIL					X			
14	TB	—	ck	ck	X				X			EXT
15	QAQC 5	—	ck	ck					X	X	X	
16	QAQC 6	—	ck	ck					X	X	X	PLEASE FORWARD TO ALS FOR BTEX TRH, PAH
16 17	A4401	0-0.1	↓	↓					X	X	X	
17 18	A4402								X	X	X	
18 19	A4403								X	X	X	
19 20	A4405								X	X	X	
20 21	A4406								X	X	X	
21 22	A4408	↓	↓	↓					X	X	X	

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

Relinquished by (Company):	CES	Received by (Company):	ELS
Print Name:	VICTOR ARIAS	Print Name:	Tanya Dohndy / KW
Date & Time:	05/08/22 8:45am	Date & Time:	05/08/2022 09:19
Signature:		Signature:	

Lab Use Only

Job number: 302351	Cooling: Ice / Ice pack / None
Temperature: 14°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2227991**	Page	: 1 of 5
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170508-GPM	Date Samples Received	: 05-Aug-2022 18:30
Order number	: ----	Date Analysis Commenced	: 10-Aug-2022
C-O-C number	: ----	Issue Date	: 15-Aug-2022 11:46
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP075(SIM): Surrogate recovery bias low due to sample matrix interferences.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC6	----	----	----	----
			Sampling date / time	04-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2227991-001	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**13.5**	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	**4.1**	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	**0.9**	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	**2.7**	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	**9.1**	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	**14.2**	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	**0.8**	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	**1.6**	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	**33.4**	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	----	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	**1600**	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	**6100**	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**7700**	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	**3530**	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	**4220**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC6	----	----	----	----
				Sampling date / time	04-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2227991-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		**7750**	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		**3520**	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		**5**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**81.7**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**89.6**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**83.6**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**90.5**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**94.3**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**99.0**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**89.6**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**101**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**108**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2227991**	Page	: 1 of 6
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170508-GPM	Date Samples Received	: 05-Aug-2022
Order number	: ----	Date Analysis Commenced	: 10-Aug-2022
C-O-C number	: ----	Issue Date	: 15-Aug-2022
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4511191)									
ES2227780-003	Anonymous	EA055: Moisture Content	----	0.1	%	11.7	13.2	12.2	0% - 20%
ES2227915-006	Anonymous	EA055: Moisture Content	----	0.1	%	1.4	1.4	0.0	0% - 50%
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4506189)									
ES2227981-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	2.3	2.6	10.7	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	0.6	0.6	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.9	2.0	6.8	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	2.1	2.3	7.2	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.8	0.9	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.8	0.9	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	0.7	0.8	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.6	0.7	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	9.8	10.8	9.7	0% - 20%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.8	0.9	14.8	No Limit
ES2227981-006	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4506189) - continued									
ES2227981-006	Anonymous	EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4506188)									
ES2227981-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	140	110	28.6	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2227981-006	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4509948)									
ES2227781-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2227991-001	QAQC6	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4506188)									
ES2227981-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	200	150	26.9	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2227981-006	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4509948)									
ES2227781-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2227991-001	QAQC6	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	12	14.1	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 4509948)									
ES2227781-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2227991-001	QAQC6	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	5	4	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4506189)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	109	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	104	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	106	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	106	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	109	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	107	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	109	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	108	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	103	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	110	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	102	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	110	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	84.9	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	85.1	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	83.4	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	83.3	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4506188)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	98.2	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	100	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	91.3	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4509948)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	86.6	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4506188)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	102	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	96.8	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	86.5	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4509948)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	85.2	68.4	128
EP080: BTEXN (QCLot: 4509948)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	88.7	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.7	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	91.9	65.0	117

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080: BTEXN (QCLot: 4509948) - continued								
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	91.9	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	91.6	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	99.6	63.0	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4506189)							
ES2227981-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	108	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	117	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4506188)							
ES2227981-001	Anonymous	EP071: C10 - C14 Fraction	----	480 mg/kg	111	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	105	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	114	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4509948)							
ES2227781-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	87.4	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4506188)							
ES2227981-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	99.2	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	108	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	121	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4509948)							
ES2227781-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	85.6	70.0	130
EP080: BTEXN (QCLot: 4509948)							
ES2227781-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	76.1	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	80.8	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	80.3	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	79.9	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	80.6	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	91.3	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2227991**	Page	: 1 of 4
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170508-GPM	Date Samples Received	: 05-Aug-2022
Site	: ----	Issue Date	: 15-Aug-2022
Sampler	: VA/TG	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
QAQC6	**04-Aug-2022**	**----**	----	----	**10-Aug-2022**	18-Aug-2022	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
HDPE Soil Jar (EP075(SIM))							
QAQC6	**04-Aug-2022**	**11-Aug-2022**	18-Aug-2022	✓	**11-Aug-2022**	20-Sep-2022	✓
EP080/071: Total Petroleum Hydrocarbons							
HDPE Soil Jar (EP080)							
QAQC6	**04-Aug-2022**	**10-Aug-2022**	18-Aug-2022	✓	**12-Aug-2022**	18-Aug-2022	✓
HDPE Soil Jar (EP071)							
QAQC6	**04-Aug-2022**	**11-Aug-2022**	18-Aug-2022	✓	**11-Aug-2022**	20-Sep-2022	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
HDPE Soil Jar (EP080)							
QAQC6	**04-Aug-2022**	**10-Aug-2022**	18-Aug-2022	✓	**12-Aug-2022**	18-Aug-2022	✓
HDPE Soil Jar (EP071)							
QAQC6	**04-Aug-2022**	**11-Aug-2022**	18-Aug-2022	✓	**11-Aug-2022**	20-Sep-2022	✓
EP080: BTEXN							
HDPE Soil Jar (EP080)							
QAQC6	**04-Aug-2022**	**10-Aug-2022**	18-Aug-2022	✓	**12-Aug-2022**	18-Aug-2022	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CHAIN OF CUSTODY FORM - Client

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Work Order Reference
ES2227991

Telephone : + 61-2-8784 8555

Company:	CES - Consulting Earth Scientists
Contact Person:	Victor Arias
Project Mgr:	Tristan Goodbody
Sampler:	VA/TG
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073
Phone:	Mob: 0439 261 637
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au

Client Project Name/Number/Site etc (ie report title): CES170608-GPM

PO No. (If applicable):

Envirolab Quote No. :

Date results required:

Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Additional report format: ☐ Esdat ☐ Equis

Lab Comments:

Sample Information | **Tests Required** | **Comments**

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH	Comments
12	RIN-03	—	04/08/22	WATER	X		X		X			PFAS - TRACE and EK 61EX - TRACE
13	TS	—	"	SOIL					X			
14	TB	—	"	"	X				X			
15	QAQC5	—	"	"					X	X	X	EXT
16	QAQC6	—	"	"					X	X	X	
17	AA401	0-0.1	"	"					X	X	X	PLEASE FORWARD TO ALS FOR BTEX TRH PAH
18	AA402											
19	AA403											
20	AA405											
21	AA406											
22	AA408											

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

Relinquished by (Company):	CES
Print Name:	VICTOR ARIAS
Date & Time:	05/08/22 8:45am
Signature:	

Received by (Company):	ELS
Print Name:	Tanya Doherty / KW
Date & Time:	05/08/2022 09:19
Signature:	

Lab Use Only

Job number:	302351
Temperature:	14°C
Cooling:	Ice / Ice pack / None
Security seal:	Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / (STD)	

Relinquished by ELS Sydney
Clearance 05/08/22 1300

Wanida
050822 06:30pm

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 302819

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias, Tristan Goodbody
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	1 Water, 7 Soil
Date samples received	11/08/2022
Date completed instructions received	11/08/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	25/08/2022
Date of Issue	22/08/2022

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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Nyovan Moonean
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Hannah Nguyen, Metals Supervisor
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organic Instruments Team Leader
Loren Bardwell, Development Chemist
Lucy Zhu, Asbestos Supervisor
Steven Luong, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in Soils Extended						
Our Reference		302819-3	302819-4	302819-5	302819-6	302819-7
Your Reference	UNITS	TB	QAQC7	CS106	C106	CS101
Depth		-	-	0-0.1	7-7.1	3-3.1
Date Sampled		9/08/2022	9/08/2022	9/08/2022	9/08/2022	9/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	0.3	0.4	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	1.3	1.3	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	0.5	0.5	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	0.4	0.5	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	0.2	0.2	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	0.2	0.2	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	0.2	0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	0.3	0.3	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	89	88	90	97	83
Surrogate $^{13}C_2$ *PFOA*	%	99	99	96	95	101
Extracted ISTD $^{13}C_3$ *PFBS*	%	111	104	103	105	99
Extracted ISTD $^{18}O_2$ *PFHxS*	%	98	93	97	92	98
Extracted ISTD $^{13}C_4$ *PFOS*	%	110	110	113	98	111

PFAS in Soils Extended						
Our Reference		302819-3	302819-4	302819-5	302819-6	302819-7
Your Reference	UNITS	TB	QAQC7	CS106	C106	CS101
Depth		-	-	0-0.1	7-7.1	3-3.1
Date Sampled		9/08/2022	9/08/2022	9/08/2022	9/08/2022	9/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	105	102	100	97	97
Extracted ISTD $^{13}C_3$ *PFPeA*	%	106	98	101	99	98
Extracted ISTD $^{13}C_2$ *PFHxA*	%	105	106	101	95	94
Extracted ISTD $^{13}C_4$ *PFHpA*	%	105	106	106	95	96
Extracted ISTD $^{13}C_4$ *PFOA*	%	108	112	114	100	98
Extracted ISTD $^{13}C_5$ *PFNA*	%	108	119	122	100	103
Extracted ISTD $^{13}C_2$ *PFDA*	%	105	124	121	95	98
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	110	119	125	96	109
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	112	130	131	105	108
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	118	125	126	108	111
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	104	121	124	100	95
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	108	167	166	100	101
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	117	#	#	104	108
Extracted ISTD $^{13}C_8$ *FOSA*	%	111	104	105	101	101
Extracted ISTD d_3 *N MeFOSA*	%	103	96	99	94	93
Extracted ISTD d_5 *N EtFOSA*	%	109	104	93	104	99
Extracted ISTD d_7 *N MeFOSE*	%	106	97	98	96	98
Extracted ISTD d_9 *N EtFOSE*	%	101	97	92	91	96
Extracted ISTD d_3 *N MeFOSAA*	%	115	170	172	96	100
Extracted ISTD d_5 *N EtFOSAA*	%	106	#	#	94	99
Total Positive PFHxS & PFOS	µg/kg	<0.1	1.6	1.6	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	1.5	1.5	<0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	3.3	3.4	<0.1	<0.1

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		302819-2	302819-3	302819-4	302819-5	302819-6
Your Reference	UNITS	TS	TB	QAQC7	CS106	C106
Depth		-	-	-	0-0.1	7-7.1
Date Sampled		9/08/2022	9/08/2022	9/08/2022	9/08/2022	9/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
TRH C_6 - C_9	mg/kg	[NA]	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	[NA]	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	<25	<25	<25	<25
Benzene	mg/kg	100%	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	101%	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	100%	<1	<1	<1	<1
m+p-xylene	mg/kg	100%	<2	<2	<2	<2
o-Xylene	mg/kg	99%	<1	<1	<1	<1
Naphthalene	mg/kg	[NA]	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	[NA]	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	97	98	96	100	94

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		302819-7	302819-8
Your Reference	UNITS	CS101	A407
Depth		3-3.1	3-3.1
Date Sampled		9/08/2022	9/08/2022
Type of sample		Soil	Soil
Date extracted	-	12/08/2022	12/08/2022
Date analysed	-	15/08/2022	15/08/2022
TRH C_6 - C_9	mg/kg	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
Naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	95	95

svTRH (C10-C40) in Soil						
Our Reference		302819-4	302819-5	302819-6	302819-7	302819-8
Your Reference	UNITS	QAQC7	CS106	C106	CS101	A407
Depth		-	0-0.1	7-7.1	3-3.1	3-3.1
Date Sampled		9/08/2022	9/08/2022	9/08/2022	9/08/2022	9/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022
TRH C_{10} - C_{14}	mg/kg	79	63	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	440	390	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	240	200	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	760	660	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	100	88	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	100	88	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	600	530	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	120	100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	820	720	<50	<50	<50
Surrogate o-Terphenyl	%	126	121	84	90	87

PAHs in Soil						
Our Reference		302819-4	302819-5	302819-6	302819-7	302819-8
Your Reference	UNITS	QAQC7	CS106	C106	CS101	A407
Depth		-	0-0.1	7-7.1	3-3.1	3-3.1
Date Sampled		9/08/2022	9/08/2022	9/08/2022	9/08/2022	9/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Naphthalene	mg/kg	1.1	1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	1.9	1.8	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.2	0.2	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.9	0.8	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.6	0.5	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.6	0.5	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.6	0.6	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.5	0.5	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.2	0.2	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	6.8	6.4	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	70	68	67	72	67

Organochlorine Pesticides in soil					
Our Reference		302819-4	302819-5	302819-6	302819-7
Your Reference	UNITS	QAQC7	CS106	C106	CS101
Depth		-	0-0.1	7-7.1	3-3.1
Date Sampled		9/08/2022	9/08/2022	9/08/2022	9/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	71	69	72	71

Organophosphorus Pesticides in Soil					
Our Reference		302819-4	302819-5	302819-6	302819-7
Your Reference	UNITS	QAQC7	CS106	C106	CS101
Depth		-	0-0.1	7-7.1	3-3.1
Date Sampled		9/08/2022	9/08/2022	9/08/2022	9/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	71	69	72	71

PCBs in Soil					
Our Reference		302819-4	302819-5	302819-6	302819-7
Your Reference	UNITS	QAQC7	CS106	C106	CS101
Depth		-	0-0.1	7-7.1	3-3.1
Date Sampled		9/08/2022	9/08/2022	9/08/2022	9/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	71	69	72	71

Acid Extractable metals in soil						
Our Reference		302819-4	302819-5	302819-6	302819-7	302819-9
Your Reference	UNITS	QAQC7	CS106	C106	CS101	QAQC7 - [TRIPLICATE]
Depth		-	0-0.1	7-7.1	3-3.1	-
Date Sampled		9/08/2022	9/08/2022	9/08/2022	9/08/2022	9/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Arsenic	mg/kg	5	9	<4	<4	9
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	47	49	20	24	51
Copper	mg/kg	42	120	6	2	59
Lead	mg/kg	99	170	7	5	89
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	22	39	3	<1	30
Zinc	mg/kg	100	190	15	18	150

Moisture						
Our Reference		302819-4	302819-5	302819-6	302819-7	302819-8
Your Reference	UNITS	QAQC7	CS106	C106	CS101	A407
Depth		-	0-0.1	7-7.1	3-3.1	3-3.1
Date Sampled		9/08/2022	9/08/2022	9/08/2022	9/08/2022	9/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	13/08/2022	13/08/2022	13/08/2022	13/08/2022	13/08/2022
Moisture	%	9.1	6.3	13	12	18

Asbestos ID - soils NEPM - ASB-001					
Our Reference	UNITS	302819-4	302819-5	302819-6	302819-7
Your Reference		QAQC7	CS106	C106	CS101
Depth		-	0-0.1	7-7.1	3-3.1
Date Sampled		9/08/2022	9/08/2022	9/08/2022	9/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date analysed	-	17/08/2022	17/08/2022	17/08/2022	17/08/2022
Sample mass tested	g	612.43	644.66	617.78	719.19
Sample Description	-	Black fine-grained soil & rocks	Black fine-grained soil & rocks	Beige clayey soil & rocks	Brown fine-grained soil &
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic Mineral Fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic Mineral Fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–
FA and AF Estimation*	g	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001

Misc Inorg - Soil		
Our Reference		302819-5
Your Reference	UNITS	CS106
Depth		0-0.1
Date Sampled		9/08/2022
Type of sample		Soil
Date prepared	-	18/08/2022
Date analysed	-	18/08/2022
Combustibility*	%	35
Total Sulphur	%w/w	0.17

vTRH(C6-C10)/BTEXN in Water		
Our Reference		302819-1
Your Reference	UNITS	RIN-04
Depth		-
Date Sampled		9/08/2022
Type of sample		Water
Date extracted	-	11/08/2022
Date analysed	-	12/08/2022
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	95
Surrogate toluene-d8	%	92
Surrogate 4-BFB	%	97

svTRH (C10-C40) in Water		
Our Reference		302819-1
Your Reference	UNITS	RIN-04
Depth		-
Date Sampled		9/08/2022
Type of sample		Water
Date extracted	-	12/08/2022
Date analysed	-	13/08/2022
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	79

PFAS in Waters Trace Extended		
Our Reference		302819-1
Your Reference	UNITS	RIN-04
Depth		-
Date Sampled		9/08/2022
Type of sample		Water
Date prepared	-	15/08/2022
Date analysed	-	15/08/2022
Perfluorobutanesulfonic acid	µg/L	<0.0004
Perfluoropentanesulfonic acid	µg/L	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002
Perfluoroheptanesulfonic acid	µg/L	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002
Perfluorodecanesulfonic acid	µg/L	<0.002
Perfluorobutanoic acid	µg/L	<0.002
Perfluoropentanoic acid	µg/L	<0.002
Perfluorohexanoic acid	µg/L	<0.0004
Perfluoroheptanoic acid	µg/L	<0.0004
Perfluorooctanoic acid PFOA	µg/L	<0.0002
Perfluorononanoic acid	µg/L	<0.001
Perfluorodecanoic acid	µg/L	<0.002
Perfluoroundecanoic acid	µg/L	<0.002
Perfluorododecanoic acid	µg/L	<0.005
Perfluorotridecanoic acid	µg/L	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05
4:2 FTS	µg/L	<0.001
6:2 FTS	µg/L	<0.0004
8:2 FTS	µg/L	<0.0004
10:2 FTS	µg/L	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	98
Surrogate $^{13}C_2$ *PFOA*	%	112
Extracted ISTD $^{13}C_3$ *PFBS*	%	90
Extracted ISTD $^{18}O_2$ *PFHxS*	%	99
Extracted ISTD $^{13}C_4$ *PFOS*	%	90

PFAS in Waters Trace Extended		
Our Reference		302819-1
Your Reference	UNITS	RIN-04
Depth		-
Date Sampled		9/08/2022
Type of sample		Water
Extracted ISTD $^{13}C_4$ *PFBA*	%	105
Extracted ISTD $^{13}C_3$ *PFPeA*	%	90
Extracted ISTD $^{13}C_2$ *PFHxA*	%	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%	118
Extracted ISTD $^{13}C_4$ *PFOA*	%	104
Extracted ISTD $^{13}C_5$ *PFNA*	%	114
Extracted ISTD $^{13}C_2$ *PFDA*	%	122
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	102
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	84
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	91
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	143
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	#
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	191
Extracted ISTD $^{13}C_8$ *FOSA*	%	71
Extracted ISTD d_3 *N MeFOSA*	%	103
Extracted ISTD d_5 *N EtFOSA*	%	105
Extracted ISTD d_7 *N MeFOSE*	%	112
Extracted ISTD d_9 *N EtFOSE*	%	104
Extracted ISTD d_3 *N MeFOSAA*	%	152
Extracted ISTD d_5 *N EtFOSAA*	%	95
Total Positive PFHxS & PFOS	µg/L	<0.0002
Total Positive PFOS & PFOA	µg/L	<0.0002
Total Positive PFAS	µg/L	<0.0002

PAHs in Water		
Our Reference		302819-1
Your Reference	UNITS	RIN-04
Depth		-
Date Sampled		9/08/2022
Type of sample		Water
Date extracted	-	12/08/2022
Date analysed	-	12/08/2022
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	85

Organochlorine Pesticides in Water		
Our Reference		302819-1
Your Reference	UNITS	RIN-04
Depth		-
Date Sampled		9/08/2022
Type of sample		Water
Date extracted	-	12/08/2022
Date analysed	-	12/08/2022
alpha-BHC	µg/L	<0.2
HCB	µg/L	<0.2
beta-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	81

OP Pesticides in Water		
Our Reference		302819-1
Your Reference	UNITS	RIN-04
Depth		-
Date Sampled		9/08/2022
Type of sample		Water
Date extracted	-	12/08/2022
Date analysed	-	12/08/2022
Dichlorvos	µg/L	<0.2
Dimethoate	µg/L	<0.2
Diazinon	µg/L	<0.2
Chlorpyriphos-methyl	µg/L	<0.2
Ronnel	µg/L	<0.2
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.2
Chlorpyriphos	µg/L	<0.2
Parathion	µg/L	<0.2
Bromophos ethyl	µg/L	<0.2
Ethion	µg/L	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2
Surrogate TCMX	%	81

PCBs in Water		
Our Reference		302819-1
Your Reference	UNITS	RIN-04
Depth		-
Date Sampled		9/08/2022
Type of sample		Water
Date extracted	-	12/08/2022
Date analysed	-	12/08/2022
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCMX	%	81

Metals in Water - Dissolved		
Our Reference		302819-1
Your Reference	UNITS	RIN-04
Depth		-
Date Sampled		9/08/2022
Type of sample		Water
Date digested	-	16/08/2022
Date analysed	-	16/08/2022
Arsenic - Dissolved	mg/L	<0.05
Cadmium - Dissolved	mg/L	<0.01
Chromium - Dissolved	mg/L	<0.01
Copper - Dissolved	mg/L	<0.01
Lead - Dissolved	mg/L	<0.03
Mercury - Dissolved	mg/L	<0.0005
Nickel - Dissolved	mg/L	<0.02
Zinc - Dissolved	mg/L	<0.02

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Ext-054	Analysed by MPL Envirolab
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-092	LOI - Sample is dried, then ignited in a furnace.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302819-5
Date prepared	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	96	92
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	95	98
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	4	0.3	0.3	0	91	94
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	98	106
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	4	1.3	1.2	8	96	89
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	91	88
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	100	97
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	4	0.5	0.4	22	102	110
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	4	0.4	0.4	0	100	102
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	4	0.2	0.2	0	99	99
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	4	0.2	0.2	0	102	107
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	4	0.2	0.1	67	99	97
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	102	105
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	100	109
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	100	103
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	109	109
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	4	<5	<5	0	103	104
4:2 FTS	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	98	100
6:2 FTS	µg/kg	0.1	Org-029	<0.1	4	0.3	0.2	40	100	103
8:2 FTS	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	108	115
10:2 FTS	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	110	126
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	4	<1	<1	0	99	102
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	4	<1	<1	0	102	107
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	4	<1	<1	0	98	94
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	4	<1	<1	0	105	106
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	4	<5	<5	0	105	111
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	106	109
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	100	97
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	88	4	88	98	11	94	94
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	97	4	99	104	5	100	104

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302819-5
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	117	4	104	104	0	112	103
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	106	4	93	96	3	111	96
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	120	4	110	102	8	112	102
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	108	4	102	100	2	108	100
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	110	4	98	98	0	107	95
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	107	4	106	105	1	107	100
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	110	4	106	105	1	106	102
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	111	4	112	107	5	108	103
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	113	4	119	117	2	109	115
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	109	4	124	121	2	107	116
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	118	4	119	119	0	116	120
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	115	4	130	129	1	115	125
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	120	4	125	128	2	123	126
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	114	4	121	123	2	108	117
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	112	4	167	163	2	108	157
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	112	4	#	#		114	184
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	115	4	104	104	0	111	99
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	108	4	96	98	2	107	94
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	110	4	104	105	1	109	100
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	110	4	97	97	0	106	94

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302819-5
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	109	4	97	98	1	105	93
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	115	4	170	160	6	115	152
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	106	4	#	#		106	178

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	302819-5
Date extracted	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
TRH C_6 - C_9	mg/kg	25	Org-023	<25	4	<25	<25	0	104	94
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	4	<25	<25	0	104	94
Benzene	mg/kg	0.2	Org-023	<0.2	4	<0.2	<0.2	0	105	93
Toluene	mg/kg	0.5	Org-023	<0.5	4	<0.5	<0.5	0	103	91
Ethylbenzene	mg/kg	1	Org-023	<1	4	<1	<1	0	102	93
m+p-xylene	mg/kg	2	Org-023	<2	4	<2	<2	0	106	97
o-Xylene	mg/kg	1	Org-023	<1	4	<1	<1	0	108	97
Naphthalene	mg/kg	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	81	4	96	97	1	101	100

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	302819-5
Date extracted	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			13/08/2022	4	13/08/2022	13/08/2022		13/08/2022	13/08/2022
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	4	79	87	10	114	#
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	4	440	440	0	103	#
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	4	240	240	0	66	#
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	4	100	110	10	114	#
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	4	600	580	3	103	#
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	4	120	130	8	66	#
Surrogate o-Terphenyl	%		Org-020	87	4	126	121	4	111	116

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	302819-5
Date extracted	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	4	1.1	1.1	0	88	104
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	4	0.1	0.1	0	81	66
Fluorene	mg/kg	0.1	Org-022/025	<0.1	4	0.1	0.1	0	84	87
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	4	1.9	1.9	0	92	110
Anthracene	mg/kg	0.1	Org-022/025	<0.1	4	0.2	0.2	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	4	0.9	1.1	20	86	79
Pyrene	mg/kg	0.1	Org-022/025	<0.1	4	0.6	0.8	29	87	70
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	4	0.6	0.8	29	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	4	0.6	0.7	15	87	65
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	4	0.5	0.7	33	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	4	0.2	0.4	67	94	61
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	4	0.1	0.2	67	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	79	4	70	68	3	84	68

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	302819-5
Date extracted	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	74	76
HCB	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	75	75
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	79	71
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	89	77
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	86	70
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	80	72
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	80	77
Endrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	72	66
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	82	79
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	68	76
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	80	4	71	67	6	79	65

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	302819-5
Date extracted	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	92	116
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	75	61
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	71	107
Malathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	93	122
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	90	84
Parathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	66	89
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	76	107
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	80	4	71	67	6	79	65

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	302819-5
Date extracted	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	118	80
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	80	4	71	67	6	79	65

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	302819-5
Date prepared	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Arsenic	mg/kg	4	Metals-020	<4	4	5	4	22	102	75
Cadmium	mg/kg	0.4	Metals-020	<0.4	4	<0.4	<0.4	0	99	77
Chromium	mg/kg	1	Metals-020	<1	4	47	45	4	103	#
Copper	mg/kg	1	Metals-020	<1	4	42	180	124	101	81
Lead	mg/kg	1	Metals-020	<1	4	99	120	19	100	##
Mercury	mg/kg	0.1	Metals-021	<0.1	4	<0.1	<0.1	0	96	93
Nickel	mg/kg	1	Metals-020	<1	4	22	26	17	102	#
Zinc	mg/kg	1	Metals-020	<1	4	100	230	79	100	##

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			18/08/2022	5	18/08/2022	[NT]		18/08/2022	[NT]
Date analysed	-			18/08/2022	5	18/08/2022	[NT]		18/08/2022	[NT]
Combustibility*	%	0.1	Inorg-092	<0.1	5	35	[NT]		[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			11/08/2022	[NT]	[NT]	[NT]	[NT]	11/08/2022	[NT]
Date analysed	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	106	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	106	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	110	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	94	[NT]
Surrogate toluene-d8	%		Org-023	93	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate 4-BFB	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
Date analysed	-			13/08/2022	[NT]	[NT]	[NT]	[NT]	13/08/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	102	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	102	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	84	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date prepared	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	[NT]
Date analysed	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	117	[NT]
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	80	[NT]
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	94	[NT]
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	81	[NT]
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	100	[NT]
4:2 FTS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	96	[NT]
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	118	[NT]
10:2 FTS	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	137	[NT]
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	112	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	107	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	114	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	106	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	113	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	98	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	78	[NT]	[NT]	[NT]	[NT]	83	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	89	[NT]	[NT]	[NT]	[NT]	92	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	83	[NT]	[NT]	[NT]	[NT]	79	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	91	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	75	[NT]	[NT]	[NT]	[NT]	81	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	86	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	59	[NT]	[NT]	[NT]	[NT]	66	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	123	[NT]	[NT]	[NT]	[NT]	125	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	144	[NT]	[NT]	[NT]	[NT]	139	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	146	[NT]	[NT]	[NT]	[NT]	126	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	61	[NT]	[NT]	[NT]	[NT]	58	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	114	[NT]	[NT]	[NT]	[NT]	111	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	119	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
Date analysed	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	71	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	77	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	79	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	88	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
Date analysed	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	86	[NT]	[NT]	[NT]	[NT]	85	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
Date analysed	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	106	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	75	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	95	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	118	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	86	[NT]	[NT]	[NT]	[NT]	85	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
Date analysed	-			12/08/2022	[NT]	[NT]	[NT]	[NT]	12/08/2022	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	99	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	86	[NT]	[NT]	[NT]	[NT]	85	[NT]

QUALITY CONTROL: Metals in Water - Dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date digested	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Date analysed	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Arsenic - Dissolved	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
Cadmium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	99	[NT]
Chromium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	106	[NT]
Copper - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	106	[NT]
Lead - Dissolved	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	96	[NT]
Mercury - Dissolved	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	105	[NT]
Nickel - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	98	[NT]
Zinc - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	99	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

TRH Soil C10-C40 NEPM - # Percent recovery for the matrix spike is not possible to report as the high concentration of analytes in sample 302819-5ms have caused interference.

Acid Extractable Metals in Soil:
- The laboratory RPD acceptance criteria has been exceeded for 302819-4 for Cu and Zn. Therefore a triplicate result has been issued as laboratory sample number 302819-9.
- # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.
- ## Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Total Sulfur analysed by MPL; Report number PDH0937.

CHAIN OF CUSTODY FORM - Client

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Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No.:	
Sampler:	VA/TG	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH	Comments
1	RIN-09	—	09/06/22	WATER	X		X		X			PFAS-TRACE and EXT
2	TS	—		SOIL					X			
3	TB	—			X				X			
4	QAQC7	—			X	X	X					
5	QAQC8	—			PLEASE FORWARD TOTALS FOR ASBESTOS, PFAS and COMBO 6							
6	CS106	0-0.1			X	X	X	X				
7	CS106	2-2.1			X	X	X					
8	CS101	3-3.1			X	X	X					
9	TA407	3-3.1	↓	↓					X	X	X	
10												
11												

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

Relinquished by (Company):	CES	Received by (Company):	ENS.
Print Name:	VICTOR ARIAS	Print Name:	CIEOH.
Date & Time:	10/06/22 9am	Date & Time:	11822 1050
Signature:		Signature:	

Lab Use Only

Job number: 302819	Cooling: Ice / Ice pack / None
Temperature: 10	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 (STD)	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2228660**	Page	: 1 of 9
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 11-Aug-2022 16:20
Order number	: ----	Date Analysis Commenced	: 16-Aug-2022
C-O-C number	: ----	Issue Date	: 18-Aug-2022 17:09
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Jake Spooner	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW

General Comments

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

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP080: Batch ES2228660-1 result has been confirmed by re-analysis.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QACC8 Received as QAQC8	----	----	----	----
				Sampling date / time	09-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2228660-001	--------	--------	--------	--------
					Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		10.1	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres		No	----	----	----	----
Asbestos Type	1332-21-4	-	--		-	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg		No	----	----	----	----
Organic Fibre	----	0.1	g/kg		No	----	----	----	----
Sample weight (dry)	----	0.01	g		621	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		J.SPOONER	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		11	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg		91	----	----	----	----
Copper	7440-50-8	5	mg/kg		167	----	----	----	----
Lead	7439-92-1	5	mg/kg		118	----	----	----	----
Nickel	7440-02-0	2	mg/kg		106	----	----	----	----
Zinc	7440-66-6	5	mg/kg		164	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QACC8 Received as QAQC8	----	----	----	----
			Sampling date / time	09-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2228660-001	--------	--------	--------	--------
				Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QACC8 Received as QAQC8	----	----	----	----
				Sampling date / time	09-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2228660-001	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		**0.7**	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		**1.6**	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		**1.0**	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		**0.7**	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		**0.6**	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		**4.6**	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	----	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		**14**	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		**1030**	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		**750**	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		**1780**	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		**17**	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		**16**	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		**100**	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		**1600**	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		**350**	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		**2050**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QACC8 Received as QAQC8	----	----	----	----
				Sampling date / time	09-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2228660-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		**100**	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		**0.6**	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		**0.6**	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		**0.6**	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0003**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0014**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		**0.0004**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QACC8 Received as QAQC8	----	----	----	----
				Sampling date / time	09-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2228660-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0021**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0017**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QACC8 Received as QAQC8	----	----	----	----
				Sampling date / time	09-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2228660-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231P: PFAS Sums - Continued									
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0021**	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**94.0**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**107**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**95.6**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**102**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**87.3**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**103**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**86.0**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**98.6**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**107**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**104**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**99.0**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**99.9**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**100**	----	----	----	----
13C8-PFOA	----	0.0002	%		**108**	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	QACC8Received as QAQC8 - 09-Aug-2022 00:00	Soil sample.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2228660**	Page	: 1 of 12
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 11-Aug-2022
Order number	: ----	Date Analysis Commenced	: 16-Aug-2022
C-O-C number	: ----	Issue Date	: 18-Aug-2022
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
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General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4521461)									
ES2228570-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	11	46.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	28	18	42.4	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	20	12	43.5	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	37	25	39.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	13	17.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	67	52	26.2	0% - 50%
ES2228682-003	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	7	35.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	11	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	12	13	9.1	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4521475)									
ES2228572-001	Anonymous	EA055: Moisture Content	----	0.1	%	24.3	22.8	6.3	0% - 20%
ES2228682-006	Anonymous	EA055: Moisture Content	----	0.1	%	34.3	29.4	15.5	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4521462)									
ES2228570-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2228682-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4521522)									
ES2228660-001	QACC8 Received as QAQC8	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 4521521)									
ES2228660-001	QACC8 Received as QAQC8	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4521521)									
ES2228660-001	QACC8 Received as QAQC8	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4521521) - continued									
ES2228660-001	QACC8 Received as QAQC8	EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4521520)									
ES2228660-001	QACC8 Received as QAQC8	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	0.7	0.9	22.8	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.6	1.7	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.0	1.1	14.4	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.7	0.8	13.5	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.6	0.6	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	4.6	5.6	19.6	0% - 50%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4520854)									
EP2210125-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2228660-001	QACC8 Received as QAQC8	EP080: C6 - C9 Fraction	----	10	mg/kg	14	16	15.1	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4521519)									
ES2228660-001	QACC8 Received as QAQC8	EP071: C15 - C28 Fraction	----	100	mg/kg	1030	1040	1.3	0% - 50%
		EP071: C29 - C36 Fraction	----	100	mg/kg	750	760	1.5	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4520854)									
EP2210125-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2228660-001	QACC8 Received as QAQC8	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	17	20	18.9	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4521519)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4521519) - continued									
ES2228660-001	QACC8 Received as QAQC8	EP071: >C16 - C34 Fraction	----	100	mg/kg	1600	1520	5.0	0% - 50%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	350	450	25.1	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	100	100	0.0	No Limit
EP080: BTEXN (QC Lot: 4520854)									
EP2210125-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2228660-001	QACC8 Received as QAQC8	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	0.6	0.6	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4524230)									
ES2228161-009	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4524230)									
ES2228161-009	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4524230)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4524230) - continued									
ES2228161-009	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4524230)									
ES2228161-009	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4521461)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	99.6	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	108	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	106	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	96.4	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	101	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	100	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	91.5	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4521462)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	89.6	70.0	125
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4521522)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	93.8	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 4521521)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	87.5	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	90.1	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.2	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.6	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	86.5	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	89.4	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.7	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.5	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	89.4	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.4	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.0	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.9	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.3	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	89.8	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.1	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	86.8	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	88.6	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	83.4	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4521521)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4521521) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	83.0	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	97.4	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.3	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	88.9	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	87.5	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	87.2	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	88.4	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	88.4	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	86.7	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.8	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	90.9	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	87.4	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	80.1	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4521520)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	88.7	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	88.8	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	90.2	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	97.6	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	89.8	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	95.0	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	97.7	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	97.6	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	93.2	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	95.8	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	93.6	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	95.1	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	90.0	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	73.3	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	74.0	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	78.4	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4520854)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	85.2	68.4	128

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4521519)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	111	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	101	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	103	71.0	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4520854)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	87.5	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4521519)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	107	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	99.7	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	108	63.0	131
EP080: BTEXN (QCLot: 4520854)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	90.7	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	87.7	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	87.1	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	87.2	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	91.1	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	106	63.0	119
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4524230)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.4	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	106	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4524230)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	92.3	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	116	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	99.4	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4524230)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	67.0	137

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4524230) - continued								
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	99.5	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	98.6	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	105	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	117	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	113	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4524230)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	108	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	101	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	109	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	113	69.2	143

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4521461)							
ES2228570-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	103	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	91.0	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	88.6	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	94.0	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	93.9	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	89.0	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	93.4	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4521462)							
ES2228570-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	101	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4521522)							
ES2228660-001	QACC8 Received as QAQC8	EP066: Total Polychlorinated biphenyls	----	2 mg/kg	81.7	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 4521521)							
ES2228660-001	QACC8 Received as QAQC8	EP068: gamma-BHC	58-89-9	0.5 mg/kg	94.0	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	101	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 4521521) - continued							
ES2228660-001	QACC8 Received as QAQC8	EP068: Aldrin	309-00-2	0.5 mg/kg	99.2	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	106	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	90.9	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	80.6	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4521521)							
ES2228660-001	QACC8 Received as QAQC8	EP068: Diazinon	333-41-5	0.5 mg/kg	103	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	96.0	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	96.4	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	95.6	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	84.5	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4521520)							
ES2228660-001	QACC8 Received as QAQC8	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	90.5	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	92.3	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4520854)							
EP2210125-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	84.8	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4521519)							
ES2228660-001	QACC8 Received as QAQC8	EP071: C10 - C14 Fraction	----	480 mg/kg	99.9	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	89.0	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	91.3	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4520854)							
EP2210125-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	83.8	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4521519)							
ES2228660-001	QACC8 Received as QAQC8	EP071: >C10 - C16 Fraction	----	860 mg/kg	90.6	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	91.6	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	86.4	52.0	132
EP080: BTEXN (QCLot: 4520854)							
EP2210125-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	89.0	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	81.1	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	83.9	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	83.1	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	86.8	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	91.8	70.0	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4524230)							
ES2228161-009	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	101	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	109	73.0	123

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4524230) - continued							
ES2228161-009	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	105	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	102	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	103	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	111	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4524230)							
ES2228161-009	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	93.4	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	111	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	113	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	112	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	112	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	111	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	106	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	113	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	112	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	109	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	98.4	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4524230)							
ES2228161-009	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	114	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	103	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	100	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	103	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	104	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	110	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	111	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4524230)							
ES2228161-009	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	88.0	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	94.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	110	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	96.8	69.2	143

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2228660**	Page	: 1 of 6
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 11-Aug-2022
Site	: ----	Issue Date	: 18-Aug-2022
Sampler	: VA/TG	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**----**	----	----	**16-Aug-2022**	23-Aug-2022	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag (EA200)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**----**	----	----	**16-Aug-2022**	05-Feb-2023	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**16-Aug-2022**	05-Feb-2023	✓	**17-Aug-2022**	05-Feb-2023	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**16-Aug-2022**	06-Sep-2022	✓	**17-Aug-2022**	06-Sep-2022	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**16-Aug-2022**	23-Aug-2022	✓	**18-Aug-2022**	25-Sep-2022	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**16-Aug-2022**	23-Aug-2022	✓	**18-Aug-2022**	25-Sep-2022	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**16-Aug-2022**	23-Aug-2022	✓	**18-Aug-2022**	25-Sep-2022	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
QACC8 - Received as QAQC8	**09-Aug-2022**	**16-Aug-2022**	23-Aug-2022	✓	**17-Aug-2022**	25-Sep-2022	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**16-Aug-2022**	23-Aug-2022	✓	**17-Aug-2022**	23-Aug-2022	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**16-Aug-2022**	23-Aug-2022	✓	**17-Aug-2022**	23-Aug-2022	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**16-Aug-2022**	23-Aug-2022	✓	**17-Aug-2022**	23-Aug-2022	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**17-Aug-2022**	05-Feb-2023	✓	**18-Aug-2022**	26-Sep-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**17-Aug-2022**	05-Feb-2023	✓	**18-Aug-2022**	26-Sep-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**17-Aug-2022**	05-Feb-2023	✓	**18-Aug-2022**	26-Sep-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**17-Aug-2022**	05-Feb-2023	✓	**18-Aug-2022**	26-Sep-2022	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
QACC8 - Received as QAQC8	**09-Aug-2022**	**17-Aug-2022**	05-Feb-2023	✓	**18-Aug-2022**	26-Sep-2022	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.

CHAIN OF CUSTODY FORM - Client

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Environmental Division
Sydney

Work Order Reference
ES2228660

Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (If applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No.:	
Sampler:	VA/TG	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Sample Information | **Tests Required** | **Comments**

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA)_NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH	Provide as much information about the sample as you can
1	RIN-04	—	09/06/22	WATER	X		X		X			PFAS-TRACE and EXT
2	TS	—		SOIL					X			
3	TB	—			X				X			
4	QAQC7	—			X	X	X					
(1) 4	QACC8	—			PLEASE FORWARD TO ALS FOR ASBESTOS, PFAS and COMBO 6							
5	CS106	0-0.1			X	X	X	X				
6	CS106	2-2.1			X	X	X					
7	CS101	3-3.1			X	X	X					
8	A407	3-3.1	↓	↓					X	X	X	

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

Relinquished by (Company):	CES	Received by (Company):	ALS
Print Name:	VICTOR ARIAS	Print Name:	CIEOFF.
Date & Time:	10/06/22 4pm	Date & Time:	11822 1050
Signature:		Signature:	

Lab Use Only

Job number: 302819	Cooling: Ice / Ice pack / None
Temperature: 10	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Rec: LCW 11/08/22 1620

Envirolab Services Pty Ltd
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CERTIFICATE OF ANALYSIS 302928

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Tristan Goodbody
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	1 Water, 10 Soil
Date samples received	12/08/2022
Date completed instructions received	12/08/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	19/08/2022
Date of Issue	19/08/2022

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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organic Instruments Team Leader
Lucy Zhu, Asbestos Supervisor
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		302928-2	302928-3	302928-4	302928-5	302928-6
Your Reference	UNITS	TS	TB	S-1	FI210	FI210
Depth		-	-	-	0.1-0.2	1.0-1.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	16/08/2022	16/08/2022	16/08/2022	16/08/2022	16/08/2022
TRH C_6 - C_9	mg/kg	[NA]	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	[NA]	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	<25	<25	<25	<25
Benzene	mg/kg	98%	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	97%	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	100%	<1	<1	<1	<1
m+p-xylene	mg/kg	100%	<2	<2	<2	<2
o-Xylene	mg/kg	100%	<1	<1	<1	<1
Naphthalene	mg/kg	[NT]	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	[NT]	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	100	92	70	71	69

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		302928-7	302928-8	302928-9	302928-10	302928-11
Your Reference	UNITS	CS112	CS116	CS116	CS117	CS117
Depth		1.0-1.1	0.6-0.7	8.9-9.0	0.1-0.2	5.0-5.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	16/08/2022	16/08/2022	16/08/2022	16/08/2022	16/08/2022
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	65	82	69	70	69

svTRH (C10-C40) in Soil						
Our Reference		302928-4	302928-5	302928-6	302928-7	302928-8
Your Reference	UNITS	S-1	FI210	FI210	CS112	CS116
Depth		-	0.1-0.2	1.0-1.1	1.0-1.1	0.6-0.7
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
TRH C_{10} - C_{14}	mg/kg	<50	64	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	270	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	120	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	450	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	79	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	79	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	330	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	410	<50	<50	<50
Surrogate o-Terphenyl	%	89	108	87	91	92

svTRH (C10-C40) in Soil				
Our Reference		302928-9	302928-10	302928-11
Your Reference	UNITS	CS116	CS117	CS117
Depth		8.9-9.0	0.1-0.2	5.0-5.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil
Date extracted	-	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022
TRH C_{10} - C_{14}	mg/kg	<50	58	<50
TRH C_{15} - C_{28}	mg/kg	<100	220	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	280	<50
TRH >C_{10} -C_{16}	mg/kg	<50	75	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	75	<50
TRH >C_{16} -C_{34}	mg/kg	<100	250	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	330	<50
Surrogate o-Terphenyl	%	89	115	88

PAHs in Soil						
Our Reference		302928-4	302928-5	302928-6	302928-7	302928-8
Your Reference	UNITS	S-1	FI210	FI210	CS112	CS116
Depth		-	0.1-0.2	1.0-1.1	1.0-1.1	0.6-0.7
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Naphthalene	mg/kg	<0.1	0.6	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	1.6	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.8	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.5	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.4	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.5	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.9	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.2	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	6.0	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	95	90	98	92	94

PAHs in Soil				
Our Reference		302928-9	302928-10	302928-11
Your Reference	UNITS	CS116	CS117	CS117
Depth		8.9-9.0	0.1-0.2	5.0-5.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022
Naphthalene	mg/kg	<0.1	0.7	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	1.8	<0.1
Anthracene	mg/kg	<0.1	0.2	<0.1
Fluoranthene	mg/kg	<0.1	1	<0.1
Pyrene	mg/kg	<0.1	0.6	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.5	<0.1
Chrysene	mg/kg	<0.1	0.4	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.9	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	6.3	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	91	90	85

Organochlorine Pesticides in soil						
Our Reference		302928-4	302928-5	302928-6	302928-7	302928-8
Your Reference	UNITS	S-1	FI210	FI210	CS112	CS116
Depth		-	0.1-0.2	1.0-1.1	1.0-1.1	0.6-0.7
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	84	96	90	96

Organochlorine Pesticides in soil				
Our Reference		302928-9	302928-10	302928-11
Your Reference	UNITS	CS116	CS117	CS117
Depth		8.9-9.0	0.1-0.2	5.0-5.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	85	88

Organophosphorus Pesticides in Soil						
Our Reference		302928-4	302928-5	302928-6	302928-7	302928-8
Your Reference	UNITS	S-1	FI210	FI210	CS112	CS116
Depth		-	0.1-0.2	1.0-1.1	1.0-1.1	0.6-0.7
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	84	96	90	96

Organophosphorus Pesticides in Soil				
Our Reference		302928-9	302928-10	302928-11
Your Reference	UNITS	CS116	CS117	CS117
Depth		8.9-9.0	0.1-0.2	5.0-5.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	85	88

PCBs in Soil						
Our Reference		302928-4	302928-5	302928-6	302928-7	302928-8
Your Reference	UNITS	S-1	FI210	FI210	CS112	CS116
Depth		-	0.1-0.2	1.0-1.1	1.0-1.1	0.6-0.7
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	84	96	90	96

PCBs in Soil				
Our Reference		302928-9	302928-10	302928-11
Your Reference	UNITS	CS116	CS117	CS117
Depth		8.9-9.0	0.1-0.2	5.0-5.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil
Date extracted	-	12/08/2022	12/08/2022	12/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	85	88

Acid Extractable metals in soil						
Our Reference		302928-4	302928-5	302928-6	302928-7	302928-8
Your Reference	UNITS	S-1	FI210	FI210	CS112	CS116
Depth		-	0.1-0.2	1.0-1.1	1.0-1.1	0.6-0.7
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	<1	6	4	3	2
Copper	mg/kg	<1	4	<1	<1	<1
Lead	mg/kg	<1	6	3	1	3
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	<1	2	<1	<1	<1
Zinc	mg/kg	<1	44	<1	<1	2

Acid Extractable metals in soil				
Our Reference		302928-9	302928-10	302928-11
Your Reference	UNITS	CS116	CS117	CS117
Depth		8.9-9.0	0.1-0.2	5.0-5.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022
Arsenic	mg/kg	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	13	2	4
Copper	mg/kg	11	5	<1
Lead	mg/kg	5	6	1
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	3	2	<1
Zinc	mg/kg	11	20	<1

Moisture						
Our Reference		302928-3	302928-4	302928-5	302928-6	302928-7
Your Reference	UNITS	TB	S-1	FI210	FI210	CS112
Depth		-	-	0.1-0.2	1.0-1.1	1.0-1.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	16/08/2022	16/08/2022	16/08/2022	16/08/2022	16/08/2022
Moisture	%	0.5	<0.1	11	16	15

Moisture					
Our Reference		302928-8	302928-9	302928-10	302928-11
Your Reference	UNITS	CS116	CS116	CS117	CS117
Depth		0.6-0.7	8.9-9.0	0.1-0.2	5.0-5.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	16/08/2022	16/08/2022	16/08/2022	16/08/2022
Moisture	%	15	17	9.8	17

Asbestos ID - soils NEPM - ASB-001						
Our Reference		302928-4	302928-5	302928-6	302928-7	302928-8
Your Reference	UNITS	S-1	FI210	FI210	CS112	CS116
Depth		-	0.1-0.2	1.0-1.1	1.0-1.1	0.6-0.7
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	17/08/2022	17/08/2022	17/08/2022	17/08/2022	17/08/2022
Sample mass tested	g	919.21	504.58	458.07	502.58	432.76
Sample Description	-	Beige sandy soil & rocks	Brown coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001				
Our Reference		302928-9	302928-10	302928-11
Your Reference	UNITS	CS116	CS117	CS117
Depth		8.9-9.0	0.1-0.2	5.0-5.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil
Date analysed	-	17/08/2022	17/08/2022	17/08/2022
Sample mass tested	g	532.14	355.81	852.1
Sample Description	-	Tan fine-grained soil & rocks	Black coarse-grained soil & rocks	Grey coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–
FA and AF Estimation*	g	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001

PFAS in Soils Extended						
Our Reference		302928-3	302928-4	302928-5	302928-6	302928-7
Your Reference	UNITS	TB	S-1	FI210	FI210	CS112
Depth		-	-	0.1-0.2	1.0-1.1	1.0-1.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	0.3
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	92	99	97	97	93
Surrogate $^{13}C_2$ *PFOA*	%	100	104	106	104	102
Extracted ISTD $^{13}C_3$ *PFBS*	%	112	115	105	104	102
Extracted ISTD $^{18}O_2$ *PFHxS*	%	122	121	117	115	115
Extracted ISTD $^{13}C_4$ *PFOS*	%	117	112	113	108	110

PFAS in Soils Extended						
Our Reference		302928-3	302928-4	302928-5	302928-6	302928-7
Your Reference	UNITS	TB	S-1	FI210	FI210	CS112
Depth		-	-	0.1-0.2	1.0-1.1	1.0-1.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	108	108	101	101	101
Extracted ISTD $^{13}C_3$ *PFPeA*	%	91	89	91	87	84
Extracted ISTD $^{13}C_2$ *PFHxA*	%	105	104	101	97	96
Extracted ISTD $^{13}C_4$ *PFHpA*	%	118	118	115	110	110
Extracted ISTD $^{13}C_4$ *PFOA*	%	116	110	115	103	106
Extracted ISTD $^{13}C_5$ *PFNA*	%	123	128	130	116	118
Extracted ISTD $^{13}C_2$ *PFDA*	%	115	112	117	109	105
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	128	116	130	108	116
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	129	118	139	119	120
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	109	100	110	102	100
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	107	108	104	94	95
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	116	118	150	109	110
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	130	124	170	115	112
Extracted ISTD $^{13}C_8$ *FOSA*	%	134	135	139	125	127
Extracted ISTD d_3 *N MeFOSA*	%	112	108	109	101	104
Extracted ISTD d_5 *N EtFOSA*	%	122	119	117	114	112
Extracted ISTD d_7 *N MeFOSE*	%	121	117	117	114	117
Extracted ISTD d_9 *N EtFOSE*	%	108	105	102	101	104
Extracted ISTD d_3 *N MeFOSAA*	%	122	117	156	105	107
Extracted ISTD d_5 *N EtFOSAA*	%	124	108	153	101	102
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	<0.1	0.2	<0.1	0.3

PFAS in Soils Extended					
Our Reference		302928-8	302928-9	302928-10	302928-11
Your Reference	UNITS	CS116	CS116	CS117	CS117
Depth		0.6-0.7	8.9-9.0	0.1-0.2	5.0-5.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	<0.1	0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	96	98	96	98
Surrogate $^{13}C_2$ *PFOA*	%	101	103	104	104
Extracted ISTD $^{13}C_3$ *PFBS*	%	106	103	105	102
Extracted ISTD $^{18}O_2$ *PFHxS*	%	115	114	118	115
Extracted ISTD $^{13}C_4$ *PFOS*	%	108	105	113	104

PFAS in Soils Extended					
Our Reference		302928-8	302928-9	302928-10	302928-11
Your Reference	UNITS	CS116	CS116	CS117	CS117
Depth		0.6-0.7	8.9-9.0	0.1-0.2	5.0-5.1
Date Sampled		10/08/2022	10/08/2022	10/08/2022	10/08/2022
Type of sample		Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	103	101	99	99
Extracted ISTD $^{13}C_3$ *PFPeA*	%	84	82	92	81
Extracted ISTD $^{13}C_2$ *PFHxA*	%	96	95	102	94
Extracted ISTD $^{13}C_4$ *PFHpA*	%	109	108	118	107
Extracted ISTD $^{13}C_4$ *PFOA*	%	104	100	120	104
Extracted ISTD $^{13}C_5$ *PFNA*	%	117	116	138	113
Extracted ISTD $^{13}C_2$ *PFDA*	%	105	102	129	103
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	106	111	133	107
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	117	111	135	111
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	100	93	108	98
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	94	93	112	94
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	110	105	168	107
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	115	116	#	122
Extracted ISTD $^{13}C_8$ *FOSA*	%	125	126	142	125
Extracted ISTD d_3 *N MeFOSA*	%	102	100	106	98
Extracted ISTD d_5 *N EtFOSA*	%	114	110	118	112
Extracted ISTD d_7 *N MeFOSE*	%	107	114	118	107
Extracted ISTD d_9 *N EtFOSE*	%	100	97	100	100
Extracted ISTD d_3 *N MeFOSAA*	%	99	106	#	107
Extracted ISTD d_5 *N EtFOSAA*	%	96	102	#	103
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1	0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	<0.1	0.1	<0.1

Misc Inorg - Soil		
Our Reference		302928-5
Your Reference	UNITS	FI210
Depth		0.1-0.2
Date Sampled		10/08/2022
Type of sample		Soil
Date prepared	-	16/08/2022
Date analysed	-	17/08/2022
Combustibility*	%	22
Total Sulphur	%w/w	0.09

vTRH(C6-C10)/BTEXN in Water		
Our Reference		302928-1
Your Reference	UNITS	RIN-05
Depth		-
Date Sampled		10/08/2022
Type of sample		Water
Date extracted	-	16/08/2022
Date analysed	-	17/08/2022
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	99
Surrogate toluene-d8	%	95
Surrogate 4-BFB	%	99

svTRH (C10-C40) in Water		
Our Reference		302928-1
Your Reference	UNITS	RIN-05
Depth		-
Date Sampled		10/08/2022
Type of sample		Water
Date extracted	-	15/08/2022
Date analysed	-	15/08/2022
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	57
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	57
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	60
Surrogate o-Terphenyl	%	74

PAHs in Water		
Our Reference		302928-1
Your Reference	UNITS	RIN-05
Depth		-
Date Sampled		10/08/2022
Type of sample		Water
Date extracted	-	15/08/2022
Date analysed	-	15/08/2022
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	94

Organochlorine Pesticides in Water		
Our Reference		302928-1
Your Reference	UNITS	RIN-05
Depth		-
Date Sampled		10/08/2022
Type of sample		Water
Date extracted	-	15/08/2022
Date analysed	-	15/08/2022
alpha-BHC	µg/L	<0.2
HCB	µg/L	<0.2
beta-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	91

OP Pesticides in Water		
Our Reference		302928-1
Your Reference	UNITS	RIN-05
Depth		-
Date Sampled		10/08/2022
Type of sample		Water
Date extracted	-	15/08/2022
Date analysed	-	15/08/2022
Dichlorvos	µg/L	<0.2
Dimethoate	µg/L	<0.2
Diazinon	µg/L	<0.2
Chlorpyriphos-methyl	µg/L	<0.2
Ronnel	µg/L	<0.2
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.2
Chlorpyriphos	µg/L	<0.2
Parathion	µg/L	<0.2
Bromophos ethyl	µg/L	<0.2
Ethion	µg/L	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2
Surrogate TCMX	%	91

PCBs in Water		
Our Reference		302928-1
Your Reference	UNITS	RIN-05
Depth		-
Date Sampled		10/08/2022
Type of sample		Water
Date extracted	-	15/08/2022
Date analysed	-	15/08/2022
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCMX	%	91

Metals in Water - Dissolved		
Our Reference		302928-1
Your Reference	UNITS	RIN-05
Depth		-
Date Sampled		10/08/2022
Type of sample		Water
Date digested	-	15/08/2022
Date analysed	-	15/08/2022
Arsenic - Dissolved	mg/L	<0.05
Cadmium - Dissolved	mg/L	<0.01
Chromium - Dissolved	mg/L	<0.01
Copper - Dissolved	mg/L	<0.01
Lead - Dissolved	mg/L	<0.03
Mercury - Dissolved	mg/L	<0.0005
Nickel - Dissolved	mg/L	<0.02
Zinc - Dissolved	mg/L	<0.02

PFAS in Waters Trace Extended		
Our Reference		302928-1
Your Reference	UNITS	RIN-05
Depth		-
Date Sampled		10/08/2022
Type of sample		Water
Date prepared	-	16/08/2022
Date analysed	-	16/08/2022
Perfluorobutanesulfonic acid	µg/L	<0.0004
Perfluoropentanesulfonic acid	µg/L	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002
Perfluoroheptanesulfonic acid	µg/L	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002
Perfluorodecanesulfonic acid	µg/L	<0.002
Perfluorobutanoic acid	µg/L	<0.002
Perfluoropentanoic acid	µg/L	<0.002
Perfluorohexanoic acid	µg/L	<0.0004
Perfluoroheptanoic acid	µg/L	<0.0004
Perfluorooctanoic acid PFOA	µg/L	<0.0002
Perfluorononanoic acid	µg/L	<0.001
Perfluorodecanoic acid	µg/L	<0.002
Perfluoroundecanoic acid	µg/L	<0.002
Perfluorododecanoic acid	µg/L	<0.005
Perfluorotridecanoic acid	µg/L	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05
4:2 FTS	µg/L	<0.001
6:2 FTS	µg/L	<0.0004
8:2 FTS	µg/L	<0.0004
10:2 FTS	µg/L	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	101
Surrogate $^{13}C_2$ *PFOA*	%	105
Extracted ISTD $^{13}C_3$ *PFBS*	%	89
Extracted ISTD $^{18}O_2$ *PFHxS*	%	107
Extracted ISTD $^{13}C_4$ *PFOS*	%	87

PFAS in Waters Trace Extended		
Our Reference		302928-1
Your Reference	UNITS	RIN-05
Depth		-
Date Sampled		10/08/2022
Type of sample		Water
Extracted ISTD $^{13}C_4$ *PFBA*	%	122
Extracted ISTD $^{13}C_3$ *PFPeA*	%	88
Extracted ISTD $^{13}C_2$ *PFHxA*	%	104
Extracted ISTD $^{13}C_4$ *PFHpA*	%	112
Extracted ISTD $^{13}C_4$ *PFOA*	%	101
Extracted ISTD $^{13}C_5$ *PFNA*	%	109
Extracted ISTD $^{13}C_2$ *PFDA*	%	125
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	110
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	109
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	85
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	117
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	125
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	164
Extracted ISTD $^{13}C_8$ *FOSA*	%	69
Extracted ISTD d_3 *N MeFOSA*	%	91
Extracted ISTD d_5 *N EtFOSA*	%	89
Extracted ISTD d_7 *N MeFOSE*	%	99
Extracted ISTD d_9 *N EtFOSE*	%	93
Extracted ISTD d_3 *N MeFOSAA*	%	146
Extracted ISTD d_5 *N EtFOSAA*	%	112
Total Positive PFHxS & PFOS	µg/L	<0.0002
Total Positive PFOS & PFOA	µg/L	<0.0002
Total Positive PFAS	µg/L	<0.0002

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Ext-054	Analysed by MPL Envirolab
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-092	LOI - Sample is dried, then ignited in a furnace.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302928-6
Date extracted	-			16/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Date analysed	-			17/08/2022	4	16/08/2022	16/08/2022		16/08/2022	16/08/2022
TRH C_6 - C_9	mg/kg	25	Org-023	<25	4	<25	<25	0	81	74
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	4	<25	<25	0	81	74
Benzene	mg/kg	0.2	Org-023	<0.2	4	<0.2	<0.2	0	78	74
Toluene	mg/kg	0.5	Org-023	<0.5	4	<0.5	<0.5	0	79	72
Ethylbenzene	mg/kg	1	Org-023	<1	4	<1	<1	0	79	72
m+p-xylene	mg/kg	2	Org-023	<2	4	<2	<2	0	84	77
o-Xylene	mg/kg	1	Org-023	<1	4	<1	<1	0	84	77
Naphthalene	mg/kg	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	63	4	70	80	13	81	80

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302928-6
Date extracted	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Date analysed	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	4	<50	<50	0	119	112
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	4	<100	<100	0	98	92
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	4	<100	<100	0	105	70
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	4	<50	<50	0	119	112
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	4	<100	<100	0	98	92
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	4	<100	<100	0	105	70
Surrogate o-Terphenyl	%		Org-020	91	4	89	90	1	111	107

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302928-6
Date extracted	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	93	92
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	91	89
Fluorene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	93	93
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	104	101
Anthracene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	102	98
Pyrene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	101	97
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	93	91
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	4	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	4	<0.05	<0.05	0	92	98
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	96	4	95	95	0	94	89

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302928-6
Date extracted	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	92	90
HCB	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	99	96
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	97	99
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	101	103
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	100	102
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	101	98
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	92	88
Endrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	96	88
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	94	90
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	92	91
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	93	4	95	98	3	93	91

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302928-6
Date extracted	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	117	117
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	91	89
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	97	97
Malathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	112	108
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	100	98
Parathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	78	80
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	96	94
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	93	4	95	98	3	93	91

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302928-6
Date extracted	-			12/08/2022	4	12/08/2022	12/08/2022		12/08/2022	12/08/2022
Date analysed	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	122	120
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	93	4	95	98	3	93	91

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	302928-6
Date prepared	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Date analysed	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Arsenic	mg/kg	4	Metals-020	<4	4	<4	<4	0	84	89
Cadmium	mg/kg	0.4	Metals-020	<0.4	4	<0.4	<0.4	0	81	88
Chromium	mg/kg	1	Metals-020	<1	4	<1	<1	0	83	88
Copper	mg/kg	1	Metals-020	<1	4	<1	<1	0	83	94
Lead	mg/kg	1	Metals-020	<1	4	<1	<1	0	81	88
Mercury	mg/kg	0.1	Metals-021	<0.1	4	<0.1	<0.1	0	91	112
Nickel	mg/kg	1	Metals-020	<1	4	<1	<1	0	83	91
Zinc	mg/kg	1	Metals-020	<1	4	<1	<1	0	81	89

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302928-6
Date prepared	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Date analysed	-			15/08/2022	4	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	97	94
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	92	88
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	100	98
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	102	100
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	99	98
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	88	97
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	101	101
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	127	127
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	105	105
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	95	95
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	110	108
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	87	86
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	113	111
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	98	102
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	100	105
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	108	107
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	4	<5	<5	0	114	113
4:2 FTS	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	107	101
6:2 FTS	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	95	97
8:2 FTS	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	93	102
10:2 FTS	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	99	105
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	4	<1	<1	0	96	98
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	4	<1	<1	0	112	111
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	4	<1	<1	0	104	101
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	4	<1	<1	0	93	93
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	4	<5	<5	0	118	123
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	105	108
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	101	102
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	96	4	99	100	1	96	95
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	105	4	104	104	0	107	104

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302928-6
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	112	4	115	113	2	110	105
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	122	4	121	119	2	119	115
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	115	4	112	112	0	114	109
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	108	4	108	108	0	106	101
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	90	4	89	92	3	88	82
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	105	4	104	105	1	103	97
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	116	4	118	119	1	115	109
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	112	4	110	109	1	108	105
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	124	4	128	119	7	118	111
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	118	4	112	112	0	109	99
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	121	4	116	116	0	124	109
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	118	4	118	115	3	122	111
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	113	4	100	104	4	105	100
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	101	4	108	103	5	98	96
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	117	4	118	117	1	113	106
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	136	4	124	124	0	130	110
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	137	4	135	133	1	131	120
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	111	4	108	110	2	109	103
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	121	4	119	120	1	118	113
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	121	4	117	121	3	117	110

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302928-6
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	109	4	105	105	0	109	97
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	123	4	117	117	0	120	105
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	113	4	108	110	2	117	102

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			16/08/2022	5	16/08/2022	16/08/2022		16/08/2022	[NT]
Date analysed	-			17/08/2022	5	17/08/2022	17/08/2022		17/08/2022	[NT]
Combustibility*	%	0.1	Inorg-092	<0.1	5	22	[NT]		[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Date analysed	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	118	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	118	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	117	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	118	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	117	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	97	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate toluene-d8	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-BFB	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	[NT]
Date analysed	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	96	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	96	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	76	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302928-1
Date extracted	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	15/08/2022
Date analysed	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	15/08/2022
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	80	93
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	81	97
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	76	90
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	75	90
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	80	98
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	89	105
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	75	99
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	74	100
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	95	[NT]	[NT]	[NT]	[NT]	80	89

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302928-1
Date extracted	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	15/08/2022
Date analysed	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	15/08/2022
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	86	100
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	103
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	103
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	79	95
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	106
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	100
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	96
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	98
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	102
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	100
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	93	[NT]	[NT]	[NT]	[NT]	83	95

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302928-1
Date extracted	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	15/08/2022
Date analysed	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	15/08/2022
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	101	123
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	73	89
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	107
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	112	138
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	108
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	99
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	76	98
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	93	[NT]	[NT]	[NT]	[NT]	83	95

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302928-1
Date extracted	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	15/08/2022
Date analysed	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	15/08/2022
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	98	120
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	93	[NT]	[NT]	[NT]	[NT]	83	95

QUALITY CONTROL: Metals in Water - Dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date digested	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	[NT]
Date analysed	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	[NT]
Arsenic - Dissolved	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	97	[NT]
Cadmium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	95	[NT]
Chromium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	95	[NT]
Copper - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	98	[NT]
Lead - Dissolved	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	98	[NT]
Mercury - Dissolved	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	98	[NT]
Nickel - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	97	[NT]
Zinc - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Date analysed	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	114	[NT]
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	95	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	81	[NT]
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	110	[NT]
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	72	[NT]
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	99	[NT]
4:2 FTS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	106	[NT]
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	111	[NT]
10:2 FTS	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	134	[NT]
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	118	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	108	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	113	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	104	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	112	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	75	[NT]	[NT]	[NT]	[NT]	86	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	88	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	75	[NT]	[NT]	[NT]	[NT]	80	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	74	[NT]	[NT]	[NT]	[NT]	83	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	89	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	92	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	57	[NT]	[NT]	[NT]	[NT]	66	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	118	[NT]	[NT]	[NT]	[NT]	126	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	133	[NT]	[NT]	[NT]	[NT]	134	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	193	[NT]	[NT]	[NT]	[NT]	178	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	67	[NT]	[NT]	[NT]	[NT]	66	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	92	[NT]	[NT]	[NT]	[NT]	93	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	129	[NT]	[NT]	[NT]	[NT]	124	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

TRH Water(C10-C40) NEPM - The positive result in the rinsate sample is due to a single peak with no hydrocarbon profile that is consistent with the use of plastic containers.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Total Sulphur analysed by MPL Laboratories. Report No. PDH0846

CHAIN OF CUSTODY FORM - Client

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Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No. :	
Sampler:	VA/TG	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH	Comments: Provide as much information about the sample as you can
1	RIN-05	—	10/08/22	WATER	X		X		X			PFAS TRACE only
2	TS	—		SOIL					X			
3	TB	—			X		X					
4	S-1	—			X	X	X					
5	EI210	0.1-0.2			X	X	X	X				
6	EI210	1.0-1.1			X	X	X					
7	CS112	1.0-1.1			X	X	X					
8	CS116	0.6-0.7			X	X	X					
9	CS116	8.9-9.0			X	X	X					
10	CS117	0.1-0.2			X	X	X					
11	CS117	50-51			X	X	X					

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

Relinquished by (Company):	CES	Received by (Company):	ELS SYD
Print Name:	VICTOR ARIAS	Print Name:	Katy Wayne
Date & Time:	11/08/22 7:10 am	Date & Time:	12/8/22 09:55
Signature:		Signature:	

Lab Use Only

Job number:	302928
Temperature:	14°C
Cooling: Ice / Ice pack / None	
Security seal: Intact / Broken / None	
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

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CERTIFICATE OF ANALYSIS 302921

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Tristan Goodbody
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	1 Water, 9 Soil
Date samples received	12/08/2022
Date completed instructions received	12/08/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	19/08/2022
Date of Issue	19/08/2022

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Asbestos Approved By
Analysed by Asbestos Approved Analyst: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Hannah Nguyen, Metals Supervisor
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Lucy Zhu, Asbestos Supervisor
Phalak Inthakesone, Organics Development Manager, Sydney
Steven Luong, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		302921-2	302921-3	302921-6	302921-7	302921-8
Your Reference	UNITS	TS	TB	GS502	GS502	WT503
Depth		-	-	0.25-0.35	0.15-0.25	0.1-0.2
Date Sampled		11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	17/08/2022	17/08/2022	17/08/2022	17/08/2022	17/08/2022
TRH C_6 - C_9	mg/kg	[NA]	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	[NA]	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	<25	<25	<25	<25
Benzene	mg/kg	110%	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	112%	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	111%	<1	<1	<1	<1
m+p-xylene	mg/kg	111%	<2	<2	<2	<2
o-Xylene	mg/kg	110%	<1	<1	<1	<1
Naphthalene	mg/kg	[NA]	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	[NA]	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	99	100	90	84	88

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		302921-9
Your Reference	UNITS	WT503
Depth		0.2-0.3
Date Sampled		11/08/2022
Type of sample		Soil
Date extracted	-	15/08/2022
Date analysed	-	17/08/2022
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	95

svTRH (C10-C40) in Soil					
Our Reference		302921-6	302921-7	302921-8	302921-9
Your Reference	UNITS	GS502	GS502	WT503	WT503
Depth		0.25-0.35	0.15-0.25	0.1-0.2	0.2-0.3
Date Sampled		11/08/2022	11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50
Surrogate o-Terphenyl	%	83	79	80	84

PAHs in Soil					
Our Reference		302921-6	302921-7	302921-8	302921-9
Your Reference	UNITS	GS502	GS502	WT503	WT503
Depth		0.25-0.35	0.15-0.25	0.1-0.2	0.2-0.3
Date Sampled		11/08/2022	11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	76	80	88	82

Organochlorine Pesticides in soil					
Our Reference		302921-6	302921-7	302921-8	302921-9
Your Reference	UNITS	GS502	GS502	WT503	WT503
Depth		0.25-0.35	0.15-0.25	0.1-0.2	0.2-0.3
Date Sampled		11/08/2022	11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	76	75	79	80

Organophosphorus Pesticides in Soil					
Our Reference		302921-6	302921-7	302921-8	302921-9
Your Reference	UNITS	GS502	GS502	WT503	WT503
Depth		0.25-0.35	0.15-0.25	0.1-0.2	0.2-0.3
Date Sampled		11/08/2022	11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	76	75	79	80

PCBs in Soil					
Our Reference		302921-6	302921-7	302921-8	302921-9
Your Reference	UNITS	GS502	GS502	WT503	WT503
Depth		0.25-0.35	0.15-0.25	0.1-0.2	0.2-0.3
Date Sampled		11/08/2022	11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	76	75	79	80

Acid Extractable metals in soil						
Our Reference		302921-6	302921-7	302921-8	302921-9	302921-11
Your Reference	UNITS	GS502	GS502	WT503	WT503	GS502 - [TRIPLICATE]
Depth		0.25-0.35	0.15-0.25	0.1-0.2	0.2-0.3	0.25-0.35
Date Sampled		11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/08/2022	17/08/2022	17/08/2022	17/08/2022	17/08/2022
Date analysed	-	17/08/2022	17/08/2022	17/08/2022	17/08/2022	17/08/2022
Arsenic	mg/kg	<4	<8	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	29	<1	<1	11
Copper	mg/kg	6	32	<1	<1	4
Lead	mg/kg	2	2	<1	<1	3
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	13	55	<1	<1	7
Zinc	mg/kg	7	28	<1	<1	6

Moisture						
Our Reference		302921-3	302921-4	302921-5	302921-6	302921-7
Your Reference	UNITS	TB	QAQC9	FB308	GS502	GS502
Depth		-	-	0-0.1	0.25-0.35	0.15-0.25
Date Sampled		11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	15/08/2022	15/08/2022	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	16/08/2022	16/08/2022	16/08/2022	16/08/2022	16/08/2022
Moisture	%	0.2	13	11	7.4	6.4

Moisture				
Our Reference		302921-8	302921-9	302921-10
Your Reference	UNITS	WT503	WT503	FB304
Depth		0.1-0.2	0.2-0.3	0.12-0.22
Date Sampled		11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	15/08/2022	15/08/2022	15/08/2022
Date analysed	-	16/08/2022	16/08/2022	16/08/2022
Moisture	%	4.0	7.2	11

Asbestos ID - soils NEPM - ASB-001					
Our Reference		302921-6	302921-7	302921-8	302921-9
Your Reference	UNITS	GS502	GS502	WT503	WT503
Depth		0.25-0.35	0.15-0.25	0.1-0.2	0.2-0.3
Date Sampled		11/08/2022	11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date analysed	-	17/08/2022	17/08/2022	17/08/2022	17/08/2022
Sample mass tested	g	641.53	543.7	862.05	686.5
Sample Description	-	Tan coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Beige sandy soil	Beige sandy soil
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–
FA and AF Estimation*	g	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001

PFAS in Soils Extended						
Our Reference		302921-3	302921-4	302921-5	302921-6	302921-7
Your Reference	UNITS	TB	QAQC9	FB308	GS502	GS502
Depth		-	-	0-0.1	0.25-0.35	0.15-0.25
Date Sampled		11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/08/2022	16/08/2022	16/08/2022	16/08/2022	16/08/2022
Date analysed	-	16/08/2022	16/08/2022	16/08/2022	16/08/2022	16/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	0.2	0.2	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	1.0	0.7	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	99	100	97	95	99
Surrogate $^{13}C_2$ *PFOA*	%	103	101	102	104	105
Extracted ISTD $^{13}C_3$ *PFBS*	%	102	96	93	94	98
Extracted ISTD $^{18}O_2$ *PFHxS*	%	103	99	98	98	101
Extracted ISTD $^{13}C_4$ *PFOS*	%	104	100	101	104	101

PFAS in Soils Extended						
Our Reference		302921-3	302921-4	302921-5	302921-6	302921-7
Your Reference	UNITS	TB	QAQC9	FB308	GS502	GS502
Depth		-	-	0-0.1	0.25-0.35	0.15-0.25
Date Sampled		11/08/2022	11/08/2022	11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	108	100	101	105	105
Extracted ISTD $^{13}C_3$ *PFPeA*	%	97	99	93	95	94
Extracted ISTD $^{13}C_2$ *PFHxA*	%	93	90	90	86	92
Extracted ISTD $^{13}C_4$ *PFHpA*	%	97	97	95	91	93
Extracted ISTD $^{13}C_4$ *PFOA*	%	97	102	98	92	92
Extracted ISTD $^{13}C_5$ *PFNA*	%	109	112	113	104	103
Extracted ISTD $^{13}C_2$ *PFDA*	%	100	89	95	92	97
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	97	101	99	102	97
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	109	99	110	101	101
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	107	76	81	98	104
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	109	128	122	100	100
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	107	#	160	107	102
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	121	#	#	120	115
Extracted ISTD $^{13}C_8$ *FOSA*	%	113	106	109	109	112
Extracted ISTD d_3 *N MeFOSA*	%	94	76	78	85	89
Extracted ISTD d_5 *N EtFOSA*	%	111	96	102	106	110
Extracted ISTD d_7 *N MeFOSE*	%	103	86	92	101	104
Extracted ISTD d_9 *N EtFOSE*	%	100	74	80	94	94
Extracted ISTD d_3 *N MeFOSAA*	%	101	164	153	104	96
Extracted ISTD d_5 *N EtFOSAA*	%	103	128	142	97	97
Total Positive PFHxS & PFOS	µg/kg	<0.1	1.3	0.9	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	1.0	0.7	<0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	1.3	0.9	<0.1	<0.1

PFAS in Soils Extended				
Our Reference		302921-8	302921-9	302921-10
Your Reference	UNITS	WT503	WT503	FB304
Depth		0.1-0.2	0.2-0.3	0.12-0.22
Date Sampled		11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	16/08/2022	16/08/2022	16/08/2022
Date analysed	-	16/08/2022	16/08/2022	16/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	99	96	94
Surrogate $^{13}C_2$ *PFOA*	%	107	105	98
Extracted ISTD $^{13}C_3$ *PFBS*	%	102	99	92
Extracted ISTD $^{18}O_2$ *PFHxS*	%	99	98	94
Extracted ISTD $^{13}C_4$ *PFOS*	%	102	100	99

PFAS in Soils Extended				
Our Reference		302921-8	302921-9	302921-10
Your Reference	UNITS	WT503	WT503	FB304
Depth		0.1-0.2	0.2-0.3	0.12-0.22
Date Sampled		11/08/2022	11/08/2022	11/08/2022
Type of sample		Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	107	105	100
Extracted ISTD $^{13}C_3$ *PFPeA*	%	97	93	88
Extracted ISTD $^{13}C_2$ *PFHxA*	%	95	91	86
Extracted ISTD $^{13}C_4$ *PFHpA*	%	95	94	90
Extracted ISTD $^{13}C_4$ *PFOA*	%	94	92	92
Extracted ISTD $^{13}C_5$ *PFNA*	%	106	101	102
Extracted ISTD $^{13}C_2$ *PFDA*	%	99	94	94
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	98	94	94
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	105	102	108
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	105	104	94
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	106	101	100
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	101	103	100
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	118	105	123
Extracted ISTD $^{13}C_8$ *FOSA*	%	111	108	106
Extracted ISTD d_3 *N MeFOSA*	%	92	90	86
Extracted ISTD d_5 *N EtFOSA*	%	111	108	105
Extracted ISTD d_7 *N MeFOSE*	%	98	99	94
Extracted ISTD d_9 *N EtFOSE*	%	94	93	87
Extracted ISTD d_3 *N MeFOSAA*	%	98	98	102
Extracted ISTD d_5 *N EtFOSAA*	%	96	92	104
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	<0.1	<0.1

vTRH(C6-C10)/BTEXN in Water		
Our Reference		302921-1
Your Reference	UNITS	RIN-06
Depth		-
Date Sampled		11/08/2022
Type of sample		Water
Date extracted	-	16/08/2022
Date analysed	-	17/08/2022
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	100
Surrogate toluene-d8	%	95
Surrogate 4-BFB	%	100

svTRH (C10-C40) in Water		
Our Reference		302921-1
Your Reference	UNITS	RIN-06
Depth		-
Date Sampled		11/08/2022
Type of sample		Water
Date extracted	-	15/08/2022
Date analysed	-	15/08/2022
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	65
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	65
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	60
Surrogate o-Terphenyl	%	101

PAHs in Water		
Our Reference		302921-1
Your Reference	UNITS	RIN-06
Depth		-
Date Sampled		11/08/2022
Type of sample		Water
Date extracted	-	15/08/2022
Date analysed	-	15/08/2022
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	95

Organochlorine Pesticides in Water		
Our Reference		302921-1
Your Reference	UNITS	RIN-06
Depth		-
Date Sampled		11/08/2022
Type of sample		Water
Date extracted	-	15/08/2022
Date analysed	-	15/08/2022
alpha-BHC	µg/L	<0.2
HCB	µg/L	<0.2
beta-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	94

OP Pesticides in Water		
Our Reference		302921-1
Your Reference	UNITS	RIN-06
Depth		-
Date Sampled		11/08/2022
Type of sample		Water
Date extracted	-	15/08/2022
Date analysed	-	15/08/2022
Dichlorvos	µg/L	<0.2
Dimethoate	µg/L	<0.2
Diazinon	µg/L	<0.2
Chlorpyriphos-methyl	µg/L	<0.2
Ronnel	µg/L	<0.2
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.2
Chlorpyriphos	µg/L	<0.2
Parathion	µg/L	<0.2
Bromophos ethyl	µg/L	<0.2
Ethion	µg/L	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2
Surrogate TCMX	%	94

PCBs in Water		
Our Reference		302921-1
Your Reference	UNITS	RIN-06
Depth		-
Date Sampled		11/08/2022
Type of sample		Water
Date extracted	-	15/08/2022
Date analysed	-	15/08/2022
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCMX	%	94

Metals in Water - Dissolved		
Our Reference		302921-1
Your Reference	UNITS	RIN-06
Depth		-
Date Sampled		11/08/2022
Type of sample		Water
Date digested	-	15/08/2022
Date analysed	-	15/08/2022
Arsenic - Dissolved	mg/L	<0.05
Cadmium - Dissolved	mg/L	<0.01
Chromium - Dissolved	mg/L	<0.01
Copper - Dissolved	mg/L	<0.01
Lead - Dissolved	mg/L	<0.03
Mercury - Dissolved	mg/L	<0.0005
Nickel - Dissolved	mg/L	<0.02
Zinc - Dissolved	mg/L	<0.02

PFAS in Waters Trace Extended		
Our Reference		302921-1
Your Reference	UNITS	RIN-06
Depth		-
Date Sampled		11/08/2022
Type of sample		Water
Date prepared	-	16/08/2022
Date analysed	-	16/08/2022
Perfluorobutanesulfonic acid	µg/L	<0.0004
Perfluoropentanesulfonic acid	µg/L	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002
Perfluoroheptanesulfonic acid	µg/L	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002
Perfluorodecanesulfonic acid	µg/L	<0.002
Perfluorobutanoic acid	µg/L	<0.002
Perfluoropentanoic acid	µg/L	<0.002
Perfluorohexanoic acid	µg/L	<0.0004
Perfluoroheptanoic acid	µg/L	<0.0004
Perfluorooctanoic acid PFOA	µg/L	<0.0002
Perfluorononanoic acid	µg/L	<0.001
Perfluorodecanoic acid	µg/L	<0.002
Perfluoroundecanoic acid	µg/L	<0.002
Perfluorododecanoic acid	µg/L	<0.005
Perfluorotridecanoic acid	µg/L	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05
4:2 FTS	µg/L	<0.001
6:2 FTS	µg/L	<0.0004
8:2 FTS	µg/L	<0.0004
10:2 FTS	µg/L	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	100
Surrogate $^{13}C_2$ *PFOA*	%	113
Extracted ISTD $^{13}C_3$ *PFBS*	%	87
Extracted ISTD $^{18}O_2$ *PFHxS*	%	100
Extracted ISTD $^{13}C_4$ *PFOS*	%	83

PFAS in Waters Trace Extended		
Our Reference		302921-1
Your Reference	UNITS	RIN-06
Depth		-
Date Sampled		11/08/2022
Type of sample		Water
Extracted ISTD $^{13}C_4$ *PFBA*	%	116
Extracted ISTD $^{13}C_3$ *PFPeA*	%	85
Extracted ISTD $^{13}C_2$ *PFHxA*	%	102
Extracted ISTD $^{13}C_4$ *PFHpA*	%	107
Extracted ISTD $^{13}C_4$ *PFOA*	%	94
Extracted ISTD $^{13}C_5$ *PFNA*	%	103
Extracted ISTD $^{13}C_2$ *PFDA*	%	100
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	102
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	104
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	71
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	111
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	123
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	150
Extracted ISTD $^{13}C_8$ *FOSA*	%	71
Extracted ISTD d_3 *N MeFOSA*	%	94
Extracted ISTD d_5 *N EtFOSA*	%	96
Extracted ISTD d_7 *N MeFOSE*	%	105
Extracted ISTD d_9 *N EtFOSE*	%	97
Extracted ISTD d_3 *N MeFOSAA*	%	135
Extracted ISTD d_5 *N EtFOSAA*	%	103
Total Positive PFHxS & PFOS	µg/L	<0.0002
Total Positive PFOS & PFOA	µg/L	<0.0002
Total Positive PFAS	µg/L	<0.0002

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

Method ID	Methodology Summary
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302921-7
Date extracted	-			15/08/2022	6	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Date analysed	-			17/08/2022	6	17/08/2022	17/08/2022		17/08/2022	17/08/2022
TRH C_6 - C_9	mg/kg	25	Org-023	<25	6	<25	<25	0	94	109
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	6	<25	<25	0	94	109
Benzene	mg/kg	0.2	Org-023	<0.2	6	<0.2	<0.2	0	88	122
Toluene	mg/kg	0.5	Org-023	<0.5	6	<0.5	<0.5	0	96	111
Ethylbenzene	mg/kg	1	Org-023	<1	6	<1	<1	0	90	101
m+p-xylene	mg/kg	2	Org-023	<2	6	<2	<2	0	98	105
o-Xylene	mg/kg	1	Org-023	<1	6	<1	<1	0	97	113
Naphthalene	mg/kg	1	Org-023	<1	6	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	92	6	90	84	7	93	108

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302921-7
Date extracted	-			15/08/2022	6	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Date analysed	-			15/08/2022	6	15/08/2022	15/08/2022		15/08/2022	15/08/2022
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	6	<50	<50	0	109	115
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	6	<100	<100	0	112	121
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	6	<100	<100	0	129	115
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	6	<50	<50	0	109	115
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	6	<100	<100	0	112	121
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	6	<100	<100	0	129	115
Surrogate o-Terphenyl	%		Org-020	74	6	83	78	6	73	79

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302921-7
Date extracted	-			15/08/2022	6	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Date analysed	-			15/08/2022	6	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	78	78
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	75	81
Fluorene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	82	84
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	90	88
Anthracene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	88	86
Pyrene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	93	91
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	87	81
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	6	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	6	<0.05	<0.05	0	84	90
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	81	6	76	71	7	81	80

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302921-7
Date extracted	-			15/08/2022	6	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Date analysed	-			15/08/2022	6	15/08/2022	15/08/2022		15/08/2022	15/08/2022
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	82	80
HCB	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	89	82
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	79	75
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	89	85
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	90	82
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	86	82
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	88	84
Endrin	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	78	78
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	84	80
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	76	78
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	81	6	76	78	3	78	82

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302921-7
Date extracted	-			15/08/2022	6	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Date analysed	-			15/08/2022	6	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	107	109
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	79	75
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	75	79
Malathion	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	108	106
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	88	86
Parathion	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	74	70
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	80	78
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	81	6	76	78	3	78	82

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302921-7
Date extracted	-			15/08/2022	6	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Date analysed	-			15/08/2022	6	15/08/2022	15/08/2022		15/08/2022	15/08/2022
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	6	<0.1	<0.1	0	123	120
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	6	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	81	6	76	78	3	78	82

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	302921-7
Date prepared	-			17/08/2022	6	17/08/2022	17/08/2022		17/08/2022	17/08/2022
Date analysed	-			17/08/2022	6	17/08/2022	17/08/2022		17/08/2022	17/08/2022
Arsenic	mg/kg	4	Metals-020	<4	6	<4	<4	0	98	#
Cadmium	mg/kg	0.4	Metals-020	<0.4	6	<0.4	<0.4	0	92	92
Chromium	mg/kg	1	Metals-020	<1	6	15	11	31	93	77
Copper	mg/kg	1	Metals-020	<1	6	6	<1	143	97	106
Lead	mg/kg	1	Metals-020	<1	6	2	2	0	95	75
Mercury	mg/kg	0.1	Metals-021	<0.1	6	<0.1	<0.1	0	118	105
Nickel	mg/kg	1	Metals-020	<1	6	13	3	125	96	71
Zinc	mg/kg	1	Metals-020	<1	6	7	2	111	96	72

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Date analysed	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	132	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	92	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	115	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	115	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	118	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	114	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	98	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	87	[NT]	[NT]	[NT]	[NT]	88	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	91	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	93	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	123	[NT]	[NT]	[NT]	[NT]	117	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	88	[NT]	[NT]	[NT]	[NT]	90	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	110	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	91	[NT]	[NT]	[NT]	[NT]	93	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Date analysed	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	118	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	118	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	117	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	118	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	117	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	97	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate toluene-d8	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-BFB	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	[NT]
Date analysed	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	96	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	96	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	76	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			15/08/2022	1	15/08/2022	15/08/2022		15/08/2022	[NT]
Date analysed	-			15/08/2022	1	15/08/2022	15/08/2022		15/08/2022	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	1	<1	<1	0	80	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	81	[NT]
Fluorene	µg/L	1	Org-022/025	<1	1	<1	<1	0	76	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	75	[NT]
Anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	80	[NT]
Pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	89	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	1	<1	<1	0	75	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	74	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	95	1	95	72	28	80	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			15/08/2022	1	15/08/2022	15/08/2022		15/08/2022	[NT]
Date analysed	-			15/08/2022	1	15/08/2022	15/08/2022		15/08/2022	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	86	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	85	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	83	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	79	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	88	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	80	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	78	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	80	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	84	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	80	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	93	1	94	71	28	83	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			15/08/2022	1	15/08/2022	15/08/2022		15/08/2022	[NT]
Date analysed	-			15/08/2022	1	15/08/2022	15/08/2022		15/08/2022	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	101	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	73	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	89	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	112	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	88	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	78	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	76	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	93	1	94	71	28	83	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			15/08/2022	1	15/08/2022	15/08/2022		15/08/2022	[NT]
Date analysed	-			15/08/2022	1	15/08/2022	15/08/2022		15/08/2022	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	1	<2	<2	0	98	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	93	1	94	71	28	83	[NT]

QUALITY CONTROL: Metals in Water - Dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date digested	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	[NT]
Date analysed	-			15/08/2022	[NT]	[NT]	[NT]	[NT]	15/08/2022	[NT]
Arsenic - Dissolved	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	97	[NT]
Cadmium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	95	[NT]
Chromium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	95	[NT]
Copper - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	98	[NT]
Lead - Dissolved	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	98	[NT]
Mercury - Dissolved	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	98	[NT]
Nickel - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	97	[NT]
Zinc - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Date analysed	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	114	[NT]
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	95	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	81	[NT]
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	110	[NT]
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	72	[NT]
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	99	[NT]
4:2 FTS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	106	[NT]
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	111	[NT]
10:2 FTS	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	134	[NT]
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	118	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	108	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	113	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	104	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	112	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	75	[NT]	[NT]	[NT]	[NT]	86	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	88	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	75	[NT]	[NT]	[NT]	[NT]	80	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	74	[NT]	[NT]	[NT]	[NT]	83	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	89	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	92	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	57	[NT]	[NT]	[NT]	[NT]	66	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	118	[NT]	[NT]	[NT]	[NT]	126	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	133	[NT]	[NT]	[NT]	[NT]	134	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	193	[NT]	[NT]	[NT]	[NT]	178	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	67	[NT]	[NT]	[NT]	[NT]	66	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	92	[NT]	[NT]	[NT]	[NT]	93	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	129	[NT]	[NT]	[NT]	[NT]	124	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

TRH Water(C10-C40) NEPM - The positive result in the rinsate sample is due to a single peak with no hydrocarbon profile that is consistent with the use of plastic containers.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Acid Extractable Metals in Soil:
- The laboratory RPD acceptance criteria has been exceeded for 302921-6 for Ni. Therefore a triplicate result has been issued as laboratory sample number 302921-11.
- # Low spike recovery was obtained for this sample. Sample matrix interference is suspected. However, an acceptable recovery was obtained for the LCS
- The PQL for As for 302921-7 has been raised due to the low spike recovery/recoveries. This may reflect other samples where similar in matrix and similar analytical interferences occur.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

CHAIN OF CUSTODY FORM - Client

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Client Project Name/Number/Site etc (ie report title): CES170608-GPM

PO No. (if applicable):

Envirolab Quote No. :

Date results required:

Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Additional report format: ☐ Esdat ☐ Equis

Lab Comments:

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH	Comments
1	RIN-06	—	11/08/22	WATER	X		X		X			PFAS TRACE EXT
2	TS	—	↓	SOIL					X			
3	TB	—			X							
4	QAQC9	—			X							
	QAQC10	—			PLEASE FORWARD TO ALS FOR PFAS							
5	FB309	0-0.1			X							
6	GS507	0.25-0.35			X	X	X					
7	GS502	0.15-0.25			X	X	X					
8	WTS03	0.1-0.2			X	X	X					
9	WTS03	0.2-0.3			X	X	X					
10	FB30A	0.17-0.22	↓	↓	X							

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

Relinquished by (Company):	CES
Print Name:	VICTOR ARIAS
Date & Time:	11/08/22 4:30pm
Signature:	

Received by (Company):	ELS SYD
Print Name:	Kirby Wayne
Date & Time:	12/8/22 9:55
Signature:	

Lab Use Only

Job number:	302921
Temperature:	14°C
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	
Cooling:	Ice / Ice pack / None
Security seal:	Intact / Broken / None

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2232517**	Page	: 1 of 5
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 09-Sep-2022 17:15
Order number	: ----	Date Analysis Commenced	: 13-Sep-2022
C-O-C number	: ----	Issue Date	: 14-Sep-2022 10:45
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC9	----	----	----	----
				Sampling date / time	11-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2232517-001	--------	--------	--------	--------
					Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**14.7**	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0002**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0011**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC9	----	----	----	----
				Sampling date / time	11-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2232517-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0013**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0013**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0013**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**106**	----	----	----	----
13C8-PFOA	----	0.0002	%		**81.5**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2232517**	Page	: 1 of 6
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 09-Sep-2022
Order number	: ----	Date Analysis Commenced	: 13-Sep-2022
C-O-C number	: ----	Issue Date	: 14-Sep-2022
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4577413)									
ES2232567-001	Anonymous	EA055: Moisture Content	----	0.1	%	5.3	5.6	4.4	0% - 20%
ES2232567-012	Anonymous	EA055: Moisture Content	----	0.1	%	8.7	8.7	0.0	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4575972)									
ES2232517-001	QAQC9	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	0.0011	0.0009	13.3	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4575972)									
ES2232517-001	QAQC9	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4575972)									
ES2232517-001	QAQC9	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4575972) - continued									
ES2232517-001	QAQC9	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4575972)									
ES2232517-001	QAQC9	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4575972)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	98.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	122	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4575972)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	100	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	108	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	114	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	104	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4575972)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	115	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	109	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	102	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	111	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	100	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	119	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.4	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4575972)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	110	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	96.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	92.0	65.0	137

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4575972) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	116	69.2	143

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4575972)							
ES2232517-001	QAQC9	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	109	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	121	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	108	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	118	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	110	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	110	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4575972)							
ES2232517-001	QAQC9	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	108	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	113	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	119	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	114	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	120	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	110	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	115	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	114	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	110	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	78.4	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	111	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4575972)							
ES2232517-001	QAQC9	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	106	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	106	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	115	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	104	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	109	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	106	63.0	144

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4575972) - continued							
ES2232517-001	QAQC9	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	106	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4575972)							
ES2232517-001	QAQC9	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	122	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	120	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	116	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	104	69.2	143

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2232517**	Page	: 1 of 4
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 09-Sep-2022
Site	: ----	Issue Date	: 14-Sep-2022
Sampler	: VA/TG	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
HDPE Soil Jar QAQC9	----	----	----	13-Sep-2022	25-Aug-2022	**19**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055) QAQC9	**11-Aug-2022**	**----**	----	----	**13-Sep-2022**	25-Aug-2022	×
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X) QAQC9	**11-Aug-2022**	**13-Sep-2022**	07-Feb-2023	✓	**13-Sep-2022**	23-Oct-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X) QAQC9	**11-Aug-2022**	**13-Sep-2022**	07-Feb-2023	✓	**13-Sep-2022**	23-Oct-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X) QAQC9	**11-Aug-2022**	**13-Sep-2022**	07-Feb-2023	✓	**13-Sep-2022**	23-Oct-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) QAQC9	**11-Aug-2022**	**13-Sep-2022**	07-Feb-2023	✓	**13-Sep-2022**	23-Oct-2022	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X) QAQC9	**11-Aug-2022**	**13-Sep-2022**	07-Feb-2023	✓	**13-Sep-2022**	23-Oct-2022	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

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

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.

CHAIN OF CUSTODY FORM - Client

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Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (to report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No.:	
Sampler:	VA/TG	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Sample Information					Tests Required														Comments
Envirolab Sample ID (Lab use only):	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	PSDESICS (AF/FA) _NEMP Method	Combination 8 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH								Provide as much information about the sample as you can
1	RIN-06	—	11/09/22	WATER	X		X		X										PFAS TRACE EXT
2	TS	—		SOIL					X										
3	TB	—							X										
4	QAQC9	—			X														
	QAQC10	—			PLEASE FORWARD TO ALS FOR PFAS														
5	FB309	0-0.1			X														
6	GS507	0.25-0.35			X	X	X												
7	GS502	0.15-0.25			X	X	X												
8	WTS03	0.1-0.2			X	X	X												
9	WTS03	0.2-0.3			X	X	X												
10	FB304	0.17-0.22	↓	↓	X	X	X												

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

Relinquished by (Company):	CES	Received by (Company):	ELS SYD
Print Name:	VICTOR ARIAS	Print Name:	Kody Wayne
Date & Time:	11/09/22 4:30pm	Date & Time:	12/9/22 9:55
Signature:		Signature:	

Lab Use

Job number:	302921
Temperature:	14°C
TAT, Req - SAME day / 1 / 2 / 3 / 4 / STD	

Environmental Division
Sydney
Work Order Reference
ES2232517

Telephone : +61-2-9764 8555

Relinquished by ELS Sydney, Crossman 09/09/22 1200

Rec: J CO 09/09/22 1715

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 303100

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias, Tristan Goodbody
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	1 Water, 6 Soil
Date samples received	15/08/2022
Date completed instructions received	15/08/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	23/08/2022
Date of Issue	22/08/2022

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Results Approved By
Hannah Nguyen, Metals Supervisor
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organic Instruments Team Leader
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

BTEX in Soil			
Our Reference		303100-2	303100-3
Your Reference	UNITS	TS	TB
Depth		-	-
Date Sampled		17/08/2022	17/08/2022
Type of sample		Soil	Soil
Date extracted	-	17/08/2022	17/08/2022
Date analysed	-	19/08/2022	19/08/2022
Benzene	mg/kg	93%	<0.2
Toluene	mg/kg	91%	<0.5
Ethylbenzene	mg/kg	89%	<1
m+p-xylene	mg/kg	90%	<2
o-Xylene	mg/kg	92%	<1
Surrogate aaa-Trifluorotoluene	%	87	112

PFAS in Soils Extended						
Our Reference		303100-3	303100-4	303100-5	303100-6	303100-7
Your Reference	UNITS	TB	FB309	FB306	FB307	FB301
Depth		-	0.5-0.6	1.0-1.1	0-0.1	0-0.1
Date Sampled		17/08/2022	17/08/2022	17/08/2022	17/08/2022	17/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Date analysed	-	18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1	<0.1	0.3	0.2
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	<0.1	<0.1	2.5	0.7
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	0.8
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	92	90	92	90	93
Surrogate $^{13}C_2$ *PFOA*	%	99	100	104	102	101
Extracted ISTD $^{13}C_3$ *PFBS*	%	121	110	112	109	114
Extracted ISTD $^{18}O_2$ *PFHxS*	%	118	111	110	111	118
Extracted ISTD $^{13}C_4$ *PFOS*	%	123	117	117	117	122

PFAS in Soils Extended						
Our Reference		303100-3	303100-4	303100-5	303100-6	303100-7
Your Reference	UNITS	TB	FB309	FB306	FB307	FB301
Depth		-	0.5-0.6	1.0-1.1	0-0.1	0-0.1
Date Sampled		17/08/2022	17/08/2022	17/08/2022	17/08/2022	17/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	110	103	102	100	98
Extracted ISTD $^{13}C_3$ *PFPeA*	%	110	105	102	107	111
Extracted ISTD $^{13}C_2$ *PFHxA*	%	116	106	105	110	117
Extracted ISTD $^{13}C_4$ *PFHpA*	%	133	125	126	131	144
Extracted ISTD $^{13}C_4$ *PFOA*	%	130	123	121	134	145
Extracted ISTD $^{13}C_5$ *PFNA*	%	132	128	127	143	155
Extracted ISTD $^{13}C_2$ *PFDA*	%	132	123	128	127	115
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	138	136	121	151	118
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	148	151	134	156	103
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	120	109	107	107	53
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	116	109	103	130	174
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	103	94	87	139	174
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	100	105	91	152	173
Extracted ISTD $^{13}C_8$ *FOSA*	%	131	121	125	143	131
Extracted ISTD d_3 *N MeFOSA*	%	125	117	116	119	71
Extracted ISTD d_5 *N EtFOSA*	%	130	121	118	119	83
Extracted ISTD d_7 *N MeFOSE*	%	125	112	114	113	73
Extracted ISTD d_9 *N EtFOSE*	%	114	100	107	98	49
Extracted ISTD d_3 *N MeFOSAA*	%	103	112	136	160	159
Extracted ISTD d_5 *N EtFOSAA*	%	86	76	86	136	128
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	<0.1	2.7	0.9
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1	<0.1	2.7	0.7
Total Positive PFAS	µg/kg	<0.1	<0.1	<0.1	3.3	1.7

Moisture					
Our Reference		303100-4	303100-5	303100-6	303100-7
Your Reference	UNITS	FB309	FB306	FB307	FB301
Depth		0.5-0.6	1.0-1.1	0-0.1	0-0.1
Date Sampled		17/08/2022	17/08/2022	17/08/2022	17/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	17/08/2022	17/08/2022	17/08/2022	17/08/2022
Date analysed	-	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Moisture	%	0.2	7.6	10	12

vTRH(C6-C10)/BTEXN in Water		
Our Reference		303100-1
Your Reference	UNITS	RIN-07
Depth		-
Date Sampled		17/08/2022
Type of sample		Water
Date extracted	-	16/08/2022
Date analysed	-	17/08/2022
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	100
Surrogate toluene-d8	%	96
Surrogate 4-BFB	%	101

svTRH (C10-C40) in Water		
Our Reference		303100-1
Your Reference	UNITS	RIN-07
Depth		-
Date Sampled		17/08/2022
Type of sample		Water
Date extracted	-	17/08/2022
Date analysed	-	17/08/2022
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	62
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	62
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	60
Surrogate o-Terphenyl	%	76

PAHs in Water		
Our Reference		303100-1
Your Reference	UNITS	RIN-07
Depth		-
Date Sampled		17/08/2022
Type of sample		Water
Date extracted	-	17/08/2022
Date analysed	-	17/08/2022
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	82

Organochlorine Pesticides in Water		
Our Reference		303100-1
Your Reference	UNITS	RIN-07
Depth		-
Date Sampled		17/08/2022
Type of sample		Water
Date extracted	-	17/08/2022
Date analysed	-	17/08/2022
alpha-BHC	µg/L	<0.2
HCB	µg/L	<0.2
beta-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	81

OP Pesticides in Water		
Our Reference		303100-1
Your Reference	UNITS	RIN-07
Depth		-
Date Sampled		17/08/2022
Type of sample		Water
Date extracted	-	17/08/2022
Date analysed	-	17/08/2022
Dichlorvos	µg/L	<0.2
Dimethoate	µg/L	<0.2
Diazinon	µg/L	<0.2
Chlorpyriphos-methyl	µg/L	<0.2
Ronnel	µg/L	<0.2
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.2
Chlorpyriphos	µg/L	<0.2
Parathion	µg/L	<0.2
Bromophos ethyl	µg/L	<0.2
Ethion	µg/L	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2
Surrogate TCMX	%	81

PCBs in Water		
Our Reference		303100-1
Your Reference	UNITS	RIN-07
Depth		-
Date Sampled		17/08/2022
Type of sample		Water
Date extracted	-	17/08/2022
Date analysed	-	17/08/2022
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCMX	%	81

Metals in Water - Dissolved		
Our Reference		303100-1
Your Reference	UNITS	RIN-07
Depth		-
Date Sampled		17/08/2022
Type of sample		Water
Date digested	-	17/08/2022
Date analysed	-	17/08/2022
Arsenic - Dissolved	mg/L	<0.05
Cadmium - Dissolved	mg/L	<0.01
Chromium - Dissolved	mg/L	<0.01
Copper - Dissolved	mg/L	<0.01
Lead - Dissolved	mg/L	<0.03
Mercury - Dissolved	mg/L	<0.0005
Nickel - Dissolved	mg/L	<0.02
Zinc - Dissolved	mg/L	<0.02

PFAS in Waters Trace Extended		
Our Reference		303100-1
Your Reference	UNITS	RIN-07
Depth		-
Date Sampled		17/08/2022
Type of sample		Water
Date prepared	-	16/08/2022
Date analysed	-	16/08/2022
Perfluorobutanesulfonic acid	µg/L	<0.0004
Perfluoropentanesulfonic acid	µg/L	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002
Perfluoroheptanesulfonic acid	µg/L	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002
Perfluorodecanesulfonic acid	µg/L	<0.002
Perfluorobutanoic acid	µg/L	<0.002
Perfluoropentanoic acid	µg/L	<0.002
Perfluorohexanoic acid	µg/L	<0.0004
Perfluoroheptanoic acid	µg/L	<0.0004
Perfluorooctanoic acid PFOA	µg/L	<0.0002
Perfluorononanoic acid	µg/L	<0.001
Perfluorodecanoic acid	µg/L	<0.002
Perfluoroundecanoic acid	µg/L	<0.002
Perfluorododecanoic acid	µg/L	<0.005
Perfluorotridecanoic acid	µg/L	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05
4:2 FTS	µg/L	<0.001
6:2 FTS	µg/L	<0.0004
8:2 FTS	µg/L	<0.0004
10:2 FTS	µg/L	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	103
Surrogate $^{13}C_2$ *PFOA*	%	102
Extracted ISTD $^{13}C_3$ *PFBS*	%	83
Extracted ISTD $^{18}O_2$ *PFHxS*	%	86
Extracted ISTD $^{13}C_4$ *PFOS*	%	79

PFAS in Waters Trace Extended		
Our Reference		303100-1
Your Reference	UNITS	RIN-07
Depth		-
Date Sampled		17/08/2022
Type of sample		Water
Extracted ISTD $^{13}C_4$ *PFBA*	%	102
Extracted ISTD $^{13}C_3$ *PFPeA*	%	85
Extracted ISTD $^{13}C_2$ *PFHxA*	%	82
Extracted ISTD $^{13}C_4$ *PFHpA*	%	79
Extracted ISTD $^{13}C_4$ *PFOA*	%	87
Extracted ISTD $^{13}C_5$ *PFNA*	%	100
Extracted ISTD $^{13}C_2$ *PFDA*	%	74
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	75
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	76
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	48
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	112
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	120
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	159
Extracted ISTD $^{13}C_8$ *FOSA*	%	76
Extracted ISTD d_3 *N MeFOSA*	%	106
Extracted ISTD d_5 *N EtFOSA*	%	103
Extracted ISTD d_7 *N MeFOSE*	%	102
Extracted ISTD d_9 *N EtFOSE*	%	96
Extracted ISTD d_3 *N MeFOSAA*	%	93
Extracted ISTD d_5 *N EtFOSAA*	%	82
Total Positive PFHxS & PFOS	µg/L	<0.0002
Total Positive PFOS & PFOA	µg/L	<0.0002
Total Positive PFAS	µg/L	<0.0002

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: BTEX in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date extracted	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
Date analysed	-			19/08/2022	[NT]	[NT]	[NT]	[NT]	19/08/2022	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	85	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	94	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	124	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			18/08/2022	[NT]	[NT]	[NT]	[NT]	18/08/2022	[NT]
Date analysed	-			18/08/2022	[NT]	[NT]	[NT]	[NT]	18/08/2022	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	113	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	102	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	108	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	114	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	105	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	106	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	104	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	94	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	116	[NT]	[NT]	[NT]	[NT]	115	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	114	[NT]	[NT]	[NT]	[NT]	116	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	113	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	115	[NT]	[NT]	[NT]	[NT]	116	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	114	[NT]	[NT]	[NT]	[NT]	118	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	119	[NT]	[NT]	[NT]	[NT]	118	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	124	[NT]	[NT]	[NT]	[NT]	123	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	128	[NT]	[NT]	[NT]	[NT]	126	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	129	[NT]	[NT]	[NT]	[NT]	122	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	110	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	81	[NT]	[NT]	[NT]	[NT]	84	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	76	[NT]	[NT]	[NT]	[NT]	82	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	120	[NT]	[NT]	[NT]	[NT]	118	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	115	[NT]	[NT]	[NT]	[NT]	114	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	121	[NT]	[NT]	[NT]	[NT]	120	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	117	[NT]	[NT]	[NT]	[NT]	114	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	110	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	118	[NT]	[NT]	[NT]	[NT]	117	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	124	[NT]	[NT]	[NT]	[NT]	116	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Date analysed	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	118	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	118	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	117	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	119	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	117	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	102	[NT]	[NT]	[NT]	[NT]	104	[NT]
Surrogate toluene-d8	%		Org-023	95	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-BFB	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
Date analysed	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
Surrogate o-Terphenyl	%		Org-020	77	[NT]	[NT]	[NT]	[NT]	78	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
Date analysed	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	76	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	79	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	79	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	80	[NT]	[NT]	[NT]	[NT]	79	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
Date analysed	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	101	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	79	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	80	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
Date analysed	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	104	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	75	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	123	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	120	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	96	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	117	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	105	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	80	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
Date analysed	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	102	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	80	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: Metals in Water - Dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date digested	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
Date analysed	-			17/08/2022	[NT]	[NT]	[NT]	[NT]	17/08/2022	[NT]
Arsenic - Dissolved	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	103	[NT]
Cadmium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	102	[NT]
Chromium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	103	[NT]
Copper - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	100	[NT]
Lead - Dissolved	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	100	[NT]
Mercury - Dissolved	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	101	[NT]
Nickel - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	101	[NT]
Zinc - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Date analysed	-			16/08/2022	[NT]	[NT]	[NT]	[NT]	16/08/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	94	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	89	[NT]
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	109	[NT]
4:2 FTS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	104	[NT]
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	97	[NT]
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	97	[NT]
10:2 FTS	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	102	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	112	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	124	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	115	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	101	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	81	[NT]	[NT]	[NT]	[NT]	81	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	87	[NT]	[NT]	[NT]	[NT]	87	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	85	[NT]	[NT]	[NT]	[NT]	85	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	88	[NT]	[NT]	[NT]	[NT]	88	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	83	[NT]	[NT]	[NT]	[NT]	83	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	85	[NT]	[NT]	[NT]	[NT]	85	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	86	[NT]	[NT]	[NT]	[NT]	86	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	87	[NT]	[NT]	[NT]	[NT]	87	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	92	[NT]	[NT]	[NT]	[NT]	92	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	85	[NT]	[NT]	[NT]	[NT]	85	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	79	[NT]	[NT]	[NT]	[NT]	79	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	113	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	139	[NT]	[NT]	[NT]	[NT]	139	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	74	[NT]	[NT]	[NT]	[NT]	74	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	115	[NT]	[NT]	[NT]	[NT]	115	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	109	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

TRH Water(C10-C40) NEPM - The positive result in the rinsate sample is due to a single peak with no hydrocarbon profile that is consistent with the use of plastic containers.

CHAIN OF CUSTODY FORM - Client

[Copyright and Confidential]

Company:	CES - Consulting Earth Scientists
Contact Person:	Victor Arias
Project Mgr:	Tristan Goodbody
Sampler:	VA/TG
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073
Phone:	Mob: 0439 261 637
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au

Client Project Name/Number/Site etc (is report title): CES170608-GPM

PO No. (if applicable):

Envirolab Quote No. :

Date results required:

Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Additional report format: ☐ Esdat ☐ Equis

Lab Comments:

ENVIROLAB GROUP
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08 8967 1201 | darwin@envirolab.com.au

Sample Information | **Tests Required** | **Comments**

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH	Comments
1	RINO7	—	17/08/22	WATER	X		X		X			PFAS TRACE EXT
2	TS		↓	SOIL	X				X			
3	TB				X				X			
4	FB309	0.5-0.6			X							
5	FB306	1.0-1.1			X							
6	FB307	0-0.1			X							
7	FB301	0-0.1	↓	↓	X							

ENVIROLAB Environmental Services 12 Ashley St Chatswood NSW 2067 Ph: (02) 9910 6200

Job No: 303100
Date Received: 17/08/22
Time Received: 1700
Received By: CH
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None
19 °C

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

Relinquished by (Company):	CES
Print Name:	VICTOR ARIAS
Date & Time:	15/08/22 3:45pm
Signature:	

Received by (Company):	ELS Sydney
Print Name:	Chloe Aman
Date & Time:	17/08/22 1700
Signature:	

Lab Use Only

Job number:	303100
Temperature:	12°C
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	
Cooling: Ice / Ice pack / None	
Security seal: Intact / Broken / None	

Form 302_V007

Issue date: 21 April 2021

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 303499

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias, Tristan Goodbody
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	1 Water, 12 Soil
Date samples received	19/08/2022
Date completed instructions received	19/08/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	26/08/2022
Date of Issue	26/08/2022

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Asbestos Approved By
Analysed by Asbestos Approved Analyst: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Giovanni Agosti, Group Technical Manager
Greta Petzold, Assistant Operation Manager
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organic Instruments Team Leader
Lucy Zhu, Asbestos Supervisor
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		303499-2	303499-3	303499-4	303499-5	303499-6
Your Reference	UNITS	TS	TB	QAQC15	FI205	FI203
Depth		-	-	-	0-0.1	1-1.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Date analysed	-	25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
TRH C_6 - C_9	mg/kg	[NA]	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	[NA]	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	<25	<25	<25	<25
Benzene	mg/kg	116%	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	116%	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	113%	<1	<1	<1	<1
m+p-xylene	mg/kg	114%	<2	<2	<2	<2
o-Xylene	mg/kg	116%	<1	<1	<1	<1
Naphthalene	mg/kg	[NA]	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	[NA]	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	84	86	101	92	92

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		303499-7	303499-8	303499-9	303499-10
Your Reference	UNITS	FI204	FI206	FI207	QC501
Depth		0.5-0.6	0-0.1	0.1-0.2	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Date analysed	-	25/08/2022	25/08/2022	25/08/2022	25/08/2022
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	90	103	76	82

svTRH (C10-C40) in Soil						
Our Reference		303499-4	303499-5	303499-6	303499-7	303499-8
Your Reference	UNITS	QAQC15	FI205	FI203	FI204	FI206
Depth		-	0-0.1	1-1.1	0.5-0.6	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Date analysed	-	24/08/2022	24/08/2022	23/08/2022	23/08/2022	23/08/2022
TRH C_{10} - C_{14}	mg/kg	<50	52	<50	<50	64
TRH C_{15} - C_{28}	mg/kg	250	310	<100	<100	240
TRH C_{29} - C_{36}	mg/kg	130	150	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	380	510	<50	<50	300
TRH >C_{10} -C_{16}	mg/kg	62	64	<50	<50	76
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	62	64	<50	<50	76
TRH >C_{16} -C_{34}	mg/kg	340	410	<100	<100	270
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	400	480	<50	<50	350
Surrogate o-Terphenyl	%	108	111	86	90	110

svTRH (C10-C40) in Soil			
Our Reference		303499-9	303499-10
Your Reference	UNITS	FI207	QC501
Depth		0.1-0.2	0-0.1
Date Sampled		18/08/2022	18/08/2022
Type of sample		Soil	Soil
Date extracted	-	22/08/2022	22/08/2022
Date analysed	-	23/08/2022	24/08/2022
TRH C_{10} - C_{14}	mg/kg	120	<50
TRH C_{15} - C_{28}	mg/kg	520	140
TRH C_{29} - C_{36}	mg/kg	200	<100
Total +ve TRH (C10-C36)	mg/kg	840	140
TRH >C_{10} -C_{16}	mg/kg	150	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	150	<50
TRH >C_{16} -C_{34}	mg/kg	640	200
TRH >C_{34} -C_{40}	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	790	200
Surrogate o-Terphenyl	%	114	92

PAHs in Soil						
Our Reference		303499-4	303499-5	303499-6	303499-7	303499-8
Your Reference	UNITS	QAQC15	FI205	FI203	FI204	FI206
Depth		-	0-0.1	1-1.1	0.5-0.6	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Date analysed	-	25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
Naphthalene	mg/kg	0.7	0.6	<0.1	<0.1	0.6
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	1.5	1.2	<0.1	<0.1	1.2
Anthracene	mg/kg	0.2	0.1	<0.1	<0.1	0.1
Fluoranthene	mg/kg	0.7	0.6	<0.1	<0.1	0.6
Pyrene	mg/kg	0.6	0.4	<0.1	<0.1	0.4
Benzo(a)anthracene	mg/kg	0.5	0.4	<0.1	<0.1	0.4
Chrysene	mg/kg	0.5	0.4	<0.1	<0.1	0.4
Benzo(b,j+k)fluoranthene	mg/kg	0.4	0.3	<0.2	<0.2	0.4
Benzo(a)pyrene	mg/kg	0.2	0.2	<0.05	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	0.1	<0.1	<0.1	0.1
Total +ve PAH's	mg/kg	5.4	4.4	<0.05	<0.05	4.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	69	70	79	73	65

PAHs in Soil			
Our Reference		303499-9	303499-10
Your Reference	UNITS	FI207	QC501
Depth		0.1-0.2	0-0.1
Date Sampled		18/08/2022	18/08/2022
Type of sample		Soil	Soil
Date extracted	-	23/08/2022	23/08/2022
Date analysed	-	25/08/2022	25/08/2022
Naphthalene	mg/kg	1.2	<0.1
Acenaphthylene	mg/kg	<0.1	0.5
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	2.6	<0.1
Anthracene	mg/kg	0.3	0.2
Fluoranthene	mg/kg	1.1	0.2
Pyrene	mg/kg	0.7	0.3
Benzo(a)anthracene	mg/kg	0.7	0.3
Chrysene	mg/kg	0.7	0.3
Benzo(b,j+k)fluoranthene	mg/kg	0.4	0.8
Benzo(a)pyrene	mg/kg	0.1	0.5
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.4
Dibenzo(a,h)anthracene	mg/kg	<0.1	0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.5
Total +ve PAH's	mg/kg	7.8	4.0
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	0.8
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	0.8
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	0.8
Surrogate p-Terphenyl-d14	%	65	112

Organochlorine Pesticides in soil						
Our Reference		303499-4	303499-5	303499-6	303499-7	303499-8
Your Reference	UNITS	QAQC15	FI205	FI203	FI204	FI206
Depth		-	0-0.1	1-1.1	0.5-0.6	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Date analysed	-	25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	64	70	91	78	61

Organochlorine Pesticides in soil			
Our Reference		303499-9	303499-10
Your Reference	UNITS	FI207	QC501
Depth		0.1-0.2	0-0.1
Date Sampled		18/08/2022	18/08/2022
Type of sample		Soil	Soil
Date extracted	-	23/08/2022	23/08/2022
Date analysed	-	25/08/2022	25/08/2022
alpha-BHC	mg/kg	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	61	70

Organophosphorus Pesticides in Soil						
Our Reference		303499-4	303499-5	303499-6	303499-7	303499-8
Your Reference	UNITS	QAQC15	FI205	FI203	FI204	FI206
Depth		-	0-0.1	1-1.1	0.5-0.6	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Date analysed	-	25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	64	70	91	78	61

Organophosphorus Pesticides in Soil			
Our Reference		303499-9	303499-10
Your Reference	UNITS	FI207	QC501
Depth		0.1-0.2	0-0.1
Date Sampled		18/08/2022	18/08/2022
Type of sample		Soil	Soil
Date extracted	-	23/08/2022	23/08/2022
Date analysed	-	25/08/2022	25/08/2022
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	61	70

PCBs in Soil						
Our Reference		303499-4	303499-5	303499-6	303499-7	303499-8
Your Reference	UNITS	QAQC15	FI205	FI203	FI204	FI206
Depth		-	0-0.1	1-1.1	0.5-0.6	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Date analysed	-	25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	64	70	91	78	61

PCBs in Soil			
Our Reference		303499-9	303499-10
Your Reference	UNITS	FI207	QC501
Depth		0.1-0.2	0-0.1
Date Sampled		18/08/2022	18/08/2022
Type of sample		Soil	Soil
Date extracted	-	23/08/2022	23/08/2022
Date analysed	-	25/08/2022	25/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	61	70

Acid Extractable metals in soil						
Our Reference		303499-4	303499-5	303499-6	303499-7	303499-8
Your Reference	UNITS	QAQC15	FI205	FI203	FI204	FI206
Depth		-	0-0.1	1-1.1	0.5-0.6	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
Arsenic	mg/kg	11	6	9	5	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	20	29	26	14	15
Copper	mg/kg	80	24	<1	<1	18
Lead	mg/kg	40	32	6	5	22
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	14	15	<1	<1	10
Zinc	mg/kg	390	310	1	3	190

Acid Extractable metals in soil				
Our Reference		303499-9	303499-10	303499-14
Your Reference	UNITS	FI207	QC501	QAQC15 - [TRIPLICATE]
Depth		0.1-0.2	0-0.1	-
Date Sampled		18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	26/08/2022	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	26/08/2022	26/08/2022
Arsenic	mg/kg	<4	<4	31
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	5	8	17
Copper	mg/kg	7	2	45
Lead	mg/kg	14	6	48
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	4	1	13
Zinc	mg/kg	47	47	410

Moisture						
Our Reference		303499-4	303499-5	303499-6	303499-7	303499-8
Your Reference	UNITS	QAQC15	FI205	FI203	FI204	FI206
Depth		-	0-0.1	1-1.1	0.5-0.6	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/08/2022	19/08/2022	19/08/2022	19/08/2022	19/08/2022
Date analysed	-	20/08/2022	20/08/2022	20/08/2022	20/08/2022	20/08/2022
Moisture	%	14	14	8.3	9.5	14

Moisture						
Our Reference		303499-9	303499-10	303499-11	303499-12	303499-13
Your Reference	UNITS	FI207	QC501	FB302	FB303	FB307
Depth		0.1-0.2	0-0.1	0.6-0.7	0-0.1	0.1-0.2
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/08/2022	19/08/2022	19/08/2022	19/08/2022	19/08/2022
Date analysed	-	20/08/2022	20/08/2022	20/08/2022	20/08/2022	20/08/2022
Moisture	%	13	14	11	22	7.3

Asbestos ID - soils NEPM - ASB-001						
Our Reference		303499-4	303499-5	303499-6	303499-7	303499-8
Your Reference	UNITS	QAQC15	FI205	FI203	FI204	FI206
Depth		-	0-0.1	1-1.1	0.5-0.6	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
Sample mass tested	g	858.87	838.47	1,318.11	1,306.17	1,015.03
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001			
Our Reference		303499-9	303499-10
Your Reference	UNITS	FI207	QC501
Depth		0.1-0.2	0-0.1
Date Sampled		18/08/2022	18/08/2022
Type of sample		Soil	Soil
Date analysed	-	25/08/2022	25/08/2022
Sample mass tested	g	795.44	1,043.64
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–
FA and AF Estimation*	g	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001

PFAS in Soils Extended						
Our Reference		303499-3	303499-4	303499-5	303499-6	303499-7
Your Reference	UNITS	TB	QAQC15	FI205	FI203	FI204
Depth		-	-	0-0.1	1-1.1	0.5-0.6
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Date analysed	-	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	0.4	0.4	<0.1	0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1	0.7	0.9	0.2	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	0.2	0.2	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	0.1	0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	0.2	0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	0.1	0.2	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	96	95	97	99	99
Surrogate $^{13}C_2$ *PFOA*	%	104	104	102	99	103
Extracted ISTD $^{13}C_3$ *PFBS*	%	100	97	100	97	101
Extracted ISTD $^{18}O_2$ *PFHxS*	%	101	97	98	98	98
Extracted ISTD $^{13}C_4$ *PFOS*	%	105	99	104	100	102

PFAS in Soils Extended						
Our Reference		303499-3	303499-4	303499-5	303499-6	303499-7
Your Reference	UNITS	TB	QAQC15	FI205	FI203	FI204
Depth		-	-	0-0.1	1-1.1	0.5-0.6
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	104	95	98	99	100
Extracted ISTD $^{13}C_3$ *PFPeA*	%	95	90	92	91	92
Extracted ISTD $^{13}C_2$ *PFHxA*	%	93	91	93	92	92
Extracted ISTD $^{13}C_4$ *PFHpA*	%	97	94	95	92	95
Extracted ISTD $^{13}C_4$ *PFOA*	%	100	96	102	101	97
Extracted ISTD $^{13}C_5$ *PFNA*	%	110	105	109	102	106
Extracted ISTD $^{13}C_2$ *PFDA*	%	96	100	91	92	93
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	99	92	96	93	90
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	106	98	104	101	96
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	99	89	94	99	103
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	99	102	109	99	95
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	106	126	132	102	100
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	112	151	168	108	109
Extracted ISTD $^{13}C_8$ *FOSA*	%	109	104	109	106	105
Extracted ISTD d_3 *N MeFOSA*	%	93	85	89	90	92
Extracted ISTD d_5 *N EtFOSA*	%	113	105	109	107	107
Extracted ISTD d_7 *N MeFOSE*	%	101	91	99	101	97
Extracted ISTD d_9 *N EtFOSE*	%	95	89	89	98	99
Extracted ISTD d_3 *N MeFOSAA*	%	105	117	126	97	100
Extracted ISTD d_5 *N EtFOSAA*	%	99	108	129	94	85
Total Positive PFHxS & PFOS	µg/kg	<0.1	1.1	1.3	0.2	0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	0.7	0.9	0.2	<0.1
Total Positive PFAS	µg/kg	<0.1	1.6	2.0	0.2	0.1

PFAS in Soils Extended						
Our Reference		303499-8	303499-9	303499-10	303499-11	303499-12
Your Reference	UNITS	FI206	FI207	QC501	FB302	FB303
Depth		0-0.1	0.1-0.2	0-0.1	0.6-0.7	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Date analysed	-	23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.2	0.7	<0.1	0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.6	1.9	0.3	0.1	0.3
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	0.4	0.2	<0.1	0.1	<0.1
Perfluoroheptanoic acid	µg/kg	0.2	0.1	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	0.7	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	96	95	94	99	97
Surrogate $^{13}C_2$ *PFOA*	%	99	104	102	103	104
Extracted ISTD $^{13}C_3$ *PFBS*	%	99	96	95	98	92
Extracted ISTD $^{18}O_2$ *PFHxS*	%	99	95	93	97	92
Extracted ISTD $^{13}C_4$ *PFOS*	%	100	102	99	104	95

PFAS in Soils Extended						
Our Reference		303499-8	303499-9	303499-10	303499-11	303499-12
Your Reference	UNITS	FI206	FI207	QC501	FB302	FB303
Depth		0-0.1	0.1-0.2	0-0.1	0.6-0.7	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	98	94	97	96	93
Extracted ISTD $^{13}C_3$ *PFPeA*	%	95	98	90	92	89
Extracted ISTD $^{13}C_2$ *PFHxA*	%	92	95	90	93	87
Extracted ISTD $^{13}C_4$ *PFHpA*	%	95	95	92	96	89
Extracted ISTD $^{13}C_4$ *PFOA*	%	104	100	98	101	90
Extracted ISTD $^{13}C_5$ *PFNA*	%	114	109	108	112	99
Extracted ISTD $^{13}C_2$ *PFDA*	%	93	88	87	92	79
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	99	95	101	98	79
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	116	105	102	106	77
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	97	92	83	94	40
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	114	123	105	112	116
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	140	161	145	148	161
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	170	#	#	#	#
Extracted ISTD $^{13}C_8$ *FOSA*	%	107	109	102	111	96
Extracted ISTD d_3 *N MeFOSA*	%	91	88	77	87	63
Extracted ISTD d_5 *N EtFOSA*	%	106	109	95	109	88
Extracted ISTD d_7 *N MeFOSE*	%	94	90	82	103	82
Extracted ISTD d_9 *N EtFOSE*	%	98	88	77	96	70
Extracted ISTD d_3 *N MeFOSAA*	%	130	128	134	133	119
Extracted ISTD d_5 *N EtFOSAA*	%	113	137	138	140	108
Total Positive PFHxS & PFOS	µg/kg	0.8	2.6	0.3	0.2	0.3
Total Positive PFOS & PFOA	µg/kg	0.6	2.0	0.3	0.1	0.3
Total Positive PFAS	µg/kg	1.4	3.8	0.3	0.4	0.3

PFAS in Soils Extended		
Our Reference		303499-13
Your Reference	UNITS	FB307
Depth		0.1-0.2
Date Sampled		18/08/2022
Type of sample		Soil
Date prepared	-	23/08/2022
Date analysed	-	23/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2
Perfluorobutanoic acid	µg/kg	<0.2
Perfluoropentanoic acid	µg/kg	<0.2
Perfluorohexanoic acid	µg/kg	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1
Perfluorononanoic acid	µg/kg	<0.1
Perfluorodecanoic acid	µg/kg	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5
Perfluorododecanoic acid	µg/kg	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5
Perfluorotetradecanoic acid	µg/kg	<5
4:2 FTS	µg/kg	<0.1
6:2 FTS	µg/kg	<0.1
8:2 FTS	µg/kg	<0.2
10:2 FTS	µg/kg	<0.2
Perfluorooctane sulfonamide	µg/kg	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	97
Surrogate $^{13}C_2$ *PFOA*	%	103
Extracted ISTD $^{13}C_3$ *PFBS*	%	96
Extracted ISTD $^{18}O_2$ *PFHxS*	%	97
Extracted ISTD $^{13}C_4$ *PFOS*	%	102

PFAS in Soils Extended		
Our Reference		303499-13
Your Reference	UNITS	FB307
Depth		0.1-0.2
Date Sampled		18/08/2022
Type of sample		Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	100
Extracted ISTD $^{13}C_3$ *PFPeA*	%	88
Extracted ISTD $^{13}C_2$ *PFHxA*	%	90
Extracted ISTD $^{13}C_4$ *PFHpA*	%	91
Extracted ISTD $^{13}C_4$ *PFOA*	%	97
Extracted ISTD $^{13}C_5$ *PFNA*	%	104
Extracted ISTD $^{13}C_2$ *PFDA*	%	83
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	82
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	98
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	89
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	97
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	115
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	132
Extracted ISTD $^{13}C_8$ *FOSA*	%	102
Extracted ISTD d_3 *N MeFOSA*	%	83
Extracted ISTD d_5 *N EtFOSA*	%	107
Extracted ISTD d_7 *N MeFOSE*	%	95
Extracted ISTD d_9 *N EtFOSE*	%	89
Extracted ISTD d_3 *N MeFOSAA*	%	104
Extracted ISTD d_5 *N EtFOSAA*	%	68
Total Positive PFHxS & PFOS	µg/kg	0.1
Total Positive PFOS & PFOA	µg/kg	<0.1
Total Positive PFAS	µg/kg	0.1

vTRH(C6-C10)/BTEXN in Water		
Our Reference		303499-1
Your Reference	UNITS	RINS8
Depth		-
Date Sampled		18/08/2022
Type of sample		Water
Date extracted	-	19/08/2022
Date analysed	-	20/08/2022
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	99
Surrogate toluene-d8	%	94
Surrogate 4-BFB	%	97

svTRH (C10-C40) in Water		
Our Reference		303499-1
Your Reference	UNITS	RINS8
Depth		-
Date Sampled		18/08/2022
Type of sample		Water
Date extracted	-	22/08/2022
Date analysed	-	23/08/2022
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	87
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	87
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	90
Surrogate o-Terphenyl	%	100

PAHs in Water		
Our Reference		303499-1
Your Reference	UNITS	RINS8
Depth		-
Date Sampled		18/08/2022
Type of sample		Water
Date extracted	-	22/08/2022
Date analysed	-	22/08/2022
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	88

Organochlorine Pesticides in Water		
Our Reference		303499-1
Your Reference	UNITS	RINS8
Depth		-
Date Sampled		18/08/2022
Type of sample		Water
Date extracted	-	22/08/2022
Date analysed	-	22/08/2022
alpha-BHC	µg/L	<0.2
HCB	µg/L	<0.2
beta-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	82

OP Pesticides in Water		
Our Reference		303499-1
Your Reference	UNITS	RINS8
Depth		-
Date Sampled		18/08/2022
Type of sample		Water
Date extracted	-	22/08/2022
Date analysed	-	22/08/2022
Dichlorvos	µg/L	<0.2
Dimethoate	µg/L	<0.2
Diazinon	µg/L	<0.2
Chlorpyriphos-methyl	µg/L	<0.2
Ronnel	µg/L	<0.2
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.2
Chlorpyriphos	µg/L	<0.2
Parathion	µg/L	<0.2
Bromophos ethyl	µg/L	<0.2
Ethion	µg/L	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2
Surrogate TCMX	%	82

PCBs in Water		
Our Reference		303499-1
Your Reference	UNITS	RINS8
Depth		-
Date Sampled		18/08/2022
Type of sample		Water
Date extracted	-	22/08/2022
Date analysed	-	22/08/2022
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCMX	%	82

Metals in Water - Dissolved		
Our Reference		303499-1
Your Reference	UNITS	RINS8
Depth		-
Date Sampled		18/08/2022
Type of sample		Water
Date digested	-	25/08/2022
Date analysed	-	25/08/2022
Arsenic - Dissolved	mg/L	<0.05
Cadmium - Dissolved	mg/L	<0.01
Chromium - Dissolved	mg/L	<0.01
Copper - Dissolved	mg/L	<0.01
Lead - Dissolved	mg/L	<0.03
Mercury - Dissolved	mg/L	<0.0005
Nickel - Dissolved	mg/L	<0.02
Zinc - Dissolved	mg/L	<0.02

PFAS in Waters Trace Extended		
Our Reference		303499-1
Your Reference	UNITS	RINS8
Depth		-
Date Sampled		18/08/2022
Type of sample		Water
Date prepared	-	24/08/2022
Date analysed	-	24/08/2022
Perfluorobutanesulfonic acid	µg/L	<0.0004
Perfluoropentanesulfonic acid	µg/L	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002
Perfluoroheptanesulfonic acid	µg/L	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002
Perfluorodecanesulfonic acid	µg/L	<0.002
Perfluorobutanoic acid	µg/L	<0.002
Perfluoropentanoic acid	µg/L	<0.002
Perfluorohexanoic acid	µg/L	<0.0004
Perfluoroheptanoic acid	µg/L	<0.0004
Perfluorooctanoic acid PFOA	µg/L	<0.0002
Perfluorononanoic acid	µg/L	<0.001
Perfluorodecanoic acid	µg/L	<0.002
Perfluoroundecanoic acid	µg/L	<0.002
Perfluorododecanoic acid	µg/L	<0.005
Perfluorotridecanoic acid	µg/L	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05
4:2 FTS	µg/L	<0.001
6:2 FTS	µg/L	<0.0004
8:2 FTS	µg/L	<0.0004
10:2 FTS	µg/L	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	102
Surrogate $^{13}C_2$ *PFOA*	%	96
Extracted ISTD $^{13}C_3$ *PFBS*	%	78
Extracted ISTD $^{18}O_2$ *PFHxS*	%	88
Extracted ISTD $^{13}C_4$ *PFOS*	%	86

PFAS in Waters Trace Extended		
Our Reference		303499-1
Your Reference	UNITS	RINS8
Depth		-
Date Sampled		18/08/2022
Type of sample		Water
Extracted ISTD $^{13}C_4$ *PFBA*	%	119
Extracted ISTD $^{13}C_3$ *PFPeA*	%	94
Extracted ISTD $^{13}C_2$ *PFHxA*	%	107
Extracted ISTD $^{13}C_4$ *PFHpA*	%	102
Extracted ISTD $^{13}C_4$ *PFOA*	%	104
Extracted ISTD $^{13}C_5$ *PFNA*	%	99
Extracted ISTD $^{13}C_2$ *PFDA*	%	103
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	98
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	98
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	73
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	146
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	143
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	164
Extracted ISTD $^{13}C_8$ *FOSA*	%	90
Extracted ISTD d_3 *N MeFOSA*	%	104
Extracted ISTD d_5 *N EtFOSA*	%	105
Extracted ISTD d_7 *N MeFOSE*	%	112
Extracted ISTD d_9 *N EtFOSE*	%	105
Extracted ISTD d_3 *N MeFOSAA*	%	145
Extracted ISTD d_5 *N EtFOSAA*	%	161
Total Positive PFHxS & PFOS	µg/L	<0.0002
Total Positive PFOS & PFOA	µg/L	<0.0002
Total Positive PFAS	µg/L	<0.0002

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

Method ID	Methodology Summary
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	303499-5
Date extracted	-			22/08/2022	4	22/08/2022	22/08/2022		22/08/2022	22/08/2022
Date analysed	-			25/08/2022	4	25/08/2022	25/08/2022		25/08/2022	25/08/2022
TRH C_6 - C_9	mg/kg	25	Org-023	<25	4	<25	<25	0	90	89
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	4	<25	<25	0	90	89
Benzene	mg/kg	0.2	Org-023	<0.2	4	<0.2	<0.2	0	100	94
Toluene	mg/kg	0.5	Org-023	<0.5	4	<0.5	<0.5	0	87	81
Ethylbenzene	mg/kg	1	Org-023	<1	4	<1	<1	0	84	87
m+p-xylene	mg/kg	2	Org-023	<2	4	<2	<2	0	90	91
o-Xylene	mg/kg	1	Org-023	<1	4	<1	<1	0	92	94
Naphthalene	mg/kg	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	93	4	101	90	12	91	85

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	22/08/2022	22/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	25/08/2022	25/08/2022		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	10	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	10	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	10	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	10	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	10	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	10	82	91	10	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	303499-5
Date extracted	-			22/08/2022	4	22/08/2022	22/08/2022		22/08/2022	22/08/2022
Date analysed	-			23/08/2022	4	24/08/2022	24/08/2022		23/08/2022	24/08/2022
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	4	<50	<50	0	117	113
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	4	250	260	4	93	109
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	4	130	120	8	86	126
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	4	62	68	9	117	113
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	4	340	330	3	93	109
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	4	<100	<100	0	86	126
Surrogate o-Terphenyl	%		Org-020	89	4	108	111	3	108	117

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	22/08/2022	22/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	24/08/2022	24/08/2022		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	10	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	10	140	<100	33	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	10	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	10	200	110	58	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	10	92	96	4	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	303499-5
Date extracted	-			25/08/2022	4	23/08/2022	23/08/2022		23/08/2022	23/08/2022
Date analysed	-			25/08/2022	4	25/08/2022	25/08/2022		25/08/2022	25/08/2022
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	4	0.7	0.9	25	75	77
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	73	71
Fluorene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	79	77
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	4	1.5	1.6	6	77	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	4	0.2	0.1	67	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	4	0.7	0.8	13	71	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	4	0.6	0.6	0	79	71
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	4	0.5	0.5	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	4	0.5	0.5	0	77	73
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	4	0.4	0.4	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	4	0.2	0.2	0	74	74
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	4	0.2	0.2	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	107	4	69	85	21	78	118

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	23/08/2022	23/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	25/08/2022	25/08/2022		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	10	0.5	0.6	18	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	10	0.2	0.3	40	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	10	0.2	0.2	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	10	0.3	0.3	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	10	0.3	0.3	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	10	0.3	0.2	40	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	10	0.8	0.9	12	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	10	0.5	0.5	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	10	0.4	0.3	29	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	10	0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	10	0.5	0.4	22	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	10	112	64	55	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	303499-5
Date extracted	-			25/08/2022	4	23/08/2022	23/08/2022		23/08/2022	23/08/2022
Date analysed	-			25/08/2022	4	25/08/2022	25/08/2022		25/08/2022	25/08/2022
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	72	78
HCB	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	67	81
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	73	68
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	61	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	62	86
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	76	84
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	79	105
Endrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	72	101
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	64	91
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	62	66
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	80	4	64	77	18	68	118

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	23/08/2022	23/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	25/08/2022	25/08/2022		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	10	70	68	3	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	303499-5
Date extracted	-			25/08/2022	4	23/08/2022	23/08/2022		23/08/2022	23/08/2022
Date analysed	-			25/08/2022	4	25/08/2022	25/08/2022		25/08/2022	23/08/2022
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	96	124
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	69	77
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	61	122
Malathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	71	126
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	70	98
Parathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	84	113
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	70	97
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	80	4	64	77	18	68	118

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	23/08/2022	23/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	25/08/2022	25/08/2022		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	10	70	68	3	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	303499-5
Date extracted	-			23/08/2022	4	23/08/2022	23/08/2022		23/08/2022	23/08/2022
Date analysed	-			25/08/2022	4	25/08/2022	25/08/2022		25/08/2022	25/08/2022
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	121	80
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	80	4	64	77	18	68	118

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	23/08/2022	23/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	25/08/2022	25/08/2022		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	10	70	68	3	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	303499-5
Date prepared	-			26/08/2022	4	26/08/2022	26/08/2022		26/08/2022	26/08/2022
Date analysed	-			26/08/2022	4	26/08/2022	26/08/2022		26/08/2022	26/08/2022
Arsenic	mg/kg	4	Metals-020	<4	4	11	24	74	97	90
Cadmium	mg/kg	0.4	Metals-020	<0.4	4	<0.4	0.4	0	93	80
Chromium	mg/kg	1	Metals-020	<1	4	20	22	10	92	#
Copper	mg/kg	1	Metals-020	<1	4	80	49	48	92	105
Lead	mg/kg	1	Metals-020	<1	4	40	55	32	94	104
Mercury	mg/kg	0.1	Metals-021	<0.1	4	<0.1	<0.1	0	106	92
Nickel	mg/kg	1	Metals-020	<1	4	14	21	40	94	79
Zinc	mg/kg	1	Metals-020	<1	4	390	570	38	100	##

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	10	26/08/2022	26/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	26/08/2022	26/08/2022		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	10	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	10	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	10	8	5	46	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	10	2	3	40	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	10	6	5	18	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	10	1	<1	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	10	47	47	0	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	303499-5
Date prepared	-			23/08/2022	4	23/08/2022	23/08/2022		23/08/2022	23/08/2022
Date analysed	-			23/08/2022	4	23/08/2022	23/08/2022		23/08/2022	23/08/2022
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	97	99
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	96	96
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	4	0.4	0.3	29	102	100
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	107	105
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	4	0.7	0.6	15	98	92
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	105	96
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	104	100
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	104	107
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	4	0.2	0.2	0	103	99
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	4	0.1	<0.1	0	106	102
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	108	104
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	4	0.2	0.1	67	84	84
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	124	137
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	111	109
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	117	117
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	4	<0.5	<0.5	0	108	108
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	4	<5	<5	0	132	128
4:2 FTS	µg/kg	0.1	Org-029	<0.1	4	<0.1	<0.1	0	102	101
6:2 FTS	µg/kg	0.1	Org-029	<0.1	4	0.1	<0.1	0	107	101
8:2 FTS	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	98	99
10:2 FTS	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	102	111
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	4	<1	<1	0	98	100
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	4	<1	<1	0	106	105
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	4	<1	<1	0	104	105
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	4	<1	<1	0	97	100
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	4	<5	<5	0	110	110
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	106	104
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	4	<0.2	<0.2	0	109	105
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	96	4	95	96	1	96	96
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	104	4	104	102	2	101	100

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	303499-5
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	99	4	97	97	0	102	95
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	101	4	97	94	3	100	96
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	109	4	99	100	1	104	100
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	104	4	95	97	2	101	98
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	92	4	90	91	1	92	88
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	92	4	91	92	1	93	91
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	94	4	94	94	0	95	94
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	100	4	96	98	2	97	100
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	110	4	105	111	6	105	104
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	91	4	100	90	11	90	88
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	98	4	92	97	5	95	99
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	101	4	98	103	5	98	101
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	91	4	89	90	1	94	93
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	98	4	102	113	10	96	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	113	4	126	137	8	105	129
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	126	4	151	175	15	118	167
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	111	4	104	106	2	104	103
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	89	4	85	86	1	90	87
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	113	4	105	105	0	108	105
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	102	4	91	93	2	101	93

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	303499-5
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	95	4	89	93	4	100	92
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	103	4	117	125	7	98	127
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	117	4	108	118	9	101	124

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	10	23/08/2022	23/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	23/08/2022	23/08/2022		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	[NT]	10	0.3	0.3	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	[NT]	10	<0.5	<0.5	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	[NT]	10	<0.5	<0.5	0	[NT]	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	[NT]	10	<0.5	<0.5	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	[NT]	10	<0.5	<0.5	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	[NT]	10	<5	<5	0	[NT]	[NT]
4:2 FTS	µg/kg	0.1	Org-029	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
6:2 FTS	µg/kg	0.1	Org-029	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
8:2 FTS	µg/kg	0.2	Org-029	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
10:2 FTS	µg/kg	0.2	Org-029	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	10	<1	<1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	10	<1	<1	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	[NT]	10	<1	<1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	[NT]	10	<1	<1	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	[NT]	10	<5	<5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	10	94	94	0	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	10	102	100	2	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	[NT]	10	95	93	2	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	10	93	92	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	10	99	99	0	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	10	97	96	1	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	10	90	89	1	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	10	90	87	3	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	10	92	91	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	10	98	97	1	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	10	108	107	1	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	10	87	85	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	10	101	88	14	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	10	102	95	7	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	10	83	77	8	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	10	105	107	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	10	145	152	5	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	10	#	#		[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	10	102	100	2	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	10	77	73	5	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	10	95	93	2	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	10	82	83	1	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	[NT]	10	77	74	4	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	10	134	133	1	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	10	138	137	1	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			19/08/2022	[NT]	[NT]	[NT]	[NT]	19/08/2022	[NT]
Date analysed	-			20/08/2022	[NT]	[NT]	[NT]	[NT]	20/08/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	100	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	100	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	103	[NT]	[NT]	[NT]	[NT]	98	[NT]
Surrogate toluene-d8	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-BFB	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
Date analysed	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	119	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	119	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	99	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
Date analysed	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	79	[NT]
Fluorene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	94	[NT]	[NT]	[NT]	[NT]	81	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
Date analysed	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	92	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
Date analysed	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	115	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	91	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	112	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	92	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
Date analysed	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	103	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	92	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: Metals in Water - Dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date digested	-			25/08/2022	[NT]	[NT]	[NT]	[NT]	25/08/2022	[NT]
Date analysed	-			25/08/2022	[NT]	[NT]	[NT]	[NT]	25/08/2022	[NT]
Arsenic - Dissolved	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	107	[NT]
Cadmium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	105	[NT]
Chromium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	101	[NT]
Copper - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead - Dissolved	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	100	[NT]
Mercury - Dissolved	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	105	[NT]
Nickel - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
Zinc - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	109	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			24/08/2022	[NT]	[NT]	[NT]	[NT]	24/08/2022	[NT]
Date analysed	-			24/08/2022	[NT]	[NT]	[NT]	[NT]	24/08/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	94	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	86	[NT]
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	95	[NT]
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	101	[NT]
4:2 FTS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	99	[NT]
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	96	[NT]
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	93	[NT]
10:2 FTS	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	90	[NT]
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	96	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	91	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	100	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	110	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	104	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	105	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	76	[NT]	[NT]	[NT]	[NT]	80	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	92	[NT]	[NT]	[NT]	[NT]	89	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	83	[NT]	[NT]	[NT]	[NT]	81	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	115	[NT]	[NT]	[NT]	[NT]	119	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	110	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	92	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	89	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	51	[NT]	[NT]	[NT]	[NT]	62	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	168	[NT]	[NT]	[NT]	[NT]	152	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	148	[NT]	[NT]	[NT]	[NT]	142	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	174	[NT]	[NT]	[NT]	[NT]	160	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	88	[NT]	[NT]	[NT]	[NT]	76	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	141	[NT]	[NT]	[NT]	[NT]	116	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	161	[NT]	[NT]	[NT]	[NT]	133	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

TRH Water(C10-C40) NEPM - The positive result in the rinsate sample is due to a single peak with no hydrocarbon profile that is consistent with the use of plastic containers.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Acid Extractable Metals in Soil:
-The laboratory RPD acceptance criteria has been exceeded for 303499-4 for Cu and Ni. Therefore a triplicate result has been issued as laboratory sample number 303499-14.
-# Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.
-## Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

CHAIN OF CUSTODY FORM - Client

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ENVIROLAB GROUP
National phone number 1300 424 344

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
02 9910 6200 | sydney@envirolab.com.au

Perth Lab - MPL Laboratories
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08 9317 2505 | lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
03 9763 2500 | melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
08 7087 8800 | adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
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07 3266 9532 | brisbane@envirolab.com.au

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

Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (If applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No. :	
Sampler:	VA/TG	Date results required:	Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Phone:	Mob: 0439 261 637	Additional report format:	☐ Esdat ☐ Equis
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Lab Comments:	
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au		

Sample information					Tests Required																Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH										Provide as much information about the sample as you can
1	RIN08	—	18/06/22	WATER	X		X		X												PFAS TRACE EX
2	TS	—		SOIL																	
3	TB	—			X				X												
4	QAQC15	—			X	X	X														
1	QAQC16	—			PLEASE FORWARD TO ALS FOR ASBESTOS, PFAS + COMBO6																
5	FI205	0-0.1			X	X	X														
6	FI 203	1-1.0			X	X	X														
7	FI 204	0.5-0.6			X	X	X														
8	FI 206	0-0.1			X	X	X														
9	FI 207	0.1-0.2			X	X	X														
10	FI501	0-0.1	↓	↓	X	X	X														

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

Relinquished by (Company):	CES	Received by (Company):	ES Jud
Print Name:	VICTOR ARIAS	Print Name:	EMILIE NG
Date & Time:	19/06/22 9am	Date & Time:	19/6/22 0905
Signature:		Signature:	

Lab Use Only

Job number:	308469
Temperature:	16.0
Cooling: Ice / Ice pack / None	
Security seal: Intact / Broken / None	
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

CHAIN OF CUSTODY FORM - Client

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

Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No. :	
Sampler:	VA/TG	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day	
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format: ☐ Esdat ☐ Equis	
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA) _NEMP Method	Combination 8 Combo	Combustible Content and % Sulfur	Provide as much information about the sample as you can
11	FB B07	0.6-0.7	16/02/17	Soil	X				
12	FB B03	0-0.1	↓	↓	X				
13	FB 307	0.1-0.2	↓	↓	X				
14	PPTD TB (x1 ea)								

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

Relinquished by (Company): CES	Received by (Company):	Lab Use Only	
Print Name: VICTOR ARIAS	Print Name:	Job number: 209499	Cooling: Ice / Ice pack / None
Date & Time: 16/2/17 9am	Date & Time:	Temperature:	Security seal: Intact / Broken / None
Signature:	Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2229709**	Page	: 1 of 7
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 19-Aug-2022 15:10
Order number	: ----	Date Analysis Commenced	: 23-Aug-2022
C-O-C number	: ----	Issue Date	: 30-Aug-2022 08:53
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Jake Spooner	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW

General Comments

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

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

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

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

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

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

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

- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EG005T: Poor precision was obtained for Chromium on sample ES2229709 # 001. Confirmed by re-digestion and reanalysis.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC16	----	----	----	----
			Sampling date / time	18-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2229709-001	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content								
Moisture Content	----	1.0	%	**14.6**	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	----	----	----	----
Asbestos Type	1332-21-4	-	--	**-**	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	**No**	----	----	----	----
Organic Fibre	----	0.1	g/kg	**No**	----	----	----	----
Sample weight (dry)	----	0.01	g	**858**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	**J.SPOONER**	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**6**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**43**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**36**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**36**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**32**	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**624**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	**13**	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	**340**	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	**160**	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**500**	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	**16**	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	**16**	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	**70**	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	**440**	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**510**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC16	----	----	----	----
				Sampling date / time	18-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2229709-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		**70**	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg		**0.0002**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		**0.0005**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC16	----	----	----	----
				Sampling date / time	18-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2229709-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued									
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg		<0.0002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		<0.0002	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		<0.0005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		**0.0007**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0007**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC16	----	----	----	----
				Sampling date / time	18-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2229709-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231P: PFAS Sums - Continued									
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0007**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**90.6**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**85.8**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**72.2**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**105**	----	----	----	----
13C8-PFOA	----	0.0002	%		**108**	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	QAQC16 - 18-Aug-2022 00:00	Soil sample.

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2229709**	Page	: 1 of 9
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 19-Aug-2022
Order number	: ----	Date Analysis Commenced	: 23-Aug-2022
C-O-C number	: ----	Issue Date	: 30-Aug-2022
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Jake Spooner	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4537941)									
ES2229672-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	29	36	19.5	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	9	8	19.6	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	12	30.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	7	18.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	14	21.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	31	20	42.0	No Limit
ES2229709-001	QAQC16	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	43	# 23	63.1	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	32	30	8.5	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	18	106	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	36	48	30.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	36	46	25.9	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	624	513	19.5	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4537946)									
ES2229672-006	Anonymous	EA055: Moisture Content	----	0.1	%	13.5	14.0	3.4	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4537940)									
ES2229631-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4534834)									
ES2229707-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	210	210	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	400	410	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4535094)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4535094) - continued									
ES2229707-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4534834)									
ES2229707-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	500	510	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	310	310	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4535094)									
ES2229707-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 4535094)									
ES2229707-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4539918)									
EP2210222-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2229641-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0010	0.0011	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4539918)									
EP2210222-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4539918) - continued									
EP2210222-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2229641-002	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.005	<0.005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4539918)									
EP2210222-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2229641-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	0.0012	0.0012	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	0.0019	0.0018	6.5	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4539918)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4539918) - continued									
EP2210222-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
ES2229641-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0010	<0.0010	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0010	<0.0010	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4537941)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	102	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	103	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	112	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	99.2	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	102	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	101	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	97.4	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4537940)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	102	70.0	125
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4534834)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	99.2	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	101	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	99.0	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4535094)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	98.6	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4534834)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	100	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	100	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	101	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4535094)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	100	68.4	128
EP080: BTEXN (QCLot: 4535094)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	99.9	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	101	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	99.9	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	96.9	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	97.4	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	97.4	63.0	119
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4539918)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	89.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.0	67.0	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4539918) - continued								
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.4	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4539918)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	87.9	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.8	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.2	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	86.5	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4539918)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	111	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	96.5	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	98.7	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.1	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.2	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.6	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4539918)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	111	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	0.00125 mg/kg	98.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	96.4	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	93.2	69.2	143

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report		
Spike	SpikeRecovery(%)	Acceptable Limits (%)

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4537941)							
ES2229672-005	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	94.8	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.1	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	85.4	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	95.8	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	95.1	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	92.2	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4537940)							
ES2229631-003	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	99.1	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4534834)							
ES2229707-001	Anonymous	EP071: C10 - C14 Fraction	----	480 mg/kg	107	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	109	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	114	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4535094)							
ES2229707-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	97.7	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4534834)							
ES2229707-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	103	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	113	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	112	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4535094)							
ES2229707-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	95.9	70.0	130
EP080: BTEXN (QCLot: 4535094)							
ES2229707-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	91.4	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	91.0	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	93.2	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	89.3	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	90.3	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	85.1	70.0	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4539918)							
EP2210222-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	89.6	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	102	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	88.0	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	93.6	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	105	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	108	59.0	134

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4539918)							
EP2210222-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	82.0	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	102	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	96.4	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	98.8	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	101	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	110	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	90.4	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	102	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	104	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	104	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	94.6	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4539918)							
EP2210222-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	113	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	102	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	93.3	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	94.4	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	92.0	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	95.2	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	102	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4539918)							
EP2210222-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	115	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	109	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	111	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	94.8	69.2	143

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2229709**	Page	: 1 of 6
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 19-Aug-2022
Site	: ----	Issue Date	: 30-Aug-2022
Sampler	: VA/TG	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	ES2229709--001	QAQC16	**Chromium**	7440-47-3	63.1 %	0% - 20%	**RPD exceeds LOR based limits**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Moisture Content	1	13	7.69	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content							
Soil Glass Jar - Unpreserved (EA055)							
QAQC16	**18-Aug-2022**	**----**	----	----	**24-Aug-2022**	01-Sep-2022	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag (EA200)							
QAQC16	**18-Aug-2022**	**----**	----	----	**29-Aug-2022**	14-Feb-2023	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
QAQC16	**18-Aug-2022**	**24-Aug-2022**	14-Feb-2023	✓	**25-Aug-2022**	14-Feb-2023	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
QAQC16	**18-Aug-2022**	**24-Aug-2022**	15-Sep-2022	✓	**25-Aug-2022**	15-Sep-2022	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
QAQC16	**18-Aug-2022**	**23-Aug-2022**	01-Sep-2022	✓	**24-Aug-2022**	01-Sep-2022	✓
Soil Glass Jar - Unpreserved (EP071)							
QAQC16	**18-Aug-2022**	**23-Aug-2022**	01-Sep-2022	✓	**25-Aug-2022**	02-Oct-2022	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
QAQC16	**18-Aug-2022**	**23-Aug-2022**	01-Sep-2022	✓	**24-Aug-2022**	01-Sep-2022	✓
Soil Glass Jar - Unpreserved (EP071)							
QAQC16	**18-Aug-2022**	**23-Aug-2022**	01-Sep-2022	✓	**25-Aug-2022**	02-Oct-2022	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
QAQC16	**18-Aug-2022**	**23-Aug-2022**	01-Sep-2022	✓	**24-Aug-2022**	01-Sep-2022	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QAQC16	**18-Aug-2022**	**26-Aug-2022**	14-Feb-2023	✓	**26-Aug-2022**	05-Oct-2022	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
QAQC16	**18-Aug-2022**	**26-Aug-2022**	14-Feb-2023	✓	**26-Aug-2022**	05-Oct-2022	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
QAQC16	**18-Aug-2022**	**26-Aug-2022**	14-Feb-2023	✓	**26-Aug-2022**	05-Oct-2022	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QAQC16	**18-Aug-2022**	**26-Aug-2022**	14-Feb-2023	✓	**26-Aug-2022**	05-Oct-2022	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
QAQC16	**18-Aug-2022**	**26-Aug-2022**	14-Feb-2023	✓	**26-Aug-2022**	05-Oct-2022	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	13	**7.69**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of soils by solvent extraction followed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of soil which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Preparation Methods	Method	Matrix	Method Descriptions
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.

CHAIN OF CUSTODY FORM - Client

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ENVIROLAB GROUP
National phone number 1300 424 344

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph: (02) 9910 6200

Environmental Division Sydney
Work Order Reference
ES2229709

Unit 20/119 Reichardt Road, Winnellie, NT 0820
Ph: 08 8967 1201 | darwin@envirolab.com.au

Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (to report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No.:	
Sampler:	VA/TG	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Asbestos (AF/FA)_NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH	Comments: Provide as much information about the sample as you can
1	RINSE	—	18/08/22	WATER	X		X		X			PFAS TRACE EXT
2	TS	—		SOIL	X				X			
3	TB	—			X				X			
4	QAQC15	—			X	X	X					
11	QAQC16	—			PLEASE FORWARD TO ALS FOR ASBESTOS, PFAS + COMBO6							
5	FI205	0-0.1			X	X	X					
6	FI 203	1-1.0			X	X	X					
7	FI 204	0.5-0.6			X	X	X					
8	FI 206	0-0.1			X	X	X					
9	FI 207	0.1-0.2			X	X	X					
10	FI501	0-0.1			X	X	X					

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

Relinquished by (Company):	CES / ELS SUD	Received by (Company):	ELS SUD
Print Name:	VICTOR ARIAS / EMMANUEL	Print Name:	EMMANUEL
Date & Time:	19/08/22 9am / 19/8/22 1100	Date & Time:	19/8/22 0905
Signature:	VA / CM	Signature:	CM

Lab Use Only

Job number:	509477
Temperature:	16.
Cooling:	Ice / Ice pack / None
Security seal:	Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Rec: 2 ✓ 19/8/22 1510

Envirolab Services Pty Ltd
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customerservice@envirolab.com.au
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CERTIFICATE OF ANALYSIS 302231-A

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	additional analysis
Date samples received	03/08/2022
Date completed instructions received	17/08/2022

Analysis Details

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

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

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

Report Details

Date results requested by	30/08/2022
Date of Issue	23/08/2022

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Results Approved By
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in ASLP Extended					
Our Reference		302231-A-12	302231-A-25	302231-A-27	302231-A-38
Your Reference	UNITS	CS110	CS102	CC401	CC410
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Concrete	Concrete
Date prepared	-	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Date analysed	-	22/08/2022	22/08/2022	22/08/2022	22/08/2022
pH of final Leachate	pH units	7.4	8.3	10.5	11.2
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	0.02	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	92	97	95	95
Surrogate $^{13}C_2$ PFOA	%	103	104	102	105
Extracted ISTD $^{13}C_3$ *PFBS*	%	93	93	92	96
Extracted ISTD $^{18}O_2$ *PFHxS*	%	84	84	83	86

PFAS in ASLP Extended					
Our Reference		302231-A-12	302231-A-25	302231-A-27	302231-A-38
Your Reference	UNITS	CS110	CS102	CC401	CC410
Depth		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
Date Sampled		2/08/2022	2/08/2022	3/08/2022	3/08/2022
Type of sample		Soil	Soil	Concrete	Concrete
Extracted ISTD $^{13}C_4$ *PFOS*	%	101	101	96	100
Extracted ISTD $^{13}C_4$ *PFBA*	%	105	106	107	110
Extracted ISTD $^{13}C_3$ *PFPeA*	%	84	85	85	85
Extracted ISTD $^{13}C_2$ *PFHxA*	%	89	92	90	91
Extracted ISTD $^{13}C_4$ *PFHpA*	%	86	88	84	85
Extracted ISTD $^{13}C_4$ *PFOA*	%	99	102	99	98
Extracted ISTD $^{13}C_5$ *PFNA*	%	92	97	99	96
Extracted ISTD $^{13}C_2$ *PFDA*	%	106	104	105	106
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	108	106	100	108
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	107	109	104	112
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	76	80	71	77
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	90	94	95	90
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	95	88	100	92
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	112	116	130	121
Extracted ISTD $^{13}C_8$ *FOSA*	%	103	97	97	99
Extracted ISTD d_3 *N MeFOSA*	%	96	97	91	93
Extracted ISTD d_5 *N EtFOSA*	%	102	102	97	104
Extracted ISTD d_7 *N MeFOSE*	%	90	92	90	92
Extracted ISTD d_9 *N EtFOSE*	%	95	98	96	97
Extracted ISTD d_3 *N MeFOSAA*	%	117	112	109	118
Extracted ISTD d_5 *N EtFOSAA*	%	113	104	105	102
Total Positive PFHxS & PFOS	µg/L	<0.01	0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	0.03	<0.01	<0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Org-029A	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. TOPA analyses use a pre-spiked, labelled internal standard PFAS precursor to assess the oxidation efficiency. The efficiency of removal by oxidation is recorded in the report. Additionally, dilutions applied (if required) to ensure sufficient precursor oxidation are also recorded and are available on request. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302231-A-25
Date prepared	-			22/08/2022	12	22/08/2022	22/08/2022		22/08/2022	22/08/2022
Date analysed	-			22/08/2022	12	22/08/2022	22/08/2022		22/08/2022	22/08/2022
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	12	<0.01	<0.01	0	90	103
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	12	<0.01	<0.01	0	115	120
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	12	<0.01	<0.01	0	104	105
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	12	<0.01	<0.01	0	117	120
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	12	<0.01	<0.01	0	93	98
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	12	<0.02	<0.02	0	90	88
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	12	<0.02	<0.02	0	98	103
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	12	<0.02	<0.02	0	100	106
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	12	<0.01	<0.01	0	101	106
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	12	<0.01	<0.01	0	102	111
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	12	<0.01	<0.01	0	93	97
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	12	<0.01	<0.01	0	108	118
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	12	<0.02	<0.02	0	103	108
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	12	<0.02	<0.02	0	97	101
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	12	<0.05	<0.05	0	96	108
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	12	<0.1	<0.1	0	79	88
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	12	<0.5	<0.5	0	100	107
4:2 FTS	µg/L	0.01	Org-029A	<0.01	12	<0.01	<0.01	0	106	111
6:2 FTS	µg/L	0.01	Org-029A	<0.01	12	<0.01	<0.01	0	103	109
8:2 FTS	µg/L	0.02	Org-029A	<0.02	12	<0.02	<0.02	0	108	120
10:2 FTS	µg/L	0.02	Org-029A	<0.02	12	<0.02	<0.02	0	97	102
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	12	<0.1	<0.1	0	104	107
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	12	<0.05	<0.05	0	106	105
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	12	<0.1	<0.1	0	92	98
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	12	<0.05	<0.05	0	105	113
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	12	<0.5	<0.5	0	95	99
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	12	<0.02	<0.02	0	108	112
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	12	<0.02	<0.02	0	108	115
Surrogate $^{13}C_8$ PFOS	%		Org-029A	91	12	92	93	1	91	90
Surrogate $^{13}C_2$ PFOA	%		Org-029A	110	12	103	106	3	106	104

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302231-A-25
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	96	12	93	96	3	95	91
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	89	12	84	83	1	85	83
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	109	12	101	100	1	104	103
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	108	12	105	105	0	107	103
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	90	12	84	86	2	84	83
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	94	12	89	90	1	91	87
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	83	12	86	84	2	83	81
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	95	12	99	98	1	99	100
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	95	12	92	92	0	95	97
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	104	12	106	101	5	103	105
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	99	12	108	95	13	103	104
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	108	12	107	103	4	108	108
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	75	12	76	72	5	78	80
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	83	12	90	91	1	87	88
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	98	12	95	100	5	88	87
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	137	12	112	123	9	119	106
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	94	12	103	94	9	96	103
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	92	12	96	92	4	91	95
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	100	12	102	96	6	100	101
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	94	12	90	91	1	87	89

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302231-A-25
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	95	12	95	94	1	94	96
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	86	12	117	103	13	110	123
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	90	12	113	105	7	107	117

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Ming To

Subject: FW: ASLP testing for CES179608-GPM

Ref: 302231-A
TAT: Standard.
Due: 24/08/2022
MT

From: Victor Arias <victor.arias@consultingearth.com.au>
Sent: Wednesday, 17 August 2022 6:18 PM
To: Simon Song <SSong@envirolab.com.au>
Subject: ASLP testing for CES179608-GPM

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Hi Simon,

Could you request the lab to do **ASLP PFAS** Job Ref: CES179608-GPM for the following samples:

- CC401, CC410, CS102, CS110 (Lab Ref: 302231) 27, 38, 25, 12.
- CS115 (Lab Ref: 302351)

Thanks

Dr Victor Arias

Senior Environmental Scientist

CONSULTING EARTH SCIENTISTS

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CERTIFICATE OF ANALYSIS 302351-A

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	additional analysis
Date samples received	05/08/2022
Date completed instructions received	17/08/2022

Analysis Details

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

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

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

Report Details

Date results requested by	24/08/2022
Date of Issue	23/08/2022

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Results Approved By
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in ASLP Extended		
Our Reference		302351-A-11
Your Reference	UNITS	CS115
Depth		0-0.1
Date Sampled		4/08/2022
Type of sample		Soil
Date prepared	-	22/08/2022
Date analysed	-	22/08/2022
pH of final Leachate	pH units	8.5
Perfluorobutanesulfonic acid	µg/L	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02
Perfluorobutanoic acid	µg/L	<0.02
Perfluoropentanoic acid	µg/L	<0.02
Perfluorohexanoic acid	µg/L	<0.01
Perfluoroheptanoic acid	µg/L	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01
Perfluorononanoic acid	µg/L	<0.01
Perfluorodecanoic acid	µg/L	<0.02
Perfluoroundecanoic acid	µg/L	<0.02
Perfluorododecanoic acid	µg/L	<0.05
Perfluorotridecanoic acid	µg/L	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5
4:2 FTS	µg/L	<0.01
6:2 FTS	µg/L	<0.01
8:2 FTS	µg/L	<0.02
10:2 FTS	µg/L	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02
Surrogate $^{13}C_8$ PFOS	%	92
Surrogate $^{13}C_2$ PFOA	%	105
Extracted ISTD $^{13}C_3$ *PFBS*	%	95
Extracted ISTD $^{18}O_2$ *PFHxS*	%	81

PFAS in ASLP Extended		
Our Reference		302351-A-11
Your Reference	UNITS	CS115
Depth		0-0.1
Date Sampled		4/08/2022
Type of sample		Soil
Extracted ISTD $^{13}C_4$ *PFOS*	%	105
Extracted ISTD $^{13}C_4$ *PFBA*	%	107
Extracted ISTD $^{13}C_3$ *PFPeA*	%	87
Extracted ISTD $^{13}C_2$ *PFHxA*	%	91
Extracted ISTD $^{13}C_4$ *PFHpA*	%	86
Extracted ISTD $^{13}C_4$ *PFOA*	%	101
Extracted ISTD $^{13}C_5$ *PFNA*	%	96
Extracted ISTD $^{13}C_2$ *PFDA*	%	103
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	105
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	114
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	80
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	96
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	94
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	118
Extracted ISTD $^{13}C_8$ *FOSA*	%	105
Extracted ISTD d_3 *N MeFOSA*	%	95
Extracted ISTD d_5 *N EtFOSA*	%	104
Extracted ISTD d_7 *N MeFOSE*	%	91
Extracted ISTD d_9 *N EtFOSE*	%	100
Extracted ISTD d_3 *N MeFOSAA*	%	123
Extracted ISTD d_5 *N EtFOSAA*	%	117
Total Positive PFHxS & PFOS	µg/L	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01
Total Positive PFAS	µg/L	<0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Org-029A	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. TOPA analyses use a pre-spiked, labelled internal standard PFAS precursor to assess the oxidation efficiency. The efficiency of removal by oxidation is recorded in the report. Additionally, dilutions applied (if required) to ensure sufficient precursor oxidation are also recorded and are available on request. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
Date analysed	-			22/08/2022	[NT]	[NT]	[NT]	[NT]	22/08/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	90	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	115	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	117	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	90	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	[NT]	[NT]	[NT]	[NT]	79	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	[NT]	[NT]	[NT]	[NT]	100	[NT]
4:2 FTS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	106	[NT]
6:2 FTS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	103	[NT]
8:2 FTS	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
10:2 FTS	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	[NT]	[NT]	[NT]	[NT]	105	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	[NT]	[NT]	[NT]	[NT]	95	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate $^{13}C_8$ PFOS	%		Org-029A	91	[NT]	[NT]	[NT]	[NT]	91	[NT]
Surrogate $^{13}C_2$ PFOA	%		Org-029A	110	[NT]	[NT]	[NT]	[NT]	106	[NT]

QUALITY CONTROL: PFAS in ASLP Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	96	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	89	[NT]	[NT]	[NT]	[NT]	85	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	109	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	108	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	90	[NT]	[NT]	[NT]	[NT]	84	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	94	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	83	[NT]	[NT]	[NT]	[NT]	83	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	95	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	95	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	104	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	99	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	108	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	75	[NT]	[NT]	[NT]	[NT]	78	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	83	[NT]	[NT]	[NT]	[NT]	87	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	98	[NT]	[NT]	[NT]	[NT]	88	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	137	[NT]	[NT]	[NT]	[NT]	119	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	94	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	92	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	94	[NT]	[NT]	[NT]	[NT]	87	[NT]

QUALITY CONTROL: PFAS in ASLP Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	95	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	86	[NT]	[NT]	[NT]	[NT]	110	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	90	[NT]	[NT]	[NT]	[NT]	107	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Ming To

Subject: FW: ASLP testing for CES179608-GPM

Ref: 302351-A
TAT: Standard
Due: 24/08/2022
MT

From: Victor Arias <victor.arias@consultingearth.com.au>
Sent: Wednesday, 17 August 2022 6:18 PM
To: Simon Song <SSong@envirolab.com.au>
Subject: ASLP testing for CES179608-GPM

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Simon,

Could you request the lab to do **ASLP PFAS** Job Ref: CES179608-GPM for the following samples:

- CC401, CC410, CS102, CS110 (Lab Ref: 302231)
- CS115 (Lab Ref: 302351)

Thanks

Dr Victor Arias

Senior Environmental Scientist

CONSULTING EARTH SCIENTISTS

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12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 302921-A

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	additional analysis
Date samples received	12/08/2022
Date completed instructions received	29/08/2022

Analysis Details

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

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

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

Report Details

Date results requested by	05/09/2022
Date of Issue	01/09/2022

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in ASLP Extended			
Our Reference		302921-A-7	302921-A-9
Your Reference	UNITS	GS502	WT503
Depth		0.15-0.25	0.2-0.3
Date Sampled		11/08/2022	11/08/2022
Type of sample		Soil	Soil
Date prepared	-	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022
pH of final Leachate	pH units	9.9	9.8
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	104	104
Surrogate $^{13}C_2$ PFOA	%	101	99
Extracted ISTD $^{13}C_3$ *PFBS*	%	94	91
Extracted ISTD $^{18}O_2$ *PFHxS*	%	97	93

PFAS in ASLP Extended			
Our Reference		302921-A-7	302921-A-9
Your Reference	UNITS	GS502	WT503
Depth		0.15-0.25	0.2-0.3
Date Sampled		11/08/2022	11/08/2022
Type of sample		Soil	Soil
Extracted ISTD $^{13}C_4$ *PFOS*	%	100	101
Extracted ISTD $^{13}C_4$ *PFBA*	%	108	108
Extracted ISTD $^{13}C_3$ *PFPeA*	%	94	96
Extracted ISTD $^{13}C_2$ *PFHxA*	%	101	96
Extracted ISTD $^{13}C_4$ *PFHpA*	%	97	97
Extracted ISTD $^{13}C_4$ *PFOA*	%	98	98
Extracted ISTD $^{13}C_5$ *PFNA*	%	106	109
Extracted ISTD $^{13}C_2$ *PFDA*	%	111	109
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	110	103
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	109	104
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	86	84
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	108	108
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	110	106
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	122	121
Extracted ISTD $^{13}C_8$ *FOSA*	%	112	109
Extracted ISTD d_3 *N MeFOSA*	%	100	98
Extracted ISTD d_5 *N EtFOSA*	%	106	102
Extracted ISTD d_7 *N MeFOSE*	%	103	99
Extracted ISTD d_9 *N EtFOSE*	%	99	100
Extracted ISTD d_3 *N MeFOSAA*	%	103	101
Extracted ISTD d_5 *N EtFOSAA*	%	111	110
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Org-029A	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. TOPA analyses use a pre-spiked, labelled internal standard PFAS precursor to assess the oxidation efficiency. The efficiency of removal by oxidation is recorded in the report. Additionally, dilutions applied (if required) to ensure sufficient precursor oxidation are also recorded and are available on request. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302921-A-9
Date prepared	-			31/08/2022	7	31/08/2022	31/08/2022		31/08/2022	31/08/2022
Date analysed	-			31/08/2022	7	31/08/2022	31/08/2022		31/08/2022	31/08/2022
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	108	112
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	114	104
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	108	99
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	122	115
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	115	119
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	113	110
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	106	107
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	110	110
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	107	110
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	113	111
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	111	111
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	104	100
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	104	105
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	111	115
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	7	<0.05	<0.05	0	109	109
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	7	<0.1	<0.1	0	109	112
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	7	<0.5	<0.5	0	110	111
4:2 FTS	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	104	106
6:2 FTS	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	111	104
8:2 FTS	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	117	115
10:2 FTS	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	119	122
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	7	<0.1	<0.1	0	107	105
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	7	<0.05	<0.05	0	108	102
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	7	<0.1	<0.1	0	102	100
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	7	<0.05	<0.05	0	113	115
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	7	<0.5	<0.5	0	125	119
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	116	121
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	103	100
Surrogate $^{13}C_8$ PFOS	%		Org-029A	109	7	104	103	1	103	109
Surrogate $^{13}C_2$ PFOA	%		Org-029A	101	7	101	99	2	102	100

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302921-A-9
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	92	7	94	96	2	95	90
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	95	7	97	92	5	94	96
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	97	7	100	98	2	102	94
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	112	7	108	110	2	110	106
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	97	7	94	95	1	93	93
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	100	7	101	96	5	102	95
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	98	7	97	97	0	94	90
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	98	7	98	96	2	99	96
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	107	7	106	107	1	105	102
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	110	7	111	110	1	104	105
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	103	7	110	107	3	103	104
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	110	7	109	103	6	106	103
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	98	7	86	77	11	94	96
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	102	7	108	99	9	106	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	106	7	110	105	5	100	108
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	125	7	122	122	0	118	110
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	113	7	112	111	1	105	104
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	103	7	100	99	1	100	99
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	109	7	106	106	0	105	103
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	102	7	103	104	1	101	97

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	302921-A-9
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	100	7	99	98	1	100	100
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	106	7	103	106	3	107	101
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	115	7	111	117	5	112	109

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Ming To

Subject: FW: PFAS ASLP & TDS analysis

Ref: 302921-A
7A7: Standard.
Due: 05/09/2022
MT.

From: Victor Arias <victor.arias@consultingearth.com.au>
Sent: Monday, 29 August 2022 9:13 AM
To: Simon Song <SSong@envirolab.com.au>
Subject: PFAS ASLP & TDS analysis

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

HI Simon,

Could you request **PFAS ASLP analysis** for the following samples:

- Lab Ref: 303499
  1. **FI207 0.1-0.2**
  2. **FI205 0-0.1**
  3. **FB303 0-0.1**
- Lab Ref:303100
  4. **FB307 0-0.1**
- Lab Ref:302921
  5. **GS502 0.15-0.25** 7
  6. **WT503 0.2-0.3** 9

Also, could you request the lab to include **TDS analysis for samples SW01 & SW02 Lab Ref:304026.**

Thank you

Cheers,

Dr Victor Arias

Senior Environmental Scientist

CONSULTING EARTH SCIENTISTS

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CERTIFICATE OF ANALYSIS 303100-A

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	additional analysis
Date samples received	15/08/2022
Date completed instructions received	29/08/2022

Analysis Details

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

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

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

Report Details

Date results requested by	05/09/2022
Date of Issue	01/09/2022

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Results Approved By
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in ASLP Extended		
Our Reference		303100-A-6
Your Reference	UNITS	FB307
Depth		0-0.1
Date Sampled		17/08/2022
Type of sample		Soil
Date prepared	-	31/08/2022
Date analysed	-	31/08/2022
pH of final Leachate	pH units	9.4
Perfluorobutanesulfonic acid	µg/L	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.06
Perfluorodecanesulfonic acid	µg/L	<0.02
Perfluorobutanoic acid	µg/L	<0.02
Perfluoropentanoic acid	µg/L	<0.02
Perfluorohexanoic acid	µg/L	<0.01
Perfluoroheptanoic acid	µg/L	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01
Perfluorononanoic acid	µg/L	<0.01
Perfluorodecanoic acid	µg/L	<0.02
Perfluoroundecanoic acid	µg/L	<0.02
Perfluorododecanoic acid	µg/L	<0.05
Perfluorotridecanoic acid	µg/L	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5
4:2 FTS	µg/L	<0.01
6:2 FTS	µg/L	<0.01
8:2 FTS	µg/L	<0.02
10:2 FTS	µg/L	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02
Surrogate $^{13}C_8$ PFOS	%	104
Surrogate $^{13}C_2$ PFOA	%	96
Extracted ISTD $^{13}C_3$ *PFBS*	%	95
Extracted ISTD $^{18}O_2$ *PFHxS*	%	94

PFAS in ASLP Extended		
Our Reference		303100-A-6
Your Reference	UNITS	FB307
Depth		0-0.1
Date Sampled		17/08/2022
Type of sample		Soil
Extracted ISTD $^{13}C_4$ *PFOS*	%	101
Extracted ISTD $^{13}C_4$ *PFBA*	%	110
Extracted ISTD $^{13}C_3$ *PFPeA*	%	98
Extracted ISTD $^{13}C_2$ *PFHxA*	%	100
Extracted ISTD $^{13}C_4$ *PFHpA*	%	88
Extracted ISTD $^{13}C_4$ *PFOA*	%	95
Extracted ISTD $^{13}C_5$ *PFNA*	%	106
Extracted ISTD $^{13}C_2$ *PFDA*	%	109
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	98
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	103
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	66
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	108
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	105
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	114
Extracted ISTD $^{13}C_8$ *FOSA*	%	107
Extracted ISTD d_3 *N MeFOSA*	%	95
Extracted ISTD d_5 *N EtFOSA*	%	100
Extracted ISTD d_7 *N MeFOSE*	%	101
Extracted ISTD d_9 *N EtFOSE*	%	99
Extracted ISTD d_3 *N MeFOSAA*	%	103
Extracted ISTD d_5 *N EtFOSAA*	%	111
Total Positive PFHxS & PFOS	µg/L	0.07
Total Positive PFOS & PFOA	µg/L	0.06
Total Positive PFAS	µg/L	0.07

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Org-029A	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. TOPA analyses use a pre-spiked, labelled internal standard PFAS precursor to assess the oxidation efficiency. The efficiency of removal by oxidation is recorded in the report. Additionally, dilutions applied (if required) to ensure sufficient precursor oxidation are also recorded and are available on request. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Date analysed	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	114	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	122	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	115	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	113	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	110	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	113	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	[NT]	[NT]	[NT]	[NT]	110	[NT]
4:2 FTS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
6:2 FTS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	111	[NT]
8:2 FTS	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	117	[NT]
10:2 FTS	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	119	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	[NT]	[NT]	[NT]	[NT]	108	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	[NT]	[NT]	[NT]	[NT]	113	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	[NT]	[NT]	[NT]	[NT]	125	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	116	[NT]
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate $^{13}C_8$ PFOS	%		Org-029A	109	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate $^{13}C_2$ PFOA	%		Org-029A	101	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: PFAS in ASLP Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	92	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	95	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	97	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	112	[NT]	[NT]	[NT]	[NT]	110	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	97	[NT]	[NT]	[NT]	[NT]	93	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	100	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	98	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	98	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	107	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	110	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	103	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	110	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	98	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	102	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	106	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	125	[NT]	[NT]	[NT]	[NT]	118	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	113	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	103	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	109	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	102	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	106	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	115	[NT]	[NT]	[NT]	[NT]	112	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Ming To

Subject: FW: PFAS ASLP & TDS analysis

Ref: 303100-A
TAT: Standard
Due: 05/09/2022
MT

From: Victor Arias <victor.arias@consultingearth.com.au>
Sent: Monday, 29 August 2022 9:13 AM
To: Simon Song <SSong@envirolab.com.au>
Subject: PFAS ASLP & TDS analysis

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

HI Simon,

Could you request **PFAS ASLP analysis** for the following samples:

- Lab Ref: 303499
  1. **FI207 0.1-0.2**
  2. **FI205 0-0.1**
  3. **FB303 0-0.1**
- Lab Ref:303100
  4. **FB307 0-0.1** 6.
- Lab Ref:302921
  5. **GS502 0.15-0.25**
  6. **WT503 0.2-0.3**

Also, could you request the lab to include **TDS analysis for samples SW01 & SW02 Lab Ref:304026.**

Thank you

Cheers,

Dr Victor Arias

Senior Environmental Scientist

CONSULTING EARTH SCIENTISTS

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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 303499-A

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	additional analysis
Date samples received	19/08/2022
Date completed instructions received	29/08/2022

Analysis Details

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

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

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

Report Details

Date results requested by	05/09/2022
Date of Issue	01/09/2022

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in ASLP Extended				
Our Reference		303499-A-5	303499-A-9	303499-A-12
Your Reference	UNITS	FI205	FI207	FB303
Depth		0-0.1	0.1-0.2	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	31/08/2022	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022	31/08/2022
pH of final Leachate	pH units	7.6	8.1	7.0
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	107	111	109
Surrogate $^{13}C_2$ PFOA	%	103	97	99
Extracted ISTD $^{13}C_3$ *PFBS*	%	92	96	91
Extracted ISTD $^{18}O_2$ *PFHxS*	%	92	93	94

PFAS in ASLP Extended				
Our Reference		303499-A-5	303499-A-9	303499-A-12
Your Reference	UNITS	FI205	FI207	FB303
Depth		0-0.1	0.1-0.2	0-0.1
Date Sampled		18/08/2022	18/08/2022	18/08/2022
Type of sample		Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFOS*	%	99	94	95
Extracted ISTD $^{13}C_4$ *PFBA*	%	112	110	111
Extracted ISTD $^{13}C_3$ *PFPeA*	%	96	94	95
Extracted ISTD $^{13}C_2$ *PFHxA*	%	100	99	99
Extracted ISTD $^{13}C_4$ *PFHpA*	%	91	95	94
Extracted ISTD $^{13}C_4$ *PFOA*	%	96	101	102
Extracted ISTD $^{13}C_5$ *PFNA*	%	110	106	108
Extracted ISTD $^{13}C_2$ *PFDA*	%	111	112	113
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	108	100	109
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	101	103	115
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	100	85	103
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	117	105	113
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	103	105	106
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	115	108	121
Extracted ISTD $^{13}C_8$ *FOSA*	%	108	110	110
Extracted ISTD d_3 *N MeFOSA*	%	100	95	102
Extracted ISTD d_5 *N EtFOSA*	%	104	102	105
Extracted ISTD d_7 *N MeFOSE*	%	98	99	101
Extracted ISTD d_9 *N EtFOSE*	%	100	98	105
Extracted ISTD d_3 *N MeFOSAA*	%	108	102	110
Extracted ISTD d_5 *N EtFOSAA*	%	108	106	112
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Org-029A	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. TOPA analyses use a pre-spiked, labelled internal standard PFAS precursor to assess the oxidation efficiency. The efficiency of removal by oxidation is recorded in the report. Additionally, dilutions applied (if required) to ensure sufficient precursor oxidation are also recorded and are available on request. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Date analysed	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	114	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	122	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	115	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	113	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	110	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	113	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	[NT]	[NT]	[NT]	[NT]	110	[NT]
4:2 FTS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
6:2 FTS	µg/L	0.01	Org-029A	<0.01	[NT]	[NT]	[NT]	[NT]	111	[NT]
8:2 FTS	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	117	[NT]
10:2 FTS	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	119	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	[NT]	[NT]	[NT]	[NT]	108	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	[NT]	[NT]	[NT]	[NT]	113	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	[NT]	[NT]	[NT]	[NT]	125	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	116	[NT]
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate $^{13}C_8$ PFOS	%		Org-029A	109	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate $^{13}C_2$ PFOA	%		Org-029A	101	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: PFAS in ASLP Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	92	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	95	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	97	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	112	[NT]	[NT]	[NT]	[NT]	110	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	97	[NT]	[NT]	[NT]	[NT]	93	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	100	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	98	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	98	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	107	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	110	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	103	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	110	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	98	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	102	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	106	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	125	[NT]	[NT]	[NT]	[NT]	118	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	113	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	103	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	109	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	102	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	106	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	115	[NT]	[NT]	[NT]	[NT]	112	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

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Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
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LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

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Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

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Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Ming To

Subject: FW: PFAS ASLP & TDS analysis

Ref: 303499A
TAT: Standard
Due: 05/09/2022
MT

From: Victor Arias <victor.arias@consultingearth.com.au>
Sent: Monday, 29 August 2022 9:13 AM
To: Simon Song <SSong@envirolab.com.au>
Subject: PFAS ASLP & TDS analysis

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

HI Simon,

Could you request **PFAS ASLP analysis** for the following samples:

- Lab Ref:303499
  1. **FI207 0.1-0.2** 9
  2. **FI205 0-0.1** 5
  3. **FB303 0-0.1** 12
- Lab Ref:303100
  4. **FB307 0-0.1**
- Lab Ref:302921
  5. **GS502 0.15-0.25**
  6. **WT503 0.2-0.3**

Also, could you request the lab to include **TDS analysis for samples SW01 & SW02 Lab Ref:304026.**

Thank you

Cheers,

Dr Victor Arias

Senior Environmental Scientist

CONSULTING EARTH SCIENTISTS

www.consultingearth.com.au

Consulting Earth Scientists Pty Ltd
Newcastle, Hunter & NSW North Coast
Suite 1, 25 Beresford Street
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ABN 67 151 524 757

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Envirolab Services Pty Ltd
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12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 304026-A

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	additional analysis
Date samples received	25/08/2022
Date completed instructions received	05/09/2022

Analysis Details

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

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

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

Report Details

Date results requested by	08/09/2022
Date of Issue	08/09/2022

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in ASLP Extended		
Our Reference		304026-A-13
Your Reference	UNITS	SD-01
Date Sampled		23/08/2022
Type of sample		Sediment
Date prepared	-	07/09/2022
Date analysed	-	07/09/2022
pH of final Leachate	pH units	5.9
Perfluorobutanesulfonic acid	µg/L	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02
Perfluorobutanoic acid	µg/L	<0.02
Perfluoropentanoic acid	µg/L	<0.02
Perfluorohexanoic acid	µg/L	<0.01
Perfluoroheptanoic acid	µg/L	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01
Perfluorononanoic acid	µg/L	<0.01
Perfluorodecanoic acid	µg/L	<0.02
Perfluoroundecanoic acid	µg/L	<0.02
Perfluorododecanoic acid	µg/L	<0.05
Perfluorotridecanoic acid	µg/L	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5
4:2 FTS	µg/L	<0.01
6:2 FTS	µg/L	<0.01
8:2 FTS	µg/L	<0.02
10:2 FTS	µg/L	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02
Surrogate $^{13}C_8$ PFOS	%	95
Surrogate $^{13}C_2$ PFOA	%	98
Extracted ISTD $^{13}C_3$ *PFBS*	%	104
Extracted ISTD $^{18}O_2$ *PFHxS*	%	117
Extracted ISTD $^{13}C_4$ *PFOS*	%	113

PFAS in ASLP Extended		
Our Reference	UNITS	304026-A-13
Your Reference		SD-01
Date Sampled		23/08/2022
Type of sample		Sediment
Extracted ISTD $^{13}C_4$ *PFBA*	%	101
Extracted ISTD $^{13}C_3$ *PFPeA*	%	99
Extracted ISTD $^{13}C_2$ *PFHxA*	%	109
Extracted ISTD $^{13}C_4$ *PFHpA*	%	133
Extracted ISTD $^{13}C_4$ *PFOA*	%	126
Extracted ISTD $^{13}C_5$ *PFNA*	%	134
Extracted ISTD $^{13}C_2$ *PFDA*	%	128
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	144
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	144
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	83
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	112
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	103
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	109
Extracted ISTD $^{13}C_8$ *FOSA*	%	127
Extracted ISTD d_3 *N MeFOSA*	%	120
Extracted ISTD d_5 *N EtFOSA*	%	120
Extracted ISTD d_7 *N MeFOSE*	%	123
Extracted ISTD d_9 *N EtFOSE*	%	112
Extracted ISTD d_3 *N MeFOSAA*	%	129
Extracted ISTD d_5 *N EtFOSAA*	%	124
Total Positive PFHxS & PFOS	µg/L	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01
Total Positive PFAS	µg/L	<0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Org-029A	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. TOPA analyses use a pre-spiked, labelled internal standard PFAS precursor to assess the oxidation efficiency. The efficiency of removal by oxidation is recorded in the report. Additionally, dilutions applied (if required) to ensure sufficient precursor oxidation are also recorded and are available on request. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	304026-A-13
Date prepared	-			07/09/2022	13	07/09/2022	07/09/2022		07/09/2022	07/09/2022
Date analysed	-			07/09/2022	13	07/09/2022	07/09/2022		07/09/2022	07/09/2022
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	13	<0.01	<0.01	0	97	96
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	13	<0.01	<0.01	0	93	91
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	13	<0.01	<0.01	0	105	100
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	13	<0.01	<0.01	0	93	92
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	13	<0.01	<0.01	0	99	93
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	13	<0.02	<0.02	0	89	87
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	13	<0.02	<0.02	0	105	104
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	13	<0.02	<0.02	0	99	96
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	13	<0.01	<0.01	0	102	102
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	13	<0.01	<0.01	0	83	80
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	13	<0.01	<0.01	0	105	100
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	13	<0.01	<0.01	0	84	86
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	13	<0.02	<0.02	0	115	96
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	13	<0.02	<0.02	0	101	105
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	13	<0.05	<0.05	0	97	97
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	13	<0.1	<0.1	0	98	89
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	13	<0.5	<0.5	0	110	108
4:2 FTS	µg/L	0.01	Org-029A	<0.01	13	<0.01	<0.01	0	100	96
6:2 FTS	µg/L	0.01	Org-029A	<0.01	13	<0.01	<0.01	0	91	91
8:2 FTS	µg/L	0.02	Org-029A	<0.02	13	<0.02	<0.02	0	85	90
10:2 FTS	µg/L	0.02	Org-029A	<0.02	13	<0.02	<0.02	0	117	121
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	13	<0.1	<0.1	0	93	88
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	13	<0.05	<0.05	0	95	97
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	13	<0.1	<0.1	0	112	105
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	13	<0.05	<0.05	0	84	89
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	13	<0.5	<0.5	0	117	109
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	13	<0.02	<0.02	0	100	94
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	13	<0.02	<0.02	0	105	99
Surrogate $^{13}C_8$ PFOS	%		Org-029A	96	13	95	102	7	99	95
Surrogate $^{13}C_2$ PFOA	%		Org-029A	101	13	98	100	2	103	101

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	304026-A-13
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	106	13	104	107	3	104	103
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	122	13	117	111	5	118	113
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	117	13	113	107	5	112	112
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	100	13	101	100	1	99	98
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	101	13	99	99	0	98	99
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	114	13	109	110	1	112	108
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	136	13	133	128	4	132	128
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	128	13	126	125	1	119	117
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	141	13	134	131	2	126	131
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	123	13	128	117	9	110	125
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	133	13	144	129	11	125	129
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	140	13	144	135	6	133	135
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	104	13	83	83	0	107	83
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	107	13	112	112	0	105	109
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	108	13	103	102	1	101	99
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	106	13	109	102	7	104	102
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	126	13	127	124	2	122	125
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	121	13	120	119	1	120	118
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	124	13	120	118	2	120	116
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	125	13	123	123	0	125	119

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	304026-A-13
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	116	13	112	109	3	108	115
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	125	13	129	131	2	120	134
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	121	13	124	132	6	115	129

Result Definitions

NT	Not tested
NA	Test not required
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>	Greater than
RPD	Relative Percent Difference
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Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
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LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

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Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Ming To

Subject: FW: PFAS ASLP sample SD-1 Lab Ref 304026

Ref : 304026-A
TAT: 3 day.
Due: 08/09/2022
MT

From: Victor Arias <victor.arias@consultingearth.com.au>
Sent: Monday, 5 September 2022 12:17 PM
To: Simon Song <SSong@envirolab.com.au>
Subject: PFAS ASLP sample SD-1 Lab Ref 304026

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Hi Simon,

Could you request the lab to carry out **ASLP for PFAS** for the **sediment sample** SD-01 (13) as referenced in lab report 304026 (COC attached) in a **3 day turn around**. Thank you.

Please send me a sample receipt for review.

Cheers,

Dr Victor Arias

Senior Environmental Scientist

CONSULTING EARTH SCIENTISTS

www.consultingearth.com.au

Consulting Earth Scientists Pty Ltd
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ABN 67 151 524 757

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CERTIFICATE OF ANALYSIS 303924

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	10 Water
Date samples received	24/08/2022
Date completed instructions received	24/08/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	31/08/2022
Date of Issue	01/09/2022

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Results Approved By
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Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference		303924-1	303924-2	303924-3	303924-5	303924-6
Your Reference	UNITS	RIN09	TS	TB	QAQC17	CF-MW06
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
Date analysed	-	27/08/2022	27/08/2022	27/08/2022	27/08/2022	27/08/2022
TRH C_6 - C_9	µg/L	<10	[NA]	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	[NA]	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	[NA]	<10	<10	<10
Benzene	µg/L	<1	111%	<1	<1	<1
Toluene	µg/L	<1	102%	<1	<1	<1
Ethylbenzene	µg/L	<1	110%	<1	<1	<1
m+p-xylene	µg/L	<2	104%	<2	<2	<2
o-xylene	µg/L	<1	107%	<1	<1	<1
Naphthalene	µg/L	<1	[NA]	<1	<1	<1
Surrogate Dibromofluoromethane	%	101	104	101	101	101
Surrogate toluene-d8	%	95	99	95	96	96
Surrogate 4-BFB	%	97	95	97	99	98

vTRH(C6-C10)/BTEXN in Water					
Our Reference		303924-7	303924-8	303924-9	303924-10
Your Reference	UNITS	CF-MW05	AFC4-MW02	AFC4-MW01	A4407
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	26/08/2022	26/08/2022	29/08/2022	29/08/2022
Date analysed	-	27/08/2022	27/08/2022	30/08/2022	30/08/2022
TRH C_6 - C_9	µg/L	<10	74	<10	<10
TRH C_6 - C_{10}	µg/L	<10	140	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	100	<10	<10
Benzene	µg/L	<1	14	<1	<1
Toluene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	18	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
o-xylene	µg/L	<1	5	<1	<1
Naphthalene	µg/L	<1	150	3	<1
Surrogate Dibromofluoromethane	%	105	104	107	103
Surrogate toluene-d8	%	94	100	96	96
Surrogate 4-BFB	%	94	98	100	99

svTRH (C10-C40) in Water						
Our Reference		303924-1	303924-5	303924-6	303924-7	303924-8
Your Reference	UNITS	RIN09	QAQC17	CF-MW06	CF-MW05	AFC4-MW02
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	920
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	1,900
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	2,900
TRH >C_{10} - C_{16}	µg/L	80	<50	<50	<50	1,600
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	80	<50	<50	<50	1,400
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	1,200
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	80	<50	<50	<50	2,700
Surrogate o-Terphenyl	%	94	88	89	84	99

svTRH (C10-C40) in Water			
Our Reference		303924-9	303924-10
Your Reference	UNITS	AFC4-MW01	A4407
Date Sampled		22/08/2022	22/08/2022
Type of sample		Water	Water
Date extracted	-	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	27/08/2022
TRH C_{10} - C_{14}	µg/L	150	190
TRH C_{15} - C_{28}	µg/L	410	730
TRH C_{29} - C_{36}	µg/L	<100	<100
Total +ve TRH (C10-C36)	µg/L	560	920
TRH >C_{10} - C_{16}	µg/L	240	340
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	230	340
TRH >C_{16} - C_{34}	µg/L	320	580
TRH >C_{34} - C_{40}	µg/L	<100	<100
Total +ve TRH (>C10-C40)	µg/L	550	920
Surrogate o-Terphenyl	%	94	89

PAHs in Water - Low Level						
Our Reference	UNITS	303924-1	303924-5	303924-6	303924-7	303924-8
Your Reference		RIN09	QAQC17	CF-MW06	CF-MW05	AFC4-MW02
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2	74
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	1.2
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	4.4
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	8.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	6.5
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	1.3
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	0.2
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	0.2
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1	96
Surrogate p-Terphenyl-d14	%	82	76	78	72	70

PAHs in Water - Low Level			
Our Reference		303924-9	303924-10
Your Reference	UNITS	AFC4-MW01	A4407
Date Sampled		22/08/2022	22/08/2022
Type of sample		Water	Water
Date extracted	-	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	26/08/2022
Naphthalene	µg/L	2.4	<0.2
Acenaphthylene	µg/L	0.3	<0.1
Acenaphthene	µg/L	0.5	<0.1
Fluorene	µg/L	1	<0.1
Phenanthrene	µg/L	0.8	<0.1
Anthracene	µg/L	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5
Total +ve PAH's	µg/L	4.9	<0.1
Surrogate p-Terphenyl-d14	%	64	67

Organochlorine Pesticides in Water						
Our Reference	UNITS	303924-1	303924-5	303924-6	303924-7	303924-8
Your Reference		RIN09	QAQC17	CF-MW06	CF-MW05	AFC4-MW02
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	82	76	78	72	70

Organochlorine Pesticides in Water			
Our Reference		303924-9	303924-10
Your Reference	UNITS	AFC4-MW01	A4407
Date Sampled		22/08/2022	22/08/2022
Type of sample		Water	Water
Date extracted	-	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	26/08/2022
alpha-BHC	µg/L	<0.2	<0.2
HCB	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Surrogate TCMX	%	68	69

OP Pesticides in Water						
Our Reference		303924-1	303924-5	303924-6	303924-7	303924-8
Your Reference	UNITS	RIN09	QAQC17	CF-MW06	CF-MW05	AFC4-MW02
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	82	76	78	72	70

OP Pesticides in Water			
Our Reference		303924-9	303924-10
Your Reference	UNITS	AFC4-MW01	A4407
Date Sampled		22/08/2022	22/08/2022
Type of sample		Water	Water
Date extracted	-	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	26/08/2022
Dichlorvos	µg/L	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2
Surrogate TCMX	%	68	69

PCBs in Water						
Our Reference		303924-1	303924-5	303924-6	303924-7	303924-8
Your Reference	UNITS	RIN09	QAQC17	CF-MW06	CF-MW05	AFC4-MW02
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	26/08/2022	26/08/2022	26/08/2022	26/08/2022
Aroclor 1016	µg/L	<2	<2	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2	<2	<2
Surrogate TCMX	%	82	76	78	72	70

PCBs in Water			
Our Reference		303924-9	303924-10
Your Reference	UNITS	AFC4-MW01	A4407
Date Sampled		22/08/2022	22/08/2022
Type of sample		Water	Water
Date extracted	-	26/08/2022	26/08/2022
Date analysed	-	26/08/2022	26/08/2022
Aroclor 1016	µg/L	<2	<2
Aroclor 1221	µg/L	<2	<2
Aroclor 1232	µg/L	<2	<2
Aroclor 1242	µg/L	<2	<2
Aroclor 1248	µg/L	<2	<2
Aroclor 1254	µg/L	<2	<2
Aroclor 1260	µg/L	<2	<2
Surrogate TCMX	%	68	69

HM in water - dissolved						
Our Reference		303924-1	303924-5	303924-6	303924-7	303924-8
Your Reference	UNITS	RIN09	QAQC17	CF-MW06	CF-MW05	AFC4-MW02
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
Date analysed	-	25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	2	2	4	<1
Lead-Dissolved	µg/L	<1	1	1	2	1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	17	22	16	15
Zinc-Dissolved	µg/L	<1	17	21	32	32

HM in water - dissolved			
Our Reference		303924-9	303924-10
Your Reference	UNITS	AFC4-MW01	A4407
Date Sampled		22/08/2022	22/08/2022
Type of sample		Water	Water
Date prepared	-	25/08/2022	25/08/2022
Date analysed	-	25/08/2022	25/08/2022
Arsenic-Dissolved	µg/L	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	<1	2
Lead-Dissolved	µg/L	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05
Nickel-Dissolved	µg/L	7	13
Zinc-Dissolved	µg/L	13	44

PFAS in Waters Trace Extended						
Our Reference		303924-1	303924-3	303924-4	303924-5	303924-6
Your Reference	UNITS	RIN09	TB	FB	QAQC17	CF-MW06
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	01/09/2022	01/09/2022	01/09/2022	01/09/2022	01/09/2022
Date analysed	-	01/09/2022	01/09/2022	01/09/2022	01/09/2022	01/09/2022
Perfluorobutanesulfonic acid	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Perfluoropentanesulfonic acid	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002	<0.0002	<0.0002	0.0006	0.0005
Perfluoroheptanesulfonic acid	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002	<0.0002	<0.0002	0.0005	0.0006
Perfluorodecanesulfonic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid	µg/L	<0.002	<0.002	<0.002	<0.004	<0.004
Perfluorohexanoic acid	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Perfluoroheptanoic acid	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Perfluorooctanoic acid PFOA	µg/L	<0.0002	<0.0002	<0.0002	0.0003	0.0003
Perfluorononanoic acid	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorodecanoic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
4:2 FTS	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 FTS	µg/L	<0.0004	<0.0004	<0.0004	0.001	0.002
8:2 FTS	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
10:2 FTS	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	101	104	100	100	100
Surrogate $^{13}C_2$ *PFOA*	%	99	96	98	109	107
Extracted ISTD $^{13}C_3$ *PFBS*	%	83	96	85	61	66
Extracted ISTD $^{18}O_2$ *PFHxS*	%	90	106	98	106	115
Extracted ISTD $^{13}C_4$ *PFOS*	%	83	90	89	87	92
Extracted ISTD $^{13}C_4$ *PFBA*	%	91	108	99	103	104

PFAS in Waters Trace Extended						
Our Reference		303924-1	303924-3	303924-4	303924-5	303924-6
Your Reference	UNITS	RIN09	TB	FB	QAQC17	CF-MW06
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	79	94	86	31	33
Extracted ISTD $^{13}C_2$ *PFHxA*	%	84	102	93	67	68
Extracted ISTD $^{13}C_4$ *PFHpA*	%	88	107	97	99	104
Extracted ISTD $^{13}C_4$ *PFOA*	%	90	107	97	95	100
Extracted ISTD $^{13}C_5$ *PFNA*	%	94	106	102	109	111
Extracted ISTD $^{13}C_2$ *PFDA*	%	96	114	104	119	119
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	91	111	103	113	116
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	106	117	111	101	92
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	43	53	45	78	89
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	112	143	131	138	145
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	100	134	125	158	#
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	138	#	156	173	#
Extracted ISTD $^{13}C_8$ *FOSA*	%	58	67	63	61	53
Extracted ISTD d_3 *N MeFOSA*	%	99	103	103	102	104
Extracted ISTD d_5 *N EtFOSA*	%	101	100	101	101	102
Extracted ISTD d_7 *N MeFOSE*	%	107	108	108	107	109
Extracted ISTD d_9 *N EtFOSE*	%	104	101	107	104	107
Extracted ISTD d_3 *N MeFOSAA*	%	121	123	126	133	127
Extracted ISTD d_5 *N EtFOSAA*	%	101	113	101	105	102
Total Positive PFHxS & PFOS	µg/L	<0.0002	<0.0002	<0.0002	0.001	0.001
Total Positive PFOS & PFOA	µg/L	<0.0002	<0.0002	<0.0002	0.0008	0.0009
Total Positive PFAS	µg/L	<0.0002	<0.0002	<0.0002	0.0025	0.0034

PFAS in Waters Trace Extended					
Our Reference		303924-7	303924-8	303924-9	303924-10
Your Reference	UNITS	CF-MW05	AFC4-MW02	AFC4-MW01	A4407
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water
Date prepared	-	01/09/2022	01/09/2022	01/09/2022	01/09/2022
Date analysed	-	01/09/2022	01/09/2022	01/09/2022	01/09/2022
Perfluorobutanesulfonic acid	µg/L	0.030	<0.01	0.036	0.022
Perfluoropentanesulfonic acid	µg/L	0.046	0.014	0.063	0.027
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.39	0.16	0.66	0.36
Perfluoroheptanesulfonic acid	µg/L	0.020	0.003	0.044	0.015
Perfluorooctanesulfonic acid PFOS	µg/L	0.026	0.089	0.91	0.14
Perfluorodecanesulfonic acid	µg/L	<0.002	<0.02	<0.002	<0.02
Perfluorobutanoic acid	µg/L	0.008	0.43	0.34	2.2
Perfluoropentanoic acid	µg/L	0.042	2.2	1.6	13
Perfluorohexanoic acid	µg/L	0.076	1.3	0.97	6.0
Perfluoroheptanoic acid	µg/L	0.0093	0.81	0.50	4.4
Perfluorooctanoic acid PFOA	µg/L	0.012	0.14	0.14	0.80
Perfluorononanoic acid	µg/L	<0.001	0.010	0.013	0.033
Perfluorodecanoic acid	µg/L	<0.002	<0.02	<0.002	<0.02
Perfluoroundecanoic acid	µg/L	<0.002	<0.02	<0.002	<0.02
Perfluorododecanoic acid	µg/L	<0.005	<0.05	<0.005	<0.05
Perfluorotridecanoic acid	µg/L	<0.01	<0.1	<0.01	<0.1
Perfluorotetradecanoic acid	µg/L	<0.05	<0.5	<0.05	<0.5
4:2 FTS	µg/L	<0.001	<0.01	0.002	0.028
6:2 FTS	µg/L	0.0081	3.8	1.5	32
8:2 FTS	µg/L	0.002	<0.01	0.011	0.035
10:2 FTS	µg/L	<0.002	<0.02	<0.002	<0.02
Perfluorooctane sulfonamide	µg/L	<0.01	<0.1	<0.01	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.02	<0.002	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.02	<0.002	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	104	101	88	96
Surrogate $^{13}C_2$ *PFOA*	%	110	99	110	99
Extracted ISTD $^{13}C_3$ *PFBS*	%	105	99	86	101
Extracted ISTD $^{18}O_2$ *PFHxS*	%	102	103	105	101
Extracted ISTD $^{13}C_4$ *PFOS*	%	110	101	96	103
Extracted ISTD $^{13}C_4$ *PFBA*	%	32	103	106	103

PFAS in Waters Trace Extended					
Our Reference	UNITS	303924-7	303924-8	303924-9	303924-10
Your Reference		CF-MW05	AFC4-MW02	AFC4-MW01	A4407
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	51	104	99	120
Extracted ISTD $^{13}C_2$ *PFHxA*	%	83	98	99	94
Extracted ISTD $^{13}C_4$ *PFHpA*	%	92	97	72	97
Extracted ISTD $^{13}C_4$ *PFOA*	%	128	99	95	95
Extracted ISTD $^{13}C_5$ *PFNA*	%	117	106	86	104
Extracted ISTD $^{13}C_2$ *PFDA*	%	119	112	110	108
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	112	106	106	109
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	97	100	96	102
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	111	90	94	90
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	154	105	154	102
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	#	105	108	140
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	#	114	#	116
Extracted ISTD $^{13}C_8$ *FOSA*	%	63	106	69	106
Extracted ISTD d_3 *N MeFOSA*	%	107	102	104	98
Extracted ISTD d_5 *N EtFOSA*	%	101	97	100	100
Extracted ISTD d_7 *N MeFOSE*	%	104	109	106	103
Extracted ISTD d_9 *N EtFOSE*	%	111	102	110	106
Extracted ISTD d_3 *N MeFOSAA*	%	77	113	81	110
Extracted ISTD d_5 *N EtFOSAA*	%	125	111	107	107
Total Positive PFHxS & PFOS	µg/L	0.41	0.25	1.6	0.50
Total Positive PFOS & PFOA	µg/L	0.039	0.22	1.0	0.94
Total Positive PFAS	µg/L	0.67	8.9	6.7	59

Miscellaneous Inorganics						
Our Reference	UNITS	303924-6	303924-7	303924-8	303924-9	303924-10
Your Reference		CF-MW06	CF-MW05	AFC4-MW02	AFC4-MW01	A4407
Date Sampled		22/08/2022	22/08/2022	22/08/2022	22/08/2022	22/08/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Total Dissolved Solids (grav)	mg/L	240	300	340	200	220

Method ID	Methodology Summary
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			26/08/2022	1	26/08/2022	29/08/2022		26/08/2022	[NT]
Date analysed	-			27/08/2022	1	27/08/2022	30/08/2022		27/08/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	109	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	109	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	110	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	108	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	110	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	111	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	105	1	101	102	1	100	[NT]
Surrogate toluene-d8	%		Org-023	95	1	95	96	1	101	[NT]
Surrogate 4-BFB	%		Org-023	97	1	97	97	0	99	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	303924-6
Date extracted	-			26/08/2022	1	26/08/2022	26/08/2022		26/08/2022	26/08/2022
Date analysed	-			26/08/2022	1	26/08/2022	26/08/2022		26/08/2022	26/08/2022
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	113	106
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	119	115
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	100	86
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	80	83	4	113	106
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	119	115
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	100	86
Surrogate o-Terphenyl	%		Org-020	106	1	94	95	1	99	120

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	26/08/2022	26/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	27/08/2022	27/08/2022		[NT]	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	[NT]	10	190	290	42	[NT]	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	[NT]	10	730	1000	31	[NT]	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	[NT]	10	340	500	38	[NT]	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	[NT]	10	580	790	31	[NT]	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	[NT]	10	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	10	89	128	36	[NT]	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	303924-7
Date extracted	-			26/08/2022	1	26/08/2022	26/08/2022		26/08/2022	26/08/2022
Date analysed	-			26/08/2022	1	26/08/2022	26/08/2022		26/08/2022	26/08/2022
Naphthalene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	88	86
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	83	81
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	88
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	90
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	90
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	99	93
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	81	79
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	86
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	88	1	82	78	5	85	76

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	26/08/2022	26/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	26/08/2022	26/08/2022		[NT]	[NT]
Naphthalene	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	0.2	67	[NT]	[NT]
Fluorene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Anthracene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Pyrene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	10	67	80	18	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	303924-7
Date extracted	-			26/08/2022	1	26/08/2022	26/08/2022		26/08/2022	26/08/2022
Date analysed	-			26/08/2022	1	26/08/2022	26/08/2022		26/08/2022	26/08/2022
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	96	90
HCB	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	96	89
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	93	91
delta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	97	93
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	96	90
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	94	90
Dieldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	90	81
Endrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	92	84
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	94	90
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	92	90
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	86	1	82	80	2	85	81

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	26/08/2022	26/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	26/08/2022	26/08/2022		[NT]	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
HCB	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
delta-BHC	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Dieldrin	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Endrin	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	10	69	82	17	[NT]	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	303924-7
Date extracted	-			26/08/2022	1	26/08/2022	26/08/2022		26/08/2022	26/08/2022
Date analysed	-			26/08/2022	1	26/08/2022	26/08/2022		26/08/2022	26/08/2022
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	94	106
Dimethoate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	85	81
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	79	87
Malathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	120	120
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	98	94
Parathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	82	91
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	90	86
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	86	1	82	80	2	85	81

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	26/08/2022	26/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	26/08/2022	26/08/2022		[NT]	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Dimethoate	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Malathion	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Parathion	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	[NT]	10	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	10	69	82	17	[NT]	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	303924-7
Date extracted	-			26/08/2022	1	26/08/2022	26/08/2022		26/08/2022	26/08/2022
Date analysed	-			26/08/2022	1	26/08/2022	26/08/2022		26/08/2022	26/08/2022
Aroclor 1016	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	1	<2	<2	0	126	100
Aroclor 1260	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	86	1	82	80	2	85	81

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	10	26/08/2022	26/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	26/08/2022	26/08/2022		[NT]	[NT]
Aroclor 1016	µg/L	2	Org-021	[NT]	10	<2	<2	0	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	[NT]	10	<2	<2	0	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	[NT]	10	<2	<2	0	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	[NT]	10	<2	<2	0	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	[NT]	10	<2	<2	0	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	[NT]	10	<2	<2	0	[NT]	[NT]
Aroclor 1260	µg/L	2	Org-021	[NT]	10	<2	<2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	10	69	82	17	[NT]	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	303924-7
Date prepared	-			25/08/2022	1	25/08/2022	25/08/2022		25/08/2022	25/08/2022
Date analysed	-			25/08/2022	1	25/08/2022	25/08/2022		25/08/2022	25/08/2022
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	91	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	113	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	95	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	88	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		98	97
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	102	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	109	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	6	25/08/2022	25/08/2022		[NT]	[NT]
Date analysed	-			[NT]	6	25/08/2022	25/08/2022		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	6	<1	[NT]		[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	6	<0.1	[NT]		[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	6	<1	[NT]		[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	6	2	[NT]		[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	6	1	[NT]		[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	6	<0.05	<0.05	0	[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	6	22	[NT]		[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	6	21	[NT]		[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			01/09/2022	6	01/09/2022	01/09/2022		01/09/2022	[NT]
Date analysed	-			01/09/2022	6	01/09/2022	01/09/2022		01/09/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	6	<0.0004	<0.0004	0	102	[NT]
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	6	<0.001	<0.001	0	102	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	6	0.0005	0.0005	0	101	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	6	<0.001	<0.001	0	94	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	6	0.0006	0.0006	0	99	[NT]
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	89	[NT]
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	100	[NT]
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	6	<0.004	<0.004	0	98	[NT]
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	6	<0.0004	<0.0004	0	103	[NT]
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	6	<0.0004	<0.0004	0	101	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	6	0.0003	0.0003	0	101	[NT]
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	6	<0.001	<0.001	0	99	[NT]
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	98	[NT]
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	101	[NT]
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	6	<0.005	<0.005	0	108	[NT]
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	6	<0.01	<0.01	0	75	[NT]
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	6	<0.05	<0.05	0	100	[NT]
4:2 FTS	µg/L	0.001	Org-029	<0.001	6	<0.001	<0.001	0	99	[NT]
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	6	0.002	0.002	0	102	[NT]
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	6	<0.0004	<0.0004	0	100	[NT]
10:2 FTS	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	104	[NT]
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	6	<0.01	<0.01	0	107	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	6	<0.05	<0.05	0	94	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	6	<0.1	<0.1	0	93	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	6	<0.05	<0.05	0	100	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	6	<0.5	<0.5	0	95	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	97	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	100	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	98	6	100	96	4	99	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	98	6	107	110	3	99	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	93	6	66	66	0	92	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	99	6	115	114	1	99	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	93	6	92	92	0	92	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	103	6	104	103	1	105	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	91	6	33	35	6	93	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	100	6	68	68	0	99	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	102	6	104	105	1	103	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	106	6	100	97	3	102	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	106	6	111	111	0	100	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	117	6	119	122	2	113	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	104	6	116	117	1	110	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	109	6	92	89	3	121	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	43	6	89	86	3	51	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	141	6	145	138	5	132	[NT]
Extracted ISTD$^{13}C_2$ *6:2FTS*	%		Org-029	139	6	#	#		130	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	172	6	#	#		166	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	70	6	53	57	7	71	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	74	6	104	101	3	89	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	102	6	102	101	1	101	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	103	6	109	105	4	104	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	94	6	107	112	5	97	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	123	6	127	129	2	125	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	109	6	102	107	5	114	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Date analysed	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	[NT]	[NT]	[NT]	[NT]	104	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

TRH Water(C10-C40) NEPM - The positive result in the rinsate sample is due to a single peak with no hydrocarbon profile that is consistent with the use of plastic containers.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

CHAIN OF CUSTODY FORM - Client

[Copyright and Confidential]

Company:	CES - Consulting Earth Scientists
Contact Person:	Victor Arias
Project Mgr:	Tristan Goodbody
Sampler:	VA/TG
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073
Phone:	Mob: 0439 261 637
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au

Client Project Name/Number/Site etc (ie report title): CES170608-GPM

PO No. (if applicable):

Envirolab Quote No. :

Date results required:

Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Additional report format: ☐ Esdat ☐ Equis

Lab Comments:

ENVIROLAB GROUP
National phone number 1300 424 344

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Unit 20/119 Reichardt Road, Winnellie, NT 0820
08 8967 1201 | darwin@envirolab.com.au

Sample Information | **Tests Required** | **Comments**

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS TRACE and EXT	Asbestos (AF/FA) _NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH	TDS	Comments
1	RINSE		22/08/22	WATER	X		X		X				Provide as much information about the sample as you can
2	TS				X				X				
3	TB				X				X				
4	FB				X								
5	DAQC17				X		X						
~~6~~	QAQC 18				PLEASE FORWARD TO ALS FOR PFAS (TRACE AND EXT) + COMBO 6								
6	CF-MW06				X		X					X	
7	CF-MW05				X		X					X	
8	AEC4-MW02				X		X					X	
9	AEC4-MW01				X		X					X	
10	AA207				X		X					X	

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

Relinquished by (Company): CES	Received by (Company): ELS-SYD	**Lab Use Only**
Print Name: VICTOR ARIAS	Print Name: CHRISTINA	Job number: 303924
Date & Time: 23/08/22 7:00am	Date & Time: 24/8/22 1130	Temperature: 14.9
Signature:	Signature:	Cooling: Ice / Ice pack / None
		Security seal: Intact / Broken / None
		TAT Req - SAME day / 1 / 2 / 3 / 4 / STD

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2230433**	Page	: 1 of 9
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 25-Aug-2022 17:10
Order number	: ----	Date Analysis Commenced	: 30-Aug-2022
C-O-C number	: ----	Issue Date	: 02-Sep-2022 17:19
Sampler	: ----		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC18	----	----	----	----
				Sampling date / time	22-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230433-001	--------	--------	--------	--------
					Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.002**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.024**	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.023**	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
^ **Total Polychlorinated biphenyls**	----	1	µg/L		<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L		<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L		<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L		<2.0	----	----	----	----
^ **Total Chlordane (sum)**	----	0.5	µg/L		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC18	----	----	----	----
				Sampling date / time	22-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230433-001	--------	--------	--------	--------
					Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L		<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L		<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.5	µg/L		<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L		<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L		<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L		<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L		<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L		<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L		<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L		<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L		<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L		<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L		<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L		<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L		<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L		<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L		<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L		<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC18	----	----	----	----
				Sampling date / time	22-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230433-001	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC18	----	----	----	----
				Sampling date / time	22-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230433-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		**0.0006**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0005**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L		<0.002	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC18	----	----	----	----
				Sampling date / time	22-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230433-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		**0.001**	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0003	µg/L		**0.0021**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0011**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0021**	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		**84.6**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		**77.6**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		**62.4**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**29.2**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**61.4**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**50.9**	----	----	----	----
EP075(SIM)T: PAH Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC18	----	----	----	----
				Sampling date / time	22-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230433-001	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	1.0	%		73.4	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		85.8	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		82.0	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		87.9	----	----	----	----
Toluene-D8	2037-26-5	2	%		116	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		114	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		100	----	----	----	----
13C8-PFOA	----	0.0005	%		87.7	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	45	134
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2230433**	Page	: 1 of 9
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 25-Aug-2022
Order number	: ----	Date Analysis Commenced	: 30-Aug-2022
C-O-C number	: ----	Issue Date	: 02-Sep-2022
Sampler	: ----		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 4553771)									
ES2230608-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.001	0.002	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.011	0.011	0.0	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.097	0.099	2.0	0% - 50%
ES2230433-001	QAQC18	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.024	0.024	0.0	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.023	0.024	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 4553770)									
ES2230167-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.1 µg/L	<0.0001	0.0	No Limit
ES2230433-001	QAQC18	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4549856)									
ES2230471-016	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2230471-009	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4549856)									
ES2230471-016	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2230471-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 4549856)									
ES2230471-016	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2230471-009	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4554551)									
ES2230608-001	Anonymous	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.0071	0.0077	8.4	0% - 20%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0037	0.0037	0.0	No Limit
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0025	0.0024	0.0	No Limit
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.0278	0.0276	0.7	0% - 20%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	0.0005	0.0005	0.0	No Limit
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4554551)									
ES2230608-001	Anonymous	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0013	0.0015	15.9	No Limit
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0017	0.0018	0.0	No Limit
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4554551)									
ES2230608-001	Anonymous	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4554551)									
ES2230608-001	Anonymous	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4554551)									
ES2230608-001	Anonymous	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.0446	0.0452	1.3	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 4553771)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.2	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.3	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	98.6	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.0	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.0	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	98.8	81.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 4553770)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	88.6	83.0	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4544042)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	87.1	68.9	113
EP068A: Organochlorine Pesticides (OC) (QCLot: 4544039)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	84.7	64.9	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	78.5	58.3	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	95.4	69.0	117
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	88.6	70.0	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	95.5	68.9	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	90.5	65.2	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	90.7	65.8	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	94.1	67.1	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	90.8	64.1	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	89.2	66.7	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	90.2	63.2	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	91.6	65.2	113
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	91.8	66.0	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	94.1	65.2	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	97.4	67.3	114
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	92.9	72.0	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	99.8	66.9	109
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	96.9	65.2	112
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	103	65.2	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	106	63.8	110
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	107	61.1	114
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4544039)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4544039) - continued								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	83.7	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	104	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	25.0	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	105	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	91.9	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	91.5	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	94.4	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	87.8	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	91.5	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	96.1	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	100	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	94.2	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	86.6	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	93.6	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	98.9	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	92.1	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	92.5	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	99.6	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	89.9	51.6	128
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4544040)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	71.7	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	78.8	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	73.7	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	74.5	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	77.0	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	76.9	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	84.6	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	82.4	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	66.9	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	70.9	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	84.7	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	68.6	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	81.3	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	73.5	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	73.3	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	69.7	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4544041)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	58.7	53.7	97.0

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4544041) - continued								
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	82.9	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	86.1	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4549856)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	79.8	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4544041)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	63.8	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	87.9	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	83.6	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4549856)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	79.5	75.0	127
EP080: BTEXN (QCLot: 4549856)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	90.3	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	102	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.1	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	96.5	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	102	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	103	70.0	120
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4554551)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	106	50.0	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	100	50.0	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	117	50.0	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	126	50.0	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.004 µg/L	117	50.0	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	79.6	50.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4554551)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.02 µg/L	115	30.0	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	115	50.0	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	115	50.0	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	119	50.0	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	116	50.0	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	122	50.0	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	117	50.0	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	118	40.0	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	122	40.0	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	115	40.0	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	110	40.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4554551)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	LCS: Spike Recovery (%)	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4554551) - continued								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	120	40.0	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	102	40.0	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	101	40.0	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	112	40.0	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	107	40.0	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	126	40.0	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	110	40.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4554551)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	107	50.0	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	123	50.0	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	118	50.0	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	80.8	50.0	130
EP231P: PFAS Sums (QCLot: 4554551)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 4553771)							
ES2230352-002	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	96.9	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	98.6	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	97.2	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	102	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	121	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	99.7	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	98.3	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 4553770)							
ES2230167-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	83.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4549856)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4549856) - continued							
ES2230471-009	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	100	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4549856)							
ES2230471-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	98.2	70.0	130
EP080: BTEXN (QCLot: 4549856)							
ES2230471-009	Anonymous	EP080: Benzene	71-43-2	25 µg/L	93.3	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	100	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	102	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	99.8	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	104	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	107	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2230433**	Page	: 1 of 7
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 25-Aug-2022
Site	: ----	Issue Date	: 02-Sep-2022
Sampler	: ----	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

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

Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP068T: Organophosphorus Pesticide Surrogate	ES2230433-001	QAQC18	**DEF**	78-48-8	62.4 %	66.5-111 %	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP066: Polychlorinated Biphenyls (PCB)						
Amber Bottle Unpreserved for Specialist Organics						
QAQC18	30-Aug-2022	29-Aug-2022	**1**	----	----	----
EP068A: Organochlorine Pesticides (OC)						
Amber Bottle Unpreserved for Specialist Organics						
QAQC18	30-Aug-2022	29-Aug-2022	**1**	----	----	----
EP068B: Organophosphorus Pesticides (OP)						
Amber Bottle Unpreserved for Specialist Organics						
QAQC18	30-Aug-2022	29-Aug-2022	**1**	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Amber Bottle Unpreserved for Specialist Organics						
QAQC18	30-Aug-2022	29-Aug-2022	**1**	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Amber Bottle Unpreserved for Specialist Organics						
QAQC18	30-Aug-2022	29-Aug-2022	**1**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Amber Bottle Unpreserved for Specialist Organics						
QAQC18	30-Aug-2022	29-Aug-2022	**1**	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	10	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS) - Continued					
Polychlorinated Biphenyls (PCB)	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	10	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

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

Method / *Container* / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
QAQC18	**22-Aug-2022**	**----**	----	----	**01-Sep-2022**	18-Feb-2023	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
QAQC18	**22-Aug-2022**	**----**	----	----	**01-Sep-2022**	19-Sep-2022	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Bottle Unpreserved for Specialist Organics (EP066)							
QAQC18	**22-Aug-2022**	**30-Aug-2022**	29-Aug-2022	×	**30-Aug-2022**	09-Oct-2022	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Bottle Unpreserved for Specialist Organics (EP068)							
QAQC18	**22-Aug-2022**	**30-Aug-2022**	29-Aug-2022	×	**30-Aug-2022**	09-Oct-2022	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Bottle Unpreserved for Specialist Organics (EP068)							
QAQC18	**22-Aug-2022**	**30-Aug-2022**	29-Aug-2022	×	**30-Aug-2022**	09-Oct-2022	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Bottle Unpreserved for Specialist Organics (EP075(SIM))							
QAQC18	**22-Aug-2022**	**30-Aug-2022**	29-Aug-2022	×	**30-Aug-2022**	09-Oct-2022	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Bottle Unpreserved for Specialist Organics (EP071)							
QAQC18	**22-Aug-2022**	**30-Aug-2022**	29-Aug-2022	×	**30-Aug-2022**	09-Oct-2022	✓
Clear glass VOC vial - HCl (EP080)							
QAQC18	**22-Aug-2022**	**01-Sep-2022**	05-Sep-2022	✓	**01-Sep-2022**	05-Sep-2022	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Bottle Unpreserved for Specialist Organics (EP071)							
QAQC18	**22-Aug-2022**	**30-Aug-2022**	29-Aug-2022	×	**30-Aug-2022**	09-Oct-2022	✓
Clear glass VOC vial - HCl (EP080)							
QAQC18	**22-Aug-2022**	**01-Sep-2022**	05-Sep-2022	✓	**01-Sep-2022**	05-Sep-2022	✓
EP080: BTEXN							
Clear glass VOC vial - HCl (EP080)							
QAQC18	**22-Aug-2022**	**01-Sep-2022**	05-Sep-2022	✓	**01-Sep-2022**	05-Sep-2022	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST)							
QAQC18	**22-Aug-2022**	**02-Sep-2022**	18-Feb-2023	✓	**02-Sep-2022**	18-Feb-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-ST)							
QAQC18	**22-Aug-2022**	**02-Sep-2022**	18-Feb-2023	✓	**02-Sep-2022**	18-Feb-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-ST)							
QAQC18	**22-Aug-2022**	**02-Sep-2022**	18-Feb-2023	✓	**02-Sep-2022**	18-Feb-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST)							
QAQC18	**22-Aug-2022**	**02-Sep-2022**	18-Feb-2023	✓	**02-Sep-2022**	18-Feb-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-ST)							
QAQC18	**22-Aug-2022**	**02-Sep-2022**	18-Feb-2023	✓	**02-Sep-2022**	18-Feb-2023	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	6	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	5	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	10	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	6	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	5	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	10	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

CHAIN OF CUSTODY FORM - Client

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Environmental Division
Sydney
Work Order Reference
ES2230433

Telephone : + 61-2-8784 8555

Company:	CES - Consulting Earth Scientists
Contact Person:	Victor Arias
Project Mgr:	Tristan Goodbody
Sampler:	VA/TG
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073
Phone:	Mob: 0439 261 637
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au

Client Project Name/Number/Site etc (ie report title): CES170608-GPM

PO No. (if applicable):

Envirolab Quote No.:

Date results required:

Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Additional report format: ☐ Esdat ☐ Equis

Lab Comments: Relinquished by ES via email 25/8/22 1200

Sample Information / **Tests Required**

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS TRACE EXT (ASDS10) (AF/FA)_NEMP Method	Combination 6 Combo	Combustible Content and % Sulfur	BTEX	TRH	PAH	TDS
1	RINSE		22/08/22	WATER	X	X		X			
2	TS							X			
3	TB				X			X			
4	FB				X						
5	QAQC 17				X	X					
~~6~~	QAQC 18				PLEASE FORWARD TO ALS FOR PFAS (TRACE EXT) + COMBO 6						
6	CE-MW06				X	X					X
7	CE-MW05				X	X					X
8	AEC4-MW02				X	X					X
9	AEC4-MW03				X	X					X
10	AAA07				X	X					X

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

Relinquished by (Company):	CES
Print Name:	Victor Arias
Date & Time:	23/08/22 7:50am
Signature:	

Received by (Company):	ELS Ltd
Print Name:	Christine
Date & Time:	24/8/22 1120
Signature:	

Lab Use Only

Job number:	303924
Temperature:	14.0
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	
Cooling: Ice / Ice-pack / None	
Security seal: Intact / Broken / None	

Rec: J CA 25/08/22 17:10

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CERTIFICATE OF ANALYSIS 304026

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	12 Water, 2 Sediment
Date samples received	25/08/2022
Date completed instructions received	25/08/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	01/09/2022
Date of Issue	01/09/2022

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Results Approved By
Giovanni Agosti, Group Technical Manager
Greta Petzold, Assistant Operation Manager
Hannah Nguyen, Metals Supervisor
Josh Williams, Organics and LC Supervisor
Kyle Gavrily, Senior Chemist
Liam Timmins, Organic Instruments Team Leader
Phalak Inthakesone, Organics Development Manager, Sydney
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference		304026-1	304026-2	304026-3	304026-5	304026-6
Your Reference	UNITS	RIN10	TS	TB	POT02	AEC4-MW03
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	29/08/2022	29/08/2022	29/08/2022	29/08/2022	29/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
TRH C_6 - C_9	µg/L	<10	[NA]	<10	210	<10
TRH C_6 - C_{10}	µg/L	<10	[NA]	<10	210	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	[NA]	<10	210	<10
Benzene	µg/L	<1	113%	<1	<1	<1
Toluene	µg/L	<1	105%	<1	<1	<1
Ethylbenzene	µg/L	<1	113%	<1	<1	<1
m+p-xylene	µg/L	<2	106%	<2	<2	<2
o-xylene	µg/L	<1	108%	<1	<1	<1
Naphthalene	µg/L	<1	[NA]	<1	<1	<1
Surrogate Dibromofluoromethane	%	99	102	100	99	100
Surrogate toluene-d8	%	95	99	95	96	96
Surrogate 4-BFB	%	98	96	96	97	95

vTRH(C6-C10)/BTEXN in Water						
Our Reference		304026-7	304026-8	304026-9	304026-10	304026-11
Your Reference	UNITS	CS106	CS101	CS117	CS116	SW-01
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	29/08/2022	29/08/2022	29/08/2022	29/08/2022	29/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	101	107	100	100	100
Surrogate toluene-d8	%	96	96	96	96	96
Surrogate 4-BFB	%	97	98	96	99	97

vTRH(C6-C10)/BTEXN in Water		
Our Reference		304026-12
Your Reference	UNITS	SW-02
Date Sampled		23/08/2022
Type of sample		Water
Date extracted	-	29/08/2022
Date analysed	-	30/08/2022
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	105
Surrogate toluene-d8	%	95
Surrogate 4-BFB	%	95

svTRH (C10-C40) in Water						
Our Reference		304026-1	304026-5	304026-6	304026-7	304026-8
Your Reference	UNITS	RIN10	POT02	AEC4-MW03	CS106	CS101
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	97	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	100	<50
TRH >C_{10} - C_{16}	µg/L	<50	52	<50	130	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	52	<50	130	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	50	<50	130	<50
Surrogate o-Terphenyl	%	77	85	95	87	100

svTRH (C10-C40) in Water					
Our Reference		304026-9	304026-10	304026-11	304026-12
Your Reference	UNITS	CS117	CS116	SW-01	SW-02
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	31/08/2022	31/08/2022
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50
Surrogate o-Terphenyl	%	92	94	90	86

PAHs in Water - Low Level						
Our Reference	UNITS	304026-1	304026-5	304026-6	304026-7	304026-8
Your Reference		RIN10	POT02	AEC4-MW03	CS106	CS101
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	69	78	74	75	81

PAHs in Water - Low Level					
Our Reference	UNITS	304026-9	304026-10	304026-11	304026-12
Your Reference		CS117	CS116	SW-01	SW-02
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	85	84	81	82

Organochlorine Pesticides in Water						
Our Reference	UNITS	304026-1	304026-5	304026-6	304026-7	304026-8
Your Reference		RIN10	POT02	AEC4-MW03	CS106	CS101
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	70	80	78	78	81

Organochlorine Pesticides in Water					
Our Reference	UNITS	304026-9	304026-10	304026-11	304026-12
Your Reference		CS117	CS116	SW-01	SW-02
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	88	87	83	83

OP Pesticides in Water						
Our Reference		304026-1	304026-5	304026-6	304026-7	304026-8
Your Reference	UNITS	RIN10	POT02	AEC4-MW03	CS106	CS101
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	70	80	78	78	81

OP Pesticides in Water					
Our Reference		304026-9	304026-10	304026-11	304026-12
Your Reference	UNITS	CS117	CS116	SW-01	SW-02
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	88	87	83	83

PCBs in Water						
Our Reference		304026-1	304026-5	304026-6	304026-7	304026-8
Your Reference	UNITS	RIN10	POT02	AEC4-MW03	CS106	CS101
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Aroclor 1016	µg/L	<2	<2	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2	<2	<2
Surrogate TCMX	%	70	80	78	78	81

PCBs in Water					
Our Reference		304026-9	304026-10	304026-11	304026-12
Your Reference	UNITS	CS117	CS116	SW-01	SW-02
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Aroclor 1016	µg/L	<2	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2	<2
Surrogate TCMX	%	88	87	83	83

HM in water - dissolved						
Our Reference		304026-1	304026-5	304026-6	304026-7	304026-8
Your Reference	UNITS	RIN10	POT02	AEC4-MW03	CS106	CS101
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	100	<1	2	1
Lead-Dissolved	µg/L	<1	2	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	<1	12	19	10
Zinc-Dissolved	µg/L	<1	78	17	51	68

HM in water - dissolved					
Our Reference		304026-9	304026-10	304026-11	304026-12
Your Reference	UNITS	CS117	CS116	SW-01	SW-02
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water
Date prepared	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Arsenic-Dissolved	µg/L	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1	<1
Lead-Dissolved	µg/L	<1	1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	16	21	<1	<1
Zinc-Dissolved	µg/L	14	48	3	2

PFAS in Waters Trace Extended						
Our Reference		304026-1	304026-3	304026-4	304026-5	304026-6
Your Reference	UNITS	RIN10	TB	FB	POT02	AEC4-MW03
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Perfluorobutanesulfonic acid	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	0.065
Perfluoropentanesulfonic acid	µg/L	<0.001	<0.001	<0.001	<0.001	0.071
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002	<0.0002	<0.0002	0.0005	0.93
Perfluoroheptanesulfonic acid	µg/L	<0.001	<0.001	<0.001	<0.001	0.062
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002	<0.0002	<0.0002	0.0005	0.91
Perfluorodecanesulfonic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	<0.002	<0.002	<0.002	<0.02	0.28
Perfluoropentanoic acid	µg/L	<0.002	<0.002	<0.002	<0.004	1.1
Perfluorohexanoic acid	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	0.85
Perfluoroheptanoic acid	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	0.30
Perfluorooctanoic acid PFOA	µg/L	<0.0002	<0.0002	<0.0002	0.0003	0.095
Perfluorononanoic acid	µg/L	<0.001	<0.001	<0.001	<0.001	0.011
Perfluorodecanoic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
4:2 FTS	µg/L	<0.001	<0.001	<0.001	<0.001	0.002
6:2 FTS	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	1.3
8:2 FTS	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	0.0082
10:2 FTS	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	100	99	97	100	106
Surrogate $^{13}C_2$ *PFOA*	%	96	102	96	111	104
Extracted ISTD $^{13}C_3$ *PFBS*	%	108	103	112	74	86
Extracted ISTD $^{18}O_2$ *PFHxS*	%	123	115	120	118	103
Extracted ISTD $^{13}C_4$ *PFOS*	%	103	104	101	96	99
Extracted ISTD $^{13}C_4$ *PFBA*	%	135	127	132	94	101

PFAS in Waters Trace Extended						
Our Reference		304026-1	304026-3	304026-4	304026-5	304026-6
Your Reference	UNITS	RIN10	TB	FB	POT02	AEC4-MW03
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	105	103	109	41	94
Extracted ISTD $^{13}C_2$ *PFHxA*	%	131	119	121	79	98
Extracted ISTD $^{13}C_4$ *PFHpA*	%	126	115	119	107	103
Extracted ISTD $^{13}C_4$ *PFOA*	%	124	114	124	103	105
Extracted ISTD $^{13}C_5$ *PFNA*	%	125	120	118	110	89
Extracted ISTD $^{13}C_2$ *PFDA*	%	122	128	121	130	134
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	119	119	115	125	122
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	113	120	119	116	99
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	52	55	54	85	76
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	113	105	111	88	113
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	119	113	109	151	169
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	116	118	123	125	112
Extracted ISTD $^{13}C_8$ *FOSA*	%	82	78	83	77	84
Extracted ISTD d_3 *N MeFOSA*	%	99	98	96	96	98
Extracted ISTD d_5 *N EtFOSA*	%	102	101	98	98	98
Extracted ISTD d_7 *N MeFOSE*	%	100	100	108	106	98
Extracted ISTD d_9 *N EtFOSE*	%	102	100	95	100	96
Extracted ISTD d_3 *N MeFOSAA*	%	#	152	166	145	145
Extracted ISTD d_5 *N EtFOSAA*	%	137	133	132	121	121
Total Positive PFHxS & PFOS	µg/L	<0.0002	<0.0002	<0.0002	0.001	1.8
Total Positive PFOS & PFOA	µg/L	<0.0002	<0.0002	<0.0002	0.0008	1.0
Total Positive PFAS	µg/L	<0.0002	<0.0002	<0.0002	0.001	6.0

PFAS in Waters Trace Extended						
Our Reference		304026-7	304026-8	304026-9	304026-10	304026-11
Your Reference	UNITS	CS106	CS101	CS117	CS116	SW-01
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Perfluorobutanesulfonic acid	µg/L	0.087	0.0058	0.0085	0.0042	0.002
Perfluoropentanesulfonic acid	µg/L	0.085	0.01	0.008	0.004	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.91	0.055	0.059	0.033	0.0077
Perfluoroheptanesulfonic acid	µg/L	0.035	<0.001	0.002	0.001	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	0.22	0.0023	0.031	0.014	0.013
Perfluorodecanesulfonic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	0.15	<0.02	0.01	0.005	<0.01
Perfluoropentanoic acid	µg/L	0.63	0.002	0.048	0.01	0.033
Perfluorohexanoic acid	µg/L	0.51	0.0057	0.033	0.011	0.019
Perfluoroheptanoic acid	µg/L	0.14	0.0008	0.013	0.0069	0.0083
Perfluorooctanoic acid PFOA	µg/L	0.052	0.0006	0.0055	0.0052	0.0066
Perfluorononanoic acid	µg/L	0.002	0.001	0.006	0.015	0.043
Perfluorodecanoic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	<0.002	<0.002	<0.002	<0.002	0.008
Perfluorododecanoic acid	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
4:2 FTS	µg/L	0.002	<0.001	<0.001	<0.001	<0.001
6:2 FTS	µg/L	0.86	0.0077	0.058	0.0065	<0.0004
8:2 FTS	µg/L	<0.0004	<0.0004	0.0005	<0.0004	<0.0004
10:2 FTS	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	102	99	101	97	98
Surrogate $^{13}C_2$ *PFOA*	%	109	111	105	104	112
Extracted ISTD $^{13}C_3$ *PFBS*	%	86	78	88	85	85
Extracted ISTD $^{18}O_2$ *PFHxS*	%	102	124	125	117	121
Extracted ISTD $^{13}C_4$ *PFOS*	%	100	105	103	106	103
Extracted ISTD $^{13}C_4$ *PFBA*	%	97	85	29	44	22

PFAS in Waters Trace Extended						
Our Reference		304026-7	304026-8	304026-9	304026-10	304026-11
Your Reference	UNITS	CS106	CS101	CS117	CS116	SW-01
Date Sampled		23/08/2022	23/08/2022	23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	92	44	59	72	55
Extracted ISTD $^{13}C_2$ *PFHxA*	%	95	88	104	109	97
Extracted ISTD $^{13}C_4$ *PFHpA*	%	100	123	123	120	115
Extracted ISTD $^{13}C_4$ *PFOA*	%	106	121	122	119	111
Extracted ISTD $^{13}C_5$ *PFNA*	%	111	127	125	120	121
Extracted ISTD $^{13}C_2$ *PFDA*	%	126	141	144	131	137
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	109	121	123	110	123
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	80	77	99	74	94
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	58	74	75	79	83
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	120	102	135	106	133
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	153	159	162	118	171
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	113	134	137	111	140
Extracted ISTD $^{13}C_8$ *FOSA*	%	76	78	87	75	77
Extracted ISTD d_3 *N MeFOSA*	%	96	95	99	95	101
Extracted ISTD d_5 *N EtFOSA*	%	99	98	101	96	101
Extracted ISTD d_7 *N MeFOSE*	%	99	101	101	101	103
Extracted ISTD d_9 *N EtFOSE*	%	98	99	102	97	99
Extracted ISTD d_3 *N MeFOSAA*	%	137	155	157	144	164
Extracted ISTD d_5 *N EtFOSAA*	%	107	120	128	89	126
Total Positive PFHxS & PFOS	µg/L	1.1	0.058	0.090	0.047	0.021
Total Positive PFOS & PFOA	µg/L	0.27	0.0028	0.036	0.019	0.019
Total Positive PFAS	µg/L	3.7	0.091	0.28	0.12	0.14

PFAS in Waters Trace Extended		
Our Reference		304026-12
Your Reference	UNITS	SW-02
Date Sampled		23/08/2022
Type of sample		Water
Date prepared	-	31/08/2022
Date analysed	-	31/08/2022
Perfluorobutanesulfonic acid	µg/L	0.0009
Perfluoropentanesulfonic acid	µg/L	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0026
Perfluoroheptanesulfonic acid	µg/L	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	0.0041
Perfluorodecanesulfonic acid	µg/L	<0.002
Perfluorobutanoic acid	µg/L	<0.01
Perfluoropentanoic acid	µg/L	0.007
Perfluorohexanoic acid	µg/L	0.0047
Perfluoroheptanoic acid	µg/L	0.003
Perfluorooctanoic acid PFOA	µg/L	0.0021
Perfluorononanoic acid	µg/L	0.008
Perfluorodecanoic acid	µg/L	<0.002
Perfluoroundecanoic acid	µg/L	<0.002
Perfluorododecanoic acid	µg/L	<0.005
Perfluorotridecanoic acid	µg/L	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05
4:2 FTS	µg/L	<0.001
6:2 FTS	µg/L	<0.0004
8:2 FTS	µg/L	<0.0004
10:2 FTS	µg/L	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	99
Surrogate $^{13}C_2$ *PFOA*	%	109
Extracted ISTD $^{13}C_3$ *PFBS*	%	80
Extracted ISTD $^{18}O_2$ *PFHxS*	%	117
Extracted ISTD $^{13}C_4$ *PFOS*	%	95
Extracted ISTD $^{13}C_4$ *PFBA*	%	23

PFAS in Waters Trace Extended		
Our Reference		304026-12
Your Reference	UNITS	SW-02
Date Sampled		23/08/2022
Type of sample		Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	57
Extracted ISTD $^{13}C_2$ *PFHxA*	%	93
Extracted ISTD $^{13}C_4$ *PFHpA*	%	113
Extracted ISTD $^{13}C_4$ *PFOA*	%	106
Extracted ISTD $^{13}C_5$ *PFNA*	%	112
Extracted ISTD $^{13}C_2$ *PFDA*	%	129
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	96
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	89
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	124
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	165
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	146
Extracted ISTD $^{13}C_8$ *FOSA*	%	72
Extracted ISTD d_3 *N MeFOSA*	%	96
Extracted ISTD d_5 *N EtFOSA*	%	98
Extracted ISTD d_7 *N MeFOSE*	%	103
Extracted ISTD d_9 *N EtFOSE*	%	98
Extracted ISTD d_3 *N MeFOSAA*	%	164
Extracted ISTD d_5 *N EtFOSAA*	%	136
Total Positive PFHxS & PFOS	µg/L	0.0067
Total Positive PFOS & PFOA	µg/L	0.0062
Total Positive PFAS	µg/L	0.032

Miscellaneous Inorganics				
Our Reference	UNITS	304026-6	304026-11	304026-12
Your Reference		AEC4-MW03	SW-01	SW-02
Date Sampled		23/08/2022	23/08/2022	23/08/2022
Type of sample		Water	Water	Water
Date prepared	-	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022
Total Dissolved Solids (grav)	mg/L	230	130	110

vTRH(C6-C10)/BTEXN in Soil			
Our Reference	UNITS	304026-13	304026-14
Your Reference		SD-01	SD-02
Date Sampled		23/08/2022	23/08/2022
Type of sample		Sediment	Sediment
Date extracted	-	29/08/2022	29/08/2022
Date analysed	-	29/08/2022	29/08/2022
TRH C_6 - C_9	mg/kg	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
Naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	98	103

svTRH (C10-C40) in Soil			
Our Reference		304026-13	304026-14
Your Reference	UNITS	SD-01	SD-02
Date Sampled		23/08/2022	23/08/2022
Type of sample		Sediment	Sediment
Date extracted	-	29/08/2022	29/08/2022
Date analysed	-	30/08/2022	30/08/2022
TRH C_{10} - C_{14}	mg/kg	53	<50
TRH C_{15} - C_{28}	mg/kg	<100	160
TRH C_{29} - C_{36}	mg/kg	<100	<100
Total +ve TRH (C10-C36)	mg/kg	50	160
TRH >C_{10} -C_{16}	mg/kg	<50	50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	50
TRH >C_{16} -C_{34}	mg/kg	<100	200
TRH >C_{34} -C_{40}	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	250
Surrogate o-Terphenyl	%	97	108

PAHs in Soil			
Our Reference	UNITS	304026-13	304026-14
Your Reference		SD-01	SD-02
Date Sampled		23/08/2022	23/08/2022
Type of sample		Sediment	Sediment
Date extracted	-	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022
Naphthalene	mg/kg	<0.1	0.4
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	1.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.6
Pyrene	mg/kg	<0.1	0.4
Benzo(a)anthracene	mg/kg	<0.1	0.4
Chrysene	mg/kg	<0.1	0.3
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.3
Benzo(a)pyrene	mg/kg	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.1
Total +ve PAH's	mg/kg	<0.05	3.7
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	106	102

Organochlorine Pesticides in soil			
Our Reference		304026-13	304026-14
Your Reference	UNITS	SD-01	SD-02
Date Sampled		23/08/2022	23/08/2022
Type of sample		Sediment	Sediment
Date extracted	-	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022
alpha-BHC	mg/kg	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	97	89

Organophosphorus Pesticides in Soil			
Our Reference	UNITS	304026-13	304026-14
Your Reference		SD-01	SD-02
Date Sampled		23/08/2022	23/08/2022
Type of sample		Sediment	Sediment
Date extracted	-	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	97	89

PCBs in Soil			
Our Reference		304026-13	304026-14
Your Reference	UNITS	SD-01	SD-02
Date Sampled		23/08/2022	23/08/2022
Type of sample		Sediment	Sediment
Date extracted	-	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	97	89

Acid Extractable metals in soil			
Our Reference		304026-13	304026-14
Your Reference	UNITS	SD-01	SD-02
Date Sampled		23/08/2022	23/08/2022
Type of sample		Sediment	Sediment
Date prepared	-	30/08/2022	30/08/2022
Date analysed	-	31/08/2022	31/08/2022
Arsenic	mg/kg	<4	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	7	8
Copper	mg/kg	5	4
Lead	mg/kg	24	10
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	2	3
Zinc	mg/kg	50	29

PFAS in Soils Extended			
Our Reference		304026-13	304026-14
Your Reference	UNITS	SD-01	SD-02
Date Sampled		23/08/2022	23/08/2022
Type of sample		Sediment	Sediment
Date prepared	-	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.4	0.3
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	<0.1	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1
Perfluorononanoic acid	µg/kg	0.1	0.3
Perfluorodecanoic acid	µg/kg	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1
6:2 FTS	µg/kg	<0.1	<0.1
8:2 FTS	µg/kg	<0.2	<0.2
10:2 FTS	µg/kg	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	101	106
Surrogate $^{13}C_2$ *PFOA*	%	100	99
Extracted ISTD $^{13}C_3$ *PFBS*	%	89	86
Extracted ISTD $^{18}O_2$ *PFHxS*	%	92	90
Extracted ISTD $^{13}C_4$ *PFOS*	%	93	92
Extracted ISTD $^{13}C_4$ *PFBA*	%	95	96

PFAS in Soils Extended			
Our Reference		304026-13	304026-14
Your Reference	UNITS	SD-01	SD-02
Date Sampled		23/08/2022	23/08/2022
Type of sample		Sediment	Sediment
Extracted ISTD $^{13}C_3$ *PFPeA*	%	95	100
Extracted ISTD $^{13}C_2$ *PFHxA*	%	89	91
Extracted ISTD $^{13}C_4$ *PFHpA*	%	91	91
Extracted ISTD $^{13}C_4$ *PFOA*	%	93	94
Extracted ISTD $^{13}C_5$ *PFNA*	%	96	104
Extracted ISTD $^{13}C_2$ *PFDA*	%	99	96
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	97	108
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	102	108
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	92	92
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	94	98
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	114	118
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	131	125
Extracted ISTD $^{13}C_8$ *FOSA*	%	92	92
Extracted ISTD d_3 *N MeFOSA*	%	85	85
Extracted ISTD d_5 *N EtFOSA*	%	94	97
Extracted ISTD d_7 *N MeFOSE*	%	89	93
Extracted ISTD d_9 *N EtFOSE*	%	94	94
Extracted ISTD d_3 *N MeFOSAA*	%	115	120
Extracted ISTD d_5 *N EtFOSAA*	%	99	102
Total Positive PFHxS & PFOS	µg/kg	0.4	0.3
Total Positive PFOS & PFOA	µg/kg	0.4	0.3
Total Positive PFAS	µg/kg	0.5	0.6

Moisture			
Our Reference		304026-13	304026-14
Your Reference	UNITS	SD-01	SD-02
Date Sampled		23/08/2022	23/08/2022
Type of sample		Sediment	Sediment
Date prepared	-	29/08/2022	29/08/2022
Date analysed	-	30/08/2022	30/08/2022
Moisture	%	26	15

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-018	Total Dissolved Solids - determined gravimetrically. The solids are dried at 180+/-10°C.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			29/08/2022	6	29/08/2022	30/08/2022		29/08/2022	[NT]
Date analysed	-			29/08/2022	6	30/08/2022	31/08/2022		30/08/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	6	<10	<10	0	115	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	6	<10	<10	0	115	[NT]
Benzene	µg/L	1	Org-023	<1	6	<1	<1	0	113	[NT]
Toluene	µg/L	1	Org-023	<1	6	<1	<1	0	113	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	6	<1	<1	0	116	[NT]
m+p-xylene	µg/L	2	Org-023	<2	6	<2	<2	0	117	[NT]
o-xylene	µg/L	1	Org-023	<1	6	<1	<1	0	117	[NT]
Naphthalene	µg/L	1	Org-023	<1	6	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	6	100	102	2	103	[NT]
Surrogate toluene-d8	%		Org-023	97	6	96	95	1	100	[NT]
Surrogate 4-BFB	%		Org-023	97	6	95	95	0	99	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	29/08/2022	30/08/2022		[NT]	[NT]
Date analysed	-			[NT]	12	30/08/2022	31/08/2022		[NT]	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	[NT]	12	<10	<10	0	[NT]	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	[NT]	12	<10	<10	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	[NT]	12	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	[NT]	12	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	[NT]	12	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	[NT]	12	<2	<2	0	[NT]	[NT]
o-xylene	µg/L	1	Org-023	[NT]	12	<1	<1	0	[NT]	[NT]
Naphthalene	µg/L	1	Org-023	[NT]	12	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	[NT]	12	105	101	4	[NT]	[NT]
Surrogate toluene-d8	%		Org-023	[NT]	12	95	96	1	[NT]	[NT]
Surrogate 4-BFB	%		Org-023	[NT]	12	95	94	1	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	304026-7
Date extracted	-			30/08/2022	5	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Date analysed	-			30/08/2022	5	30/08/2022	30/08/2022		30/08/2022	30/08/2022
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	5	<50	<50	0	113	96
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	5	<100	<100	0	112	100
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	5	<100	<100	0	129	98
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	5	52	<50	4	113	96
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	5	<100	<100	0	112	100
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	5	<100	<100	0	129	98
Surrogate o-Terphenyl	%		Org-020	92	5	85	80	6	119	101

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	30/08/2022	30/08/2022		[NT]	[NT]
Date analysed	-			[NT]	11	31/08/2022	31/08/2022		[NT]	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	[NT]	11	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	[NT]	11	<50	<50	0	[NT]	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	11	90	85	6	[NT]	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	304026-10
Date extracted	-			30/08/2022	5	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Date analysed	-			30/08/2022	5	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Naphthalene	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	78	90
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	75	89
Fluorene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	72	88
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	79	96
Anthracene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	76	96
Pyrene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	79	99
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	81	97
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	74	88
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	5	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	82	5	78	69	12	76	83

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	30/08/2022	30/08/2022		[NT]	[NT]
Date analysed	-			[NT]	11	30/08/2022	30/08/2022		[NT]	[NT]
Naphthalene	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluorene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Anthracene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Pyrene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	11	81	77	5	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	304026-10
Date extracted	-			30/08/2022	5	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Date analysed	-			30/08/2022	5	30/08/2022	30/08/2022		30/08/2022	30/08/2022
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	80	94
HCB	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	82	96
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	77	97
delta-BHC	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	81	99
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	80	96
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	76	94
Dieldrin	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	70	92
Endrin	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	76	90
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	78	96
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	78	96
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	81	5	80	67	18	76	86

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	30/08/2022	30/08/2022		[NT]	[NT]
Date analysed	-			[NT]	11	30/08/2022	30/08/2022		[NT]	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
HCB	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
delta-BHC	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Dieldrin	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Endrin	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	11	83	79	5	[NT]	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	304026-10
Date extracted	-			30/08/2022	5	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Date analysed	-			30/08/2022	5	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	87	101
Dimethoate	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	70	89
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	71	83
Malathion	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	108	128
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	82	100
Parathion	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	72	76
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	72	88
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	5	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	81	5	80	67	18	76	86

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	30/08/2022	30/08/2022		[NT]	[NT]
Date analysed	-			[NT]	11	30/08/2022	30/08/2022		[NT]	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Dimethoate	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Malathion	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Parathion	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	11	83	79	5	[NT]	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	304026-10
Date extracted	-			30/08/2022	5	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Date analysed	-			30/08/2022	5	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Aroclor 1016	µg/L	2	Org-021	<2	5	<2	<2	0	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	5	<2	<2	0	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	5	<2	<2	0	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	5	<2	<2	0	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	5	<2	<2	0	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	5	<2	<2	0	113	120
Aroclor 1260	µg/L	2	Org-021	<2	5	<2	<2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	81	5	80	67	18	76	86

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	30/08/2022	30/08/2022		[NT]	[NT]
Date analysed	-			[NT]	11	30/08/2022	30/08/2022		[NT]	[NT]
Aroclor 1016	µg/L	2	Org-021	[NT]	11	<2	<2	0	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	[NT]	11	<2	<2	0	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	[NT]	11	<2	<2	0	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	[NT]	11	<2	<2	0	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	[NT]	11	<2	<2	0	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	[NT]	11	<2	<2	0	[NT]	[NT]
Aroclor 1260	µg/L	2	Org-021	[NT]	11	<2	<2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	11	83	79	5	[NT]	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	304026-5
Date prepared	-			30/08/2022	1	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Date analysed	-			30/08/2022	1	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		104	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	[NT]		99	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		103	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		104	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		100	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	101	109
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		103	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		104	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	7	30/08/2022	30/08/2022		[NT]	[NT]
Date analysed	-			[NT]	7	30/08/2022	30/08/2022		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	7	<1	<1	0	[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	7	<1	<1	0	[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	7	2	2	0	[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	7	<1	<1	0	[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	7	<0.05	[NT]		[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	7	19	19	0	[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	7	51	48	6	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	304026-11
Date prepared	-			31/08/2022	5	31/08/2022	31/08/2022		31/08/2022	31/08/2022
Date analysed	-			31/08/2022	5	31/08/2022	31/08/2022		31/08/2022	31/08/2022
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	5	<0.0004	<0.0004	0	99	118
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	5	<0.001	<0.001	0	98	100
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	5	0.0005	0.0004	22	98	86
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	5	<0.001	<0.001	0	95	95
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	5	0.0005	0.0006	18	100	99
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	5	<0.002	<0.002	0	87	84
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	5	<0.02	<0.02	0	99	98
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	5	<0.004	<0.004	0	99	102
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	5	<0.0004	<0.0004	0	100	86
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	5	<0.0004	<0.0004	0	99	108
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	5	0.0003	0.0004	29	99	103
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	5	<0.001	<0.001	0	98	87
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	5	<0.002	<0.002	0	96	90
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	5	<0.002	<0.002	0	98	96
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	5	<0.005	<0.005	0	93	101
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	5	<0.01	<0.01	0	70	103
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	5	<0.05	<0.05	0	102	100
4:2 FTS	µg/L	0.001	Org-029	<0.001	5	<0.001	<0.001	0	99	93
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	5	<0.0004	<0.0004	0	108	116
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	5	<0.0004	<0.0004	0	100	117
10:2 FTS	µg/L	0.002	Org-029	<0.002	5	<0.002	<0.002	0	120	101
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	5	<0.01	<0.01	0	103	113
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	5	<0.05	<0.05	0	109	108
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	5	<0.1	<0.1	0	100	99
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	5	<0.05	<0.05	0	115	109
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	5	<0.5	<0.5	0	116	115
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	5	<0.002	<0.002	0	89	98
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	5	<0.002	<0.002	0	103	126
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	102	5	100	99	1	101	97
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	99	5	111	114	3	102	112

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	304026-11
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	104	5	74	80	8	94	83
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	105	5	118	125	6	96	121
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	98	5	96	99	3	87	100
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	117	5	94	92	2	111	23
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	99	5	41	44	7	93	57
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	113	5	79	82	4	104	98
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	112	5	107	111	4	102	115
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	117	5	103	107	4	100	111
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	112	5	110	113	3	97	119
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	117	5	130	135	4	100	142
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	106	5	125	128	2	101	123
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	119	5	116	122	5	111	101
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	63	5	85	87	2	52	88
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	106	5	88	92	4	94	135
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	111	5	151	159	5	89	173
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	113	5	125	127	2	86	138
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	83	5	77	80	4	70	77
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	96	5	96	94	2	96	95
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	100	5	98	97	1	98	97
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	101	5	106	101	5	102	98

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	304026-11
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	99	5	100	99	1	96	97
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	131	5	145	149	3	117	169
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	122	5	121	129	6	107	127

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	10	31/08/2022	31/08/2022		[NT]	[NT]
Date analysed	-			[NT]	10	31/08/2022	31/08/2022		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	[NT]	10	0.0042	0.0040	5	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	[NT]	10	0.004	0.004	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	[NT]	10	0.033	0.031	6	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	[NT]	10	0.001	<0.001	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	[NT]	10	0.014	0.013	7	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	[NT]	10	<0.002	<0.002	0	[NT]	[NT]
Perfluorobutanoic acid	µg/L	0.002	Org-029	[NT]	10	0.005	0.005	0	[NT]	[NT]
Perfluoropentanoic acid	µg/L	0.002	Org-029	[NT]	10	0.01	0.01	0	[NT]	[NT]
Perfluorohexanoic acid	µg/L	0.0004	Org-029	[NT]	10	0.011	0.011	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	[NT]	10	0.0069	0.0071	3	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	[NT]	10	0.0052	0.0051	2	[NT]	[NT]
Perfluorononanoic acid	µg/L	0.001	Org-029	[NT]	10	0.015	0.014	7	[NT]	[NT]
Perfluorodecanoic acid	µg/L	0.002	Org-029	[NT]	10	<0.002	<0.002	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/L	0.002	Org-029	[NT]	10	<0.002	<0.002	0	[NT]	[NT]
Perfluorododecanoic acid	µg/L	0.005	Org-029	[NT]	10	<0.005	<0.005	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/L	0.01	Org-029	[NT]	10	<0.01	<0.01	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	[NT]	10	<0.05	<0.05	0	[NT]	[NT]
4:2 FTS	µg/L	0.001	Org-029	[NT]	10	<0.001	<0.001	0	[NT]	[NT]
6:2 FTS	µg/L	0.0004	Org-029	[NT]	10	0.0065	0.0064	2	[NT]	[NT]
8:2 FTS	µg/L	0.0004	Org-029	[NT]	10	<0.0004	<0.0004	0	[NT]	[NT]
10:2 FTS	µg/L	0.002	Org-029	[NT]	10	<0.002	<0.002	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	[NT]	10	<0.01	<0.01	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	[NT]	10	<0.05	<0.05	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	[NT]	10	<0.1	<0.1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	[NT]	10	<0.05	<0.05	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	[NT]	10	<0.5	<0.5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	[NT]	10	<0.002	<0.002	0	[NT]	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	[NT]	10	<0.002	<0.002	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	10	97	100	3	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	10	104	105	1	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	[NT]	10	85	82	4	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	10	117	110	6	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	10	106	97	9	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	10	44	44	0	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	10	72	70	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	10	109	100	9	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	10	120	108	11	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	10	119	108	10	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	10	120	114	5	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	10	131	118	10	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	10	110	98	12	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	10	74	74	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	10	79	77	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	10	106	95	11	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	10	118	103	14	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	10	111	100	10	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	10	75	70	7	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	10	95	96	1	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	10	96	99	3	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	10	101	100	1	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	[NT]	10	97	99	2	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	10	144	147	2	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	10	89	95	7	[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date prepared	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Date analysed	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Total Dissolved Solids (grav)	mg/L	5	Inorg-018	<5	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-21	[NT]
Date extracted	-			29/08/2022	[NT]	[NT]	[NT]	[NT]	29/08/2022	[NT]
Date analysed	-			29/08/2022	[NT]	[NT]	[NT]	[NT]	29/08/2022	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	112	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	117	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	118	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	111	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	108	[NT]	[NT]	[NT]	[NT]	112	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-21	[NT]
Date extracted	-			29/08/2022	[NT]	[NT]	[NT]	[NT]	29/08/2022	[NT]
Date analysed	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	109	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	109	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	96	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-21	[NT]
Date extracted	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Date analysed	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	121	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	129	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	103	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-21	[NT]
Date extracted	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Date analysed	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	117	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	127	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	125	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	121	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	89	[NT]	[NT]	[NT]	[NT]	84	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-21	[NT]
Date extracted	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Date analysed	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	122	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	124	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	124	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	124	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	125	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	89	[NT]	[NT]	[NT]	[NT]	84	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-21	[NT]
Date extracted	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Date analysed	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	89	[NT]	[NT]	[NT]	[NT]	84	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-21	[NT]
Date prepared	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Date analysed	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	99	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	100	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-21	[NT]
Date prepared	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Date analysed	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	100	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	111	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	105	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	109	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	98	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-21	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	113	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	111	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-21	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	117	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

CHAIN OF CUSTODY FORM - Client

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Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (If applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No. :	
Sampler:	VA/TG	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	COMBINATION 6 ANALYSIS BELOW ANTG 2018 INCL. METALS FOR WATER SAMPLES

Sample Information					Tests Required							Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS Trace Ext	Combination 6 Combo	BTEX	TRH	PAH	TOS		Provide as much information about the sample as you can
1	RIN10		23/08/22	WATER	X	X	X					
2	TS		↓	↓	X	X	X					
3	TB				X	X	X					
4	FB				X	X	X					
5	POT02				X	X	X					
6	AEC4-MW03				X	X	X			X		
7	CG106				X	X	X					
8	CG101				X	X	X					
9	CG117				X	X	X					
10	CG116				X	X	X					
11	SW01		↓	↓	X	X	X					

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

Relinquished by (Company):	CES	Received by (Company):	ELS 84D
Print Name:	VICTOR ARIAS	Print Name:	CBarlott
Date & Time:	24/08/22 7:00am	Date & Time:	25.08.22 1100
Signature:		Signature:	

Lab Use Only

Job number: 304026	Cooling: Ice / Ice pack / None
Temperature: 18°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

CHAIN OF CUSTODY FORM - Client

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08 9317 2505 | lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
03 9763 2500 | melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
08 7087 6800 | adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
07 3266 9532 | brisbane@envirolab.com.au

Darwin Office - Envirolab Services
Unit 20/119 Reichardt Road, Winnellie, NT 0820
08 8987 1201 | darwin@envirolab.com.au

Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No.:	
Sampler:	VA/TG	Date results required:	Standard ☑ / Same Day ☐ / 1 day ☐ / 2 day ☐ / 3 day ☐
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose:	
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format:	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	COMBINATION 6 ANALYSIS BELOW AND 2016 Incl. METALS FOR WATER ANALYSIS

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	Combination 6 Combo	BTEX	Comments: Provide as much information about the sample as you can
12	SW-02		23/08/22	WATER	X			PFAS TRACE and EXT
13	SD-01		↓	SEDIMENT	X	X	X	
14	SD-02		↓	↓	X	X	X	

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

Relinquished by (Company):	CES	Received by (Company):	ELS SYD
Print Name:	VICTOR ARIAS	Print Name:	C Bartlett
Date & Time:	24/08/22 Pmam	Date & Time:	25.08.22 1100
Signature:		Signature:	

Lab Use Only

Job number:	304026
Temperature:	18°C
TAT Req - SAME day / 1 / 2 / 3 / 4 (STD)	
Cooling: Ice / Ice pack / None	
Security seal: Intact / Broken / None	

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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 304142

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Tristan Goodbody
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	13 Water
Date samples received	26/08/2022
Date completed instructions received	26/08/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	02/09/2022
Date of Issue	02/09/2022

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Results Approved By
Giovanni Agosti, Group Technical Manager
Josh Williams, Organics and LC Supervisor
Phalak Inthakesone, Organics Development Manager, Sydney
Steven Luong, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference		304142-1	304142-2	304142-3	304142-4	304142-5
Your Reference	UNITS	RIN11	TS	TB	FB	QAQC19
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	29/08/2022	29/08/2022	29/08/2022	29/08/2022	29/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
TRH C_6 - C_9	µg/L	<10	[NA]	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	[NA]	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	[NA]	<10	<10	<10
Benzene	µg/L	<1	109%	<1	<1	<1
Toluene	µg/L	<1	101%	<1	<1	<1
Ethylbenzene	µg/L	<1	107%	<1	<1	<1
m+p-xylene	µg/L	<2	100%	<2	<2	<2
o-xylene	µg/L	<1	103%	<1	<1	<1
Naphthalene	µg/L	<1	[NA]	<1	<1	<1
Surrogate Dibromofluoromethane	%	101	103	105	101	103
Surrogate toluene-d8	%	95	100	95	95	96
Surrogate 4-BFB	%	96	94	95	97	94

vTRH(C6-C10)/BTEXN in Water					
Our Reference		304142-6	304142-7	304142-8	304142-9
Your Reference	UNITS	GS502	CS112	FI210	WT503
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	29/08/2022	29/08/2022	29/08/2022	29/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
TRH C_6 - C_9	µg/L	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	102	106	102	102
Surrogate toluene-d8	%	96	95	95	96
Surrogate 4-BFB	%	99	96	96	94

svTRH (C10-C40) in Water						
Our Reference		304142-1	304142-4	304142-5	304142-6	304142-7
Your Reference	UNITS	RIN11	FB	QAQC19	GS502	CS112
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	88	57	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	88	57	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	90	60	<50	<50	<50
Surrogate o-Terphenyl	%	92	95	80	87	79

svTRH (C10-C40) in Water			
Our Reference		304142-8	304142-9
Your Reference	UNITS	FI210	WT503
Date Sampled		24/08/2022	24/08/2022
Type of sample		Water	Water
Date extracted	-	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	01/09/2022
TRH C_{10} - C_{14}	µg/L	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50
Surrogate o-Terphenyl	%	82	70

PAHs in Water - Low Level						
Our Reference	UNITS	304142-1	304142-4	304142-5	304142-6	304142-7
Your Reference		RIN11	FB	QAQC19	GS502	CS112
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	79	71	66	74	66

PAHs in Water - Low Level			
Our Reference		304142-8	304142-9
Your Reference	UNITS	FI210	WT503
Date Sampled		24/08/2022	24/08/2022
Type of sample		Water	Water
Date extracted	-	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022
Naphthalene	µg/L	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	71	63

Organochlorine Pesticides in Water						
Our Reference	UNITS	304142-1	304142-4	304142-5	304142-6	304142-7
Your Reference		RIN11	FB	QAQC19	GS502	CS112
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	74	70	66	75	67

Organochlorine Pesticides in Water			
Our Reference	UNITS	304142-8	304142-9
Your Reference		FI210	WT503
Date Sampled		24/08/2022	24/08/2022
Type of sample		Water	Water
Date extracted	-	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022
alpha-BHC	µg/L	<0.2	<0.2
HCB	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Surrogate TCMX	%	70	70

OP Pesticides in Water						
Our Reference		304142-1	304142-4	304142-5	304142-6	304142-7
Your Reference	UNITS	RIN11	FB	QAQC19	GS502	CS112
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Surrogate TCMX	%	74	70	66	75	67

OP Pesticides in Water			
Our Reference		304142-8	304142-9
Your Reference	UNITS	FI210	WT503
Date Sampled		24/08/2022	24/08/2022
Type of sample		Water	Water
Date extracted	-	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022
Dichlorvos	µg/L	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2
Surrogate TCMX	%	70	70

PCBs in Water						
Our Reference		304142-1	304142-4	304142-5	304142-6	304142-7
Your Reference	UNITS	RIN11	FB	QAQC19	GS502	CS112
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022	31/08/2022
Aroclor 1016	µg/L	<2	<2	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2	<2	<2
Surrogate TCMX	%	74	70	66	75	67

PCBs in Water			
Our Reference		304142-8	304142-9
Your Reference	UNITS	FI210	WT503
Date Sampled		24/08/2022	24/08/2022
Type of sample		Water	Water
Date extracted	-	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022
Aroclor 1016	µg/L	<2	<2
Aroclor 1221	µg/L	<2	<2
Aroclor 1232	µg/L	<2	<2
Aroclor 1242	µg/L	<2	<2
Aroclor 1248	µg/L	<2	<2
Aroclor 1254	µg/L	<2	<2
Aroclor 1260	µg/L	<2	<2
Surrogate TCMX	%	70	70

HM in water - dissolved						
Our Reference		304142-1	304142-4	304142-5	304142-6	304142-7
Your Reference	UNITS	RIN11	FB	QAQC19	GS502	CS112
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	5	3	4
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	<1	34	32	9
Zinc-Dissolved	µg/L	<1	<1	24	33	24

HM in water - dissolved			
Our Reference		304142-8	304142-9
Your Reference	UNITS	FI210	WT503
Date Sampled		24/08/2022	24/08/2022
Type of sample		Water	Water
Date prepared	-	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022
Arsenic-Dissolved	µg/L	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	3	3
Lead-Dissolved	µg/L	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05
Nickel-Dissolved	µg/L	12	29
Zinc-Dissolved	µg/L	35	25

PFAS in Waters Trace Extended						
Our Reference		304142-1	304142-3	304142-4	304142-5	304142-6
Your Reference	UNITS	RIN11	TB	FB	QAQC19	GS502
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	01/09/2022	01/09/2022	01/09/2022	01/09/2022	01/09/2022
Date analysed	-	01/09/2022	01/09/2022	01/09/2022	01/09/2022	01/09/2022
Perfluorobutanesulfonic acid	µg/L	<0.0004	<0.0004	<0.0004	0.0004	<0.0004
Perfluoropentanesulfonic acid	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002	<0.0002	<0.0002	0.0003	0.0003
Perfluoroheptanesulfonic acid	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002	<0.0002	<0.0002	0.0006	0.0007
Perfluorodecanesulfonic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Perfluoroheptanoic acid	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Perfluorooctanoic acid PFOA	µg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Perfluorononanoic acid	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Perfluorodecanoic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
4:2 FTS	µg/L	<0.001	<0.001	<0.001	<0.001	<0.001
6:2 FTS	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	0.002
8:2 FTS	µg/L	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
10:2 FTS	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	106	101	102	99	98
Surrogate $^{13}C_2$ *PFOA*	%	109	109	105	107	109
Extracted ISTD $^{13}C_3$ *PFBS*	%	90	77	92	88	90
Extracted ISTD $^{18}O_2$ *PFHxS*	%	88	79	94	92	94
Extracted ISTD $^{13}C_4$ *PFOS*	%	94	89	99	97	107
Extracted ISTD $^{13}C_4$ *PFBA*	%	128	101	130	35	39

PFAS in Waters Trace Extended						
Our Reference		304142-1	304142-3	304142-4	304142-5	304142-6
Your Reference	UNITS	RIN11	TB	FB	QAQC19	GS502
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	89	70	90	55	59
Extracted ISTD $^{13}C_2$ *PFHxA*	%	116	91	118	88	91
Extracted ISTD $^{13}C_4$ *PFHpA*	%	99	77	102	92	97
Extracted ISTD $^{13}C_4$ *PFOA*	%	97	81	101	99	107
Extracted ISTD $^{13}C_5$ *PFNA*	%	96	84	96	97	109
Extracted ISTD $^{13}C_2$ *PFDA*	%	112	95	105	99	108
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	105	88	98	100	99
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	100	94	97	95	91
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	82	72	71	107	117
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	93	74	93	59	69
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	90	76	93	62	87
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	104	87	97	65	93
Extracted ISTD $^{13}C_8$ *FOSA*	%	65	53	64	59	49
Extracted ISTD d_3 *N MeFOSA*	%	99	97	99	96	99
Extracted ISTD d_5 *N EtFOSA*	%	103	101	104	102	102
Extracted ISTD d_7 *N MeFOSE*	%	103	103	103	97	104
Extracted ISTD d_9 *N EtFOSE*	%	102	99	105	101	100
Extracted ISTD d_3 *N MeFOSAA*	%	110	95	98	85	72
Extracted ISTD d_5 *N EtFOSAA*	%	142	126	128	110	130
Total Positive PFHxS & PFOS	µg/L	<0.0002	<0.0002	<0.0002	0.0009	0.001
Total Positive PFOS & PFOA	µg/L	<0.0002	<0.0002	<0.0002	0.0006	0.0007
Total Positive PFAS	µg/L	<0.0002	<0.0002	<0.0002	0.001	0.0035

PFAS in Waters Trace Extended						
Our Reference		304142-7	304142-8	304142-9	304142-10	304142-11
Your Reference	UNITS	CS112	FI210	WT503	FB304	FB301
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	01/09/2022	01/09/2022	01/09/2022	01/09/2022	01/09/2022
Date analysed	-	01/09/2022	01/09/2022	01/09/2022	01/09/2022	01/09/2022
Perfluorobutanesulfonic acid	µg/L	0.001	0.002	0.0008	0.18	0.0066
Perfluoropentanesulfonic acid	µg/L	<0.001	0.001	<0.001	0.27	0.007
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002	0.0072	0.0051	3.3	0.051
Perfluoroheptanesulfonic acid	µg/L	<0.001	<0.001	<0.001	0.27	0.005
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002	0.0059	0.0021	4.9	0.12
Perfluorodecanesulfonic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorobutanoic acid	µg/L	0.004	0.008	0.003	0.071	0.009
Perfluoropentanoic acid	µg/L	0.004	0.02	0.007	0.29	0.039
Perfluorohexanoic acid	µg/L	<0.0004	0.011	0.0050	0.64	0.031
Perfluoroheptanoic acid	µg/L	<0.0004	0.0041	0.001	0.13	0.0068
Perfluorooctanoic acid PFOA	µg/L	<0.0002	0.0027	0.0007	0.30	0.0052
Perfluorononanoic acid	µg/L	<0.001	0.003	<0.001	0.94	0.041
Perfluorodecanoic acid	µg/L	<0.002	<0.002	<0.002	0.003	<0.002
Perfluoroundecanoic acid	µg/L	<0.002	<0.002	<0.002	0.002	<0.002
Perfluorododecanoic acid	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
4:2 FTS	µg/L	<0.001	<0.001	<0.001	0.003	<0.001
6:2 FTS	µg/L	0.001	0.003	0.002	1.2	0.003
8:2 FTS	µg/L	<0.0004	<0.0004	<0.0004	0.0081	<0.0004
10:2 FTS	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	92	92	97	99	98
Surrogate $^{13}C_2$ *PFOA*	%	107	109	103	103	105
Extracted ISTD $^{13}C_3$ *PFBS*	%	87	90	84	91	96
Extracted ISTD $^{18}O_2$ *PFHxS*	%	98	91	92	103	94
Extracted ISTD $^{13}C_4$ *PFOS*	%	111	109	99	99	103
Extracted ISTD $^{13}C_4$ *PFBA*	%	61	52	33	102	60

PFAS in Waters Trace Extended						
Our Reference		304142-7	304142-8	304142-9	304142-10	304142-11
Your Reference	UNITS	CS112	FI210	WT503	FB304	FB301
Date Sampled		24/08/2022	24/08/2022	24/08/2022	24/08/2022	24/08/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	68	67	51	94	73
Extracted ISTD $^{13}C_2$ *PFHxA*	%	95	95	83	99	105
Extracted ISTD $^{13}C_4$ *PFHpA*	%	95	96	90	101	105
Extracted ISTD $^{13}C_4$ *PFOA*	%	102	104	102	105	113
Extracted ISTD $^{13}C_5$ *PFNA*	%	102	106	102	118	100
Extracted ISTD $^{13}C_2$ *PFDA*	%	110	103	105	112	112
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	101	97	99	100	111
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	94	83	91	96	99
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	107	114	115	120	115
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	65	69	66	54	73
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	66	84	85	104	76
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	82	93	98	98	79
Extracted ISTD $^{13}C_8$ *FOSA*	%	39	44	53	51	51
Extracted ISTD d_3 *N MeFOSA*	%	98	97	96	97	97
Extracted ISTD d_5 *N EtFOSA*	%	103	105	101	105	101
Extracted ISTD d_7 *N MeFOSE*	%	99	104	107	106	101
Extracted ISTD d_9 *N EtFOSE*	%	103	106	101	105	97
Extracted ISTD d_3 *N MeFOSAA*	%	75	70	104	108	94
Extracted ISTD d_5 *N EtFOSAA*	%	102	118	147	147	127
Total Positive PFHxS & PFOS	µg/L	<0.0002	0.013	0.0072	8.2	0.17
Total Positive PFOS & PFOA	µg/L	<0.0002	0.0086	0.0028	5.2	0.13
Total Positive PFAS	µg/L	0.0099	0.067	0.027	12	0.32

PFAS in Waters Trace Extended		
Our Reference		304142-12
Your Reference	UNITS	FB308
Date Sampled		24/08/2022
Type of sample		Water
Date prepared	-	01/09/2022
Date analysed	-	01/09/2022
Perfluorobutanesulfonic acid	µg/L	0.022
Perfluoropentanesulfonic acid	µg/L	0.025
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.13
Perfluoroheptanesulfonic acid	µg/L	0.006
Perfluorooctanesulfonic acid PFOS	µg/L	0.081
Perfluorodecanesulfonic acid	µg/L	<0.002
Perfluorobutanoic acid	µg/L	0.007
Perfluoropentanoic acid	µg/L	0.02
Perfluorohexanoic acid	µg/L	0.030
Perfluoroheptanoic acid	µg/L	0.0074
Perfluorooctanoic acid PFOA	µg/L	0.0097
Perfluorononanoic acid	µg/L	0.025
Perfluorodecanoic acid	µg/L	<0.002
Perfluoroundecanoic acid	µg/L	<0.002
Perfluorododecanoic acid	µg/L	<0.005
Perfluorotridecanoic acid	µg/L	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05
4:2 FTS	µg/L	<0.001
6:2 FTS	µg/L	0.020
8:2 FTS	µg/L	<0.0004
10:2 FTS	µg/L	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	97
Surrogate $^{13}C_2$ *PFOA*	%	105
Extracted ISTD $^{13}C_3$ *PFBS*	%	91
Extracted ISTD $^{18}O_2$ *PFHxS*	%	94
Extracted ISTD $^{13}C_4$ *PFOS*	%	105
Extracted ISTD $^{13}C_4$ *PFBA*	%	35

PFAS in Waters Trace Extended		
Our Reference		304142-12
Your Reference	UNITS	FB308
Date Sampled		24/08/2022
Type of sample		Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	60
Extracted ISTD $^{13}C_2$ *PFHxA*	%	93
Extracted ISTD $^{13}C_4$ *PFHpA*	%	101
Extracted ISTD $^{13}C_4$ *PFOA*	%	115
Extracted ISTD $^{13}C_5$ *PFNA*	%	110
Extracted ISTD $^{13}C_2$ *PFDA*	%	106
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	97
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	81
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	81
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	72
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	102
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	102
Extracted ISTD $^{13}C_8$ *FOSA*	%	61
Extracted ISTD d_3 *N MeFOSA*	%	94
Extracted ISTD d_5 *N EtFOSA*	%	103
Extracted ISTD d_7 *N MeFOSE*	%	104
Extracted ISTD d_9 *N EtFOSE*	%	100
Extracted ISTD d_3 *N MeFOSAA*	%	81
Extracted ISTD d_5 *N EtFOSAA*	%	137
Total Positive PFHxS & PFOS	µg/L	0.22
Total Positive PFOS & PFOA	µg/L	0.091
Total Positive PFAS	µg/L	0.38

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			29/08/2022	1	29/08/2022	30/08/2022		29/08/2022	[NT]
Date analysed	-			30/08/2022	1	30/08/2022	31/08/2022		30/08/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	120	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	120	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	120	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	118	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	119	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	121	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	121	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	105	1	101	100	1	99	[NT]
Surrogate toluene-d8	%		Org-023	95	1	95	96	1	100	[NT]
Surrogate 4-BFB	%		Org-023	95	1	96	95	1	98	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			31/08/2022	1	31/08/2022	31/08/2022		31/08/2022	[NT]
Date analysed	-			31/08/2022	1	31/08/2022	31/08/2022		31/08/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	88	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	100	0	88	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	88	91	3	88	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	88	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	86	[NT]
Surrogate o-Terphenyl	%		Org-020	95	1	92	90	2	91	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	304142-7
Date extracted	-			31/08/2022	1	31/08/2022	31/08/2022		31/08/2022	31/08/2022
Date analysed	-			31/08/2022	1	31/08/2022	31/08/2022		31/08/2022	31/08/2022
Naphthalene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	80	84
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	81	81
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	80	84
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	94
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	92
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	97
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	95
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	78	82
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	79	1	79	74	7	79	78

QUALITY CONTROL: Organochlorine Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	304142-7
Date extracted	-			31/08/2022	1	31/08/2022	31/08/2022		31/08/2022	31/08/2022
Date analysed	-			31/08/2022	1	31/08/2022	31/08/2022		31/08/2022	31/08/2022
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	84	86
HCB	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	85	89
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	85	91
delta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	91	95
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	90	94
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	86	90
Dieldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	77	80
Endrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	72	76
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	84	90
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	84	90
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	81	1	74	71	4	82	80

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	304142-7
Date extracted	-			31/08/2022	1	31/08/2022	31/08/2022		31/08/2022	31/08/2022
Date analysed	-			31/08/2022	1	31/08/2022	31/08/2022		31/08/2022	31/08/2022
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	84	91
Dimethoate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	83	87
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	73	71
Malathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	107	114
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	92	94
Parathion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	68	68
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	81	1	74	71	4	82	80

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	304142-7
Date extracted	-			31/08/2022	1	31/08/2022	31/08/2022		31/08/2022	31/08/2022
Date analysed	-			31/08/2022	1	31/08/2022	31/08/2022		31/08/2022	31/08/2022
Aroclor 1016	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	1	<2	<2	0	112	100
Aroclor 1260	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	81	1	74	71	4	82	80

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	304142-4
Date prepared	-			30/08/2022	1	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Date analysed	-			30/08/2022	1	30/08/2022	30/08/2022		30/08/2022	30/08/2022
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		99	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	[NT]		98	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		98	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		98	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		97	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	110	117
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		98	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		98	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	304142-7
Date prepared	-			[NT]	6	30/08/2022	30/08/2022		[NT]	30/08/2022
Date analysed	-			[NT]	6	30/08/2022	30/08/2022		[NT]	30/08/2022
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	6	<1	<1	0	[NT]	101
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	6	<0.1	<0.1	0	[NT]	102
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	6	<1	<1	0	[NT]	94
Copper-Dissolved	µg/L	1	Metals-022	[NT]	6	3	3	0	[NT]	92
Lead-Dissolved	µg/L	1	Metals-022	[NT]	6	<1	<1	0	[NT]	94
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	6	<0.05	[NT]		[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	6	32	31	3	[NT]	91
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	6	33	31	6	[NT]	96

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date prepared	-			01/09/2022	6	01/09/2022	01/09/2022		01/09/2022	[NT]
Date analysed	-			01/09/2022	6	01/09/2022	01/09/2022		01/09/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	6	<0.0004	0.0004	0	106	[NT]
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	6	<0.001	<0.001	0	110	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	6	0.0003	0.0002	40	96	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	6	<0.001	<0.001	0	107	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	6	0.0007	0.0008	13	104	[NT]
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	98	[NT]
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	101	[NT]
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	106	[NT]
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	6	<0.0004	<0.0004	0	98	[NT]
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	6	<0.0004	<0.0004	0	108	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	6	<0.0002	<0.0002	0	101	[NT]
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	6	<0.001	<0.001	0	116	[NT]
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	103	[NT]
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	99	[NT]
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	6	<0.005	<0.005	0	105	[NT]
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	6	<0.01	<0.01	0	88	[NT]
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	6	<0.05	<0.05	0	100	[NT]
4:2 FTS	µg/L	0.001	Org-029	<0.001	6	<0.001	<0.001	0	104	[NT]
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	6	0.002	0.002	0	111	[NT]
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	6	<0.0004	<0.0004	0	108	[NT]
10:2 FTS	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	102	[NT]
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	6	<0.01	<0.01	0	104	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	6	<0.05	<0.05	0	99	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	6	<0.1	<0.1	0	110	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	6	<0.05	<0.05	0	105	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	6	<0.5	<0.5	0	97	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	110	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	6	<0.002	<0.002	0	111	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	103	6	98	94	4	97	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	104	6	109	106	3	101	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	89	6	90	90	0	86	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	94	6	94	91	3	92	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	100	6	107	112	5	100	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	122	6	39	41	5	116	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	86	6	59	60	2	80	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	113	6	91	95	4	104	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	101	6	97	98	1	90	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	109	6	107	109	2	96	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	106	6	109	109	0	93	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	114	6	108	113	5	106	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	109	6	99	111	11	99	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	112	6	91	88	3	105	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	74	6	117	102	14	71	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	96	6	69	73	6	84	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	104	6	87	92	6	81	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	107	6	93	93	0	90	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	62	6	49	56	13	56	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	99	6	99	96	3	100	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	104	6	102	101	1	104	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	105	6	104	103	1	102	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	102	6	100	102	2	103	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	113	6	72	77	7	101	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	130	6	130	134	3	108	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	9	01/09/2022	01/09/2022		[NT]	[NT]
Date analysed	-			[NT]	9	01/09/2022	01/09/2022		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	[NT]	9	0.0008	0.001	22	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	[NT]	9	<0.001	<0.001	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	[NT]	9	0.0051	0.0053	4	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	[NT]	9	<0.001	<0.001	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	[NT]	9	0.0021	0.0021	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	[NT]	9	<0.002	<0.002	0	[NT]	[NT]
Perfluorobutanoic acid	µg/L	0.002	Org-029	[NT]	9	0.003	0.003	0	[NT]	[NT]
Perfluoropentanoic acid	µg/L	0.002	Org-029	[NT]	9	0.007	0.007	0	[NT]	[NT]
Perfluorohexanoic acid	µg/L	0.0004	Org-029	[NT]	9	0.0050	0.0050	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	[NT]	9	0.001	0.001	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	[NT]	9	0.0007	0.0007	0	[NT]	[NT]
Perfluorononanoic acid	µg/L	0.001	Org-029	[NT]	9	<0.001	<0.001	0	[NT]	[NT]
Perfluorodecanoic acid	µg/L	0.002	Org-029	[NT]	9	<0.002	<0.002	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/L	0.002	Org-029	[NT]	9	<0.002	<0.002	0	[NT]	[NT]
Perfluorododecanoic acid	µg/L	0.005	Org-029	[NT]	9	<0.005	<0.005	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/L	0.01	Org-029	[NT]	9	<0.01	<0.01	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	[NT]	9	<0.05	<0.05	0	[NT]	[NT]
4:2 FTS	µg/L	0.001	Org-029	[NT]	9	<0.001	<0.001	0	[NT]	[NT]
6:2 FTS	µg/L	0.0004	Org-029	[NT]	9	0.002	0.001	67	[NT]	[NT]
8:2 FTS	µg/L	0.0004	Org-029	[NT]	9	<0.0004	<0.0004	0	[NT]	[NT]
10:2 FTS	µg/L	0.002	Org-029	[NT]	9	<0.002	<0.002	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	[NT]	9	<0.01	<0.01	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	[NT]	9	<0.05	<0.05	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	[NT]	9	<0.1	<0.1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	[NT]	9	<0.05	<0.05	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	[NT]	9	<0.5	<0.5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	[NT]	9	<0.002	<0.002	0	[NT]	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	[NT]	9	<0.002	<0.002	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	9	97	90	7	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	9	103	109	6	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	[NT]	9	84	85	1	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	9	92	94	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	9	99	108	9	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	9	33	35	6	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	9	51	57	11	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	9	83	89	7	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	9	90	96	6	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	9	102	109	7	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	9	102	104	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	9	105	106	1	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	9	99	102	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	9	91	90	1	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	9	115	122	6	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	9	66	73	10	[NT]	[NT]
Extracted ISTD$^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	9	85	95	11	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	9	98	93	5	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	9	53	57	7	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	9	96	95	1	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	9	101	100	1	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	9	107	100	7	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	[NT]	9	101	100	1	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	9	104	106	2	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	9	147	145	1	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Dissolved Metals: no filtered, preserved sample was received for #4, 5, 7, 8 & 9, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.
Note: there is a possibility some elements may be underestimated.

TRH Water(C10-C40) NEPM - The positive result in the rinsate sample is due to a single peak with no hydrocarbon profile that is consistent with the use of plastic containers.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

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CERTIFICATE OF ANALYSIS 304142-A

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	additional analysis
Date samples received	26/08/2022
Date completed instructions received	05/09/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	06/09/2022
Date of Issue	06/09/2022

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in Waters Trace Extended		
Our Reference		304142-A-13
Your Reference	UNITS	FB305
Date Sampled		24/08/2022
Type of sample		Water
Date prepared	-	05/09/2022
Date analysed	-	05/09/2022
Perfluorobutanesulfonic acid	µg/L	0.36
Perfluoropentanesulfonic acid	µg/L	0.45
Perfluorohexanesulfonic acid - PFHxS	µg/L	4.6
Perfluoroheptanesulfonic acid	µg/L	0.41
Perfluorooctanesulfonic acid PFOS	µg/L	6.4
Perfluorodecanesulfonic acid	µg/L	<0.02
Perfluorobutanoic acid	µg/L	0.12
Perfluoropentanoic acid	µg/L	0.53
Perfluorohexanoic acid	µg/L	1.1
Perfluoroheptanoic acid	µg/L	0.21
Perfluorooctanoic acid PFOA	µg/L	0.41
Perfluorononanoic acid	µg/L	1.2
Perfluorodecanoic acid	µg/L	0.004
Perfluoroundecanoic acid	µg/L	0.002
Perfluorododecanoic acid	µg/L	<0.05
Perfluorotridecanoic acid	µg/L	<0.10
Perfluorotetradecanoic acid	µg/L	<0.5
4:2 FTS	µg/L	0.006
6:2 FTS	µg/L	1.4
8:2 FTS	µg/L	0.010
10:2 FTS	µg/L	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	101
Surrogate $^{13}C_2$ *PFOA*	%	113
Extracted ISTD $^{13}C_3$ *PFBS*	%	93
Extracted ISTD $^{18}O_2$ *PFHxS*	%	102
Extracted ISTD $^{13}C_4$ *PFOS*	%	105
Extracted ISTD $^{13}C_4$ *PFBA*	%	104

PFAS in Waters Trace Extended		
Our Reference	UNITS	304142-A-13
Your Reference		FB305
Date Sampled		24/08/2022
Type of sample		Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	100
Extracted ISTD $^{13}C_2$ *PFHxA*	%	105
Extracted ISTD $^{13}C_4$ *PFHpA*	%	100
Extracted ISTD $^{13}C_4$ *PFOA*	%	102
Extracted ISTD $^{13}C_5$ *PFNA*	%	110
Extracted ISTD $^{13}C_2$ *PFDA*	%	115
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	119
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	110
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	95
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	102
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	128
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	135
Extracted ISTD $^{13}C_8$ *FOSA*	%	110
Extracted ISTD d_3 *N MeFOSA*	%	102
Extracted ISTD d_5 *N EtFOSA*	%	102
Extracted ISTD d_7 *N MeFOSE*	%	119
Extracted ISTD d_9 *N EtFOSE*	%	108
Extracted ISTD d_3 *N MeFOSAA*	%	114
Extracted ISTD d_5 *N EtFOSAA*	%	121
Total Positive PFHxS & PFOS	µg/L	11
Total Positive PFOS & PFOA	µg/L	6.8
Total Positive PFAS	µg/L	17

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			06/09/2022	[NT]	[NT]	[NT]	[NT]	06/09/2022	[NT]
Date analysed	-			06/09/2022	[NT]	[NT]	[NT]	[NT]	06/09/2022	[NT]
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	115	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	78	[NT]
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	84	[NT]
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	94	[NT]
4:2 FTS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	105	[NT]
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	93	[NT]
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	[NT]	[NT]	[NT]	[NT]	88	[NT]
10:2 FTS	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	98	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	94	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	101	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	80	[NT]	[NT]	[NT]	[NT]	69	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	87	[NT]	[NT]	[NT]	[NT]	70	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	87	[NT]	[NT]	[NT]	[NT]	75	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	89	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	84	[NT]	[NT]	[NT]	[NT]	70	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	79	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	81	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	78	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	77	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	77	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	80	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	79	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	72	[NT]	[NT]	[NT]	[NT]	51	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	141	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	139	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	153	[NT]	[NT]	[NT]	[NT]	116	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	70	[NT]	[NT]	[NT]	[NT]	53	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	114	[NT]

QUALITY CONTROL: PFAS in Waters Trace Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	78	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	115	[NT]	[NT]	[NT]	[NT]	88	[NT]

Result Definitions

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PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
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For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

PFAS: PQLs have been raised due to background levels of PFAS in the sample.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Ming To

From: Victor Arias <victor.arias@consultingearth.com.au>
Sent: Monday, 5 September 2022 3:14 PM
To: Simon Song
Cc: Ming To
Subject: RE: PFAS trace + ext analysis sample SD-1 Lab Ref 304142
Attachments: 304142-COC.pdf

Importance: High

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Ref: 304142-A
TAT: 1 day.
Due: 06/09/2022
MT

Sorry the lab reference is **304142 (COC attached)**

Thanks

Dr Victor Arias

Senior Environmental Scientist

CONSULTING EARTH SCIENTISTS

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ABN 67 161 524 757

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From: Victor Arias
Sent: Monday, 5 September 2022 3:11 PM
To: Simon Song <SSong@envirolab.com.au>
Cc: Ming To <MTo@envirolab.com.au>
Subject: PFAS trace + ext analysis sample SD-1 Lab Ref 304412
Importance: High

Hi Simon,

I just noticed I missed one PFAS analysis for one of the water samples for the Munmorah site.

Please request **PFAS trace, ext analysis for sample FB305** Lab Ref 304412 in **1 day turn around**. Thank you.

(13).

Cheers,

304142-A

Dr Victor Arias

Senior Environmental Scientist

CONSULTING EARTH SCIENTISTS

www.consultingearth.com.au

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CHAIN OF CUSTODY FORM - Client

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07 3266 9532 | brisbane@envirolab.com.au

Darwin Office - Envirolab Services
Unit 20/119 Reichardt Road, Winnellie, NT 0820
08 8987 1201 | darwin@envirolab.com.au

Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias	PO No. (if applicable):	
Project Mgr:	Tristan Goodbody	Envirolab Quote No. :	
Sampler:	VA/TRC	Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day	
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format: ☐ Esdat ☐ Equis	
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS Trench Soil	Combination 6 Combo	BTEX	PAH	TDS	Comments: Provide as much information about the sample as you can
1	BH-11		24/08/22	WATER	X	X	X			
2	TS						X			
3	TB				X		X			
4	FB				X	X	X			
5	QAQC 19				X	X				
-	QAQC 20				PLEASE FORWARD TO ALS FOR COMBO 6 and PFAS (Trench Soil)					
6	GS 502				X	X				
7	CS117				X	X				
8	FI110				X	X				
9	WTS03				X	X				
10	FB304				X	X				

Tests Required

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

Relinquished by (Company):	CES	Received by (Company):	ELI SYDNEY
Print Name:	VICTOR ARIAS	Print Name:	JOHN
Date & Time:	25/08/22 7:00pm	Date & Time:	26.8.22 1045
Signature:		Signature:	

Lab Use Only

Job number: 304142	Cooling: Ice / Ice pack / None
Temperature: 15	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

CHAIN OF CUSTODY FORM - Client

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ENVIROLAB GROUP
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08 9317 2505 | lab@mpl.com.au

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

Company:	CES - Consulting Earth Scientists	**Client Project Name/Number/Site etc (ie report title):**	CES170608-GPM
Contact Person:	Victor Arias	**PO No. (If applicable):**	
Project Mgr:	Tristan Goodbody	**Envirolab Quote No. :**	
Sampler:	VA/TG	**Date results required:**	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	**Or choose:**	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	Mob: 0439 261 637	*Note: Inform lab in advance if urgent turnaround is required - surcharges apply*	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	**Additional report format:**	☐ Esdat ☐ Equis
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	**Lab Comments:**	

Sample Information					Tests Required																Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS TRACE LOW CAT	Combination 6 Combo															Provide as much information about the sample as you can
11	FB301		24/08/22	WATER	X																
12	FB309		↓	↓	X																
13	FB305																				

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

Relinquished by (Company):	CES	**Received by (Company):**	
Print Name:	VICTOR ARIAS	**Print Name:**	
Date & Time:	25/08/22	**Date & Time:**	
Signature:		**Signature:**	

Lab Use Only

Job number: 304142	**Cooling:** Ice / Ice pack / None
Temperature:	**Security seal:** Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2230692**	Page	: 1 of 9
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 29-Aug-2022 16:15
Order number	: ----	Date Analysis Commenced	: 30-Aug-2022
C-O-C number	: ----	Issue Date	: 06-Sep-2022 10:11
Sampler	: VA AC		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC20	----	----	----	----
				Sampling date / time	24-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230692-001	--------	--------	--------	--------
					Result	----	----	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		**0.021**	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		**0.024**	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		**0.023**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
^ **Total Polychlorinated biphenyls**	----	1	µg/L		<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L		<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L		<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L		<2.0	----	----	----	----
^ **Total Chlordane (sum)**	----	0.5	µg/L		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC20	----	----	----	----
				Sampling date / time	24-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230692-001	--------	--------	--------	--------
					Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.5	µg/L		<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L		<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.5	µg/L		<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L		<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L		<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L		<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L		<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L		<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L		<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L		<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L		<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L		<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L		<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L		<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L		<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L		<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L		<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L		<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L		<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC20	----	----	----	----
				Sampling date / time	24-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230692-001	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC20	----	----	----	----
				Sampling date / time	24-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230692-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L		**0.0003**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L		<0.0005	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L		<0.002	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L		<0.0005	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L		<0.0005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L		<0.0005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L		<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC20	----	----	----	----
				Sampling date / time	24-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230692-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L		<0.001	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L		<0.001	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L		<0.0005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L		<0.0005	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L		<0.001	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L		<0.001	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L		<0.001	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L		<0.001	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0003	µg/L		**0.0003**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0003	µg/L		**0.0003**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0003	µg/L		**0.0003**	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		**82.6**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		**68.9**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		**70.5**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**20.8**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**48.9**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**44.9**	----	----	----	----
EP075(SIM)T: PAH Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQC20	----	----	----	----
				Sampling date / time	24-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230692-001	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	1.0	%		**59.1**	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		**74.9**	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		**76.3**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**94.8**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**97.3**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**90.2**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0005	%		**110**	----	----	----	----
13C8-PFOA	----	0.0005	%		**106**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	45	134
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2230692**	Page	: 1 of 12
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8569 2200	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 29-Aug-2022
Order number	: ----	Date Analysis Commenced	: 30-Aug-2022
C-O-C number	: ----	Issue Date	: 06-Sep-2022
Sampler	: VA AC		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 4554724)									
ES2230505-019	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.121	0.111	8.4	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.095	0.091	3.7	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.263	0.250	5.0	0% - 20%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.119	0.115	3.8	0% - 20%
ES2230690-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	7.94	6.91	13.9	0% - 20%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.296	0.296	0.0	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.257	0.222	14.8	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.016	0.010	42.6	0% - 50%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	1.83	1.77	3.5	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4554785)									
ES2230505-019	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2230769-006	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4548678)									
ES2230692-001	QAQC20	EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	<1	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 4548676)									
ES2230692-001	QAQC20	EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 4548676) - continued									
ES2230692-001	QAQC20	EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	<2.0	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4548676)									
ES2230692-001	QAQC20	EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	<2.0	0.0	No Limit
		EP068: Parathion	56-38-2	2	µg/L	<2.0	<2.0	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4548677)									
ES2230692-001	QAQC20	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4548677) - continued									
ES2230692-001	QAQC20	EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4548675)									
ES2230692-001	QAQC20	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4555225)									
ES2230692-001	QAQC20	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2230713-008	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4548675)									
ES2230692-001	QAQC20	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4555225)									
ES2230692-001	QAQC20	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2230713-008	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 4555225)									
ES2230692-001	QAQC20	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2230713-008	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 4555225) - continued									
ES2230713-008	Anonymous	EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4555648)									
EM2216744-001	Anonymous	EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	0.173	0.153	12.6	0% - 20%
		EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	0.0366	0.0360	1.7	0% - 20%
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	0.0228	0.0248	8.7	0% - 20%
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	0.197	0.174	12.0	0% - 20%
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	0.0082	0.0084	3.1	0% - 50%
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4555648)									
EM2216744-001	Anonymous	EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	0.0136	0.0156	13.5	0% - 20%
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	0.0133	0.0136	1.8	0% - 20%
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	0.0039	0.0037	4.6	No Limit
		EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	0.0149	0.0154	3.2	0% - 20%
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	0.057	0.062	7.5	0% - 20%
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4555648)									
EM2216744-001	Anonymous	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4555648) - continued									
EM2216744-001	Anonymous	EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	<0.001	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4555648)									
EM2216744-001	Anonymous	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	<0.001	0.0	No Limit
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	<0.001	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4555648)									
EM2216744-001	Anonymous	EP231X-ST: Sum of PFAS	----	0.0003	µg/L	0.540	0.506	6.5	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 4554724)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.1	82.0	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.4	84.0	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.5	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.0	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	92.5	85.0	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	88.8	84.0	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	91.4	79.0	117
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4554785)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.1	77.0	111
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4548678)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	87.5	68.9	113
EP068A: Organochlorine Pesticides (OC) (QCLot: 4548676)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	79.0	64.9	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	94.8	58.3	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	87.4	69.0	117
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	87.3	70.0	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	97.6	68.9	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	84.3	65.2	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	84.2	65.8	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	93.6	67.1	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	91.8	64.1	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	91.8	66.7	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	94.0	63.2	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	95.5	65.2	113
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	92.6	66.0	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	87.1	65.2	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	93.8	67.3	114
EP068: 4.4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	95.8	72.0	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	101	66.9	109
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	83.8	65.2	112
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	82.9	65.2	112
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	89.9	63.8	110
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	84.1	61.1	114
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4548676)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4548676) - continued								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	90.4	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	77.9	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	25.1	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	79.3	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	90.8	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	92.3	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	94.1	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	93.4	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	90.6	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	92.0	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	95.4	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	95.7	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	99.3	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	93.7	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	95.2	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	90.2	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	93.7	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	89.5	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	96.9	51.6	128
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4548677)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	69.3	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	81.1	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	69.9	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	86.4	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	99.8	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	93.9	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	86.0	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	84.9	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	78.1	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	86.0	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	80.8	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	80.3	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	79.7	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	72.1	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	71.9	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	71.1	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4548675)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	69.8	53.7	97.0

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4548675) - continued								
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	85.6	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	91.3	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4555225)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	93.9	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4548675)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	72.0	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	92.5	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	82.3	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4555225)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	93.1	75.0	127
EP080: BTEXN (QCLot: 4555225)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	97.1	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	97.6	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	98.4	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	97.6	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	102	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	109	70.0	120
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4555648)								
EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0005	µg/L	<0.0005	0.004 µg/L	92.8	50.0	130
EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0005	µg/L	<0.0005	0.004 µg/L	93.2	50.0	130
EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0005	µg/L	<0.0005	0.004 µg/L	86.4	50.0	130
EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0005	µg/L	<0.0005	0.004 µg/L	80.0	50.0	130
EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0003	µg/L	<0.0003	0.004 µg/L	98.4	50.0	130
EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0005	µg/L	<0.0005	0.004 µg/L	73.6	50.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4555648)								
EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.002	µg/L	<0.002	0.02 µg/L	89.3	30.0	130
EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0005	µg/L	<0.0005	0.004 µg/L	78.4	50.0	130
EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0005	µg/L	<0.0005	0.004 µg/L	119	50.0	130
EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0005	µg/L	<0.0005	0.004 µg/L	103	50.0	130
EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.0005	µg/L	<0.0005	0.004 µg/L	116	50.0	130
EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.0005	µg/L	<0.0005	0.004 µg/L	82.4	50.0	130
EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.0005	µg/L	<0.0005	0.004 µg/L	108	50.0	130
EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	108	40.0	130
EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0005	µg/L	<0.0005	0.004 µg/L	106	40.0	130
EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0005	µg/L	<0.0005	0.004 µg/L	90.4	40.0	130
EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	µg/L	<0.0005	0.01 µg/L	115	40.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4555648)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	LCS: Spike Recovery (%)	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4555648) - continued								
EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0005	µg/L	<0.0005	0.004 µg/L	84.8	40.0	130
EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.001	µg/L	<0.001	0.01 µg/L	107	40.0	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.001	µg/L	<0.001	0.01 µg/L	105	40.0	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.001	µg/L	<0.001	0.01 µg/L	78.7	40.0	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.001	µg/L	<0.001	0.01 µg/L	101	40.0	130
EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0005	µg/L	<0.0005	0.004 µg/L	80.0	40.0	130
EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0005	µg/L	<0.0005	0.004 µg/L	101	40.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4555648)								
EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.001	µg/L	<0.001	0.004 µg/L	86.0	50.0	130
EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.001	µg/L	<0.001	0.004 µg/L	94.4	50.0	130
EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.001	µg/L	<0.001	0.004 µg/L	90.8	50.0	130
EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.001	µg/L	<0.001	0.004 µg/L	120	50.0	130
EP231P: PFAS Sums (QCLot: 4555648)								
EP231X-ST: Sum of PFAS	----	0.0003	µg/L	<0.0003	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 4554724)							
ES2230505-020	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	70.2	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	95.6	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	101	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	90.0	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	88.6	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	87.7	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	90.0	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4554785)							
ES2230505-020	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	77.4	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4548678)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4548678) - continued							
WN2210660-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	10 µg/L	91.2	68.2	116
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4548677)							
WN2210660-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	88.8	70.0	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	91.0	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4548675)							
WN2210660-001	Anonymous	EP071: C10 - C14 Fraction	----	200 µg/L	105	70.0	130
		EP071: C15 - C28 Fraction	----	250 µg/L	106	71.0	130
		EP071: C29 - C36 Fraction	----	200 µg/L	110	67.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4555225)							
ES2230692-001	QAQC20	EP080: C6 - C9 Fraction	----	325 µg/L	94.2	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4548675)							
WN2210660-001	Anonymous	EP071: >C10 - C16 Fraction	----	250 µg/L	102	70.0	130
		EP071: >C16 - C34 Fraction	----	350 µg/L	93.9	75.0	130
		EP071: >C34 - C40 Fraction	----	150 µg/L	108	67.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4555225)							
ES2230692-001	QAQC20	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	92.1	70.0	130
EP080: BTEXN (QCLot: 4555225)							
ES2230692-001	QAQC20	EP080: Benzene	71-43-2	25 µg/L	90.0	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	89.1	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	96.1	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	95.7	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	99.2	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	115	70.0	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4555648)							
ES2230692-001	QAQC20	EP231X-ST: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.004 µg/L	103	50.0	130
		EP231X-ST: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.004 µg/L	100	50.0	130
		EP231X-ST: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.004 µg/L	87.2	50.0	130
		EP231X-ST: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.004 µg/L	87.2	50.0	130
		EP231X-ST: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.004 µg/L	104	50.0	130
		EP231X-ST: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.004 µg/L	69.6	30.0	130
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4555648)							
ES2230692-001	QAQC20	EP231X-ST: Perfluorobutanoic acid (PFBA)	375-22-4	0.02 µg/L	105	30.0	130
		EP231X-ST: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.004 µg/L	123	50.0	130
		EP231X-ST: Perfluorohexanoic acid (PFHxA)	307-24-4	0.004 µg/L	108	50.0	130
		EP231X-ST: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.004 µg/L	100	50.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4555648) - continued							
ES2230692-001	QAQC20	EP231X-ST: Perfluorooctanoic acid (PFOA)	335-67-1	0.004 µg/L	104	50.0	130
		EP231X-ST: Perfluorononanoic acid (PFNA)	375-95-1	0.004 µg/L	84.4	50.0	130
		EP231X-ST: Perfluorodecanoic acid (PFDA)	335-76-2	0.004 µg/L	108	50.0	130
		EP231X-ST: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.004 µg/L	120	30.0	130
		EP231X-ST: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.004 µg/L	103	30.0	130
		EP231X-ST: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.004 µg/L	79.6	30.0	130
		EP231X-ST: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.01 µg/L	121	30.0	130
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4555648)							
ES2230692-001	QAQC20	EP231X-ST: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.004 µg/L	96.0	30.0	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.01 µg/L	105	30.0	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.01 µg/L	107	30.0	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.01 µg/L	79.0	30.0	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.01 µg/L	96.8	30.0	130
		EP231X-ST: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.004 µg/L	92.0	30.0	130
		EP231X-ST: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.004 µg/L	96.8	30.0	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4555648)							
ES2230692-001	QAQC20	EP231X-ST: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.004 µg/L	80.4	50.0	130
		EP231X-ST: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.004 µg/L	87.6	50.0	130
		EP231X-ST: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.004 µg/L	78.0	50.0	130
		EP231X-ST: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.004 µg/L	119	50.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2230692**	Page	: 1 of 6
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 29-Aug-2022
Site	: ----	Issue Date	: 06-Sep-2022
Sampler	: VA AC	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	13	7.69	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Pesticides by GCMS	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)							
QAQC20	**24-Aug-2022**	**02-Sep-2022**	20-Feb-2023	✓	**02-Sep-2022**	20-Feb-2023	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
QAQC20	**24-Aug-2022**	**----**	----	----	**02-Sep-2022**	21-Sep-2022	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
QAQC20	**24-Aug-2022**	**30-Aug-2022**	31-Aug-2022	✓	**01-Sep-2022**	09-Oct-2022	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068)							
QAQC20	**24-Aug-2022**	**30-Aug-2022**	31-Aug-2022	✓	**01-Sep-2022**	09-Oct-2022	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068)							
QAQC20	**24-Aug-2022**	**30-Aug-2022**	31-Aug-2022	✓	**01-Sep-2022**	09-Oct-2022	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
QAQC20	**24-Aug-2022**	**30-Aug-2022**	31-Aug-2022	✓	**01-Sep-2022**	09-Oct-2022	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
QAQC20	**24-Aug-2022**	**30-Aug-2022**	31-Aug-2022	✓	**01-Sep-2022**	09-Oct-2022	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QAQC20	**24-Aug-2022**	**02-Sep-2022**	07-Sep-2022	✓	**02-Sep-2022**	07-Sep-2022	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
QAQC20	**24-Aug-2022**	**30-Aug-2022**	31-Aug-2022	✓	**01-Sep-2022**	09-Oct-2022	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QAQC20	**24-Aug-2022**	**02-Sep-2022**	07-Sep-2022	✓	**02-Sep-2022**	07-Sep-2022	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
QAQC20	**24-Aug-2022**	**02-Sep-2022**	07-Sep-2022	✓	**02-Sep-2022**	07-Sep-2022	✓
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST)							
QAQC20	**24-Aug-2022**	**05-Sep-2022**	20-Feb-2023	✓	**05-Sep-2022**	20-Feb-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-ST)							
QAQC20	**24-Aug-2022**	**05-Sep-2022**	20-Feb-2023	✓	**05-Sep-2022**	20-Feb-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-ST)							
QAQC20	**24-Aug-2022**	**05-Sep-2022**	20-Feb-2023	✓	**05-Sep-2022**	20-Feb-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-ST)							
QAQC20	**24-Aug-2022**	**05-Sep-2022**	20-Feb-2023	✓	**05-Sep-2022**	20-Feb-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-ST)							
QAQC20	**24-Aug-2022**	**05-Sep-2022**	20-Feb-2023	✓	**05-Sep-2022**	20-Feb-2023	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	13	**7.69**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X-ST	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

CHAIN OF CUSTODY FORM - Client

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Company:	CES - Consulting Earth Scientists	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM
Contact Person:	Victor Arias		
Project Mgr:	Tristan Goodbody	PO No. (if applicable):	
Sampler:	VA/TG/C	Envirolab Quote No.:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Date results required: Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day	
Phone:	Mob: 0439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au	Additional report format: ☐ Esdat ☐ Equis	
Email Invoice to:	tristan.goodbody@consultingearth.com.au; victor.arias@consultingearth.com.au; kay.lowe@consultingearth.com.au	Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS (Trace Level)	Combination 6 Combo	BTEX	PAH	TDS												Provide as much information about the sample as you can
1	RIN-11		29/08/22	WATER	X	X	X														
2	TS						X														
3	TB				X	X	X														
4	FB				X	X	X														
5	QAQC 19				X	X															
(1)	QAQC 20				PLEASE FORWARD TO ALS FOR COMBO 6 and PFAS (trace level)																
6	GS 502				X	X															
7	CS117				X	X															
8	FI710				X	X															
9	WTS03				X	X															
10	FB304				X																

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

Relinquished by (Company):	CES	Received by (Company):	ELS SYDNEY
Print Name:	VICTOR ARIAS	Print Name:	JOHN
Date & Time:	25/08/22 7:00pm	Date & Time:	26.8.22 1045
Signature:		Signature:	

Lab Use Only

Job number: 304142	Cooling: Ice / Ice pack / None
Temperature: 15	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Relinquished by ELS Sydney,
C Rossman 29/08/22 1200

Rec: J Cle 29/08/22 1515

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CERTIFICATE OF ANALYSIS 304214

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias, Tristan Goodbody
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM-DI**
Number of Samples	8 Water
Date samples received	26/08/2022
Date completed instructions received	26/08/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	02/09/2022
Date of Issue	02/09/2022

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Results Approved By
Giovanni Agosti, Group Technical Manager
Josh Williams, Organics and LC Supervisor
Phalak Inthakesone, Organics Development Manager, Sydney
Steven Luong, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in Waters Trace Extended						
Our Reference		304214-1	304214-3	304214-4	304214-5	304214-6
Your Reference	UNITS	RIN12	TB	FB	FB306	FB309
Date Sampled		25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	01/09/2022	01/09/2022	01/09/2022	01/09/2022	01/09/2022
Date analysed	-	01/09/2022	01/09/2022	01/09/2022	01/09/2022	01/09/2022
Perfluorobutanesulfonic acid	µg/L	<0.0004	<0.0004	<0.0004	0.89	0.0062
Perfluoropentanesulfonic acid	µg/L	<0.001	<0.001	<0.001	1.3	0.004
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.0002	<0.0002	<0.0002	17	0.023
Perfluoroheptanesulfonic acid	µg/L	<0.001	<0.001	<0.001	1.1	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	<0.0002	<0.0002	<0.0002	18	0.013
Perfluorodecanesulfonic acid	µg/L	<0.002	<0.002	<0.002	<0.020	<0.002
Perfluorobutanoic acid	µg/L	<0.002	<0.002	<0.002	0.32	0.025
Perfluoropentanoic acid	µg/L	<0.002	<0.002	<0.002	1.4	0.046
Perfluorohexanoic acid	µg/L	<0.0004	<0.0004	<0.0004	3.2	0.026
Perfluoroheptanoic acid	µg/L	<0.0004	<0.0004	<0.0004	0.60	0.0083
Perfluorooctanoic acid PFOA	µg/L	<0.0002	<0.0002	<0.0002	1.3	0.0038
Perfluorononanoic acid	µg/L	<0.001	<0.001	<0.001	4.1	0.003
Perfluorodecanoic acid	µg/L	<0.002	<0.002	<0.002	<0.02	<0.002
Perfluoroundecanoic acid	µg/L	<0.002	<0.002	<0.002	<0.02	<0.002
Perfluorododecanoic acid	µg/L	<0.005	<0.005	<0.005	<0.05	<0.005
Perfluorotridecanoic acid	µg/L	<0.01	<0.01	<0.01	<0.1	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.5	<0.05
4:2 FTS	µg/L	<0.001	<0.001	<0.001	<0.01	<0.001
6:2 FTS	µg/L	<0.0004	<0.0004	<0.0004	4.3	0.0046
8:2 FTS	µg/L	<0.0004	<0.0004	<0.0004	0.026	<0.0004
10:2 FTS	µg/L	<0.002	<0.002	<0.002	<0.02	<0.002
Perfluorooctane sulfonamide	µg/L	<0.01	<0.01	<0.01	<0.1	<0.01
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.02	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002	<0.002	<0.02	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	96	99	96	104	97
Surrogate $^{13}C_2$ *PFOA*	%	104	99	97	100	110
Extracted ISTD $^{13}C_3$ *PFBS*	%	96	100	97	100	70
Extracted ISTD $^{18}O_2$ *PFHxS*	%	94	94	98	100	102
Extracted ISTD $^{13}C_4$ *PFOS*	%	107	103	103	102	90
Extracted ISTD $^{13}C_4$ *PFBA*	%	132	132	135	102	103

PFAS in Waters Trace Extended						
Our Reference		304214-1	304214-3	304214-4	304214-5	304214-6
Your Reference	UNITS	RIN12	TB	FB	FB306	FB309
Date Sampled		25/08/2022	25/08/2022	25/08/2022	25/08/2022	25/08/2022
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	92	92	92	106	50
Extracted ISTD $^{13}C_2$ *PFHxA*	%	118	116	120	98	90
Extracted ISTD $^{13}C_4$ *PFHpA*	%	108	108	105	92	110
Extracted ISTD $^{13}C_4$ *PFOA*	%	105	106	110	98	100
Extracted ISTD $^{13}C_5$ *PFNA*	%	99	106	101	93	110
Extracted ISTD $^{13}C_2$ *PFDA*	%	109	112	112	106	111
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	106	109	102	104	101
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	110	114	106	108	82
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	90	93	78	89	65
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	101	101	103	99	173
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	99	96	99	99	#
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	97	103	100	111	177
Extracted ISTD $^{13}C_8$ *FOSA*	%	67	69	68	107	67
Extracted ISTD d_3 *N MeFOSA*	%	106	105	106	106	102
Extracted ISTD d_5 *N EtFOSA*	%	108	106	108	107	106
Extracted ISTD d_7 *N MeFOSE*	%	105	105	108	101	103
Extracted ISTD d_9 *N EtFOSE*	%	109	108	114	114	108
Extracted ISTD d_3 *N MeFOSAA*	%	110	117	110	105	130
Extracted ISTD d_5 *N EtFOSAA*	%	129	131	123	113	86
Total Positive PFHxS & PFOS	µg/L	<0.0002	<0.0002	<0.0002	34	0.036
Total Positive PFOS & PFOA	µg/L	<0.0002	<0.0002	<0.0002	19	0.017
Total Positive PFAS	µg/L	<0.0002	<0.0002	<0.0002	53	0.16

PFAS in Waters Trace Extended		
Our Reference		304214-7
Your Reference	UNITS	QAQC21
Date Sampled		25/08/2022
Type of sample		Water
Date prepared	-	01/09/2022
Date analysed	-	01/09/2022
Perfluorobutanesulfonic acid	µg/L	0.28
Perfluoropentanesulfonic acid	µg/L	0.26
Perfluorohexanesulfonic acid - PFHxS	µg/L	1.0
Perfluoroheptanesulfonic acid	µg/L	0.23
Perfluorooctanesulfonic acid PFOS	µg/L	8.8
Perfluorodecanesulfonic acid	µg/L	0.029
Perfluorobutanoic acid	µg/L	0.026
Perfluoropentanoic acid	µg/L	0.035
Perfluorohexanoic acid	µg/L	0.066
Perfluoroheptanoic acid	µg/L	0.021
Perfluorooctanoic acid PFOA	µg/L	0.037
Perfluorononanoic acid	µg/L	<0.01
Perfluorodecanoic acid	µg/L	<0.02
Perfluoroundecanoic acid	µg/L	<0.02
Perfluorododecanoic acid	µg/L	<0.05
Perfluorotridecanoic acid	µg/L	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5
4:2 FTS	µg/L	<0.01
6:2 FTS	µg/L	4.0
8:2 FTS	µg/L	0.86
10:2 FTS	µg/L	0.29
Perfluorooctane sulfonamide	µg/L	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	104
Surrogate $^{13}C_2$ *PFOA*	%	100
Extracted ISTD $^{13}C_3$ *PFBS*	%	95
Extracted ISTD $^{18}O_2$ *PFHxS*	%	101
Extracted ISTD $^{13}C_4$ *PFOS*	%	99
Extracted ISTD $^{13}C_4$ *PFBA*	%	98

PFAS in Waters Trace Extended		
Our Reference	UNITS	304214-7
Your Reference		QAQC21
Date Sampled		25/08/2022
Type of sample		Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	104
Extracted ISTD $^{13}C_2$ *PFHxA*	%	99
Extracted ISTD $^{13}C_4$ *PFHpA*	%	102
Extracted ISTD $^{13}C_4$ *PFOA*	%	100
Extracted ISTD $^{13}C_5$ *PFNA*	%	97
Extracted ISTD $^{13}C_2$ *PFDA*	%	86
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	78
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	80
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	103
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	104
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	128
Extracted ISTD $^{13}C_8$ *FOSA*	%	87
Extracted ISTD d_3 *N MeFOSA*	%	95
Extracted ISTD d_5 *N EtFOSA*	%	83
Extracted ISTD d_7 *N MeFOSE*	%	104
Extracted ISTD d_9 *N EtFOSE*	%	93
Extracted ISTD d_3 *N MeFOSAA*	%	69
Extracted ISTD d_5 *N EtFOSAA*	%	111
Total Positive PFHxS & PFOS	µg/L	9.8
Total Positive PFOS & PFOA	µg/L	8.8
Total Positive PFAS	µg/L	16

vTRH(C6-C10)/BTEXN in Water					
Our Reference	UNITS	304214-1	304214-2	304214-3	304214-4
Your Reference		RIN12	TS	TB	FB
Date Sampled		25/08/2022	25/08/2022	25/08/2022	25/08/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	30/08/2022	30/08/2022	30/08/2022	30/08/2022
Date analysed	-	31/08/2022	31/08/2022	31/08/2022	31/08/2022
TRH C_6 - C_9	µg/L	<10	[NA]	<10	<10
TRH C_6 - C_{10}	µg/L	<10	[NA]	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	[NA]	<10	<10
Benzene	µg/L	<1	112%	<1	<1
Toluene	µg/L	<1	104%	<1	<1
Ethylbenzene	µg/L	<1	110%	<1	<1
m+p-xylene	µg/L	<2	104%	<2	<2
o-xylene	µg/L	<1	106%	<1	<1
Naphthalene	µg/L	<1	[NA]	<1	<1
Surrogate Dibromofluoromethane	%	101	108	106	102
Surrogate toluene-d8	%	95	100	95	95
Surrogate 4-BFB	%	94	93	95	96

svTRH (C10-C40) in Water			
Our Reference	UNITS	304214-1	304214-4
Your Reference		RIN12	FB
Date Sampled		25/08/2022	25/08/2022
Type of sample		Water	Water
Date extracted	-	31/08/2022	31/08/2022
Date analysed	-	01/09/2022	01/09/2022
TRH C_{10} - C_{14}	µg/L	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50
TRH >C_{10} - C_{16}	µg/L	54	54
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	54	54
TRH >C_{16} - C_{34}	µg/L	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100
Total +ve TRH (>C10-C40)	µg/L	50	50
Surrogate o-Terphenyl	%	87	78

PAHs in Water - Low Level			
Our Reference	UNITS	304214-1	304214-4
Your Reference		RIN12	FB
Date Sampled		25/08/2022	25/08/2022
Type of sample		Water	Water
Date extracted	-	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022
Naphthalene	µg/L	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	77	66

Organochlorine Pesticides in Water			
Our Reference	UNITS	304214-1	304214-4
Your Reference		RIN12	FB
Date Sampled		25/08/2022	25/08/2022
Type of sample		Water	Water
Date extracted	-	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022
alpha-BHC	µg/L	<0.2	<0.2
HCB	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Surrogate TCMX	%	78	66

OP Pesticides in Water			
Our Reference	UNITS	304214-1	304214-4
Your Reference		RIN12	FB
Date Sampled		25/08/2022	25/08/2022
Type of sample		Water	Water
Date extracted	-	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022
Dichlorvos	µg/L	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2
Surrogate TCMX	%	78	66

PCBs in Water			
Our Reference		304214-1	304214-4
Your Reference	UNITS	RIN12	FB
Date Sampled		25/08/2022	25/08/2022
Type of sample		Water	Water
Date extracted	-	31/08/2022	31/08/2022
Date analysed	-	31/08/2022	31/08/2022
Aroclor 1016	µg/L	<2	<2
Aroclor 1221	µg/L	<2	<2
Aroclor 1232	µg/L	<2	<2
Aroclor 1242	µg/L	<2	<2
Aroclor 1248	µg/L	<2	<2
Aroclor 1254	µg/L	<2	<2
Aroclor 1260	µg/L	<2	<2
Surrogate TCMX	%	78	66

HM in water - dissolved			
Our Reference		304214-1	304214-4
Your Reference	UNITS	RIN12	FB
Date Sampled		25/08/2022	25/08/2022
Type of sample		Water	Water
Date prepared	-	30/08/2022	30/08/2022
Date analysed	-	30/08/2022	30/08/2022
Arsenic-Dissolved	µg/L	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	<1	<1
Lead-Dissolved	µg/L	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	<1
Zinc-Dissolved	µg/L	<1	<1

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	304214-6
Date prepared	-			01/09/2022	5	01/09/2022	01/09/2022		01/09/2022	01/09/2022
Date analysed	-			01/09/2022	5	01/09/2022	01/09/2022		01/09/2022	01/09/2022
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	5	0.89	0.90	1	111	126
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	5	1.3	1.3	0	120	102
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	5	17	17	0	103	82
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	5	1.1	1.1	0	113	96
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	5	18	18	0	114	96
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	5	<0.020	<0.020	0	90	78
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	5	0.32	0.33	3	103	102
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	5	1.4	1.5	7	109	116
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	5	3.2	3.1	3	103	77
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	5	0.60	0.59	2	108	104
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	5	1.3	1.3	0	103	106
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	5	4.1	4.0	2	113	105
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	5	<0.02	<0.02	0	106	86
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	5	<0.02	<0.02	0	100	91
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	5	<0.05	<0.05	0	105	99
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	5	<0.1	<0.1	0	107	98
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	5	<0.5	<0.5	0	108	101
4:2 FTS	µg/L	0.001	Org-029	<0.001	5	<0.01	0.011	10	106	89
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	5	4.3	4.3	0	107	95
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	5	0.026	0.027	4	114	109
10:2 FTS	µg/L	0.002	Org-029	<0.002	5	<0.02	<0.02	0	106	98
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	5	<0.1	<0.1	0	106	113
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	5	<0.05	<0.05	0	104	100
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	5	<0.1	<0.1	0	97	97
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	5	<0.05	<0.05	0	108	121
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	5	<0.5	<0.5	0	104	102
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	5	<0.02	<0.02	0	116	91
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	5	<0.02	<0.02	0	106	114
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	102	5	104	100	4	101	102
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	103	5	100	99	1	102	115

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	304214-6
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	96	5	100	100	0	93	69
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	99	5	100	102	2	92	104
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	103	5	102	103	1	91	86
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	129	5	102	102	0	129	20
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	94	5	106	104	2	90	51
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	116	5	98	101	3	114	93
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	114	5	92	91	1	108	110
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	116	5	98	99	1	109	99
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	113	5	93	94	1	105	107
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	120	5	106	107	1	107	124
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	109	5	104	115	10	100	99
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	104	5	108	112	4	102	74
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	70	5	89	96	8	83	66
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	101	5	99	101	2	99	#
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	102	5	99	100	1	98	#
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	110	5	111	115	4	90	#
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	77	5	107	107	0	71	64
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	105	5	106	108	2	105	106
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	109	5	107	109	2	105	103
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	107	5	101	108	7	103	105

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	304214-6
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	112	5	114	113	1	106	107
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	120	5	105	116	10	107	128
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	142	5	113	121	7	128	92

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			30/08/2022	[NT]	[NT]	[NT]	[NT]	30/08/2022	[NT]
Date analysed	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	108	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	108	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	109	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-023	95	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Date analysed	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
Surrogate o-Terphenyl	%		Org-020	95	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Date analysed	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	81	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	79	[NT]	[NT]	[NT]	[NT]	79	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Date analysed	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	91	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	77	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	72	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	81	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Date analysed	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	83	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	73	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	107	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	68	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	81	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Date analysed	-			31/08/2022	[NT]	[NT]	[NT]	[NT]	31/08/2022	[NT]
Aroclor 1016	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	112	[NT]
Aroclor 1260	µg/L	2	Org-021	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	81	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date prepared	-			30/08/2022	4	30/08/2022	30/08/2022		30/08/2022	[NT]
Date analysed	-			30/08/2022	4	30/08/2022	30/08/2022		30/08/2022	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	99	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	4	<0.1	<0.1	0	98	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	98	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	98	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	97	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	4	<0.05	[NT]		101	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	98	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	98	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

The positive result in the rinsate sample is due to a single peak with no hydrocarbon profile that is consistent with the use of plastic containers.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

PFAS: Samples 5 and 7 required dilution due to background levels of PFAS in the samples. PQLs have been adjusted accordingly.

CHAIN OF CUSTODY FORM - Client

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Company:	CES	Client Project Name/Number/Site etc (ie report title):	CES170608-GPM-DI
Contact Person:	Victor Arias		
Project Mgr:	Tristan Goodbody	PO No. (if applicable):	
Sampler:	VA	Envirolab Quote No. :	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073	Date results required: Or choose: ☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day	
Phone:	0 2 49654782 Mob: 439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	victor.arias@consultingearth.com.au; tristan.goodbody@conslutingearth.com.au	Additional report format: ☑ Esdat ☐ Equis	
Email Invoice to:	kay.lowe@consultingearth.com.au	Lab Comments:	

Sample Information					Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS (12 or 28)	Asbestos AF/FA Analysis (NEPMWA	Combination 6	BTEX	TRH	PAH												Provide as much information about the sample as you can
1	RINSE		25/8/22	WATER	X		X	X														
2	TS		↓	↓																		
3	TB				X			X														
4	FB				X		X	X														
5	FB306				X				1													
6	FB309				X																	
7	QAQC21 TS																					
8	QAQC22 TS																					

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

Relinquished by (Company):	CES	Received by (Company):	ECS SYDNEY
Print Name:	VICTOR ARIAS	Print Name:	JOHN
Date & Time:	26/8/22 5:15pm	Date & Time:	26-8-22 1735
Signature:		Signature:	1735

Lab Use Only	
Job number: 304214	Cooling: Ice / Ice pack / None
Temperature: 7.	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2230695**	Page	: 1 of 5
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: MR VICTOR ARIAS	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM-DI	Date Samples Received	: 29-Aug-2022 16:15
Order number	: ----	Date Analysis Commenced	: 30-Aug-2022
C-O-C number	: ----	Issue Date	: 02-Sep-2022 16:21
Sampler	: VICTOR ARIAS		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQA22	----	----	----	----
				Sampling date / time	25-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230695-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.03**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.01**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		**0.02**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QAQA22	----	----	----	----
				Sampling date / time	25-Aug-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2230695-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		**0.06**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		**0.04**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		**0.06**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**98.2**	----	----	----	----
13C8-PFOA	----	0.02	%		**107**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2230695**	Page	: 1 of 7
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: MR VICTOR ARIAS	Contact	: Customer Services ES
Address	: Suite 3, Level 1 55-65 Grandview Street PYMBLE NSW, AUSTRALIA 2073	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM-DI	Date Samples Received	: 29-Aug-2022
Order number	: ----	Date Analysis Commenced	: 30-Aug-2022
C-O-C number	: ----	Issue Date	: 02-Sep-2022
Sampler	: VICTOR ARIAS		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4552386)									
EP2210898-009	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.18	0.19	9.3	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.11	0.12	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2230652-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4552386)									
EP2210898-009	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.20	0.20	0.0	0% - 50%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.12	0.12	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	0.15	0.15	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 4552386) - continued									
ES2230652-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 4552386)									
EP2210898-009	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2230652-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4552386)									
EP2210898-009	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 4552386) - continued									
EP2210898-009	Anonymous	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2230652-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 4552386)									
EP2210898-009	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.88	0.90	2.2	0% - 20%
ES2230652-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4552386)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	90.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	119	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	102	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	100	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4552386)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	107	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	99.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	112	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	116	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	78.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	123	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	107	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	118	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4552386)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	99.4	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	114	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	120	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	125	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4552386)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	106	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	104	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	123	67.0	138

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4552386) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	97.4	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4552386)							
ES2230130-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	# Not Determined	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	# Not Determined	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	# Not Determined	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	# Not Determined	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	99.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4552386)							
ES2230130-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	111	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	# Not Determined	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	106	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	# Not Determined	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.8	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	117	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	106	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	111	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	102	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	118	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4552386)							
ES2230130-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	82.0	67.0	137

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4552386) - continued							
ES2230130-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	97.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	113	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	87.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	88.8	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	117	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4552386)							
ES2230130-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	85.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	93.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	98.2	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	74.0	71.4	144

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2230695**	Page	: 1 of 5
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: MR VICTOR ARIAS	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM-DI	Date Samples Received	: 29-Aug-2022
Site	: ----	Issue Date	: 02-Sep-2022
Sampler	: VICTOR ARIAS	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2230130--001	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2230130--001	Anonymous	**Perfluoropentane sulfonic acid (PFPeS)**	2706-91-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2230130--001	Anonymous	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2230130--001	Anonymous	**Perfluoroheptane sulfonic acid (PFHpS)**	375-92-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2230130--001	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ES2230130--001	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ES2230130--001	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ES2230130--001	Anonymous	**Perfluorooctanoic acid (PFOA)**	335-67-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
QAQA22	**25-Aug-2022**	**01-Sep-2022**	21-Feb-2023	✓	**01-Sep-2022**	21-Feb-2023	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
QAQA22	**25-Aug-2022**	**01-Sep-2022**	21-Feb-2023	✓	**01-Sep-2022**	21-Feb-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
QAQA22	**25-Aug-2022**	**01-Sep-2022**	21-Feb-2023	✓	**01-Sep-2022**	21-Feb-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
QAQA22	**25-Aug-2022**	**01-Sep-2022**	21-Feb-2023	✓	**01-Sep-2022**	21-Feb-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
QAQA22	**25-Aug-2022**	**01-Sep-2022**	21-Feb-2023	✓	**01-Sep-2022**	21-Feb-2023	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

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29/08/22 1200

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Brisban 20a, 10-2 07 32

Environmental Division
Sydney
Work Order Reference
ES2230695

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Company:	CES			Client Project Name/Number/Site etc (ie report title):	CES170608-GPM-DI
Contact Person:	Victor Arias			PO No. (if applicable):	
Project Mgr:	Tristan Goodbody			Envirolab Quote No.:	
Sampler:	VA			Date results required:	
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073			Or choose:	☑ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day
Phone:	0 2 49654782	Mob:	439 261 637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
Email Results to:	victor.arias@consultingearth.com.au; tristan.goodbody@consultingearth.com.au			Additional report format:	☑ Esdat ☐ Equis
Email Invoice to:	kay.lowe@consultingearth.com.au			Lab Comments:	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS (72 analytes)	Asbestos in Fines Analysis (NEPM/WA)	Combination 6.2	BTEX	TRH	PAH	Comments
1	RINSE		25/8/22	WATER	X		X	X			
2	TS										
3	TB				X			X			
4	EB				X		X	X			
5	EB306				X						
6	EB309				X						
7	QAQC21 TD										
(1) B	QAQC22 TS										

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

Relinquished by (Company):	CES	Received by (Company):	ES SYDNEY
Print Name:	VICTOR ARIAS	Print Name:	JOHN
Date & Time:	26/8/22 5:15pm	Date & Time:	26-8-22 1735
Signature:		Signature:	1735

Lab Use Only

Job number: 302214	Cooling: Ice / Ice pack / None
Temperature: 7.	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Rec: J Cha 29/08/22 1615

Relinquished by ALS Sydney, Crossman
29/08/22 1200

Login

From: Geoff Weir
Sent: Monday, 29 August 2022 9:20 AM
To: Poonam Raj; Login
Subject: FW: 304214 - CES170608-GPM-DI

From: Victor Arias <victor.arias@consultingearth.com.au>
Sent: Monday, 29 August 2022 8:55 AM
To: Geoff Weir <GWeir@envirolab.com.au>; Tristan Goodbody <tristan.goodbody@consultingearth.com.au>
Cc: Simon Song <SSong@envirolab.com.au>
Subject: RE: 304214 - CES170608-GPM-DI

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Hi Geoff,

Please include both samples in COC and analyse **QAQC21 for PFAS trace and extended and:**

- **QAQC22 → Please forward to ALS for PFAS trace and extended analysis.**

Thank you.

Cheers,

Dr Victor Arias

Senior Environmental Scientist

CONSULTING EARTH SCIENTISTS

www.consultingearth.com.au

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Newcastle, Hunter & NSW North Coast
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Newcastle West, NSW 2302

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ABN 67 151 524 767

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Rec: J C 29/08/22 1615

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 302351-B

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	additional analysis
Date samples received	05/08/2022
Date completed instructions received	26/09/2022

Analysis Details

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

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

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

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

Report Details

Date results requested by	04/10/2022
Date of Issue	30/09/2022

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Results Approved By
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in Soils Extended				
Our Reference		302351-B-1	302351-B-3	302351-B-18
Your Reference	UNITS	A4410	A4414	A4403
Depth		0-0.1	0-0.1	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil
Date prepared	-	29/09/2022	29/09/2022	29/09/2022
Date analysed	-	29/09/2022	29/09/2022	29/09/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1	<0.1	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.5	<0.1	0.2
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	0.1	<0.1	0.2
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorododecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	<5	<5	<5
4:2 FTS	µg/kg	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	1.2	<0.1	0.6
8:2 FTS	µg/kg	2.1	<0.2	0.3
10:2 FTS	µg/kg	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1	<1	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1	<1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1	<1	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2	<0.2	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2	<0.2	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	95	100	101
Surrogate $^{13}C_2$ *PFOA*	%	100	102	99
Extracted ISTD $^{13}C_3$ *PFBS*	%	95	98	98
Extracted ISTD $^{18}O_2$ *PFHxS*	%	97	96	95
Extracted ISTD $^{13}C_4$ *PFOS*	%	105	98	102

PFAS in Soils Extended				
Our Reference		302351-B-1	302351-B-3	302351-B-18
Your Reference	UNITS	A4410	A4414	A4403
Depth		0-0.1	0-0.1	0-0.1
Date Sampled		4/08/2022	4/08/2022	4/08/2022
Type of sample		Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	106	104	100
Extracted ISTD $^{13}C_3$ *PFPeA*	%	96	96	95
Extracted ISTD $^{13}C_2$ *PFHxA*	%	104	98	99
Extracted ISTD $^{13}C_4$ *PFHpA*	%	99	95	92
Extracted ISTD $^{13}C_4$ *PFOA*	%	111	99	104
Extracted ISTD $^{13}C_5$ *PFNA*	%	105	94	95
Extracted ISTD $^{13}C_2$ *PFDA*	%	113	102	99
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	124	104	101
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	128	111	108
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	122	111	108
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	102	94	91
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	123	102	114
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	152	109	100
Extracted ISTD $^{13}C_8$ *FOSA*	%	102	105	103
Extracted ISTD d_3 *N MeFOSA*	%	110	104	106
Extracted ISTD d_5 *N EtFOSA*	%	109	101	104
Extracted ISTD d_7 *N MeFOSE*	%	101	98	101
Extracted ISTD d_9 *N EtFOSE*	%	101	96	102
Extracted ISTD d_3 *N MeFOSAA*	%	137	102	89
Extracted ISTD d_5 *N EtFOSAA*	%	138	99	99
Total Positive PFHxS & PFOS	µg/kg	0.5	<0.1	0.2
Total Positive PFOS & PFOA	µg/kg	0.6	<0.1	0.2
Total Positive PFAS	µg/kg	4.0	<0.1	1.2

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			29/09/2022	18	29/09/2022	29/09/2022		29/09/2022	[NT]
Date analysed	-			29/09/2022	18	29/09/2022	29/09/2022		29/09/2022	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	18	<0.1	<0.1	0	108	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	18	<0.1	<0.1	0	100	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	18	<0.1	<0.1	0	99	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	18	<0.1	<0.1	0	97	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	18	0.2	0.2	0	96	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	18	<0.2	<0.2	0	87	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	18	<0.2	<0.2	0	100	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	18	<0.2	0.2	0	104	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	18	0.2	0.2	0	104	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	18	<0.1	<0.1	0	105	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	18	<0.1	<0.1	0	97	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	18	<0.1	<0.1	0	120	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	18	<0.5	<0.5	0	112	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	18	<0.5	<0.5	0	94	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	18	<0.5	<0.5	0	102	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	18	<0.5	<0.5	0	93	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	18	<5	<5	0	103	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	18	<0.1	<0.1	0	104	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	18	0.6	0.9	40	92	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	18	0.3	0.4	29	113	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	18	<0.2	<0.2	0	107	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	18	<1	<1	0	104	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	18	<1	<1	0	103	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	18	<1	<1	0	100	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	18	<1	<1	0	106	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	18	<5	<5	0	91	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	18	<0.2	<0.2	0	96	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	18	<0.2	<0.2	0	103	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	96	18	101	94	7	91	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	107	18	99	100	1	100	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	99	18	98	95	3	97	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	101	18	95	94	1	104	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	104	18	102	110	8	110	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	103	18	100	98	2	104	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	89	18	95	92	3	94	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	96	18	99	96	3	102	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	95	18	92	95	3	101	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	98	18	104	99	5	102	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	95	18	95	95	0	98	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	101	18	99	98	1	100	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	101	18	101	108	7	109	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	102	18	108	108	0	103	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	108	18	108	107	1	106	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	87	18	91	84	8	95	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	85	18	114	104	9	105	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	88	18	100	108	8	94	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	101	18	103	102	1	101	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	107	18	106	104	2	104	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	106	18	104	103	1	103	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	100	18	101	97	4	98	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	99	18	102	96	6	98	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	84	18	89	97	9	104	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	88	18	99	102	3	101	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 302819-A

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias
Address	Suite 3, Level 1, 55 Grandview Street, Pymble, NSW, 2073

Sample Details

Your Reference	**CES170608-GPM**
Number of Samples	additional analysis
Date samples received	11/08/2022
Date completed instructions received	26/09/2022

Analysis Details

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

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

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

Report Details

Date results requested by	04/10/2022
Date of Issue	30/09/2022

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Results Approved By
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in Soils Extended		
Our Reference		302819-A-8
Your Reference	UNITS	A407
Depth		3-3.1
Date Sampled		9/08/2022
Type of sample		Soil
Date prepared	-	29/09/2022
Date analysed	-	29/09/2022
Perfluorobutanesulfonic acid	µg/kg	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.9
Perfluorodecanesulfonic acid	µg/kg	<0.2
Perfluorobutanoic acid	µg/kg	0.8
Perfluoropentanoic acid	µg/kg	4.1
Perfluorohexanoic acid	µg/kg	2.1
Perfluoroheptanoic acid	µg/kg	2.3
Perfluorooctanoic acid PFOA	µg/kg	0.8
Perfluorononanoic acid	µg/kg	0.1
Perfluorodecanoic acid	µg/kg	<0.5
Perfluoroundecanoic acid	µg/kg	<0.5
Perfluorododecanoic acid	µg/kg	<0.5
Perfluorotridecanoic acid	µg/kg	<0.5
Perfluorotetradecanoic acid	µg/kg	<5
4:2 FTS	µg/kg	<0.1
6:2 FTS	µg/kg	13
8:2 FTS	µg/kg	0.3
10:2 FTS	µg/kg	<0.2
Perfluorooctane sulfonamide	µg/kg	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	<1
N-Ethyl perfluorooctanesulfon amide	µg/kg	<1
N-Me perfluorooctanesulfonamid oethanol	µg/kg	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5
MePerfluorooctanesulf- amid oacetic acid	µg/kg	<0.2
EtPerfluorooctanesulf amid oacetic acid	µg/kg	<0.2
Surrogate $^{13}C_8$ *PFOS*	%	101
Surrogate $^{13}C_2$ *PFOA*	%	94
Extracted ISTD $^{13}C_3$ *PFBS*	%	102
Extracted ISTD $^{18}O_2$ *PFHxS*	%	103
Extracted ISTD $^{13}C_4$ *PFOS*	%	109

PFAS in Soils Extended		
Our Reference		302819-A-8
Your Reference	UNITS	A407
Depth		3-3.1
Date Sampled		9/08/2022
Type of sample		Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	104
Extracted ISTD $^{13}C_3$ *PFPeA*	%	101
Extracted ISTD $^{13}C_2$ *PFHxA*	%	101
Extracted ISTD $^{13}C_4$ *PFHpA*	%	98
Extracted ISTD $^{13}C_4$ *PFOA*	%	108
Extracted ISTD $^{13}C_5$ *PFNA*	%	101
Extracted ISTD $^{13}C_2$ *PFDA*	%	108
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	113
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	119
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	118
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	94
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	112
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	122
Extracted ISTD $^{13}C_8$ *FOSA*	%	103
Extracted ISTD d_3 *N MeFOSA*	%	104
Extracted ISTD d_5 *N EtFOSA*	%	101
Extracted ISTD d_7 *N MeFOSE*	%	98
Extracted ISTD d_9 *N EtFOSE*	%	100
Extracted ISTD d_3 *N MeFOSAA*	%	87
Extracted ISTD d_5 *N EtFOSAA*	%	91
Total Positive PFHxS & PFOS	µg/kg	0.9
Total Positive PFOS & PFOA	µg/kg	1.7
Total Positive PFAS	µg/kg	24

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			29/09/2022	[NT]	[NT]	[NT]	[NT]	29/09/2022	[NT]
Date analysed	-			29/09/2022	[NT]	[NT]	[NT]	[NT]	29/09/2022	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	87	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	120	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	94	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	102	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	103	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	113	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	[NT]	[NT]	[NT]	[NT]	91	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	96	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	91	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	110	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	89	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	109	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	87	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	85	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	88	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	84	[NT]	[NT]	[NT]	[NT]	104	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	88	[NT]	[NT]	[NT]	[NT]	101	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Ming To

Subject: FW: PFAS analysis in Soil

Ref: 302819-A
TAT: Standard.
Due: 04/10/2022
MT.

From: Simon Song <SSong@envirolab.com.au>
Sent: Monday, 26 September 2022 5:28 PM
To: Victor Arias <victor.arias@consultingearth.com.au>
Cc: Tristan Goodbody <tristan.goodbody@consultingearth.com.au>; Ming To <MTo@envirolab.com.au>
Subject: RE: PFAS analysis in Soil

Will do
Ming, A job, due 04/10

Kind Regards,

Simon Song | Senior Customer Service | Envirolab Services

Great Science. Great Service.

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200
E SSong@envirolab.com.au | W www.envirolab.com.au

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Latest Updat e: Our Melbourne lab's NATA accredited for EDTA in soil and water matrices & compliant with EPA Victoria's entire 1828.2 suite. More info rmation >

Please consider the environment before printing this email.

Samples will be analysed per our T&C's.

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This e-mail message has been scanned for Viruses

From: Victor Arias <victor.arias@consultingearth.com.au>
Sent: Monday, 26 September 2022 5:23 PM
To: Simon Song <SSong@envirolab.com.au>
Cc: Tristan Goodbody <tristan.goodbody@consultingearth.com.au>
Subject: PFAS analysis in Soil

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Hi Simon,

Could you request the lab for PFAS analysis on the following soil samples:

1) A4403 0-0.1 → Report 302351
2) A4407 3-3.1 → Report *302819* 8
3) A4410 0-0.1 → Report 302351
4) A4414 0-0.1 → Report 302351

Thanks. For the moment request normal standard turn around (due 30 September)

Appendix K

Calibration Sheets

PID Calibration Certificate

Instrument PhoCheck Tiger
Serial No. T-113988

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	PID	✓	10.6ev			
Alarms	Beeper	✓	**Low**	**High**	**TWA**	**STEL**
	Settings	✓	50ppm	100ppm	N/A	N/A
Software	Version	✓				
Data logger	Operation	✓				
Download	Operation	✓				
Other tests:						

Certificate of Calibration

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

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		93ppm Isobutylene		SY361		92.6ppm

Calibrated by: Izack Muhlbock

Calibration date: 27/07/2022

Next calibration due: 23/01/2023

CONSULTING EARTH SCIENTISTS

Daily Calibration Sheet

Date 3/08/2022 **Job Name:** ESI Waratah Super Battery **Job Number:** CES170608-GPM

Field Staff: Tristan Goodbody/Victor Arias **Project Manager:** T. Goodbody

Weather: Cloudy, slight breeze

ITEM	PID	Explosimeter	Acidity		Conductivity	Redox	DO	Turbidity
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	NTU
Model	PhoCheck Tiger	-	-	-	-	-	-	-
Serial Number	T-113988	-	-	-	-	-	-	-
Calibration Standard	Iso-Butylene	-	-	-	-	-	-	-
Concentration	100	-	-	-	-	-	-	-
Calibration Time	8:40	-	-	-	-	-	-	-
Calibration Reading	101.9	-	-	-	-	-	-	-
Comments PID OK								

Checks

Time	15:22	-	-	-	-	-	-	-
Reading	102.1	-	-	-	-	-	-	-
Comment PID OK								

Notes

Field Staff Signature: 

CONSULTING EARTH SCIENTISTS

Daily Calibration Sheet

Date 4/08/2022 **Job Name:** ESI Waratah Super Battery **Job Number:** CES170608-GPM

Field Staff: Victor Arias **Project Manager:** T. Goodbody

Weather: Fine, slight breeze

ITEM	PID	Explosimeter	Acidity		Conductivity	Redox	DO	Turbidity
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	NTU
Model	PhoCheck Tiger	-	-	-	-	-	-	-
Serial Number	T-113988	-	-	-	-	-	-	-
Calibration Standard	Iso-Butylene	-	-	-	-	-	-	-
Concentration	100	-	-	-	-	-	-	-
Calibration Time	7:20	-	-	-	-	-	-	-
Calibration Reading	101.1	-	-	-	-	-	-	-
Comments PID OK								

Checks

Time	17:06	-	-	-	-	-	-	-
Reading	100.2	-	-	-	-	-	-	-
Comment PID OK								

Notes

Field Staff Signature:

CONSULTING EARTH SCIENTISTS

Daily Calibration Sheet

Date 9/08/2022 **Job Name:** ESI Waratah Super Battery **Job Number:** CES170608-GPM

Field Staff: Victor Arias **Project Manager:** T. Goodbody

Weather: Fine, slight breeze

ITEM	PID	Explosimeter	Acidity		Conductivity	Redox	DO	Turbidity
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	NTU
Model	PhoCheck Tiger	-	-	-	-	-	-	-
Serial Number	T-113988	-	-	-	-	-	-	-
Calibration Standard	Iso-Butylene	-	-	-	-	-	-	-
Concentration	100	-	-	-	-	-	-	-
Calibration Time	7:08	-	-	-	-	-	-	-
Calibration Reading	101.3	-	-	-	-	-	-	-
Comments PID OK								

Checks

Time	17:36	-	-	-	-	-	-	-
Reading	100.8	-	-	-	-	-	-	-
Comment PID OK								

Notes

Field Staff Signature: 

CONSULTING EARTH SCIENTISTS

Daily Calibration Sheet

Date 10/08/2022 **Job Name:** ESI Waratah Super Battery **Job Number:** CES170608-GPM

Field Staff: Victor Arias **Project Manager:** T. Goodbody

Weather: Overcast, calm

ITEM	PID	Explosimeter	Acidity		Conductivity	Redox	DO	Turbidity
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	NTU
Model	PhoCheck Tiger	-	-	-	-	-	-	-
Serial Number	T-113988	-	-	-	-	-	-	-
Calibration Standard	Iso-Butylene	-	-	-	-	-	-	-
Concentration	100	-	-	-	-	-	-	-
Calibration Time	7:20	-	-	-	-	-	-	-
Calibration Reading	100.6	-	-	-	-	-	-	-
Comments PID OK								

Checks

Time	12:41	-	-	-	-	-	-	-
Reading	100.8	-	-	-	-	-	-	-
Comment PID OK								

Notes

Field Staff Signature:

CONSULTING EARTH SCIENTISTS

Daily Calibration Sheet

Date 11/08/2022 **Job Name:** ESI Waratah Super Battery **Job Number:** CES170608-GPM

Field Staff: Victor Arias **Project Manager:** T. Goodbody

Weather: Fine, calm

ITEM	PID	Explosimeter	Acidity		Conductivity	Redox	DO	Turbidity
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	NTU
Model	PhoCheck Tiger	-	-	-	-	-	-	-
Serial Number	T-113988	-	-	-	-	-	-	-
Calibration Standard	Iso-Butylene	-	-	-	-	-	-	-
Concentration	100	-	-	-	-	-	-	-
Calibration Time	7:40	-	-	-	-	-	-	-
Calibration Reading	101.1	-	-	-	-	-	-	-
Comments PID OK								

Checks

Time	13:41	-	-	-	-	-	-	-
Reading	102.8	-	-	-	-	-	-	-
Comment PID OK								

Notes

Field Staff Signature:

CONSULTING EARTH SCIENTISTS

Daily Calibration Sheet

Date 12/08/2022 **Job Name:** ESI Waratah Super Battery **Job Number:** CES170608-GPM

Field Staff: Victor Arias **Project Manager:** T. Goodbody

Weather: Shower, slight breeze

ITEM	PID	Explosimeter	Acidity		Conductivity	Redox	DO	Turbidity
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	NTU
Model	PhoCheck Tiger	-	-	-	-	-	-	-
Serial Number	T-113988	-	-	-	-	-	-	-
Calibration Standard	Iso-Butylene	-	-	-	-	-	-	-
Concentration	100	-	-	-	-	-	-	-
Calibration Time	7:40	-	-	-	-	-	-	-
Calibration Reading	100.8	-	-	-	-	-	-	-
Comments PID OK								

Checks

Time	17:41	-	-	-	-	-	-	-
Reading	101.0	-	-	-	-	-	-	-
Comment PID OK								

Notes

Field Staff Signature: 

CONSULTING EARTH SCIENTISTS

Daily Calibration Sheet

Date 18/08/2022 **Job Name:** ESI Waratah Super Battery **Job Number:** CES170608-GPM

Field Staff: Victor Arias **Project Manager:** T. Goodbody

Weather:	Partly cloudy, slight breeze

ITEM	**PID**	**Explosimeter**	**Acidity**		**Conductivity**	**Redox**	**DO**	**Turbidity**
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	NTU
Model	PhoCheck Tiger	-	-	-	-	-	-	-
Serial Number	T-113988	-	-	-	-	-	-	-
Calibration Standard	Iso-Butylene	-	-	-	-	-	-	-
Concentration	100	-	-	-	-	-	-	-
Calibration Time	7:40	-	-	-	-	-	-	-
Calibration Reading	100.6	-	-	-	-	-	-	-
Comments PID OK								

Checks

Time	17:11	-	-	-	-	-	-	-
Reading	101.6	-	-	-	-	-	-	-
Comment PID OK								

Notes

Field Staff Signature: 

Multi Parameter Water Meter

Instrument YSI Pro DSS
Serial No. 21K101474

Air-Met Scientific Pty Ltd
1300 137 067

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

Certificate of Calibration

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. EC		2.76mS		385041	2.78mS
2. Temp		22.4°C		Testo	20.5°C
3. pH 4		pH 4.00		383006	pH 4.05
4. pH 7		pH 7.00		381241	pH 6.75
5. DO		0.00ppm		371864	-0.05
6.Turbidity		50NTU		387519	50.01NTU
7. mV		236.7mV		385070/387761	236.3mV

Calibrated by: Lebelle Chee

Calibration date: 12/08/2022

Next calibration due: 11/09/2022

CONSULTING EARTH SCIENTISTS

Daily Calibration Sheet

Date 22/08/2022 **Job Name:** ESI Waratah Super Battery **Job Number:** CES170608-GPM

Field Staff: Victor Arias/Alex Crabtree **Project Manager:** T. Goodbody

Weather:	Cloudy, slight breeze

ITEM	**PID**	**Explosimeter**	**Acidity**		**Conductivity**	**Redox**	**DO**	**Turbidity**
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	NTU
Model	-	-	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS
Serial Number	-	-	21K101474	21K101474	21K101474	21K101474	21K101474	21K101474
Calibration Standard	-	-	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standard Turbidity Solution Lot N0 386950
Concentration	-	-	4.0	7.0	2760	236.7	0	50
Calibration Time	-	-	7:10	7:12	7:15	7:20	7:25	7:30
Calibration Reading	-	-	4.05	7.01	2788	236.7	-0.07	50.21
Comments Multiparemeter OK								

Checks

Time	-	-	18:13	18:16	18:22	18:28	18:32	18:36
Reading	-	-	4.16	7.22	2798	240.0	-0.09	51.0
Comment Multiparameter OK								

Notes

Field Staff Signature: 

CONSULTING EARTH SCIENTISTS

Daily Calibration Sheet

Date 23/08/2022 **Job Name:** ESI Waratah Super Battery **Job Number:** CES170608-GPM

Field Staff: Victor Arias/Alex Crabtree **Project Manager:** T. Goodbody

Weather: Fine, slight breeze

ITEM	PID	Explosimeter	Acidity		Conductivity	Redox	DO	Turbidity
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	NTU
Model	-	-	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS
Serial Number	-	-	21K101474	21K101474	21K101474	21K101474	21K101474	21K101474
Calibration Standard	-	-	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standard Turbidity Solution Lot N0 386950
Concentration	-	-	4.0	7.0	2760	236.7	0	50
Calibration Time	-	-	7:03	7:07	7:12	7:15	7:20	7:22
Calibration Reading	-	-	4.07	7.02	2770	236.9	-0.02	50.08
Comments Multiparemeter OK								

Checks

Time	-	-	13:18	13:21	13:26	13:30	13:35	13:41
Reading	-	-	4.10	6.92	2680	239.0	0.02	53.0
Comment Multiparameter OK								

Notes

Field Staff Signature: 

CONSULTING EARTH SCIENTISTS

Daily Calibration Sheet

Date	24/08/2022	**Job Name:**	ESI Waratah Super Battery	**Job Number:**	CES170608-GPM
Field Staff:	Victor Arias/Alex Crabtree			**Project Manager:**	T. Goodbody

Weather:	Clear, moderate breeze

ITEM	PID	Explosimeter	Acidity		Conductivity	Redox	DO	Turbidity
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	NTU
Model	-	-	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS
Serial Number	-	-	21K101474	21K101474	21K101474	21K101474	21K101474	21K101474
Calibration Standard	-	-	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standard Turbidity Solution Lot N0 386950
Concentration	-	-	4.0	7.0	2760	236.7	0	50
Calibration Time	-	-	7:02	7:05	7:10	7:13	7:15	7:18
Calibration Reading	-	-	4.03	6.91	2763	236	-0.01	50.18
Comments Multiparemeter OK								

Checks

Time	-	-	16:48	16:52	16:56	16:01	16:05	16:07
Reading	-	-	3.91	6.95	2820	239.9	0.05	56.0
Comment Multiparameter OK								

Notes

Field Staff Signature:

CONSULTING EARTH SCIENTISTS

Daily Calibration Sheet

Date 25/08/2022 **Job Name:** ESI Waratah Super Battery **Job Number:** CES170608-GPM

Field Staff: Victor Arias/Alex Crabtree **Project Manager:** T. Goodbody

Weather: Cloudy, slight breeze

ITEM	PID	Explosimeter	Acidity		Conductivity	Redox	DO	Turbidity
Units	ppm	% LEL	pH	pH	uS/cm	mV	ppm	NTU
Model	-	-	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS	YSI Pro DSS
Serial Number	-	-	21K101474	21K101474	21K101474	21K101474	21K101474	21K101474
Calibration Standard	-	-	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standards for Calibration Rig	Standard Turbidity Solution Lot N0 386950
Concentration	-	-	4.0	7.0	2760	236.7	0	50
Calibration Time	-	-	7:02	7:05	7:10	7:13	7:15	7:18
Calibration Reading	-	-	3.91	6.95	2768	236.1	-0.01	50.35
Comments Multiparemeter OK								

Checks

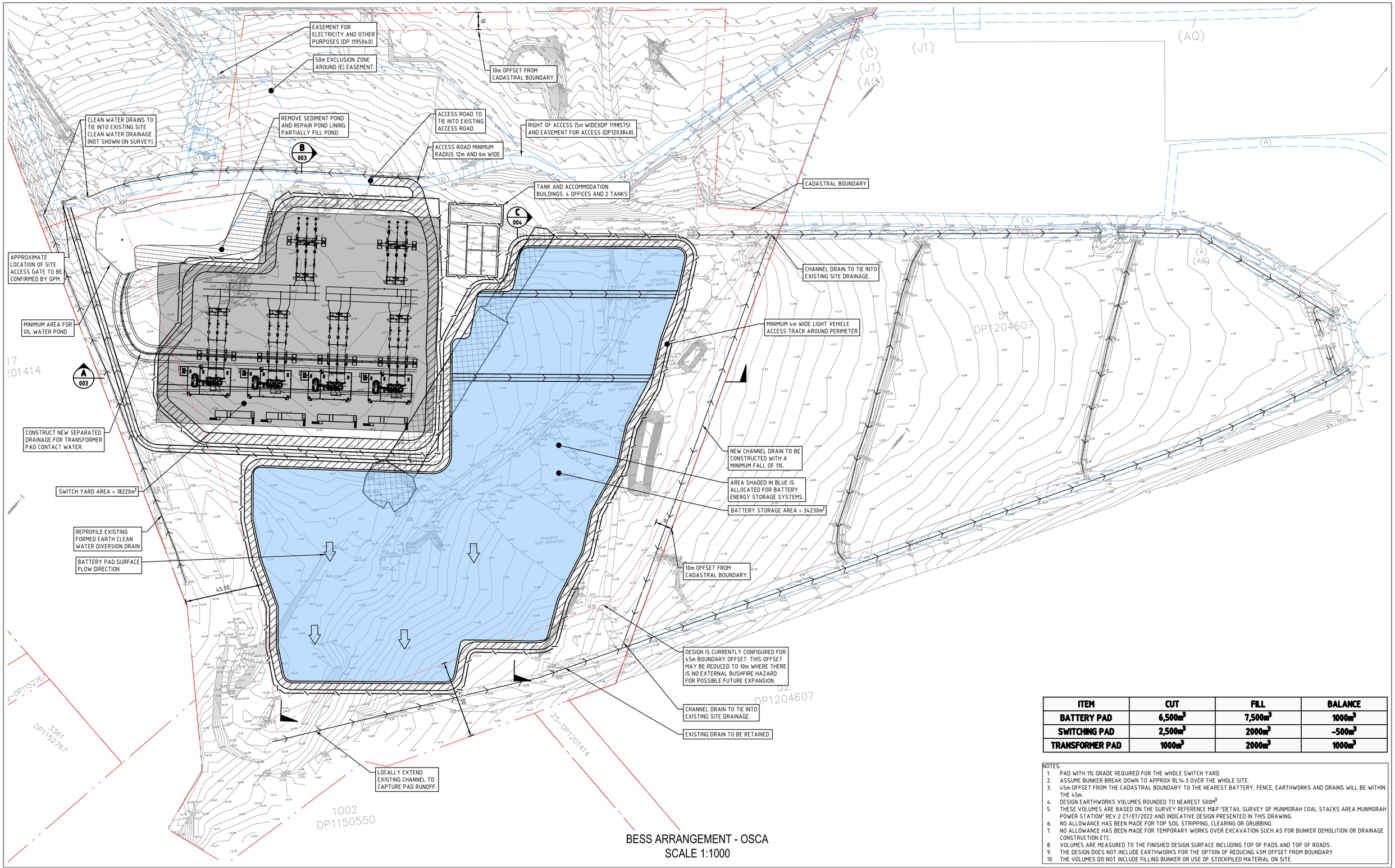
Time	-	-	14:08	14:12	14:16	14:20	14:23	14:26
Reading	-	-	3.91	6.95	2820	239.9	0.05	56.0
Comment Multiparameter OK								

Notes

Field Staff Signature:

Appendix L

Additional Documentation Provided by GPM



BESS ARRANGEMENT - OSCA
SCALE 1:1000

ITEM	CUT	FILL	BALANCE
BATTERY PAD	6,500m³	7,500m³	1000m³
SWITCHING PAD	2,500m³	2000m³	-500m³
TRANSFORMER PAD	1000m³	2000m³	1000m³

NOTES:
1. PAD WITH 1% GRADE REQUIRED FOR THE WHOLE SWITCH YARD.
2. ASSUME BUNKER BREAK DOWN TO APPROX RL14. 3 OVER THE WHOLE SITE.
3. 45m OFFSET FROM THE CADASTRAL BOUNDARY TO THE NEAREST BATTERY, FENCE, EARTHWORKS AND DRAINS WILL BE WITHIN THE 45m.
4. DESIGN EARTHWORKS VOLUMES ROUNDED TO NEAREST 500M³.
5. THESE VOLUMES ARE BASED ON THE SURVEY REFERENCE M&P "DETAIL SURVEY OF MUNMORAH COAL STACKS AREA MUNMORAH POWER STATION" REV 2 27/07/2022 AND INDICATIVE DESIGN PRESENTED IN THIS DRAWING.
6. NO ALLOWANCE HAS BEEN MADE FOR TOP SOIL STRIPPING, CLEARING OR GRUBBING.
7. NO ALLOWANCE HAS BEEN MADE FOR TEMPORARY WORKS OVER EXCAVATION SUCH AS FOR BUNKER DEMOLITION OR DRAINAGE CONSTRUCTION ETC.
8. VOLUMES ARE MEASURED TO THE FINISHED DESIGN SURFACE INCLUDING TOP OF PADS AND TOP OF ROADS.
9. THE DESIGN DOES NOT INCLUDE EARTHWORKS FOR THE OPTION OF REDUCING 45M OFFSET FROM BOUNDARY
10. THE VOLUMES DO NOT INCLUDE FILLING BUNKER OR USE OF STOCKPILED MATERIAL ON SITE.

Rev	Description	Checked	Approved	Date
D	FOR INFORMATION		T.L.	02/08/22
C	FOR INFORMATION		T.L.	28/07/22
B	FOR INFORMATION		T.L.	28/07/22
A	FOR INFORMATION		T.L.	27/07/22

Author C.HASWELL | Drafting Check | Reg No.
Designer A.GAUTHIER | Design Check | Date

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

GHD
Level 8, 180 Lonsdale Street, Melbourne VIC 3000 AU
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www.ghd.com

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Project No. 12582669

Client DEPARTMENT OF PLANNING INDUSTRY & ENVIRONMENT
Project
Status CONCEPT DESIGN | Status Code

Drawing Title BESS ARRANGEMENT
COAL STORAGE AREA
INDICATIVE ONLY
GENERAL ARRANGEMENT PLAN

Size A1
Drawing No. 12582669-C002
Rev D

Plot Date: 2 August 2022 - 1:02 PM | Plotted by: Conor Haswell | File Name: G:\21\12582669\CADD\Drawings\Only_Coal_Storage_Area\RA DESN EWKS OCSA.dwg

Munmorah – Coal Handling Plant Structures

Specification for Demolition and Site Restoration

Generator Property Management Pty Ltd (GPM)

Reference: 500382-003-014

Revision: 0

2022-07-21



aurecon

Bringing ideas to life

Document control record

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Client contact			**Client reference**			
Rev	**Date**	**Revision details/status**	**Author**	**Reviewer**	**Verifier** (if required)	**Approver**
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B	2022-07-20	Client changes incorporated	L Karabesinis	P Hobbs		P Hill
0	2022-07-22	Final	L Karabesinis	P Hobbs		P Hill
Current revision		**0**				

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Munmorah Coal Handling Plant Area Drawings

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Tables

Table 1 | Pricing Schedule

1 Introduction

This document (with appendices) describes the scope of work and the technical requirements for the *WUC* as defined in the *Contract*. This is not a stand-alone document. It is to be used and read in conjunction with the Conditions of *Contract* along with any other documents referred to herein. The term “Tenderer” is used in the same context as “*Contractor*”.

2 General

This specification details the requirements for the safe demolition and ground restoration of the *Principal’s* surface and below ground Coal Handling Plant reinforced concrete (RC) structures primarily the Live Storage Bunker and its associated structures located within the former Munmorah Power Station Coal Handling Area south of the former main power station area located in Colongra, NSW 2262. Refer to Figure 1 and Figure 2 below.

This specification is a performance-based specification where it is expected the *Contractor* will bring their own expertise and methods to safely achieve the objectives of the Project. The *Contractor* shall develop a timeline for the *WUC* around their own methods in accordance with the *Principal’s* Table of Key Dates for the Works (refer Appendix C).

The *Contractor* must comply with every aspect of this specification, including all related documents and all statutory requirements as a minimum.

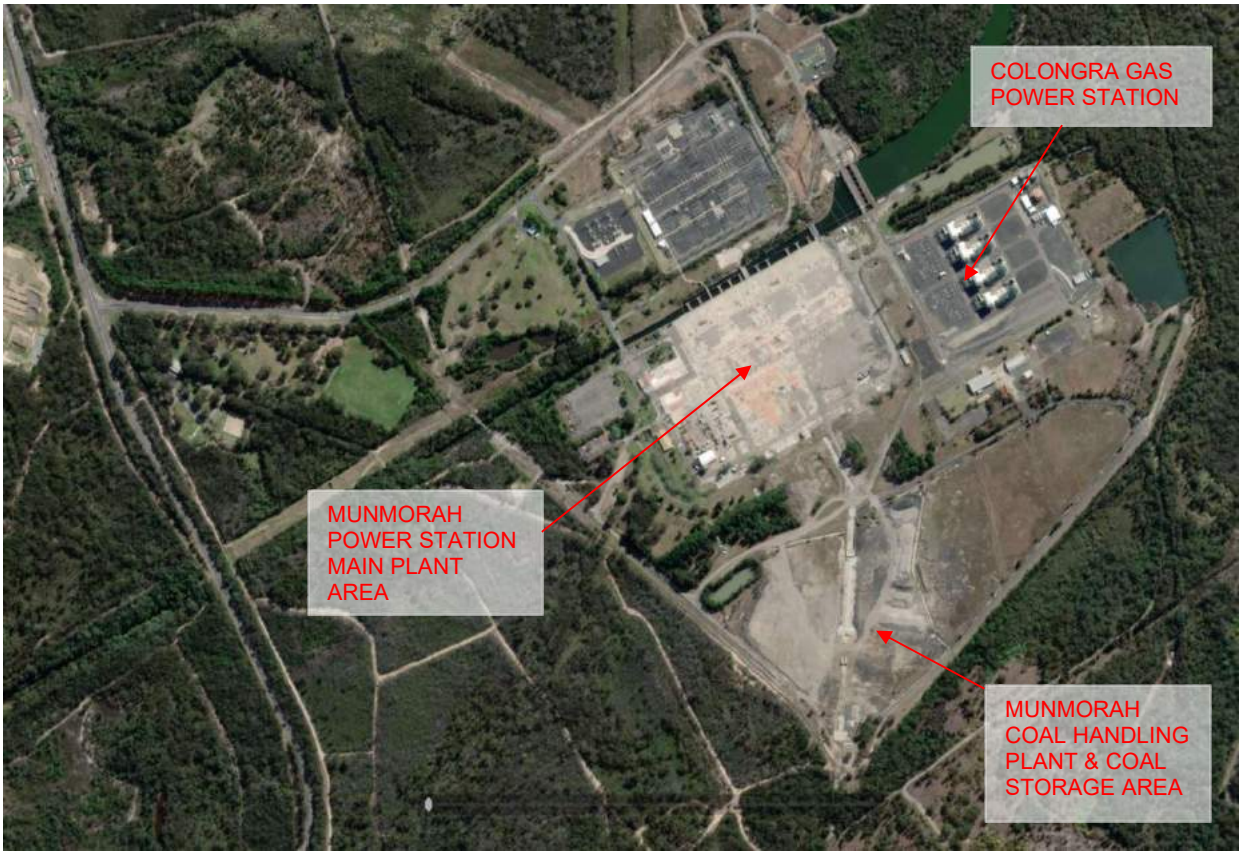


Figure 1: Site location



Figure 2: Work location

2.1 Objectives of the Project

The *Contractor* must perform the *WUC* to achieve the following objectives:

- Safe demolition in accordance with NSW regulations and best practice demolition techniques.
- Compliance with regulations for the demolition work.
- Compliance with the MPS Demolition Development Approval (DA) Conditions of Consent in particular noise and dust requirements.
- Partial demolition of the existing former Munmorah Coal Handing Plant surface and below ground structures to facilitate future use which will be the subject of separate planning approvals.
- Removal and disposal of concrete encased asbestos cement conduits and asbestos pipes cast within the RC items to the *Principal's* on-*site* Asbestos Repository or off-*site* to an authorised waste disposal facility.
- Removal and disposal off-*site* of existing, handrails, fences, gates, utilities, services, steel plates, metal members and waste.
- Reuse of the demolished RC as engineered backfill material within voids.
- Reuse of existing on-*site* concrete rubble and fill material stockpiles in the Coal Handling Storage Area as engineered backfill for the voids.
- Maximise the recycling of demolition waste and materials.
- Removal and disposal of surface coal and stockpiled materials from the Coal Storage Area to a designated area near the ash dam.

- Execute all necessary make good *work* for handover to the *Principal*.
- Timely execution of the *WUC* in accordance with the Table of Key dates (refer to Appendix C).

2.2 *Contractor* experience

The *Contractor* shall demonstrate prior experience and competency working with similar scopes of work.

The *Contractor* shall note that the Work area is located near the operational Colongra Power Station (200 m away), which is owned by Snowy Hydro, and take this into account in undertaking the *WUC*.

Work shall be undertaken by skilled workers, employed by the *Contractor* who must have at least five (5) years of practical experience in concrete demolition works for this type of setting.

2.3 *Site* visit and reference information

The *Contractor* (Tenderer) shall be responsible for ascertaining that the information in the tender documents is sufficient to provide a lump sum price for the *WUC*. The *Contractor* (Tenderer) shall visit the *site* during the tender period to familiarise themselves with the Scope of Work and *site* requirements. This shall be organised with the *Principal*.

For additional reference information refer to:

- Appendix A – Coal Handing Plant Area Drawings
- Appendix D – Additional Site photos

2.4 Site Background

The Munmorah Power Station (MPS) is situated at Station Road, Colongra NSW 2262. MPS last operated in August 2010, was officially closed in July 2012. It underwent decommissioning and demolition of the power station above ground structures between 2016 and the end of 2018.

MPS and the *site* is managed by Generator Property Management Proprietary Limited (GPM) on behalf of the NSW Government through NSW Treasury.

The *site* is located on the former Munmorah Power Station Coal Handling and Storage Area south of the former main power station generating plant area refer to Figure 2 for the *site* boundary. The *site* is secured by chain wire fence and is accessed via a road through the former main power station plant area and via an access road behind GPM's office.

2.5 Scope of Works

This Demolition and Site Restoration Scope of Works (SoW) for the *WUC* refers to RC demolition, removal and processing of existing structures and backfilling of the subsequent voids with processed concrete from the *work*, existing *site* stockpiles and imported fill material, in compacted layers to allow unimpeded construction of future facilities in this location.

This SoW covers the surface and below ground Coal Handling Plant RC structures and miscellaneous items, primarily the Live Storage Bunker and Conveyor Tunnels and associated structures, located within the former Munmorah Coal Handling Area south of the former main power station generating plant area. The SoW includes, but is not limited to:

- Implementing and maintaining appropriate Health and Safety measures and procedures.
- Implementing and maintaining Environmental controls.
- Maintaining and protecting existing structures and services (e.g. access roads, drains) in the area.
- Supply and maintenance of all necessary plant and equipment to conduct the *WUC*.
- Hazardous material inspection, removal and disposal (e.g. asbestos cement conduits, coal dust).

- Demolition, removal and processing of RC for use as engineered material for backfilling the voids following demolition.
- Excavation and appropriate benching and battering of existing in-situ material to allow demolition of below ground structures.
- Option 1 - Complete demolition, removal and processing of all RC items associated with the Coal Live Storage Bunker, Conveyor Tunnels and nominated RC slabs (refer Figure 2), foundations, pits, sumps and concrete surface drain (east of stockpile areas) in the Coal Handling Plant area to a level 1 m below the existing Coal Storage Area ground surface level (including cutting and removal of the reinforcing down to this level). Also to be demolished are the underlying protruding horizontal RC structures (i.e. plough feeder table, hoppers, stairs and landings etc) below the 1 m level, but above the Coal Live Storage Bunker basement slab, and demolition of the drainage pit kerbing throughout the basement of the void (refer to Figure 3 below) along with all other structures below the 1 m level necessary for the successful backfilling and compaction of the void.
- Option 2 - Complete demolition, removal and processing of all RC items associated with the Coal Live Storage Bunker, Conveyor Tunnels nominated RC slabs (refer Figure 2), foundations, pits, sumps and concrete surface drain (east of stockpile areas) in the Coal Handling Plant area to a level 2 m below the existing Coal Storage Area ground surface level (including cutting and removal of the reinforcing down to this level). Also to be demolished are the underlying protruding horizontal RC structures (i.e. plough feeder table, hoppers, stairs and landings etc) below the 2 m level, but above the Coal Live Storage Bunker basement slab, and demolition of the drainage pit kerbing throughout the basement of the void (refer to Figure 4 below) along with all other structures below the 2 m level necessary for the successful backfilling and compaction of the void.
- Demolition, removal and disposal to the of the existing backfill, coal and capping of the Coal Live Storage Hoppers to the *Principal's* disposal area west of the Munmorah Ash Dam.
- Processing of the demolished RC to remove steel reinforcing and imbedded items (steel fixtures, water stops etc) and produce 75 mm maximum size concrete rubble for use as backfill material within the Coal Live Storage Bunker voids and Cable Tunnels.
- Backfilling the voids following the demolition of the RC structures with processed reinforced concrete in 200 mm compacted layers to 1 m below the existing Coal Storage Area ground surface.
- Backfilling of the remaining top 1 m of voids up to the existing Coal Storage Area surface level with clean Excavated Natural Material (ENM) fill sourced from the MPS site at a location specified by the Principal, in 200 mm compacted layers.
- Processing and reuse of the existing on-*site* concrete rubble and fill material stockpiles in the Coal Handling Plant Area as backfill for the voids and tunnels
- Safe removal and disposal of asbestos containing material (ACM) down to 1 m below existing ground level on the MPS site as specified by the Principal. Specifically, the ACM embedded downpipes, weep holes and cable conduits (as part of Option 1 demolition works).
- Safe removal and disposal of asbestos containing material (ACM) down to 2 m below existing ground level on the MPS site as specified by the Principal. Specifically, the ACM embedded downpipes, weep holes and cable conduits (as part of Option 2 demolition works).
- Grout plugging asbestos cement conduit weep holes in the bunker, conveyor tunnel walls and entrance ramp retaining walls that are not being demolished.
- Grout plugging of asbestos cement drainage down pipes (i.e. top and bottom) in the bunker walls that are not being demolished.
- Concrete plug the exiting stormwater drains in the Coal Live Storage Bunker and Conveyor Ramp.
- Removal and disposal of all coal, debris and vegetation from within the Coal Live Storage Bunker and ramps to the *Principal's* disposal area west of the Munmorah Ash Dam.
- Removal and disposal off-*site* of various redundant services/items including, chain mesh fencing, galvanised steel hand railing, metal plates and members, electrical cables and associated fixings.

- Removal and disposal of surface coal (varying 0 to 500 mm in depth) from the Coal Storage Area to a designated area near the ash dam (refer to Figure 13).
- Site survey of the Coal Storage Area before and after surface coal removal.
- *Site* trimming and grading of demolished and backfilled areas of the *WUC*.
- Mobilisation and demobilisation of office, crib room and toilets etc for the duration of *work*.

Note to *Tenderers*: Depth of demolition from surface level to be finalised in Contract depending upon future use requirements.

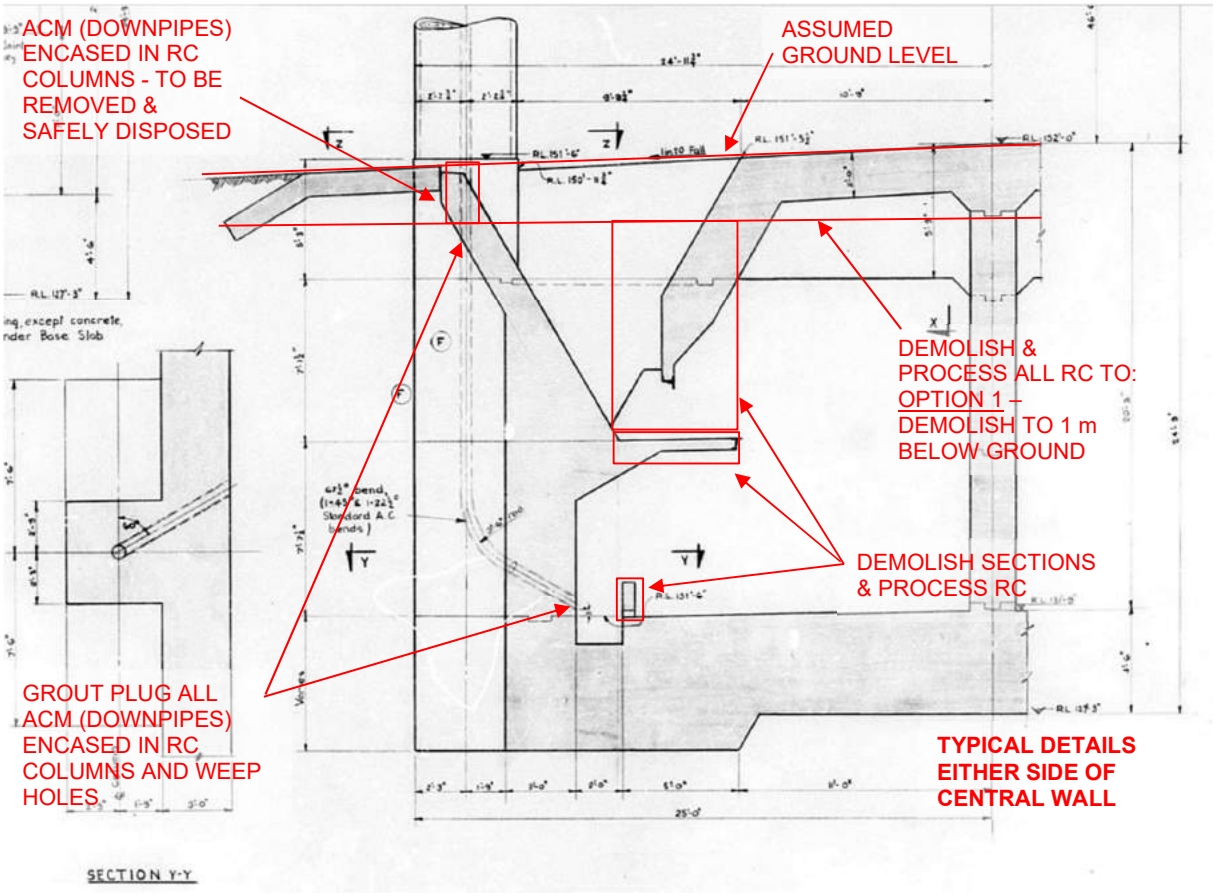


Figure 3: Live Storage Hopper Extent of Demolition Option 1 - Drawing MM213304K

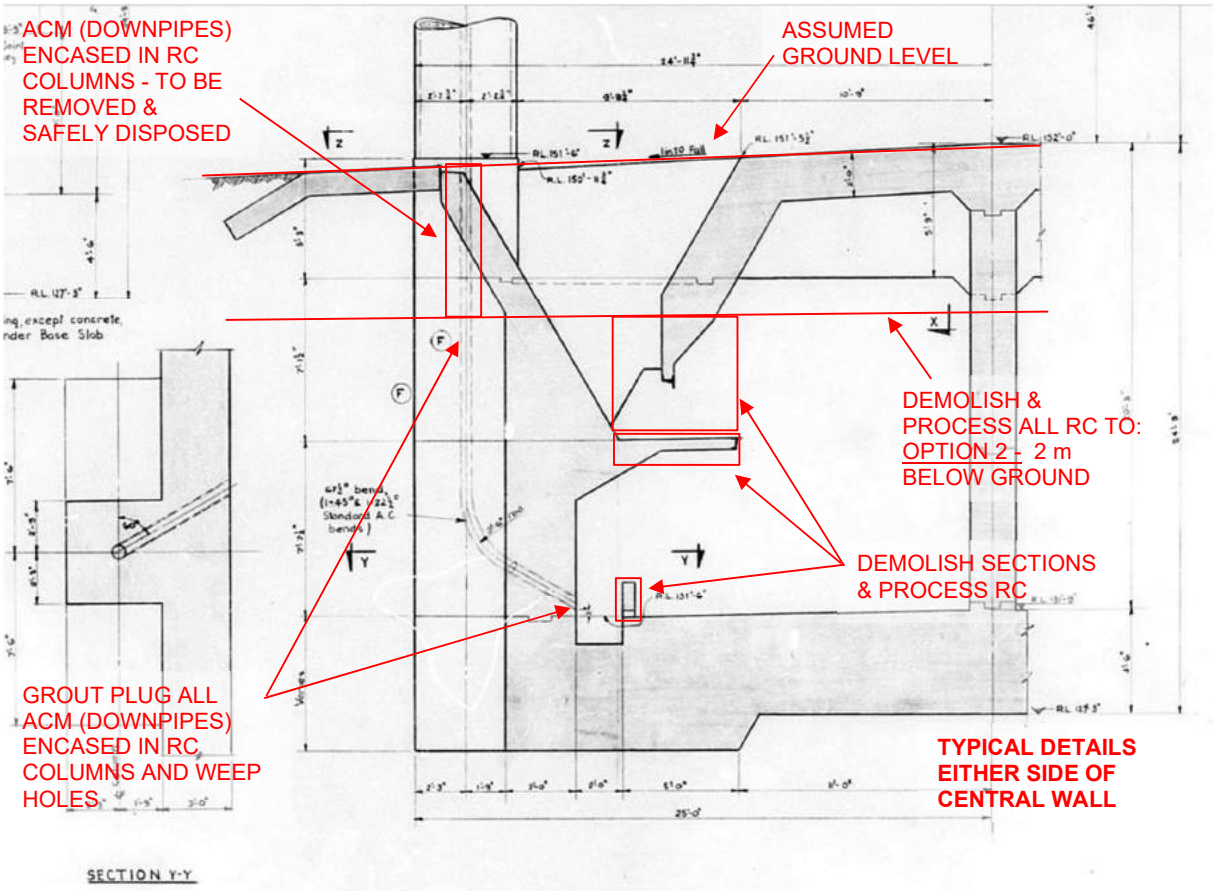


Figure 4: Live Storage Hopper Extent of Demolition Option 2 - Drawing MM213304K

3 Demolition, disposal, processing and *site* restoration

In accordance with the Objectives of the Project, the following is a list of the *separable portions* for the infrastructure to be demolished, retained, disposed, *site* processed including areas to backfilled and restored where nominated, noting that the list is not necessarily exhaustive. The *Contractor* shall be responsible for the demolition, removing and processing all the nominated and identified infrastructure plus any other equipment not specifically specified in a *separable portion*, to achieve the Objectives of the Project. *Site* drawings are included in Appendix A for reference.

3.1 *separable portion* 1 - Project Management, Plans and Approvals

The *Contractor* shall be responsible for the Project Management, Health, Safety and Environmental Management, Quality Management, planning and approvals for the *WUC*.

3.2 *separable portion* 2 - *Site* Establishment, Disestablishment and Preparation Works

The *Contractor* shall undertake all work necessary to establish on *site*, including disestablishment at the completion of the *WUC*, including all preparation works for the *WUC*.

3.3 *separable portion* 3 – Demolition, disposal, concrete processing and reuse

The following broadly describes the infrastructure at the *site* to be demolished, processed for reuse and disposed of by the *Contractor*:

- Option 1 - Demolition, removal and processing of RC retaining walls, hoppers, overhead slabs, beam, ground slabs, foundation, walls, columns, kerbing and plough feeder tables associated with the Coal Live Storage Bunker and Conveyor Tunnels 1 m below the Coal Storage Area existing surface level.
- Option 2 - Demolition, removal and processing of RC retaining walls, hoppers, overhead slabs, beam, ground slabs, foundation, walls, columns, kerbing and plough feeder tables associated with the Coal Live Storage Bunker and Conveyor Tunnels 2 m below the Coal Storage Area existing surface level.
- Demolition, removal and disposal of the capping, backfilling and coal from the Coal Live Storage Hoppers to the *Principal's* disposal area west of the Munmorah Ash Dam.
- Demolition, removal and processing of the RC foundations and RC slabs and foundations from the former refuelling station and structures in the area south the Coal Live Storage Bunker structure (refer to Figure 2 and drawing MM 636672 in Appendix A).
- Demolition, removal and processing of the RC surface drain east of the existing concrete rubble and material stockpiles (refer to Figure 2 and drawing MM 360753 in Appendix A).
- Removal and disposal of asbestos cement conduits concrete encased and cast within the RC members by a Class B licences asbestos remover. ACM material will be transported and disposed of in the Asbestos Repository area designated by the *Principal,* west of the Munmorah Ash Dam. Alternatively, if the volume of ACM material is low it will be disposed off-*site* to an authorised asbestos disposal facility.
- Removal and disposal off-*site* of various redundant services/items including: 1.8m high chain mesh fencing, galvanised steel handrails, metal plates and members, electrical cables and associated fixings.
- Removal and disposal of coal, debris, vegetation and waste from the work area to areas designated by the *Principal* west of the Munmorah Ash Dam.
- Processing of the demolished RC to remove steel reinforcing and embedded items to produce 75 mm maximum size concrete rubble for use as backfill material within the voids and tunnels.
- Grout plugging asbestos cement conduit weep holes and cable conduits in the bunker and tunnel walls and conveyor ramp retaining walls that are not being demolished.
- Grout plugging asbestos cement down pipes in the bunker walls.
- Concrete plug the exiting stormwater drains in the Coal Live Storage Bunker and Conveyor Ramp.

An outline of the Scope of Work (SoW) elements required to be demolished are outlined below in Figures 5 to 11.

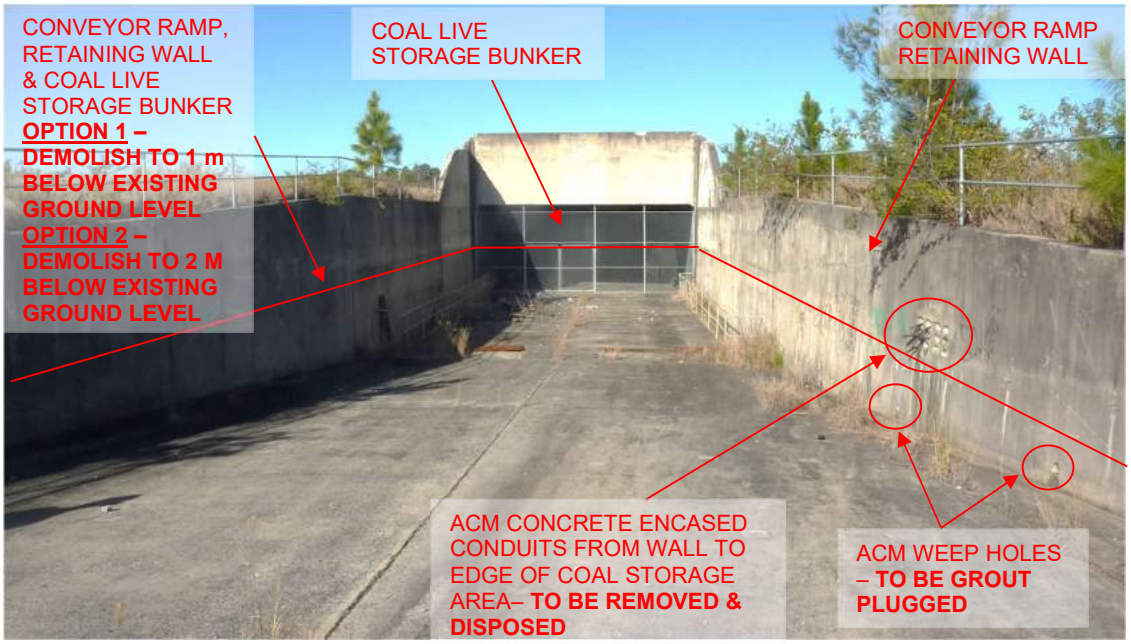


Figure 5: Entrance to Coal Live Storage Bunker (facing South)

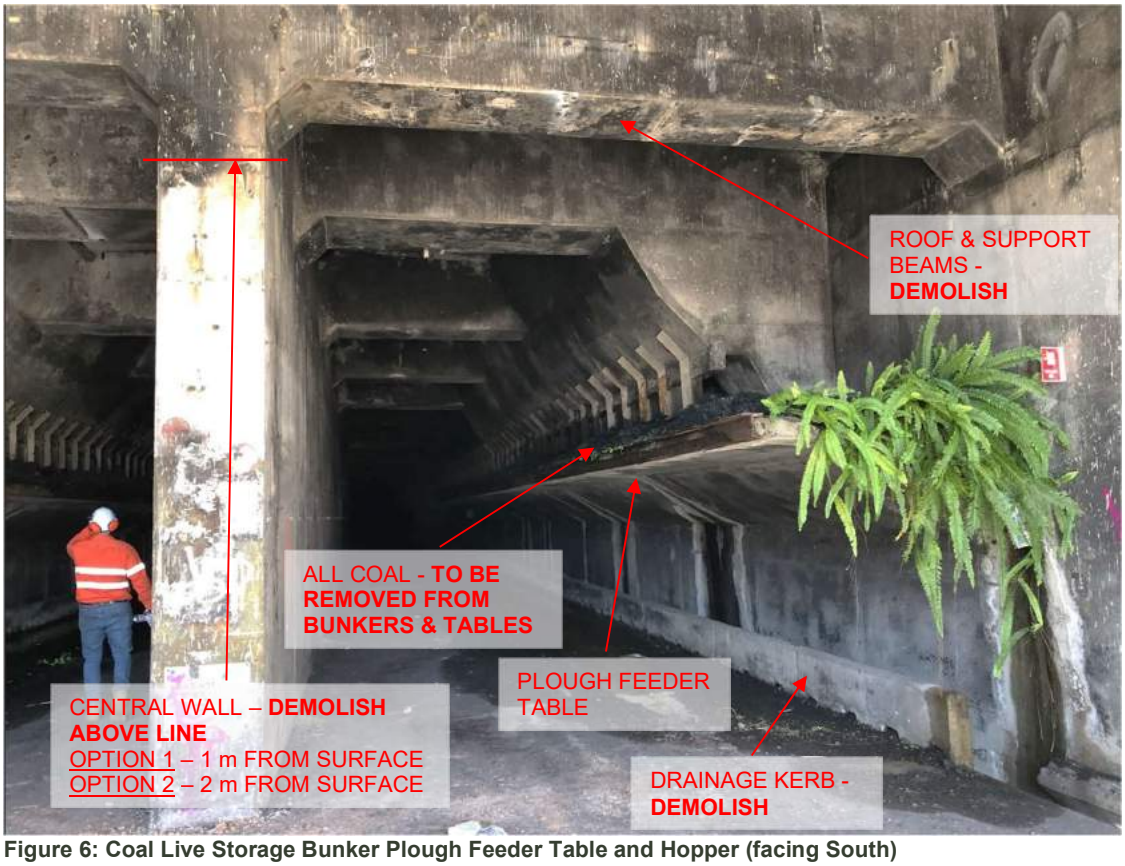


Figure 6: Coal Live Storage Bunker Plough Feeder Table and Hopper (facing South)

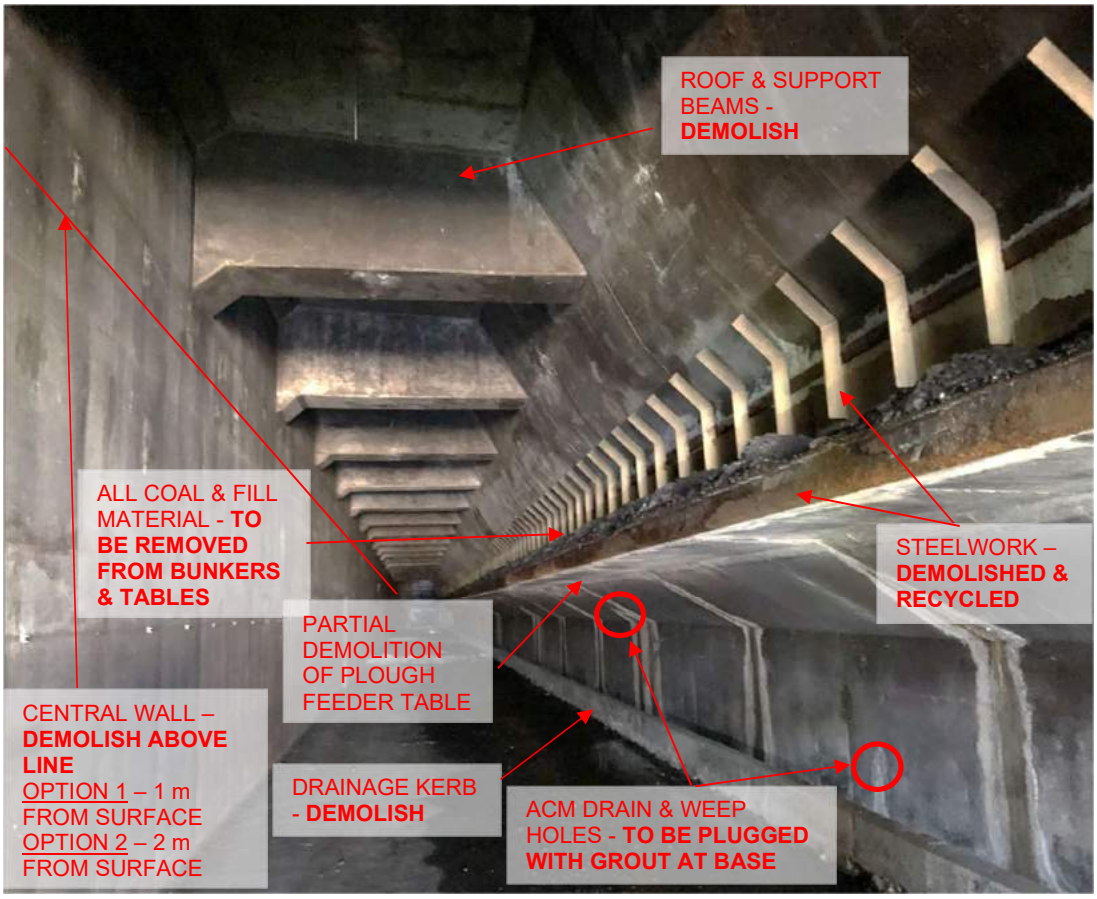


Figure 7: Inside Coal Live Storage Right Hand Bunker (facing South)



Figure 8: Inclined Conveyor Tunnel entrance to Coal Live Storage Bunker (facing South)

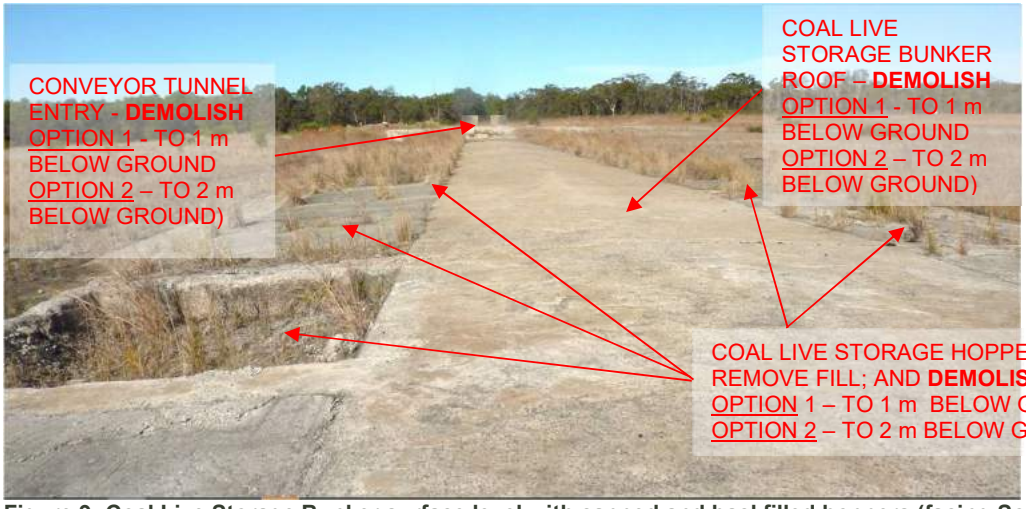


Figure 9: Coal Live Storage Bunker surface level with capped and backfilled hoppers (facing South)



Figure 10: Coal Live Storage Bunker column with capped asbestos cement downpipe



Figure 11: Refuelling Area slabs South of Coal Live Storage Bunker

3.4 *separable portion* 4 - Backfilling and *site* restoration

The following broadly describes *site* restoration of the voids following the demolition of the below ground RC structures and infrastructure at the *site* by the *Contractor*:

- Backfill of the voids following the demolition of the RC structures with processed reinforced concrete and concrete rubble in 200 mm compacted layers to 1 m below the existing ground surface.
- Backfill the remaining top 1 m of void and surrounding demolition excavated area up to the existing ground surface level with clean ENM fill sourced from the MPS site in 200 mm compacted layers.
- Backfill of pits and trenches within the Coal Live Storage Bunker with processed recycled reinforced concrete.
- The inclined Conveyor Tunnel Structures below the nominated level of demolition (i.e. Option 1 - 1 m and Option 2 - 2 m from the Coal Storage Area surface level) will require careful placement of fill material to achieve adequate compaction and backfilling of the void between the bunker basement and the inclined enclosed tunnel void structure.
- Processing and reuse of existing on-*site* stockpiles of concrete rubble and fill material in the Coal Handling Plant Area as backfill for the voids (refer to Figure 12).
- Dewatering, cleanout and backfilling of the setting pond southwest of the live storage bunker with clean fill in 200 mm compacted layers to the existing ground level in this area.
- Removal and disposal of surface coal (varying 0 to 500 mm in depth) from the Coal Storage Area to a designated area near the ash dam (refer to Figure 13).
- Site survey of the Coal Storage Area before and after surface coal removal.
- Excavation, transport and disposal of the crushed concrete and other stockpiled material from the coal storage area to a nominated area outside the *site* within the MPS.
- All fill and backfill materials including *site* won materials used in the *WUC* shall be approved clean hard material, deposited and compacted in areas resulting from the *WUC*. Any material brought to *site* must be ENM classification and this needs to be demonstrated by transfer of custody dockets.
- No material containing any of the following may be used as fill or backfill:

    a) Vegetation matter.

b) Top soil.

c) Organic clays or silts.

d) Toxic materials.

e) Compounds harmful to other elements of construction.

f) Materials whose liquid limit exceeds seventy per cent (70%) or whose plasticity index exceeds fifty per cent (50%).

g) Materials that suffer from degradation during compaction.

h) Any material which will scour badly or any dispersive soil.

i) Coal.



Figure 12: On-site fill and concrete rubble stockpiles (East of Coal Storage Bunker)



Figure 13: Coal Storage Area surface coal

3.4.1 Placement of backfill material

Backfill material shall be placed in layers of even density and at the specified thickness and compacted to the degree of compaction specified hereunder. Placement shall be in areas as large as is practicable and shall not proceed unless sufficient compaction plant and time is available to fully compact each area placed within the working day on which it is placed.

Backfill shall be deposited in regular layers not more than 200 mm in compacted thickness. Each layer shall be well compacted with approved mechanical equipment before the next layer is placed.

Should soft areas develop within the placed fill material during compaction, they shall be removed to the full depth and replaced with approved material.

3.4.2 Backfilling layer sequence

Backfilling the Coal Live Storage Bunker and Conveyor Tunnels shall be the following sequence;

1) The processed on-*site* stockpiled fill material shall be placed in compacted layers on the bunker slabs.
2) This shall be followed with layers of the processed on-*site* stockpiled concrete rubble placed in compacted layers in the bunker over the placed and compacted fill material.
3) When all the on-*site* processed stockpiled concrete rubble is used, the processed RC rubble from the demolition works shall be placed over the placed concrete rubble in compacted layers in the bunker voids to a level not to exceed 1m below the general ground surface level in this area.
4) The processed RC rubble shall also be placed within the inclined Conveyor Tunnel structure to fill the void up to the level of the demolished Conveyor Tunnel roof slab (i.e. either 1 or 2 m below the surface level) and then placed in compacted layers to a level not to exceed 1 m below the general ground surface in this area.
5) The remaining voids shall be backfilled with clean ENM fill sourced from the MPS site, placed in compacted layers up to the general ground surface level in these areas (i.e. Coal Live Storage Bunkers, Conveyor Tunnels, ramps, slabs, foundations and surface drain).

3.4.3 Compaction of fill and Concrete Rubble

All fill and concrete rubble layers shall be compacted with an approved mechanical means to achieve a dry density ratio (AS 1289.5.4.1) of not less than that specified in Section 3.4.4. The in-situ dry density shall be determined in accordance with AS 1289.5.3.1.

3.4.4 Compaction Standard

The fill material shall be compacted to 98% Specified Maximum Dry Density Ratio, Standard Compactive Effort.

3.4.5 Site trimming and grading

Upon the completion of the excavation, backfilling and compaction the site surface shall be trimmed to a uniform finished surface level with level tolerance of plus 0 mm, minus 50 mm.

4 Technical specification and standards

4.1 Standards

The *Contractor* is responsible for ensuring compliance of the *WUC* with the following Australian Standards current at the *date of acceptance of tender* and in general accordance, as a minimum, with the *Principal's* standards and the *Principal's* Environment, Health and Safety Management System (EHSMS) current at the *date of acceptance of tender*:

- AS 2601 - The Demolition of Structures
- AS/NZS 1576.1 – Scaffolding – General Requirements
- AS 1289 – Method of Testing Soils for Engineering Purposes
- AS/NZS 2865 - Confined Spaces
- AS/NZS 3012 – Electrical installations – Construction and Demolition Sites
- AS 1891.4 – Industrial Fall-arrest Systems and Devices

4.2 Codes of Practice and Regulations

All *WUC*, including all materials and workmanship, shall comply with the relevant requirements of NSW Government regulations, bylaws of the controlling local authority, codes of practice and guidelines including, but not limited to, the following:

4.2.1 Acts and Regulations

- Work Health and Safety Act (NSW)
- Work Health and Safety Regulation (NSW)
- Protection of the Environment Operations (Waste) Regulation (NSW)
- Protection of the Environment Operations Act (NSW)

4.2.2 Codes of Practice (COP)

- NSW Government - Code of Practice – Demolition Work.
- NSW Government - Code of Practice - Confined Spaces.
- NSW Government - Code of Practice – How to Safely Remove Asbestos.
- NSW Government - Code of Practice – Hazardous Manual Tasks.
- NSW Government - Code of Practice – Managing the Risks of Falls at Workplaces
- Workcover NSW - Moving plant on construction sites code of practice.
- Workcover NSW - Safe work on roofs part 1: commercial and industrial buildings code of practice.
- Workcover NSW - Work near overhead power lines code of practice.

4.2.3 Guidelines

- NSW Waste Avoidance and Resource Recovery Strategy 2014–21.
- EPA Disposal Guidelines

4.3 Related specifications

All documents referenced in this specification shall be included as requirements of the *WUC*. This also applies to other technical specifications that may be supplied by the *Principal* which are required for the successful, safe completion of the *WUC*.

5 Demolition and *site* restoration scope

5.1 General

The *Contractor* is to familiarise themselves with the Scope of Work described in the *Contract*, drawings, by *site* visit, documents appended to this specification to understand the scope of the work fully. The *Contractor* shall perform the *WUC* to achieve the Objectives of the Project as described in the *Contract*.

5.2 *Contractor* to note

a) All work on the *site* must be carried out in such a manner so as not to impact on the normal day to day operations of any of the surrounding stakeholders.

b) The *Contractor* must put in place the appropriate *site* access control procedures to allow all visitors, including the *Principal* and *Superintendent*, to gain access to the *site*.
c) The *Contractor* must provide such temporary access and temporary protection to all equipment to enable safe work to proceed. The *Contractor* must maintain safe access to the *site* by carrying out, as necessary, any modifications to the *site*, including the installation of handrails and kickplates where required during the carrying out of the *WUC*.
d) Up to the *date of practical completion* and during the completion of minor omissions and defects the *Contractor* must maintain and leave the *site* in a clean and tidy condition to the satisfaction of the *Superintendent*.
e) The *Contractor* must put in place a Waste Management Plan for the disposal of materials generated by the *WUC* to ensure all rubbish and material not recyclable and no longer required are removed from site. The Waste Management Plan must be submitted to the *Superintendent* and *Principa*l for review and comment.
f) The *Contractor* must comply with all written directions issued by the *Superintendent* pursuant to this Section within 24 hours, failure to do so will constitute default of *Contract.*
g) The *Contractor* must be responsible for the planning, design, management, isolation, demolition, backfilling, restoration, clean up, disposal, rectification and *defects liability period* of the *WUC* described and the performance of all other obligations required by the *Contract*.
h) The *Contractor* must make its own assessment as to the condition and structural stability of the items/structures to be demolished. The *Superintendent* and/or *Principal* will not accept any responsibility for the consequences of any judgement made by the *Contractor* in relation to the condition and structural stability of the items/structures to be demolished.
i) The *Contractor* must submit for review to the relevant Authority (SafeWork NSW) detailed work methods, procedures and information for all areas of the *WUC* prior to them being implemented. Work must not commence until such methods and procedures have been approved by the relevant statutory authority.
j) The *Contractor* must supply all materials, plant, equipment, tools, tackle, scaffolding, labour and services necessary for carrying out of all *WUC.*
k) The *Contractor* must ensure due protection is given to any existing pavement, service, structure or equipment, which is not included in the scope of *work* for demolition. Should any damage occur, rectification works must be performed by the *Contractor* to reinstate it to its current condition to the satisfaction of the *Superintendent*.
l) The *Contractor* must maintain a record of disposal for all materials, plant, equipment, fill, rubble and waste emanating from the *site*.
m) The record must include copies of weighbridge dockets, disposal dockets and tipping fees payed to statutory approved dump sites.
n) Both the *Superintendent* and *Principal* will have the right to witness the record of disposal for all materials resulting from *WUC*.
o) The *Contractor* must provide the *Superintendent* with documentary evidence of the disposal of all asbestos contaminated materials in accordance with statutory requirements.
p) The *Contractor* will have on *site* at all times during the execution of the *WUC*, a supervisor named in its current SafeWork NSW Unrestricted Demolition Licence.
q) The demolition methods used by the *Contractor* must, at all times, consider the health and safety of all persons on the *site*. Mitigation strategies and the hierarchy of Risk Control must be used to ensure Zero Harm. The *Contractor* must also take into consideration to possible impact to others beyond the defined boundary.
r) The *Contractor* will not be permitted to store unnecessary equipment on the *site*. *Contractor's* equipment, i.e. equipment brought onto the *site* by the *Contractor*, which, in the opinion of the *Superintendent*, is being stored unnecessarily on the *site* must be removed, at the *Contractor's* cost, within 24 hours of a direction from the *Superintendent*.
s) The *Contractor* shall manage and account for the potential explosive environment associated with the presence of coal dust and coal within the Coal Handling Plant Structures and Storage Area In undertaking the *WUC.*

5.3 Work and Services by *Principal* and others

The *Principal* will allocate to the *Contractor* an area in the former power station car parking area away from the working areas for the erection of the Contractor's *site* facilities.

a) Power supply for amenities and offices will be made available for use by the *Contractor* from an existing private pole and power board in the car parking area.
b) Domestic water will be available for use by the *Contractor* from an existing water supply system in the amenities area. Water supply via the *Principal's* site water supply is not guaranteed.
c) The *Contractor* shall supply their own project office and amenities including toilet facilities (porticos or pump out system) during the *WUC*.
d) The Main Access Bridge (near GPM office) with a 40t Maximum load limit (TBC) will be used as an access route during the WUC.
e) The existing CW Screens Road bridge near the Colongra Power Station currently has a restricted 40t Maximum load limit. The eastern side has a reduced load limit and is currently cordoned off using water barriers. This may not be available to access during the Works.

5.4 Project management

The *Contractor* must provide a Project Execution Plan (PEP) for the *WUC*. An example of a PEP shall be submitted with the *Contractor*'s Tender. The PEP must contain key information on but not limited to:

a) Environment, Health, Safety and Security.
b) Construction and environmental management plan.
c) Dilapidation Report of the *site* and surrounding properties and infrastructure.
d) *Construction program* (down to Level 3) forming the schedule for performing the *WUC*.
e) Resources and organisation chart.
f) Key personnel proposed.
g) Quality management detail, including compliance to standards and regulations.
h) Reporting and frequency.
i) Project controls.
j) Demolition and *Site* restoration proposed approach – high level.
k) Recycling approach.
l) Required certifications and license for the *WUC* considering methods proposed.

5.5 Health, safety and environment

The *Contractor* shall allow in their price for all the *Principal*'s and Regulatory requirements including but not limited to:

a) PPE
b) SWMS
c) Site Inductions
d) Pre-start meetings, permit-to-work formalities and toolbox meetings.
e) Permit-to-work meetings and formalities.
f) Confined space requirements (if required) including rescue team and stand by personnel. Confined space works to comply with AS 2865 and any additional *Principal* requirements.
g) Working at height requirements in accordance with the NSW Government - Code of Practice – Managing the Risks of Falls at Workplaces
h) ACM removal, handling, and disposal requirements. ACM works to comply with the NSW Government - Code of Practice – How to Safely Remove Asbestos
i) Verification of competency assessments.
j) Permits, certifications and licences for:
    a. Plant and Machinery, including boats and scaffolding.
    b. Equipment.
    c. ACM removal transport and disposal activities
    d. People to perform high risk activities.
k) Monthly Health and Safety Statistics Reporting.

l) Any other requirement not mentioned to be compliant with the *Principal*'s requirements
m) Statutory Regulations.
n) SafeWork NSW requirements.

5.6 Quality Management

5.6.1 General

a) The *Contractor* shall plan, establish and maintain a quality system for the *WUC* that meets a National or International quality system standard.
b) Implementation of the Quality Assurance requirements shall be in accordance with AS/NZS ISO 9001 where appropriate.
c) The *Contractor* shall provide a *Contract* Specific Quality Plan that shall satisfy the overall requirements of the nominated quality system standard and in particular shall include the following as a minimum:
    a. A precise description of the scope of the plan in terms of the work covered
    b. The *Contractor*'s overall organisation structure
    c. The organisation structure specifically applicable for the management of the *Contract* with clear definition of the responsibility and authority for quality of each key position
    d. An outline of how the requirements of each applicable quality system element will be met, with cross referencing of the appropriate, formally documented system element procedures
    e. A procedure index identifying those procedures or work instructions which are already in existence or which are to be developed to address specific requirements of the *WUC*
    f. An index of the Inspection and Test Plans developed or to be developed to cover all important aspects of the *WUC*, and
    g. The procedure for reviewing, updating and controlling the *Contract* Specific Quality Plan.

d) Unless otherwise agreed in writing by *Superintendent*, no *WUC* shall commence until the *Contract* Specific Quality Plan has been reviewed and accepted by the *Superintendent*.
e) Subsequent to the award of the *Contract* and until the *final certificate* is issued, the *Contractor*'s quality system will be subject to audit and surveillance by the *Superintendent*. The frequency and depth of such audit and surveillance will depend on the adequacy of the *Contractor*s QA system and the *Contractor*'s performance during the *Contract*.
f) The minimum notice to be given by the *Superintendent* to the *Contractor* of such an audit will be 5 working days. For surveillance, advance notice of 24 hours will be given.
g) For Corrective Action Requests (CARs) or Non Conformance Reports (NCRs) originating during the life of a *Contract*, the *Contractor* shall develop and submit the program of implementation of appropriate corrective action no later than two weeks after the date of issue of such CARs or NCRs.
h) All programs for implementation of corrective action, when accepted by the *Superintendent,* shall form part of the *Contract*. Such corrective action shall not entitle the *Contractor* to an *EOT* nor shall it entitle the *Contractor* to a claim for additional costs.

5.6.2 Quality Documentation

The *Contractor* shall establish and maintain a system of records that provide objective evidence that the requirements of the *Contract* are satisfied. The *Contractor* shall ensure that subcontractor records, pertinent to the *Contract* are covered by this system.

All applicable records shall be available for audit and review by the *Superintendent* prior to undertaking the *WUC.*

Records shall be retained by the *Contractor* and subcontractors for a period of seven years from the last *date of practical completion* of the *Contract* unless stipulated for a longer period by the *Contractor* by the appropriate Statutory or Regulatory requirements.

5.6.3 Inspection and Test Plans

The *Contractor* shall plan and document the inspections, tests and verifications to be performed by the *Contractor* and its subcontractors. Inspection and Test Plan(s) (ITPs) shall be prepared in accordance with AS/NZS ISO 9001 and shall include all the suggested requirements of that Standard.

Inspection and Test Plan(s) shall be submitted to the *Superintendent* at least two weeks prior to the programmed commencement date of work covered by each plan (unless specifically detailed elsewhere in the *Contract*) to allow the *Superintendent* to assess their suitability for use on the *Contract* and to insert the witness, hold and release points required by the *Superintendent.*

Where the *Contractor* intends to rely on and submit for approval, subcontractor's ITPs for various parts of the work, these subcontractor's ITPs shall be referenced on the *Contractor*'s Master Controlling ITP and shall be checked and endorsed by the *Contractor* prior to submission to the *Superintendent*.

Unless otherwise agreed, the programmed commencement dates for work covered by ITPs will be those in the latest approved *construction program*. The *Contractor* shall be deemed to have made due allowance in its *construction program* for the *Superintendent*'s consideration of the plan(s). The insertion of witness, hold and release points by the *Superintendent* shall not be the basis of claims for additional costs or *EOT* by the *Contractor*.

5.7 Disposal of demolition spoil, scrap and recycling

The *Contractor* shall make every effort to recycle materials and waste from the *WUC* as much as possible. The *Contractor* shall seek guidance from NSW Waste Avoidance and Resource Recovery Strategy 2014–21 and demonstrate how the reduction of waste streams will be achieved.

The *Contractor* shall clearly identify in their offer the extent of recycling including:

a) Scrap metal. The *Contractor* shall allow for the scrapping of all materials that can be salvaged.
b) Processing of scrap on *site* for efficient transport from the *site* is possible and controls around process shall be clearly identified in the CEMP.
c) Recycled concrete. The *Contractor* shall recycle all concrete for use as backfilling of voids.
d) Steel reinforcing recycling.
e) Other.

All *WUC* shall comply with the Protection of the Environment Operations Act.

5.8 Traffic Management Plan

The *Contractor* shall develop a Traffic Management Plan (TMP) for the *WUC*. Consultation with the *Principal* shall be allowed for and undertaken in developing the TMP. The TMP shall comply with Transport for NSW (TfNSW) and Central Coast Council requirements.

5.9 Dilapidation Report

The *Contractor* shall undertake and prepare dilapidation report for the *site* and surrounding properties and infrastructure before commencing *WUC*.

5.10 Site Establishment and Disestablishment

The *Contractor* shall provide in the area allocated by *Principal* at the *site*, all sanitary and all other accommodation for the personnel employed by the *Contractor* and subcontractors on the *Contract*. Each building or structure must have its exact location approved. Use of other areas requires special approval.

The *Contractor* shall supply, erect, maintain and remove within 14 days after the last *date of practical completion* of the *Contract*, any temporary structures such as the *Contractor*'s *site* office, store shed,

workshop, tool shed and employees' amenities shed, change room, sanitary accommodation, hot water boilers, etc., all as required by the relevant industrial arrangements/agreements and Statutory Authorities.

The buildings and associated services shall be maintained in a clean and sanitary condition, all subject to the approval of *Principal* and authorities concerned. The *Contractor* shall give all notices to the authorities and pay all fees.

Site accommodation and amenities shall be of a standard that complies with the requirements of the *Principal* and regulations of the Work Health and Safety Act and Work Health and Safety Regulation. Adequate facilities shall be provided before any *WUC* at *site* commences. All *site* buildings and containers shall be identified with the company name.

The *Contractor* shall provide all drainage and surface preparation required in the area allocated. The *Contractor* shall be responsible for the maintenance of the allocated area, road access and other installed services.

The *Contractor* shall pay all costs, including demurrage charges, incurred in the delivery to *site* and receipt, handling and storage at the *site* of all materials forming part of the *WUC*.

Connection by the *Contractor* of temporary services to the *Principal's* electrical and water supplies and or terminal points shall be carried out by suitably qualified and trained personnel. The reliability and safety of these services are not guaranteed by the *Principal*. The *Contractor* will make its own investigations into their suitability for use during the *WUC*. Personnel undertaking this work shall be suitably inducted to the *site* prior to any work being carried out.

6 Pricing Particulars

The Tenderer shall note that the required format of Pricing Schedules will be as shown in the following table:

Table 1 | Pricing Schedule

Item	Description	Schedule	Purpose	Applicable Pricing Section
separable portion 1	Project Management, Plans and Approvals	Returnable Schedule – Lump Sum Pricing	Lump Sum Price	6.1:6.3
separable portion 2	Site Establishment, Disestablishment and Preparation Works	Returnable Schedule – Lump Sum Pricing	Lump Sum Price	6.1:6.3
separable portion 3	Demolition, disposal, concrete processing and reuse	Returnable Schedule – Lump Sum Pricing	Lump Sum Price	6.1:6.3
separable portion 4	Backfilling and *Site* restoration	Returnable Schedule – Lump Sum Pricing	Lump Sum Price	6.1:6.3
separable portion 5	Unplanned Works as directed by the *Superintendent*	Returnable Schedule – SOR Pricing	Schedule of Firm Rates	6.1:6.3

6.1 General

Tenderers must consider carefully the requirements provided within this document and others by the *Principal*. The Tenderer shall submit a proposed program for completion of the *WUC* in the Tender.

The Tenderer must complete the Pricing Schedules contained in Appendix B by entering opposite each category or work item offered the Rate/Price and other relevant pricing information to the extent required to complete the Schedules. The tendered Rates/Prices shall be FIRM, i.e. not subject to variation in costs. The

Contractor will have no entitlement to claim any increase in payments under the *Contract* in the event of changes to any industrial arrangements/agreements, (irrespective of whether one or more such arrangements/agreements may require negotiation, registration and/or implementation).

The *Contractor* shall serve all notices and pay all fees necessary to comply with all Acts of Parliament and the requirements of all Statutory Authorities.

Where the *Contractor* is obliged under the terms of the *Contract* to work overtime to regain its *construction program*, expedite outage work, or for any other reason covered by the *Contract*, this *work* shall be carried out at the *Contractor*'s expense with no adjustment to the *contract sum*.

Where, with the written agreement of the *Superintendent*, specialist labour, materials or other ex-works Items not covered elsewhere under the *Contract* are supplied by a subcontractor, whether in the course of Schedule of Firm Rates work or otherwise, then the *Contractor* will be reimbursed at the subcontractor invoiced cost to the *Contractor*, for supply of such specialist labour, materials or ex works items, plus a handling fee, not to exceed 5% of the subcontractor's invoiced cost and which is to be nominated as a percentage in the Pricing Schedules contained in Appendix B. The handling fee must include for all procurement and other overhead administrative costs, charges, expenses and profit.

The *Contractor* shall note that claims for payment will be the base subcontractor's invoice (excluding GST) plus the handling fee.

6.2 Firm Lump Sum Price

The Tenderer must submit a separate firm Lump Sum Price listed in the Pricing Schedule contained in Appendix B for the work scope detailed in Sections 2, 3, 4 and 5. Notwithstanding the breakdown in the Pricing Schedule contained in Appendix B the Tenderer must include for all costs in its total tender price.

6.3 Schedule of Firm Rates

Where the *Superintendent* directs that *WUC* will be carried out on a Schedule of Firm Rates basis (Refer to Appendix B - SOR Pricing Schedule), the rates charged for hourly labour must allow for all costs such as, but not limited to profit, statutory allowances, small tools and consumables including welding consumables, plant and equipment (except where special plant and equipment is required and is specifically requested, in writing by the *Principal*), welding machines, lifting tackle, *site* establishment and facilities and supervision that is necessary to carry out the *work*.

Prior to commencement of *work* under a Work Direction, the *Contractor* must supply, for the approval of the *Superintendent*, budget maximum quantities of Schedule of Firm Rates items, the estimated monetary value of any items at cost plus, and a program for completion, for the agreed scope of *work*.

The *Contractor* will note that as the statutory requirements provide for the erection of all temporary guard rails and protection necessary, no separate payments will be made for the installation, maintenance and subsequent removal of such guard rails and protection. Where the *Contract* includes Schedule of Firm Rates items for provision of guardrails and protection, payment for such items will only be made for supply at the specific direction of the *Superintendent*. Items required by statutory regulations must be provided by the *Contractor*, independent of the Schedule of Firm Rates, and at no additional cost to the *Principal*.

7 *Contractor* Health, Safety and Environment

A priority for this project is the safe execution of the *WUC*. Controlling the *work* to ensure no harm to the environment, health and safety of people is of primary importance. The *WUC* is strictly controlled in accordance with the *Principal's site* safety requirements in operational areas. The *Contractor* shall allow for, and shall abide by without exception, the *site* Environment, Health and Safety (EH&S) requirements and regulatory requirements for the *WUC*.

7.1 Principal Contractor

For the purposes of the Work Health and Safety Regulation (NSW), the *Contractor* will be the Principal Contractor for all *WUC*.

7.2 Site Health and Safety Management Plan

The *Contractor* shall allow to develop a project specific health and safety management plan for the *WUC* in accordance with the *Contractor's* Health and Safety Management system and NSW regulations.

7.3 Inductions

The *Contractor* shall allow for the *Principal's* induction to the Munmorah Power Station site. This will have a nominal duration of 1 hour. Inductions can be performed individually online using the appropriate login and password details provided by the *Principal*.

All personnel, including subcontractors, are required to undertake this induction and complete a questionnaire based on the induction information. All costs associated with induction attendance shall be borne by the *Contractor*. There is no charge by the *Principal* to conduct inductions.

7.4 Licencing and certification

The *Contractor* will be performing high-risk work activities as part of the *WUC*. The *Contractor* shall abide by the requirements of the Work Health and Safety Regulation 2017. Division 1 Licensing of high-risk work.

No person may carry out a class of high-risk work unless that person holds a high-risk work licence for that class of high-risk work. Proof of licences is required. The *Contractor* shall provide these at Tender time and update a register for retention on *site* during the *WUC*.

7.4.1 Confined space work

All confined space work must comply with the permits to work from AS 2865 as a minimum. The *Contractor* must employ confined space controls in accordance with AS 2865 and Codes of Practice (COP) should the *Contractor* introduce confined space work in their work methods. The *Contractor* should, wherever practicable, develop work methods that prevent the need for confined space entry (CSE).

7.4.2 Working at Heights

The *Contractor* shall provide and maintain a safe system of work to provide adequate protection from falls in accordance with The NSW Government - Code of Practice – Managing the Risks of Falls at Workplaces.

The *Contractor* shall perform the *WUC* by methods that ensure all personnel can safely enter and exit the workplace, undertake, and inspect the works with adequate protection from falls. This includes providing fall prevention devices and, if that is not possible, fall arrest systems.

7.4.3 Rescue Plan

The *Contractor* shall provide a Rescue Plan and resources for all CSE work. All resources to perform a rescue shall be allowed for and provided by the *Contractor*. Communications by a 2-way radio shall be established with the *Principal*. Communication protocols shall be identified in the Rescue Plan.

7.4.4 Rescue team

The *Contractor* shall have a rescue team on standby during all CSE work. The rescue team shall be trained for rescue in a confined space and have the appropriate number of personnel, communications and equipment for a standalone rescue capability.

7.5 Demolition

Demolition work shall be carried out in accordance with the Work Health and Safety Regulation (NSW). All demolition work shall comply with AS 2601 - The demolition of structures. All plans and requirements of the standard shall be allowed for in the *Contractor*'s price.

The *Contractor* shall be licenced and approved to perform the demolition works by SafeWork NSW. The *Contractor* shall notify the regulator of the demolition work in accordance with SafeWork NSW requirements.

7.6 Disposal of demolition materials

7.6.1 Scrap metal

The *Contractor* shall allow to remove as scrap all materials that can be salvaged for the purposes of scrap. Processing of scrap on *site* for consolidation and efficient transport from the *site* shall be considered to reduce traffic numbers and costs. Where demolition materials cannot be recycled, the *Contractor* must dispose of these materials at an NSW EPA approved licenced waste disposal facility. Documented waste tracking must be provided on completion of the *WUC*.

7.6.2 Demolished concrete

The *Contractor* shall process all demolished reinforced concrete and stockpiled concrete rubble to a maximum particle size of 75 mm for reuse as backfill material for the voids following demolition from the *WUC.*

The *Contractor* should state what approvals are required for any on-*site* processing proposed. The *Contractor* shall include for all costs associated with obtaining approvals and carrying out any on-*site* processing.

7.6.3 Hazardous materials and substances

The *Contractor* shall conduct an audit by a competent person of the Coal Handling Plant Structures and associated infrastructure and develop a Hazardous Substances Management Plan in accordance with AS 2601.

The *Contractor* shall also investigate and confirm the presence of asbestos containing materials (ACM).

Any ACM shall be removed before demolition commences in accordance with the developed Hazardous Substances Management Plan. It is noted that following ACM exists in the work area:

a) Weep hole asbestos cement conduits cast within the Coal Live Storage Bunker walls and retaining walls and Conveyor Tunnel walls.
b) Drainage asbestos cement down pipes (8 number of) cast within the Coal Live Storage Structure columns and in the plough feeder tables.
c) Electrical and control cable asbestos cement conduits cast within walls, foundations and slabs.
d) Buried concrete encased asbestos cement conduits within the Coal Storage Area.

The *Contractor* shall remove the embedded asbestos cement conduits from the RC members to be demolished by core drilling and extracting the asbestos cement conduits before demolishing the member or extracting the entire member where possible such as minor footings.

The *Contractor* shall remove the concrete asbestos cement electrical conduits from the conveyor ramp retaining wall to the former oil and coal trap north of the coal storage area (refer to Figure 5 and drawing MM 360752 in Appendix A).

The *Contractor* shall investigate and confirm before demolition that other site material and debris in the work area does not have ACM or other hazardous materials.

All ACM shall be disposed of to either the on-*site* Asbestos Repository or disposed off-*site* to an authorised asbestos / waste disposal facility. ACM disposal location will depend on the volume of ACM removed from the work area.

If the *Contractor* is directed to use the on-*site* asbestos repository area the *Contractor* shall be responsible for the transport of the ACM to, preparation of and management of the asbestos repository area during the *WUC.* This shall include daily covering of the ACM with 0.5 m of fill material and final restoration of the area deposited ACM with a covering of 3 m of clean fill material.

The *Contractor* shall also manage and account for the potential explosive environment associated with the presence of coal dust and coal within the Coal Handling Plant Structures and Storage Area in undertaking the *WUC.*

The *Contractor* shall safely remove and dispose of the coal dust and coal from within the Live Storage Bunker and Conveyor Tunnel structures to the *Principal's* on-*site* disposal area west of the Munmorah Ash Dam.

7.7 Environmental controls

The *Contractor* shall allow for a project *site* specific plan to manage environmental factors The *Contractor* shall develop a Construction and Environmental Management Plan (CEMP) and Waste Management Plan (WMP) for the *WUC*. All emissions shall be controlled.

The CEMP shall address, but not be limited to, the following:

a) Air borne contaminants shall be controlled.
b) Noise.
c) Site working hours:
    a. 7am to 6pm Monday to Saturday.
    b. No work Sundays or Public Holidays without the written permission and approval of the *Superintendent*
d) Water – flows which impact storm water and the intake and outfall canals are not permitted during the *WUC*. The *Contractor* shall abide by the approved CEMP. The *Contractor* shall employ sufficient resources to mitigate any potential spill or debris entering the intake and outfall canals.
e) Land - The *Contractor* shall employ sufficient sediment and erosion control techniques to manage potential discharges from the *site* during the *WUC*.

A

Appendices

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Appendix M

EIL Calculations

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
20
Enter soil pH (calcium chloride method) (values from 1 to 14)
7
Enter organic carbon content (%OC) (values from 0 to 50%)
1
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cu soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	#NUM!	85
Urban residential and open public spaces	#NUM!	230
Commercial and industrial	#NUM!	320

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
20
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Ni soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	#NUM!	50
Urban residential and open public spaces	#NUM!	270
Commercial and industrial	#NUM!	460

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
20
Enter soil pH (calcium chloride method) (values from 1 to 14)
7
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Zn soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	#NUM!	230
Urban residential and open public spaces	#NUM!	770
Commercial and industrial	#NUM!	1200

Appendix N

SAQP

CONSULTING
EARTH
SCIENTISTS

SAMPLING AND ANALYSIS QUALITY PLAN
ENVIRONMENTAL SITE INVESTIGATION
WARATAH SUPER BATTERY SITE,
301 SCENIC DRIVE, DOYALSON, NSW 2262

PREPARED FOR GENERATOR PROPERTY MANAGEMENT PTY LTD

CES DOCUMENT REFERENCE: CES170608-GPM-DM

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SAMPLING AND ANALYSIS QUALITY PLAN

ENVIRONMENTAL SITE INVESTIGATION

WARATAH SUPER BATTERY SITE

301 SCENIC DRIVE, DOYALSON, NSW 2262

PREPARED FOR GENERATOR PROPERTY MANAGEMENT PTY LTD

CES DOCUMENT REFERENCE: CES170608-GPM-DM

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SAMPLING AND ANALYSIS QUALITY PLAN

ENVIRONMENTAL SITE INVESTIGATION

WARATAH SUPER BATTERY SITE

301 SCENIC DRIVE, DOYALSON, NSW 2262

PREPARED FOR GENERATOR PROPERTY MANAGEMENT PTY LTD.

CES DOCUMENT REFERENCE: CES170608-GPM-DM

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SAMPLING AND ANALYSIS QUALITY PLAN

ENVIRONMENTAL SITE INVESTIGATION

WARATAH SUPER BATTERY SITE

301 SCENIC DRIVE, DOYALSON, NSW 2262

PREPARED FOR GENERATOR PROPERTY MANAGEMENT PTY LTD.

CES DOCUMENT REFERENCE: CES170608-GPM-DM

1 INTRODUCTION

Consulting Earth Scientists Pty Ltd (CES) was commissioned by Generator Property Management Pty Ltd (GPM) to conduct an environmental site investigation for a portion of the GPM landholding located at 301 Scenic Drive, Doyalson NSW 2262 (herein referred to as the site). The site is legally described as Part Lot 10 in Deposited Plan (DP) 1201414. The lot is proposed to be subdivided.

A site location plan is presented as Figure 1. The proposed site boundary is presented as Figure 2, based on the proposed site boundary survey, provided by GPM, presented as Appendix A.

The site comprises the former Munmorah Power Station coal stockpile area (Coal Stack) and surrounding lands which include the former coal handling plant (including the coal bunker), coal conveyor systems, coal bulldozer fuelling area and staff amenities, a former gardener's shed, two surface water management and settlement dams, and a surface water collection and conveyancing system (Perimeter Channel). The site also includes Hydrocarbon Area of Environmental Concern (AEC) 4 which was subject to assessment undertaken in 2019, the results of which are presented in *AEC4 – Coal Stack Above Ground Storage Tanks Investigation Report* (CES document reference CES170608-GPM-BL dated 07 June 2019).

The Coal Stack area of the site was used for processing and load-out of demolition waste during the demolition of the Former Munmorah Power Station (which was located offsite to the north). Five stockpiles of demolition produced materials (crushed concrete) have been retained and are stockpiled onsite. A separate SAQP has been prepared for the assessment of the stockpiled materials, *Sampling and Analysis Quality Plan Crushed Concrete Stockpiles Assessment* (CES170608-GPM-DI dated 15 July 2022), and assessment of the stockpiled materials has not been included in this SAQP.

The former Munmorah Power Station fire fighting training area is located offsite to the northeast, adjacent to the site.

This Sampling and Analysis Quality Plan (SAQP) is designed to document the procedures for sampling soil, surface water, groundwater and sediment at the site in order to determine the suitability of the site with respect to contamination for the proposed use of the site for the Waratah Super Battery, to identify contamination issues with respect to the proposed site use that

require remediation or management, and if required provide suitable environmental data on which remediation and management decisions can be based.

The SAQP has been prepared with reference to the guideline documents listed in Section 10.

2 OBJECTIVES AND SCOPE OF WORK

2.1 OBJECTIVES

The objectives of the work are to characterise the site with respect to contamination, assess the suitability of the site for the proposed Waratah Super Battery use and if required provide environmental data on which remediation and management decisions can be based.

2.2 SCOPE OF WORK

To achieve the objective, CES proposes to undertake the following scope of work:

- Preparation of this SAQP, which includes the seven step Data Quality Objectives (DQO) Assessment and the preparation of a preliminary conceptual site model (CSM);
- Obtain all necessary permits and approvals prior to commencement of the works including (where applicable) from GPM;
- Preparation a Project Safety Plan (PSP) for the sampling works;
- Implementation of a rinsate analysis programme of sampling equipment prior to visiting the site or prior to the commencement of sampling to ensure that all selected sampling equipment does not provide an additional source of Per and Poly Fluoroalkyl Substances (PFAS);
- Completion of the following fieldwork programme comprising:
    - Excavation of 12 test pits and drilling of 5 boreholes in the former Coal Stack Area and the collection of 24 soil samples.
    - Excavation of 9 test pits and drilling of 1 borehole in the former adjacent lands and the collection of 14 soil samples.
    - Excavation of 1 test pit and drilling of 1 borehole in the footprint of the former gardeners shed and the collection of 2 soil samples.
    - Excavation of 3 test pits and drilling of 6 boreholes adjacent to the battery site boundary with the offsite Fire Fighting Training Area and the collection of 9 soil samples.
    - Collection of 2 sediment samples from the Coal Handling Pond using a multistage sediment core sampler.

  - Collection of 2 surface water samples from the Western Settling Basin and the Coal Handling Pond
  - Collection of 14 shallow soil samples from the former location of the AEC 4 Above-ground Storage Tank (AST) concrete pad.
  - Collection of 13 concrete grab samples from the perimeter channel and the coal handling plant "bunker".
  - Completion of the 13 boreholes with groundwater monitoring wells to allow for the sampling of groundwater.
  - Development of 13 new and 5 existing groundwater wells.
  - Collection of 18 groundwater samples using low flow purging and sampling techniques.
- Soil samples will be field screened using a calibrated Photoionisation Detector (PID) and fill soil samples will be screened for asbestos in accordance with Table 8 of WA DER 2021 *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*.
- Soils encountered during test pit excavation/drilling will be logged in accordance AS 1726- 2017.
- Soil samples will be submitted to a NATA accredited laboratory for analysis as follows:
  - PFAS in soils/sediment/concrete (64 samples):
    - 24 samples from the Coal Stack
    - 14 Samples from the adjacent lands;
    - 9 samples from the boundary with the Fire Fighting Training Area
    - 4 samples from the former gardeners shed and the Coal Handling Pond
    - 13 samples from the perimeter channel and Coal Handling Plant bunker
  - PFAS in Australian Standard Leaching Procedure (ASLP) (11 Samples)
    - 3 samples from the Coal Stack
    - 2 samples from the adjacent lands;
    - 2 samples from the boundary with the Fire Fighting Training Area
    - 2 samples from the former gardeners shed and the Coal Handling Pond
    - 2 samples from the perimeter channel and Coal Handling Plant bunker
  - Total Recoverable Hydrocarbons (TRH) Benzene, Toluene Ethylbenzene and Xylene (BTEX), Polycyclic aromatic hydrocarbons (PAHs), Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) Organochlorine pesticides (OCPs) Organophosphates pesticides (OCPs) and Polychlorinated biphenyls (PCBs) (31 samples)
    - 17 samples from the Coal Stack
    - 10 Samples from the adjacent lands;
    - 4 samples from the former gardeners shed and Coal Handling Pond
  - Asbestos in soils (Asbestos Fines/Fibrous Asbestos) (27 samples)
    - 17 samples from the Coal Stack

    - 10 Samples from the adjacent lands;
  - TRH, BTEX, PAHs – 14 samples from the AEC 4 sub-slab sampling.
  - TRH, BTEX, PAHs, Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) OCPs, OPPs, PCBs, in groundwater (14 samples)
  - PFAS in groundwater/surface water (20 samples)
  - Combustible content and Sulfur content (9 samples from the Coal Stack)
  - Quality Assurance and Quality Control Samples:
    - PFAS in soil 16 samples;
    - TRH, BTEX, PAHs, Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) OCPs, OPPs, PCBs in soil 4 samples
    - PFAS in groundwater and surface water 6 samples
    - TRH, BTEX, PAHs, Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) OCPs, OPPs, PCBs, in groundwater and surface water 2 samples
    - TRH, BTEX, PAHs, Metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn) OCPs, OPPs, PCBs, and PFAS in rinsate samples 10 samples.
    - TRH BTEX in trip spike and TRH BTEX and PFAS in trip blank 12 sample sets.

- Preparation of an Environmental Site Investigation Report will be prepared in accordance with the requirements of a detailed site investigation – Table 2.3 of *Consultants Reporting on Contaminated Land Contaminated Land Guidelines* NSW EPA 2020, which will provide the following information and data:

  - Confirmation of the soil, sediment, surface water and groundwater sampling methodology;
  - Discussion of the QA/QC sampling and whether the results of the QA/QC analysis provide robust confidence in the sampling procedures, sample handling and laboratory performance;
  - Presentation of the guideline values for assessment of soil, sediment, surface water and groundwater analysis;
  - Presentation of the analytical results, including tabular presentation of the results to allow comparison with the guideline values. Exceedances of the screening criteria will be presented on figures;
  - Presentation of the location of residual buried services onsite which may be constructed of asbestos cement, based on site plans or site walkover combined with a survey;
  - Assessment and discussion of the analytical results including potential areas of concern or areas requiring further investigation/assessment/remediation/ management, in the event that the detected concentrations are above the currently available guideline values;
  - Presents a revised Conceptual Site Model; and

- Presents an assessment of site suitability and makes recommendations for further assessment and/or remedial work if considered to be necessary.

3 SITE IDENTIFICATION AND ENVIRONMENTAL SETTING

3.1 SITE IDENTIFICATION

The site, as it is referred to in this SAQP, consists of part of the GPM property holding at 301 Scenic Drive, Doyalson NSW 2262. The site is defined Lot 10 Deposited Plan (DP) 1201414, which is attached as Appendix A. The site boundary is presented on Figure 2 Site Layout Plan.

The Site is located within the Central Coast Council local government area (LGA) on the Central Coast of NSW. The area of the Site is approximately 13.5 ha.

The site locality is presented in Figure 1 with the site's key features presented in Figure 2.

The geographical extent of the site is presented in Table 1 below.

Table 1: Geographical extent of site

Corner/point of site	Eastings	Northings
Northwest corner of site	364012	6323899
Southeast corner of site	364461	6323901
Northeast corner of site	364231	6324209
Southwest corner of site	364317	6323671
Centre of site	364256	6323960

3.2 SITE ZONING AND LAND USE

The current land use zoning is defined by the Land Zoning Map – Sheet LZN_018, 8550_COM_LZN_018_020_20160615, dated 3 February 2017 to date (Wyong Local Environmental Plan 2013) and is currently SP2 Infrastructure – Electricity Generating Works.

3.3 SITE DESCRIPTION

The site is currently vacant and is under care and maintenance by GPM.

The site is irregular in shape

Site features, as observed by CES on 08 July 2022 include:

- The Coal Stack Area of the site, used during the demolition of the former Munmorah Power Station as a metal processing and load out area, was observed to have small scrap metal pieces distributed across the site surface. In addition, the historic use of the site for coal stockpiling has resulted in coal fragments visible on the site surface.

- Five stockpiles of demolition derived materials were observed near the north-eastern boundary of the site.
- Two dams are located onsite, the Western Settling Basin (near the north west corner of the site) and the Coal Handling Plant "Clean" Water Pond, near the northern boundary of the site.
- No structures are present on the site, with the exception of the former coal handling plant "bunker" which is comprises a long sub-surface concrete structure located in the centre of the Coal Stack Area. The concrete structure extends above the site surface in two locations, at the northern and southern extents of the structure. A ramp from the site surface down to the bunker entrance is located at the northern end of the bunker.
- The Perimeter Channel, an open concrete lined surface water management channel is located along the boundary of the former Coal Stack Area.
- A shallow unlined dish drain is located along the western boundary, adjacent to the former coal conveyor line. The drain discharges to the western part of the Perimeter Channel and the Western Settling Basin.
- Concrete slabs and bunding associated with the bulldozer Above Ground Storage Tanks (ASTs) are located to the south of the site. An oil-water separator remains insitu adjacent to the concrete slabs.
- Two concrete slabs are located near the northern boundary of the site, one associated with a former gardeners shed and one a former water tank (understood to have provided fire fighting water storage.
- The former Coal Stack and conveyor line areas are sparsely vegetated with grasses and some small bushes/trees, the remaining areas of the site are well vegetated with grasses and established trees.
- The site boundary is fencing, in good condition, in all directions with the exception of the north-western boundary which is partially fenced, and the northern boundary. The site is bound by other GPM held lands, with the exception of the east, which is owned by Snowy Hydro Limited.

3.4 SURROUNDING LAND USE

The site is bound by other GPM held lands, with the exception of the east, which is owned by Snowy Hydro Limited as part of the Colongra Power Station. The Colongra Power Station is located approximately 200 m northeast of the site and is also used for electricity generating industrial purposes.

The GPM managed land is surrounded by the following uses presented in Table 2:

Table 2: Surrounding Land Use

Orientation	Description
North	The former Munmorah Power Station, vacant following the demolition. The northern boundary of the former Munmorah Power Station is formed by the Inlet/Outlet Canal.
West	The former Munmorah Power Station buffer lands, Camp Breakaway and residential areas of San Remo and Blue Haven, Doyalson beyond.
South	The former Munmorah Power Station buffer lands lie to the south with the residential areas of Budgewoi, Buff Point and Halekulani with Budgewoi Lake beyond.
East	An area of the Snowy Hydro Limited landholding which used to be part of the Coal Stack followed by former Munmorah Power Station buffer lands and Colongra Swamp Nature Reserve with the residential area of Halekulani and Lake Munmorah beyond.

3.5 SENSITIVE NEARBY RECEPTORS

Sensitive nearby receptors are presented in Table 3:

Table 3: Sensitive Nearby Receptors

Sensitive Receptor	Receptor Type	Orientation and Distance from Site
Lake Munmorah	Human Health – Recreational; Ecological.	1.1 km, East
Budgewoi Lake	Human Health – Recreational; Ecological.	1.6 km, South West
Colongra Swamp	Human Health – Recreational; Ecological.	0.5 km, North East
GPM Landholding	Human Health – Recreational/Site specific; Ecological.	0 m, North, South, West
Surrounding Residential Areas	Human Health – Residential	0.6 km, East (closest)
Future Site Users	Human Health – Commercial/Industrial	0 m
Colongra Power Station Site Workers	Human Health – Commercial/Industrial	0 m, East

3.6 PLANNING CERTIFICATES

With reference to the Section 10.7(2) and (5) Planning Certificate (issued 13 June 2018) for the Lot 10 DP 1201414 which includes the site, the following is noted:

- The site is zoned “SP2 Infrastructure”;
- The site is located within a proclaimed mine subsidence district under the Mine Subsidence Compensation Act 1961;
- Some of the site is located on bush fire prone land; and
- The site is not prescribed under the Contaminated Land Management Act 1997 (“Nil Prescribed Matters”).

3.7 CURRENT AND PROPOSED SITE USE

The site is currently vacant and under care and maintenance by GPM therefore the generic commercial/industrial exposure scenario is likely to be most suitable, however a site-specific human heath risk assessment may be considered.

The proposed land use is to develop the site to install the Waratah Super Battery. The final design of the development is under development and may include:

- Cut/fill operations to create a level surface for the construction of battery infrastructure and battery units;
- Finishing the site surface with a suitable aggregate material in accordance with an engineered specification;
- Demolition/partial demolition of the former Coal Handling Plant bunker;
- Filling of the Western Settling Basin and the Coal Handling Plant “Clean” Water Pond. Alternatively, these structures may be retained for stormwater management;
- Demolition of some or all of the Perimeter Channel; and
- Construction of a suitable site stormwater management system. The system is likely to require the installation of retention storage basins/dams to manage potentially contaminated waters.

3.8 BURRIED SERVICES

Before You Dig plans for the site have been accessed and with the exception of Telstra and Optus which are marked in the northern portion of the site, buried services are shown onsite.

The site has been subject to demolition works, and all buried services relating to the former coal handling plant and staff amenities have been disconnected and deenergised. It is likely that plans showing the location of these services are available within the site records. It is also noted that based on observations at other areas of the site that site services (stormwater and electrical conduit) will be constructed of asbestos cement.

The location of services remaining on site should be investigated as part of the works as where services are retained insitu it is likely that an environmental management plan to manage risks associated with the presence of asbestos will be required.

3.9 COAL STOCKPILING

Coal was delivered to the coal stack by conveyor from the Munmorah State Mine, Newvale No. 2 Colliery, Endeavor State Mine and later from the Vales Point Power Station. No processing or crushing of coal was undertaken within the Coal Stack, coal was delivered processed to a maximum particle size of 50 mm. Bulldozers were used to manage and store excess coal delivered to the coal stack by pushing coal away from the coal handling plant, and back to the handling plant as required.

3.10 TOPOGRAPHY

A Light Detecting and Ranging (LiDAR) survey was provided by GPM. The LiDAR contours indicate that the site elevation is between approximately 10 - 18 m AHD, and the site falls gently to the north, with the exception of the eastern area of the former Coal Stack, which falls to the east.

3.11 GEOLOGY

With reference to the Gosford – Lake Macquarie 1:100, 000 Geological Series Map (9131, 9231) the lithology underlying the site is "Rnm", *Conglomerate, pebbly sandstone, grey to green shale (Munmorah Conglomerate) of the Narrabeen Group (Clifton Subgroup) of the Mesozoic age.*

The subsurface profile encountered in CES (2019) is presented in Table 4.

Table 4: Subsurface profile identified in CES (2019c)

Geological Unit	Approximate Depth to Base of Unit (m)	Approximate Thickness (m)	Typical Description
Unit 1: Fill	0.3 to 1.2	0.3 to 1.2	Gravelly sand, medium to coarse, dark grey. Gravel is fine, dark grey, angular. Occasional traces of coal tailings. Moist or dry. Occasional diesel odours, no staining observed.

Geological Unit	Approximate Depth to Base of Unit (m)	Approximate Thickness (m)	Typical Description
Unit 2: Residual	7.2 to 7.9	6.3 to 6.7	Sandy clay, low to medium plasticity, mottled pale grey/reddish yellow/reddish brown/red. Moisture content equal to or greater than plastic limit. Firm to very stiff. Occasional diesel odours and dark grey/grey staining. OR; Silty clay, high plasticity, mottled pale grey/reddish brown or pale grey. Moisture content equal to plastic limit. Firm to stiff. Occasional diesel odours and dark grey/grey staining.
Unit 3: Munmorah Conglomerate	Not proven	Greater than 8.7	Highly weathered conglomerate: Sandy clay, medium plasticity, dark grey/reddish yellow. Moisture content greater than plastic limit. Occasional slight diesel odour. No staining observed.

3.12 SOILS

With reference to the Gosford – Lake Macquarie 1:100, 000 Soil Landscape Series Map (9131, 9231) the site is underlain by Doyalson Soil Landscape Group.

- The Doyalson Soil Landscape Group is characterised by *"gently undulating rises on Munmorah Conglomerate, broad crests and ridges and long gently inclined slopes. Predominantly cleared eucalyptus forests."*

3.13 ACID SULFATE SOILS

With reference to the Catherine Hill Bay Acid Sulphate Soils Risk Map (Department of Natural Resources (CJ Murphy, 1997, Edition 2, 1:25,000), the site is underlain by disturbed terrain in the north of the site and is unmapped in the south of the site (no known occurrence). Disturbed terrain relates to areas that have been extensively modified by anthropogenic activities, and therefore the presence or absence of acid sulfate soils is required to be assessed by soil investigations.

The soil types identified in previous investigations as presented in Table 4 do not comprise soils formed in marine or estuarine sediments, tidal lakes, coastal wetlands, back swamp areas, waterlogged or scalded areas, interdune swales or coastal sand dunes. In addition, the site is located at between 10 to 18 m AHD, elevations at which Acid Sulfate Soils are unlikely to form. In consideration of the above, Acid Sulfate Soils are not considered further.

3.14 HYDROGEOLOGY

The relevant hydrogeology of the site consists of a shallow unconfined aquifer, which is likely to have a relatively low permeability due to the formation consisting of clays and sandy clays.

Based on a previous investigation, undertaken by CES, *Munmorah Power Station: Groundwater Flow Assessment* (document reference: CES170608-GPM-AD Rev 2, dated 06 July 2018), groundwater flow around the wider GPM site is centripetal (i.e. groundwater flows towards the site's centre – the location of the power station). Based on this assessment and a review of the topographical information, the groundwater flow direction underlying the site therefore is expected to flow in a northerly direction towards the former Munmorah Power Station.

3.15 HYDROLOGY

Run off from the site is likely to be captured by the GPM site's stormwater management system which is divided between the "Clean" stormwater and "Dirty" water systems.

The "Clean" stormwater system typically drains areas of the site which did not contain potentially contaminating activities within the catchment. These areas include landscaped areas, building roofs, roadways, and the buffer lands. The "Clean" stormwater system discharges offsite directly, to the Outlet Canal.

The "Dirty" water system is designed to drain areas of the site where that catchment activities have the potential to produce contaminated run off such as within the former power station proper, maintenance sheds, the Coal Stack Area, and the former firefighting training area.

As such the water in the Coal Stack area and the conveyor line area of the site run off will be collected by the "Dirty" water system and run off from the other areas of the site collected by the "Clean" stormwater system.

As noted above the Coal Stack area drains to the "Dirty" water system, via the Perimeter Channel, which is part of the "Dirty" water system. The Perimeter Channel in the western portion of the Coal Stack area discharges to the Western Settling Basin, and the eastern portion to the offsite Eastern Settling Basin.

Similarly, the conveyor area runoff is collected by an unlined dish drain which discharges to the Perimeter Channel, or directly to the Western Settling Basin.

The exception to the above is the Coal Handling Plan bunker which discharges to the Coal Grit Sump (offsite) which is likely to overflow to the Station "Clean" stormwater system (offsite). During operations the Coal Grit Sump was pumped back to the Perimeter Channel.

The Western Settling Basin, under normal flow conditions also discharges to the Eastern Settling Basin (offsite) via an underground discharge line that discharges to the Perimeter Channel which drains the eastern portion of the Coal Stack area, east of the Coal Handling Plan bunker ramp.

The Western Settling Basin has a spillway which discharges to the "Clean" stormwater system in high flow conditions via the S1 Conveyor Pond (offsite) and the offsite Clean Water Channel.

Further details of site drainage are presented on drawing MM638784 *Munmorah Power Station Station Drainage Coal Handling Plant Area Drainage Layout* date 18 April 1995, a copy of which is attached as Appendix B.

3.16 METEOROLOGY

The site is located approximately 6.7 km north west of the former Commonwealth Bureau of Meteorology Norah Head Lighthouse weather station. The following climatic information was obtained from this data source, based on data recorded from 1971 to 2005:

- Mean monthly rainfall was variable throughout the year, with rainfall being highest during February (142.0 mm) and lowest during August (70.7 mm);
- Highest mean temperatures (recorded at 3 pm) occur during the months of December to March (mean maximum 22.9 to 23.8 degrees Celsius); and
- Cooler temperatures (recorded at 9 am) occur during the months of June to August (mean temperature 12.4 to 13.8 degrees Celsius).

The Commonwealth Bureau of Meteorology Norah Head automatic weather station is located 0.1 km from the former Commonwealth Bureau of Meteorology's Norah Head Lighthouse weather station and presents more recent climate data. The following climatic information was obtained from this data source, based on data recorded from 1989 to 2017:

- Mean monthly rainfall is variable throughout the year, with rainfall being highest during June (146.7 mm) and lowest during October (55.0 mm);
- Highest mean temperatures (recorded at 3 pm) occur during the months of November to March (mean maximum 23.7 to 26.0 degrees Celsius); and
- Cooler temperatures (recorded at 9 am) occur during the months of June to August (mean temperature 12.8 to 14.5 degrees Celsius).

No evapotranspiration data is available for the former Commonwealth Bureau of Meteorology Norah Head Lighthouse weather station or Commonwealth Bureau of Meteorology Norah Head automatic weather station, or any other nearby weather station.

3.17 ENVIRONMENTAL PROTECTION LICENCE (NO. 759)

Environmental Protection Licence (EPL) No. 759 has been issued to GPM by the NSW EPA and includes the site. The EPL relates to the discharge of miscellaneous discharge to waters (at any time). Various monitoring points are required to be sampled against assessment criteria and reported on an annual basis. No discharge or monitoring points are located on the site as defined in this SAQP.

3.18 NSW CONTAMINATED SITE REGISTER

Four contaminated sites notified to the NSW EPA are located within one kilometre of the site. Available information relating to the sites is presented in Table 5:

Table 5: NSW EPA Contaminated Sites Register (1 km from site)

Site and Address	Contaminating Activity	EPA Site Management Class	Orientation and Distance from Site
Colongra Power Station Off Scenic Drive, Budgewoi	Other Industry	Under Assessment	0 m North East
Endeavour Colliery Scenic Drive, Colongra	Other Industry	Regulation under CLM Act not required	0 m South
Munmorah Colliery Scenic Drive, Doyalson	Other Industry	Regulation under CLM Act not required	20 m West
Former Halekulani Landfill Macleay Drive, Halekulani	Landfill	Regulation under CLM Act not required	500 m East

It should be noted that the site is notified as contaminated on the NSW EPA Contaminated Sites Register and the NSW EPA has indicated its intention to declare a portion of the GPM landholding as significantly contaminated requiring regulation under the Contaminated Land Management Act 1997.

3.19 PREVIOUS REPORTS

The following seven reports relating to previous investigations in the investigation area were reviewed:

- Environmental Resources Management Australia (ERM), *Project Symphony – Colongra Power Station Stage 2 Environmental Site Assessment* Reference 0237749, 2014;
- Consulting Earth Scientists Pty Ltd, *Per- and Poly-Fluoroalkyl Substances (PFAS) Investigation Report* (CES Document Reference CES170608-GPM-AI, 2019a);

- *Consulting Earth Scientists, Preliminary Site Investigation: Former Munmorah Power Station* (CES Document Reference CES170608-GPM-AW, 2019b)
- *AEC4 – Coal Stack Above Ground Storage Tanks Investigation Report Former Munmorah Power Station* (CES document reference CES170608-GPM-BL, 2019c)
- *Preliminary Sediment Characterisation Report Former Munmorah Power Station* (CES document reference CES170608-GPM-CX, 2021)

3.19.1 ERM 2014 Project Symphony – Colongra Power Station Stage 2 Environmental Site Assessment Reference

The ERM investigation was carried out to provide baseline contamination data as part of vendor due diligence prior to the sale of Colongra Power Station to Snowy Hydro Ltd (SHL), and as such did not include the site in their assessment. As part of the investigation, however, two groundwater monitoring wells were drilled to the west and southwest of the site, which have been identified as suitable for providing background water quality information, CF_MW05 and CF_MW06.

Laboratory analytical results did not detect Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Polycyclic Aromatic Hydrocarbons (PAH), Phenols, Volatile Organic Compounds (VOCs), Polychlorinated Biphenyls (PCBs) or Per-and Poly-Fluoroalkyl Substances (PFAS) concentrations in excess of the laboratory Practical Quantitation Limit (PQL). Metals and metalloid concentrations are presented in Table 6.

Table 6: ERM (2014) Metals and Metalloid Concentrations in Groundwater

Filtered Metals	**CF_MW05**	**CF_MW06**
Arsenic µg/L	<1	<1
Barium µg/L	82	46
Beryllium µg/L	<1	<1
Boron µg/L	<50	80
Cadmium µg/L	<0.1	<0.1
Chromium µg/L	<1	<1
Cobalt µg/L	4	8
Copper µg/L	4	2
Lead µg/L	10	12
Magnesium µg/L	5,000	2,000
Manganese µg/L	113	387
Mercury µg/L	<0.1	<0.1
Molybdenum µg/L	<1	<1
Nickel µg/L	5	3
Selenium µg/L	<10	<10
Thallium µg/L	<1	<1

Vanadium µg/L	<10	<10
Zinc µg/L	31	38

Borehole logs of CF_MW05 and CF_MW06 are presented as Appendix C.

CF_MW05 and CF_MW06 locations are presented on Figure 3.

3.19.2 CES 20219a Per- and Poly-Fluoroalkyl Substances (PFAS) Investigation Report

The CES investigation was conducted over the whole of the GPM landholding and included sampling from 10 soil bores from within the site. Soil sample analysis did not detect PFAS concentrations in excess of the adopted screening criteria, however PFAS were detected in excess of the laboratory PQL including PFHxS (2 samples), PFOS (7 samples) and PFOA (1 sample). PFAS detections were not detected in soil samples collected at 0.5 m bgl with the exception of one sample location. With respect to the concentrations of PFAS in soils the following was noted:

"The western area of the former coal stockpile area [the site] *is currently utilised for processing and loading out of demolition materials from the demolition works at the Former Munmorah Power Station. The eastern area* [Snowy Hydro Ltd landholding, offsite] *is currently unused, with managed grass present in this area. Results detected widespread PFAS (not above the screening criteria) in the shallow soils in western area, with only one PFAS detection in the eastern area. Based on observations onsite and discussions with the demolition contractor, the western area which is used for material processing, had been irrigated using water drawn from the Eastern Retention Basin* [offsite] *during demolition works, for dust suppression… Based on the above assessment, the PFAS concentrations detected in the former coal stockpile area* [the site] *are not considered to indicate an additional source of PFAS at the site."*

In addition to soil sampling in the Coal Stack area, sampling of surface water and sediment within the Western Settling Basin was conducted. Sediment and surface water sample concentrations were not detected in excess of the adopted screening criteria.

A summary of relevant soil, sediment and surface water samples is presented in Table 7.

Table 7: Summary of Relevant PFAS Investigation Results

Location	Type	Date	Depth	Units	PFHxS	PFOS	PFOA	Sum PFAS n=28
CSA-01-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	0.1	<0.1	0.3
CSA-01-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-02-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	0.5	<0.1	1.4
CSA-02-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1

CSA-03-01	Soil	20/12/2017	0.05-0.1	µg/kg	<0.1	0.3	<0.1	0.3
CSA-03-02	Soil	20/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-06-01	Soil	19/12/2017	0.05-0.1	µg/kg	1.8	10	1	19
CSA-06-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-07-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-07-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-08-01	Soil	20/12/2017	0.05-0.1	µg/kg	0.1	0.1	<0.1	0.2
CSA-08-02	Soil	20/12/2017	0.5	µg/kg	0.4	0.2	<0.1	0.9
CSA-09-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	<0.1	<0.1	0.1
CSA-09-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-13-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	<0.1	<0.1	0.1
CSA-13-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-14-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	0.4	<0.1	0.4
CSA-14-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-15-01	Soil	19/12/2017	0.05-0.1	µg/kg	<0.1	<0.1	<0.1	<0.1
CSA-15-02	Soil	19/12/2017	0.5	µg/kg	<0.1	<0.1	<0.1	<0.1
WSB-01	Sediment	02/02/2018	-	µg/kg	0.2	1.4	<0.1	1.7
WSB-02	Sediment	02/02/2018	-	µg/kg	0.2	1.6	0.1	2.1
WSB-01	Surface Water	02/02/2018	-	µg/L	0.081	0.12	0.04	0.702
WSB-02	Surface Water	02/02/2018	-	µg/L	0.1	0.14	0.033	0.761

Sample locations are presented on Figure 3.

3.19.3 CES 2019b Preliminary Site Investigation: Former Munmorah Power Station

The investigation area assessed in the former Munmorah Power Station Preliminary Site Investigation includes the site as defined in this SAQP.

The PSI assessment indicates that the site comprised vacant/low intensity agricultural land prior to the development of the Munmorah Power Station, which was commissioned in 1967. A

review of the historic aerial photographs contained in the PSI report, with a focus on the site as defined in this SAQP is presented as Table 8.

Table 8: Historical Aerial Photograph Review

Year	Description
1954	**Site:** The site generally comprises areas which have been cleared, possibly for agricultural uses. One structure is present on the site, near the centre of the Coal Stack Area. **Surrounds:** The site is surrounded by bush/undeveloped land, with an area to the north east of the site disturbed through clearing and possible earthworks.
1966	**Site:** The 1966 photograph is of poor quality; however, the site appears to have undergone a major change. **Surrounds:** The MPS (likely under construction) can be seen. The surrounding area of the site has significantly changed. The Inlet/Outlet Canal and TransGrid Switchyard have been constructed to the north of the site. The plant maintenance yard for the Endeavour Colliery (Newvale No. 2 Colliery) has also been constructed.
1976	**Site:** The south of the site (the Coal Stack Area) contains a coal stockpile. The coal conveyor line and coal handling infrastructure can be seen running along the southern site boundary and through the centre of the coal stack area towards the Munmorah Power Station. No evidence of environmental controls can be seen in the coal stack area (Perimeter Channel, Western Settling Basin). The lands adjacent to the Coal Stack Area, to the north, appear to have been landscaped, with three to four well defined rows of trees planted. The fire fighting water tank is visible. **Surrounds:** To the north the Munmorah Power Station consisting of the boilers, turbine hall building, chimney stacks and the associated administration buildings and workshops can be seen, located to the north of the site. Transformers are present on the site, to the north of the turbine hall building. Smoke emissions can be seen emitted from both of the station chimney stacks. The north west corner of the site is landscaped, with a carpark near the northern boundary. Similar to the 1966 photograph, the TransGrid switchyard and the Inlet/Outlet Canal can be seen to the north west of the site. The above ground infrastructure for the Munmorah State Mine can be seen to the north west, with a conveyor line extending to the site, which then runs along the southern boundary of the site. A second conveyor line running northwest joins with the line from the Munmorah State Mine, prior to it reaching the site boundary. To the north east of the site the Munmorah Ash Dam can be seen, with the deposition of ash in the dam visible. Other areas to the north of the site appear to be landscaped or remnant bushland. The coal stack extends off-site to the east, over the site boundary. To the north of the off-site coal stack, some structures have been constructed, along with an area of hardstanding. Some ground improvement works have taken place to the north of the structures. To the south east of the site the surface infrastructure for the Endeavour Colliery (Newvale No. 2 Colliery) can be seen. A coal conveyor line can be seen extending from the mine portal to the southern corner of the site. The remaining area to the south consists of bushland.

Year	Description
1984	**Site:** The Perimeter Channel has been constructed around the outside of the coal stack area. A waterbody (Western Settling Basin) has been constructed to the north west of the Coal Stack Area. To the south of the coal stack area two possible ASTs can be observed east of the coal conveyor. The lands adjacent to the Coal Stack Area, to the north, appear unchanged, except some additional vegetation growth, and a small structure located to the north east of the water tank. **Surrounds:** The power station area of the site is unchanged from the 1976 photograph. Smoke emissions are visible from the eastern stack only. The surrounding area of the subject site is largely unchanged since the previous aerial photograph with the exception of the off-site coal stack area to the east, which has reduced in size. In addition, an area of hardstanding which is being used for storage has been constructed to the north east of the power station.
1994	**Site:** The Coal Stack area of the site is unchanged. The adjacent lands to the north exhibit additional vegetation growth. Two additional structures have been constructed to the south west of the water tank, possibly the Gardeners Shed, closest to the water tank. **Surrounds:** The surrounding area of the subject site is largely unchanged since the previous aerial photograph, with the exception of two new water bodies: one to the north east of the site, which has been constructed adjacent to the Inlet Canal; the second has been constructed to the north east of the off-site coal stack area.
2001	**Site:** The site is largely unchanged since the previous aerial photograph. **Surrounds:** The surrounding area is largely unchanged since the previous aerial photograph, with the exception of the removal of coal from the off-site coal stack area, and evidence of a bushfire to the south of the site.
2010	**Site:** The site is largely unchanged since the previous aerial photograph, with the exception of the removal of the small structure north east of the water tank. The volume of coal stored in the coal stack area has reduced. **Surrounds:** The surrounding area of the site shows the Colongra Gas Power Station has been constructed to the north east of the site. The two mines in the immediate vicinity of the site appear to have been decommissioned, with surface infrastructure removed.
2012	**Site:** The site is largely unchanged since the previous aerial photograph. **Surrounds:** The surrounding area of the site is largely unchanged since the previous aerial photograph.
2014	**Site:** The site is largely unchanged since the previous aerial photograph. **Surrounds:** The surrounding area of the site is largely unchanged since the previous aerial photograph.
2016	**Site:** The site is largely unchanged since the previous aerial photograph. **Surrounds:** The surrounding area of the site is largely unchanged since the previous aerial photograph.

Year	Description
2018	**Site:** The site has undergone significant changes since the 2016 photograph, with the site undergoing demolition work. The Coal Handling Plant, water tank and other structures have been removed. The majority of the site contains stockpiles of material related to the demolition works. **Surrounds:** To the north of the site, the Munmorah Power Station is undergoing demolition works.
2022	**Site:** The site has undergone significant changes since the 2018 photograph, with the removal of most of the demolition works stockpiles. An estimated five stockpiles remain in the eastern portion of the Coal Stack area of the site. **Surrounds:** To the north of the site, the Munmorah Power Station demolition works have been completed, with the area now vacant.

The Preliminary Conceptual Site Model as presented in the PSI report relevant to this site is presented in Section 4, with additional information based on further information and investigations undertaken since the PSI incorporated into the CSM as required.

3.19.4 CES 2019c AEC4 – Coal Stack Above Ground Storage Tanks Investigation Report Former Munmorah Power Station

The purpose of this investigation was to determine if the soil and groundwater in the Coal Stack area of the site had been impacted by the storage and use of hydrocarbon fuels in the bulldozer fuelling area, and if so, does the impact pose a risk to human health or the environment, which would require remediation or management to mitigate risks.

The above ground storage tanks are first visible in the 1976 aerial photograph; however, it is likely that the tanks were installed around the time of the power station construction which was completed in 1967. The tanks appear similar from the 1976 photograph to 23 February 2016, when the aerial photograph indicates that the tanks have been removed. No formal decommissioning documentation for the tanks was provided, however anecdotally, the tanks were decommissioned and disposed of as scrap metal during the power station demolition.

No hydrocarbon fuel storage infrastructure was observed onsite in the former location of the above ground tanks (ASTs) during the assessment. The concrete slabs remain in place however the low bund walls and surrounding structures have been removed. Anecdotal evidence indicates that all fueling infrastructure associated with the ASTs was kept above ground, that is to say that underground pipes are unlikely to have been installed associated with the tanks.

A small sediment pond was observed adjacent to the concrete slab, which appears to discharge to the perimeter channel. An oil/water separator is located at the discharge point. The oil water separator was observed to contain free LNAPL on 23 January 2019. The oil/water separator was pumped out using a vacuum truck on 28 February 2019 and disposed of at Cleanaway Operations Pty Ltd – Kooragang.

Visual and olfactory evidence (staining and diesel odours) were encountered during test pit excavation and borehole drilling. PID detected VOC concentrations of up to 91 ppm (test pit AEC04_05 4.8-5.1 m).

No soil or groundwater concentrations were detected in excess of the human health or ecological assessment criteria.

Soil concentrations were not detected in excess of the TRH management limits which indicates that there is a low likelihood of the formation of free LNAPL in soil and other aesthetic considerations are unlikely to trigger the requirement to remediate the site.

Dissolved TRH in groundwater was not detected at concentrations which would be indicative of the presence of LNAPL.

With respect to contaminant concentrations which were detected in excess of the laboratory PQL the following is noted in the report:

- *The primary source of potential contamination (the diesel ASTs) has been removed. The soil and groundwater investigation results indicate that it is unlikely that a significant secondary source in soils underlies the location of the former tanks;*
- *The oil/water separator which was observed to contain a hydrocarbon/water mix during fieldwork has been pumped out and is not likely to present an ongoing source and as such no is not considered an environmental risk.*
- *The magnitude and extent of impact detected indicate that concentrations detected are unlikely to represent contamination as a result of a release from the bulk storage tanks, rather may represent the result of incidental/minor spills during tank and plant filling;*
- *The detected concentrations of TRH, BTEX, and VOCs are likely to reduce over time due to physical, chemical and biological processes which occur in soil and groundwater. As the site surface does not contain significant concrete slabs or sealed areas the potential for aerobic biodegradation of organic contaminants is high;*
- *The soil and rock underlying the site consist of materials with likely hydraulic conductivity ranging from 10^{-6} m/s (sandy clay) and 10^{-10} m/s (Munmorah Conglomerate). The low permeability of the subsurface materials and the relatively flat hydraulic gradient in area AEC 4 indicates that detected contaminants are unlikely to migrate significant distances, and therefore have a low likelihood for reaching sensitive offsite water bodies.*
- *Future development of the site will be subject to development consent and associated environmental site assessment may be required to assess the suitability of the site with respect to the proposed development and may require further investigation, specifically the soil and groundwater quality directly beneath the concrete slab, to confirm the site as suitable.*

A summary of soil and groundwater concentrations detected in AEC 4 is presented in Tables 9 and 10.

Table 9: AEC 4 Soil Sampling Results

		AEC04-02	AEC04-03	AEC04-03	AEC04-03	AEC04-04	AEC04-05	AEC04-06	AEC04-07	AEC04-08
		2.5	0.5	2.5_S	2.5_N	5	2.5	5	5.5	5
	Units									
Fraction 1 TRH	mg/kg	<25	<25	<25	<25	<25	<25	<25	<25	<25
Fraction 2 TRH	mg/kg	94	490	280	<50	200	<50	<50	<50	<50
TRH >C16-C34	mg/kg	<100	1200	180	<100	140	<100	<100	<100	<100
TRH >C34-C40	mg/kg	<100	<100	<100	<100	<100	<100	<100	<100	<100
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<0.1	1.4	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	<0.05	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total PAH's	mg/kg	0.3	8.5	0.68	<0.05	1.4	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	mg/kg	2	21	4	5	3	3	5	7	5

Table 10: AEC 4 Groundwater Sampling Results

		A4-MW1	A4-MW2	A4-MW3
		27/02/2019	27/02/2019	27/02/2019
Fraction 1 TRH	µg/L	<10	72	<10
Fraction 2 TRH	µg/L	840	870	63
TRH >C16 - C34	µg/L	720	430	<100
TRH >C34 - C40	µg/L	<100	<100	<100
Benzene	µg/L	<1	16	<1
Toluene	µg/L	<1	<1	2

Ethylbenzene	µg/L	<1	8	<1
m+p-xylene	µg/L	<2	<2	<2
o-xylene	µg/L	<1	9	<1
Naphthalene	µg/L	2	10	<1
Benzo(a)pyrene	µg/L	<1	<1	<1
Total PAH's	µg/L	7.8	15	1.2
Dissolved Lead	µg/L	<1	<1	<1

Sample locations are presented on Figure 3.

Borehole logs for wells AEC4_MW01, AEC4_MW02 and AEC4_MW03 are presented in Appendix C.

3.19.5 CES 2021 Preliminary Sediment Characterisation Report Former Munmorah Power Station

This investigation comprised the assessment of sediment thickness and quality in four dams located in the GPM landholding, including the Western Settling Basin. Two locations in the Western Settling Basin were assessed, with 4 samples collected. Samples were analysed for Per- and Polyfluoroalkyl Substances (PFAS), Total Recoverable Hydrocarbons (TRH), Polyaromatic Hydrocarbons (PAH), Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), Polychlorinated Biphenyls (PCBs), Volatile Organic Compounds (VOC), Organochlorine/Organophosphate Pesticides (OCP/OPP), and common metals and metalloids.

Contaminant concentrations were not detected in excess of the adopted screening criteria in the samples collected from the Western Settling Basin.

An estimated 5,000 m^3 was identified to be contained within the Western Settling Basin, based on an average sediment thickness of 2.0 m. Sediments were described as *Sandy clay, low plasticity, dark grey/black, sand is fine, with high organic content and coal fragments. Very soft.*

A summary of laboratory analytical results from the Western Settling Basin samples is presented in Table 11.

Table 11: Western Settling Basin Laboratory Analysis

		WSB-101	WSB-101	WSB-102	WSB-102
Parameter	Units	0.0-0.2 m	1.5-1.6 m	0.0-0.4 m	0.6-1.8 m
Perfluorohexanesulfonic acid PFHxS	µg/kg	0.4	0.7	0.2	0.3
Perfluorooctanesulfonic acid PFOS	µg/kg	2.4	2.2	0.8	1.1
Perfluorooctanoic acid PFOA	µg/kg	0.1	<0.1	<0.1	<0.1
Total PFAS n= 28	µg/kg	3.2	3.1	1.4	1.6
Arsenic	mg/kg	<4	<4	<4	<4

Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	2	7	5
Copper	mg/kg	10	7	21	11
Lead	mg/kg	70	11	24	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	3	5	4
Zinc	mg/kg	210	46	160	77
TPH C6 - C10 lessBTEX (F1)	mg/kg	<25	NT	NT	<25
TRH >C10 - C16 less Naphthalene (F2)	mg/kg	<50	NT	NT	150
TRH >C16-C34	mg/kg	280	NT	NT	890
TRH >C34-C40	mg/kg	<100	NT	NT	260
Benzene	mg/kg	<0.2	NT	NT	<0.2
Toluene	mg/kg	<0.5	NT	NT	<0.5
Ethylbenzene	mg/kg	<1	NT	NT	<1
Total +ve Xylenes	mg/kg	<3	NT	NT	<3
Naphthalene	mg/kg	4.9	NT	NT	2.6
Benzo(a)pyrene	mg/kg	0.4	NT	NT	0.56
Total PAH's	mg/kg	14	NT	NT	20
Benzo(a)pyrene TEQ (PQL)	mg/kg	0.8	NT	NT	1.2
VOC	mg/kg	ND	NT	NT	ND
PCB	mg/kg	ND	NT	NT	ND
OCP	mg/kg	ND	NT	NT	ND
OPP	mg/kg	ND	NT	NT	ND

Sample locations are presented on Figure 3.

3.19.6 Surface Water Sampling – Douglas Partners 2021

Douglas Partners was commissioned by GPM to collect surface water and run off samples from the GPM landholding, which included samples collected from the site as defined in this SAQP. Samples were collected during or immediately following rainfall on 24 August 2021 and 26 November 2021.

The results of the sampling have not been formally reported, and have been supplied as laboratory analytical reports combined with a sample location plan only, therefore confirmation of sample methodology and assessment of quality assurance and quality control procedures has not been completed. The results should not be relied upon until assessment of data quality is undertaken.

Sample locations are presented on Figure 3, summary analytical results are presented in Tables 12.

Table 12: Summary of Surface water and runoff sampling - August and November 2021

Sample ID	Location Description	Date	PFHxS (µg/L)	PFOS (µg/L)	PFOA (µg/L)	Total Positive PFAS (µg/L)
WSB-IC	Western Sediment Basin inlet Channel	24 August 2021	0.0085	0.027	0.0084	0.29
WSB-IC	Western Sediment Basin inlet Channel	26 November 2021	0.015	0.044	0.015	0.48
WSB-ST	Western Sediment Basin - Sediment Trap	24 August 2021	0.011	0.023	0.0075	0.36
WSB-ST	Western Sediment Basin - Sediment Trap	26 November 2021	0.0088	0.030	0.0065	0.38
WCC	Western Centre Channel (Sediment Trap)	24 August 2021	0.07	0.12	0.032	0.77
WCC	Western Centre Channel (Sediment Trap)	26 November 2021	0.094	0.18	0.039	0.91
ECC	Eastern Centre Channel (Sediment Trap)	24 August 2021	0.042	0.087	0.016	0.51
ECC	Eastern Centre Channel (Sediment Trap)	26 November 2021	0.030	0.064	0.018	0.49
NCCS	Northern Crushed Concrete Stockpile	24 August 2021	0.0049	0.0088	0.011	0.52
NCCS	Northern Crushed Concrete Stockpile	26 November 2021	0.0020	0.0030	0.0044	0.23
SCCS	Southern Crushed Concrete Stockpile	24 August 2021	0.013	0.038	0.0072	0.22
SCCS	Southern Crushed Concrete Stockpile	26 November 2021	0.0077	0.030	0.0047	0.14
CSS	Coal Stack Sag	24 August 2021	0.019	0.055	0.014	0.33
WCS	Western Channel South	24 August 2021	0.011	0.022	0.0083	0.2
WCS	Western Channel South	26 November 2021	0.0076	0.012	0.0038	0.075
ECS	Eastern Channel South	24 August 2021	0.0093	0.021	0.0043	0.13
ECS	Eastern Channel South	26 November 2021	0.012	0.019	0.0077	0.21
CHP-01	Coal Handling Plant “Clean” Water Pond	26 November 2021	0.0071	0.0097	0.0041	0.097
WSB	Western Settling Basin	26 November 2021	0.0079	0.028	0.0070	0.26
RNC	Runoff Northern Concrete Stockpile	26 November 2021	0.002	0.0034	0.0056	0.32

4 PRELIMINARY CONCEPTUAL SITE MODEL

A preliminary Conceptual Site Model is presented in CES (2019b). The CSM has been refined as appropriate based on updated knowledge of the site.

4.1 SOURCES AND CONTAMINANTS OF POTENTIAL CONCERN

The following contamination sources have been identified:

4.1.1 Coal handling and storage

Residual coal particles have been identified in the Coal Stack area and along the western site boundary, underlying the former coal conveyor line. Coal was also observed in the sediments in the Western Settling Basin. Contaminants of concern associated with coal handling and storage are:

- Metals and metalloids;
- Combustible materials;
- Petroleum hydrocarbons; and
- Polycyclic Aromatic Hydrocarbons.

4.1.2 Demolition works

The Coal Stack area was used for processing of demolition materials during the power station demolition works. Contaminants of concern associated with demolition processing are:

- Total Recoverable Hydrocarbons;
- Polycyclic Aromatic Hydrocarbons;
- Benzene Toluene Ethylbenzene and Xylene;
- Polychlorinated Biphenyls;
- Metals and metalloids; and
- Asbestos.

4.1.3 Dust suppression using impacted water

As identified in the CES (2019a), during the demolition works PFAS impacted water was used as dust suppression water. This water was typically used on the Coal Stack and site haul roads. Other areas of the site have the potential to have been impacted by the use of impacted dust suppression water including the Perimeter Channel, the Coal Handling Plant Bunker the Western Settling Basin and the Clean Stormwater Collection Pond.

4.1.4 Offsite Fire Fighter Training

The single known source point for PFAS at the site is the former Fire Fighting Training Area, located offsite to the north east. While due to topography and assessed groundwater flow direction it is unlikely to have impacted the site, confirmation that the impacts do not extend over the site boundary is required.

4.1.5 Gardeners Shed/Amenities buildings

A number of demolished structures were observed in historic aerial photographs and plans such as sheds and amenities buildings.

The gardeners shed is likely to have been used to store tools and small volumes of chemicals associated with the maintenance of the landscaped areas of the site. The was known to have had an award-winning garden, located near the former training building. As the garden shed was not used for commercial agricultural production it is unlikely that large volumes of potentially contaminating chemicals were stored in the shed, and volumes are likely to have been below 10 L in individual commercially available containers. Chemicals stored could have included pesticides, fertilisers and hydrocarbon fuels and lubricants.

Contaminants of concern are:

- Total Recoverable Hydrocarbons;
- Polycyclic Aromatic Hydrocarbons;
- Benzene Toluene Ethylbenzene and Xylene;
- Polychlorinated Biphenyls;
- Pesticides;
- Metals and metalloids; and
- Asbestos.

4.1.6 Hydrocarbon Fuel Storage

The AEC 4 report (CES 2019c) recommends that the detected impacts are reassessed at the point of development consent application to assess risks to the proposed development. Assessment of the soils underlying the concrete slab and oil/water separator is required. In addition, soil and groundwater sampling at the location of highest PID readings should be included. Contaminants of concern are:

- Total Recoverable Hydrocarbons; and
- Benzene Toluene Ethylbenzene and Xylene.

4.1.7 Water tank that may have contained PFAS treated water

A water tank that was used to contain fire fighting water was noted on plans and in the aerial photograph review. Based on available information with respect to PFAS containing AFFF onsite, it is unlikely that the water tank contained dilute AFFF treated water. In addition were

PFAS treated water contained in the water tank and had impacted soil and groundwater, elevated PFAS concentrations would likely have been detected in the sites clean stormwater system which discharges at point D1 into the Outlet Canal. However there remains a potential that PFAS treated water was stored in the tank, which may have impacted surrounding soils and groundwater.

4.1.8 Residual services/structures underground

The demolition works completed to date were limited to above ground structures. Bonded asbestos cement pipe and conduit was used extensively at the former Munmorah Power Station, and as such there is a potential for asbestos containing materials to be located in the sub surface.

4.2 EXPOSURE PATHWAYS

Potential exposure pathways are:

- Direct dermal contact with impacted soil;
- Direct dermal contact with impacted water;
- Inhalation of impacted soil particles as dust;
- Incidental ingestion of impacted soil;
- Incidental ingestion of impacted water; and
- Consumption of impacted terrestrial produce.

4.3 RECEPTORS

Potential human receptors are:

- Site workers including construction workers, maintenance workers (industrial/commercial);
- Recreational users and workers offsite;
- Recreational users of Budgewoi Lake, Lake Munmorah, Colongra Swamp, Colongra Swamp Nature Reserve.

Potential ecological receptors are:

- Onsite terrestrial flora and fauna;
- Onsite aquatic flora and fauna;
- Offsite aquatic flora and fauna;

5 DATA QUALITY OBJECTIVES

The DQO process is a seven-step iterative planning approach that is used to define the type, quantity and quality of data needed to inform decisions relating to the objectives of the investigation.

5.1 STEP 1 – STATE THE PROBLEM

This step comprises a summary of the environmental impact that will require new environmental data and identifies the resources required to resolve the issue.

The problem is:

- Is the site in its current condition suitable for the proposed Waratah Super Battery or is remediation/management of contamination required to make the site suitable?

The objectives of the investigation are presented in Section 2.

The consultant project team will comprise Tristan Goodbody (Associate Environmental Engineer, Project Manager) with Victor Arais (Senior Environmental Scientist, CENVP:SC) and Chris Rotsides (Environmental Scientist) as the field team.

The Sub-contract analytical laboratories are Envirolab (Primary) and ALS (Secondary).

The NSW Auditor project team will comprise Kylie Lloyd (NSW EPA Accredited Site Auditor) and Joshua Lloyd (Senior Hydrogeologist).

The preliminary conceptual site model is presented in Section 4.

5.2 STEP 2 – IDENTIFY THE DECISION STATEMENT

This step comprises the identification of decisions that need to be made about the impact and the new environmental data required to make them.

- What are the concentrations of contaminants identified in the Preliminary Conceptual Site Model in soil, sediment, concrete surface water and groundwater?
- Do contaminant concentrations exceed the adopted screening criteria?
- Do contaminant concentrations pose an unacceptable risk to human health or the environment?
- Is remediation or management of contaminated media required?

It is expected that by resolving these questions, it will be possible to resolve the objectives of the project.

5.3 STEP 3 – IDENTIFY INPUTS TO THE DECISION

This step involves the identification of the information required to support any decision and whether any new environmental data will be required.

- Relevant existing soil, sediment, groundwater and surface water data from previous environmental site assessments and investigations (Section 3.17);
- New soil, sediment, concrete, groundwater and surface water laboratory analytical data collected, field observations and measurements made during field work;
- The contaminants of concern as presented in Section 4.1;
- The adopted site screening criteria is discussed in Section 7.

5.4 STEP 4 – DEFINE THE STUDY BOUNDARIES

This step involves the spatial and temporal aspects of the environmental media that the data must represent to support the decision (s).

- Lateral – as defined by the site perimeter shown on Figure 2;
- Vertical – as defined by the site surface to the maximum depth of the deepest existing groundwater monitoring well, estimated to be 8 m; and
- This project involves the collection of spot sampling events at the proposed locations. As a result, the concentrations detected by the laboratory in the samples recovered will be representative of discrete moments in time and as such, will be subject to climatic and anthropogenic activities at that point or related to human activities that have occurred up to that point at the particular sampling location, and therefore may not be representative of long-term concentrations. If average concentrations are required to enable an understanding of longer term (chronic) risks, then additional sampling may be required.

5.5 STEP 5 – DEVELOP THE DECISION RULE

This step comprises defining the parameter of interest, specifying the action level and integrating Step 1 to 4 into a single statement that gives a logical basis for choosing between alternative actions.

- The acceptable limits for the QA/QC samples collected during the investigation are presented in Table 13;

  A decision on the acceptance of the analytical data will be made on the basis of the Data Quality Indicators (DQI) in the context of the PARCC parameters as follows.

  - Precision: A quantitative measure of the variability (or reproducibility) of data;
  - Accuracy: A quantitative measure of the closeness of reported data to the “true” value;
  - Representativeness: The confidence (expressed qualitatively) that data is representative of each media present on Site;
  - Completeness: A measure of the amount of useable data from a data collection activity; and

  - Comparability: The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event.
- The parameters of interest are the concentrations in the various sampled media of the contaminants of concern;

The following decision rules are presented:

1. Is the data collected of suitable quality?
2. Do contaminant concentrations exceed the adopted screening criteria?
3. Do contaminant concentrations pose an unacceptable risk to human health or the environment?

Table 13 Laboratory Data Quality Indicators

QA/QC Sample Type	Method of Assessment	Acceptable Range
Field QA/QC		
Blind and Split Replicates	The assessment of split replicate is undertaken by calculating the Relative Percent Difference (RPD) of the replicate concentration compared with the original sample concentration. The RPD is defined as: $RPD = 100 \times \frac{\lvert X_1 - X_2 \rvert}{\text{Average}}$ Where: X_1 and X_2 are the concentration of the original and replicate samples.	*The acceptable range depends upon the levels detected:* ▪ *0 – 100% RPD (When the average concentration is < 5 times the PQL)* ▪ *0 – 75% RPD (When the average concentration is 5 to 10 times the PQL)* ▪ *0 – 50% RPD (When the average concentration is > 10 times the PQL)*
Blanks (Rinsate, Trip and Field Blanks)	Each blank is analysed as per the original samples.	*Analytical Result < PQL*
Laboratory-prepared Trip Spike	The trip spike is analysed after returning from the field and the % recovery of the known spike is calculated.	*70% - 130%*
Laboratory QA/QC		
Laboratory Duplicates	Assessment as per Split Replicates.	*The acceptable range depends upon the levels detected:* ▪ *0 – 100% RPD (When the average concentration is < 4 times the PQL)* ▪ *0 – 50% RPD (When the average concentration is 4 to 10 times the PQL)* ▪ *0 – 30% RPD (When the average concentration is > 10 times the PQL)*
Surrogates Matrix Spikes Laboratory Control Samples	Assessment is undertaken by determining the % Recovery of the known spike or addition to the sample. $\%\ Recovery = 100 \times \frac{C - A}{B}$ Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; C = Calculated Concentration.	Surrogates: 70% – 130% Matrix Spikes: 70% - 130% (Organics) 80% - 120% (Inorganics) LCS: 70% - 130% (Organics) 90% - 110% (Inorganics)
Method Blanks	Each blank is analysed as per the original samples.	*Analytical Result < PQL*
Note: *PQL = Laboratory Practical Quantitation Limit or the minimum detection limit for a particular analyte.*		

5.6 STEP 6 – SPECIFY LIMITS ON DECISION ERRORS

This step involves specifying the decision-maker's acceptable limits on decision errors.

Specific limits for this project are in accordance with the appropriate guidance made or endorsed by the NSW EPA, appropriate indicators of data quality, and standard procedures for field sampling and handling. As such, even with the collection of robust field data, there will be inherent uncertainty in conclusive/summary statements based on the assessment undertaken.

5.7 STEP 7 – OPTIMISE THE FIELDWORK PROGRAM DESIGN

The optimised program for the fieldwork is presented as Section 6.

6 FIELDWORK PROGRAMME DESIGN

The following proposed sampling programme has been designed based on the previous assessments and investigations carried out to date, knowledge of the potential issues resulting from past activities undertaken at the site and takes into consideration the objectives of the assessment.

In general, the sampling procedures for soil, sediment, surface water and groundwater have been planned with reference to:

- *PFAS National Environment Management Plan*, (PFAS NEMP 2.0) Heads of EPAs Australia and New Zealand (HEPA), 2020.
- *National Environment Protection (Assessment of site Contamination) Measure 1999*, as amended 2013 (ASC NEPM) National Environment Protection Council (NEPC), 2013.

In addition to the intrusive works presented in the subsequent sections identification and mapping of underground and residual services should included in the works program.

6.1 PRELIMINARIES

Prior to attending site, the following tasks will be undertaken:

- Preparation of a Project Safety Plan to cover the works including the soil, sediment, surface water and groundwater sampling; and
- Attendance of relevant inductions, daily site briefings and obtaining the relevant permits if required.

6.2 RINSATE PROGRAMME

In order to provide confidence in the sampling, it will be necessary to determine whether any confounding sources of PFAS are present from the processes and procedures involved in the soil, sediment, surface water and groundwater sampling. As a result, this will include:

- Rinsate from the various sampling equipment (including sediment sampler, soil sampling equipment and well installation materials (pipework and filter pack) for the new groundwater monitoring wells.

6.3 GENERAL SAMPLING ORDER

In order to minimise the potential for cross contamination, where known the sampling order will be undertaken from downgradient to upgradient as per Section 8.2.4.3 of the *Guideline on Site Characterisation (Schedule B2) ASC NEPM* (NEPC 2013).

6.4 SOIL

6.4.1 Sampling Pattern and density

Soil sampling is proposed in to be conducted on a stratified random grid sample pattern, combined with targeted sampling of specific areas of interest.

The stratified random sample pattern will be conducted over the Coal Stack Area and the Adjacent Land as follows:

The Coal Stack area (including the conveyor area along the western site boundary) is estimated to be 9.0 hectares. A total of 17 sample locations are proposed to be completed which equates to approximately two samples per hectare. The stratified random sampling was determined on the basis of a 70 m grid spacing, with sample locations within each grid space randomised using a random number generator.

The Adjacent Land area is estimated to be 4.5 hectares. A total of 10 sample locations are proposed to be completed which equates to approximately two samples per hectare. The stratified random sampling was determined on the basis of a 90 m grid spacing, with sample locations within each grid space randomised using a random number generator.

Targeted areas of soil sampling are described below:

- The former gardeners shed was targeted with two sampling locations;
- The AEC 4 (Bulldozer Fuelling Area) was targeted with 14 sample locations on the basis of one sample per 25 m^2 for an area of approximately 350 m^2. Samples are proposed to be collected from soils underlying the concrete slab and oil/water separator following removal. Four of the sampling locations will be extended as test pits to a maximum depth of refusal or the depth at which groundwater is encountered. A fifth location will be completed by borehole drilling to allow for the installation of a groundwater monitoring well and collection of deep soil samples.
- The proposed site boundary near the former firer fighting training area was targeted with 9 sample locations, of which 6 locations are proposed to be assessed along the site boundary (150 m) on a linear spacing of one sample per 25 m. The additional 3 locations have been selected at the same linear density (1 per 25 m), set 20 m from the proposed boundary, in the area assessed as most likely to have been impacted by fire fighting training activities, based on an assessment of topography and the presence of vegetation.
- The location of the former water tank was targeted with one sampling location.

Soil sampling locations are presented on Figure 4.

6.4.2 Depth Intervals of Sampling

Soil sampling locations will be assessed using test pits completed by an excavator. Test pits will be extended to the shallower of refusal, 0.5 m into natural soils or 3 m. Where soil and groundwater samples are proposed boreholes will be used in place of test pits.

Boreholes will be advanced using direct push or solid flight auger drilling techniques to the shallower of method refusal, 1.5 m below the intersection of groundwater or 8 m. It is noted that all new groundwater sampling locations are co-located with soil sampling locations.

Soil samples will be collected at 0.05 m to 0.10 m (surface sample), 0.1 m to 0.2m, then every 0.5 m bgl up to and including 2 m bgl, and then at minimum 1.0 m intervals thereafter until the target depth is reached. Additional samples will be collected from soil strata which are observed to comprise distinctly heterogenous materials in relation to the surrounding soils and from immediately below the soil/fill interface.

A minimum of one sample per location will be submitted for laboratory analysis. Samples submitted for analysis will be selected based on visual or olfactory indicators of contamination, asbestos and PID field screening, and to provide site coverage (lateral and vertical).

In addition to soil sample collection, were observed residual buried services and conduit observed in test pits and boreholes will be recorded (depth and location) for future survey and mapping if required.

6.4.3 Method of Sampling Collection

Care will be taken to ensure that representative samples are obtained from the depth required and that the integrity is maintained.

Soil samples will be screened using a calibrated Photoionisation Detector (PID) to record volatile organic compounds. PID screening will be conducted in a subsample collected and sealed in a zip lock bag. Samples will be retained in the bag for a minimum of 10 minute prior to measurement of headspace concentrations.

Surface soil samples and samples of soils assessed to comprise fill materials will be field screened for asbestos in accordance with Table 8 of WA DER 2021 *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.*

All soil samples will be collected directly from a decontaminated auger or dedicated direct push sampling sleeve. Care will be taken when collecting auger samples to ensure the most representative sample of the targeted material is sampled.

The soil will be transferred to the sample jar using new nitrile gloves used for the collection of each sample.

6.5 GROUNDWATER

Groundwater sampling from 20 locations, as presented on Figure 5, of which 3 sampling locations are existing onsite. Two existing wells are located offsite up/cross hydraulic gradient for the purpose of background groundwater quality assessment.

It is noted that all new groundwater sampling locations are co-located with soil sampling locations.

6.5.1 Well Construction

The groundwater monitoring wells will be installed in accordance with *Minimum Construction Requirements for Water Bores in Australia Fourth Edition* (National Uniform Drillers Licensing Committee, 2020) as conventional drilling and well development practices prescribed in NEPM (2013) for typical groundwater monitoring and sampling of contaminated sites are suitable for PFAS sampling, as outlined within Section 18.5.1 of the PFAS NEMP 2.0 (2020). It is noted that drilling fluids that contain PFAS compounds must not be used.

The wells are proposed to be constructed with PVC casing that is screened across the groundwater interface. A sand filter pack extending from the base of the borings to 1.0 m above the top of the slotted PVC casing will be used and will be sealed with 1 m hydrated bentonite pellets above the sand pack. The wells will be finished with end caps and upstanding well monuments.

Where observed, groundwater inflows and the depth of inflow observations will be noted on the borehole log and considered in the well design.

6.5.2 Well Development and Sampling Methodology

Fieldwork will be undertaken in accordance with documented CES procedures by experienced staff.

Well development will be undertaken prior to sampling by surging and pumping manually with a decontaminated foot valve attached to Teflon-free tubing. Development will be undertaken until 3 well volumes have been removed or where wells have slow recovery, until dry. Groundwater extracted during the well development will be stored within containers and will be treated as PFAS-contaminated waste until verified by laboratory results.

Following development of the wells, they will then be allowed to recharge for approximately one week before purging and sampling.

Prior to sampling, a purging process will be undertaken by the low-flow method using a peristaltic or bladder pump with drawdown control to limit drawdown to less than 0.05 m. This will be done using a low flow pump with inlet tubing (Teflon free) set at the midpoint of the response zone (slotted pipe). Consideration will be given to water strike information, where available for positioning of the inlet sampling point.

In the event that a monitoring well exhibits poor recovery during the well development process, the field data sheet will be annotated. During sampling, the poor recovery wells will be purged and efforts to minimise drawdown will be made; however, the “less than 0.05 m” drawdown aim will not be maintained. This will be recorded on the field data sheet during sampling. From

previous experience of groundwater sampling at the site, it is unlikely that any well will be purged dry.

A calibrated (and decontaminated) water quality meter (WQM) will be used during the purging process to assess chemical equilibrium by measuring pH, redox potential (Eh), electrical conductivity, dissolved oxygen and temperature. Note that daily calibration spot checks will be undertaken on the WQM and recorded on field sheets to ensure consistency and quality of field data measurements. The parameters will be considered stable and at equilibrium when two consecutive readings are within ±10 %. Stabilisation of the water quality parameters is considered to represent formation specific (at the point of sampling) water being drawn into the parameter measurement cup. As such, the field parameter stabilisation will be used to assess when water that is representative of the formation is to be sampled. Sampling will commence after the parameters have stabilised utilising the same low-flow extraction methods.

Groundwater samples will be collected from the pump tubing directly into the laboratory sample containers. Care will be taken to minimise disturbance of the sample to avoid aeration by minimising the distance between the outlet tubing and the container, tilting the container so that discharge flows gently down the inner walls (groundwater samples), and ensuring containers have no airspace (fully filled).

Subject to the agreement of GPM, groundwater generated by the development and purging of groundwater monitoring installations will be discharged to the Station Dirty Water System.

6.6 SURFACE WATER

Two surface water samples grab samples are proposed to be collected, from the Western Settling Basin and the Coal Handling Plant “Clean Water Pond”.

Surface water sample locations are presented on Figure 6.

Surface water samples will be collected directly from the water body using laboratory supplied containers.

6.7 SEDIMENT SAMPLES

Sediments in the Coal Handling Plant “Clean Water Pond” have not been assessed to date, as such sampling from two locations is proposed.

The sediment samples will be collected at the nominated locations using a multi staged sediment sampler and dedicated disposable polycarbonate push tubes, with samples placed directly into laboratory supplied sample containers.

Proposed sediment sample locations are presented on Figure 6.

6.8 CONCRETE

6.8.1 Sampling Pattern and density

Concrete sampling is proposed in to be completed in the perimeter channel and the Coal Handling Plant bunker on the basis of one sample per 100 m. at total of 13 samples are proposed.

6.8.2 Depth Intervals of Sampling

Concrete samples will be from the concrete surface (0.0 to 0.1 m) and locations are shown in Figure 7.

6.8.3 Method of Sampling Collection

Samples will be collected using a decontaminated reciprocating hammer

The concrete will be transferred to the sample container using new nitrile gloves used for the collection of each sample.

6.9 DECONTAMINATION PROCEDURES

Prior to sample collection, any personnel that handle decontaminated sampling equipment that directly contacts the targeted media, must wash their hands with soap and rinse thoroughly in potable water before donning a clean, new pair of disposable nitrile gloves. A new pair of nitrile gloves must be worn for each different sample. Additional hand washing prior to donning the new pair of gloves is necessary if the old pair of gloves was compromised or if the personnel's ungloved hands touched items that may represent potential PFAS contamination since last being washed.

Soil samples will be collected directly from the test pit side wall or from the drilling push tube.

The pumps (foot valve) used to develop each well or if a bladder pump is used to sample wells will be decontaminated in between sample locations by washing with potable water, followed by in a laboratory certified PFAS-free deionised water.

The low flow pump (peristaltic or bladder pump) sample train will not require decontamination since CES proposes to use dedicated (Teflon free) tubing for each well.

Water quality instruments will be decontaminated by washing with potable water followed by rinsing with laboratory certified PFAS-free deionised water. It should be noted that sample collection will be carried out by breaking the sample train on the monitoring well side of the water quality flow cell. That is to say that the collected sample will not have passed through the flow cell.

The multi-stage sediment sampler will be decontaminated in between sample locations by washing with potable water, followed by laboratory certified PFAS-free deionised water.

6.10 SAMPLE HANDLING PROCEDURES

6.10.1 Sample Containers

Laboratory supplied HDPE sample containers with Teflon-free lined lids will be used to contain the samples for PFAS analysis. HDPE/LDPE Ziplock bags will be used for samples for asbestos analysis. Glass jars with Teflon lined lids will be utilised for samples for other contaminant analysis.

6.10.2 Method of Sample Storage and Handling

All sample containers will be labelled with the sample number, project number, date obtained and site name. This information will be repeated on the Chain-of-Custody (COC) record form.

Once filled, the caps will be checked to ensure that they are secure (and that there are no air bubbles/head space) then placed within an esky / cool box in which double bagged ice has been added to keep the samples cool. Separate cool boxes will be kept for samples for PFAS analysis.

At the end of each sampling day the samples in the cool box will be transported to the CES office where ice will be added until delivered to the laboratory (within one day). Custody seals will be placed on the esky / cool box for delivery to the laboratory. QAQC samples (Trip Blank and Trip Spikes) will be included in each cool box to check whether any confounding sources may have been introduced during the sample handling and transportation process.

Samples for QAQC assessment will not be homogenised onsite to minimise the risks associated with cross-contamination and confounding sources of PFAS and volatile loss. Duplicate and triplicate samples will be collected to target the same material from similar depths as the primary samples (soil/sediment) and immediately by filling sample containers for similar analysis in succession (water).

6.10.3 Documentation

For soil samples the supervising engineer/scientist will be required to fill out a copy of the CES "sample register", which documents:

- Time of sample collection;
- Weather;
- Unique sample identification number; and
- Sample location and depth.

In addition, during drilling/test pit excavation a log will be completed by an experienced environmental engineer/scientist. The log will record the following data:

- Sample number and depth;
- Soil description in accordance with AS1726-2017;
- Unusual characteristics such as odour and staining;
- Depth of excavation/drillng;

- Depth of refusal if applicable;
- Method of excavation/drilling; and
- The depth of first encountered free water (if relevant).
- Name of sampler

For groundwater samples the supervising engineer/scientist will be required to fill out a copy of CES "Groundwater Sampling Field Data Sheet" and "Sample Register', which document:

- Time of sample collection;
- Weather;
- Unique sample identification number;
- Sample location and depth;
- Static Water Level;
- Date of well development;
- Water quality screening results (DO, Temperature, Redox potential, pH and conductivity);
- Presence or absence of odour (nature and intensity);
- Colour of the water;
- Presence or absence of sediment in the well; and
- Well condition and purging volumes.

Similar Sediment and Surface Water Sampling Field Data Sheets will be completed for sediment and surface water samples which document:

- Time of sample collection;
- Weather;
- Unique sample identification number;
- Visual assessment of sample location;
- Description of sediment
- Water quality screening results (DO, Temperature, Redox potential, pH and conductivity);
- Presence or absence of odour (nature and intensity);
- Colour of the water;
- Flow conditions.

All samples, including QA samples, will be transported to the primary and check laboratories under Chain-of Custody procedures and maintained in an ice-filled cooler. The COC will detail the following information:

- Site identification;

- The sampler;
- Nature of the sample;
- Collection time and date;
- Analyses to be performed;
- Sample preservation method;
- Departure time from site; and
- Dispatch couriers.

6.11 LABORATORY ANALYSIS

The proposed laboratory analysis schedule is presented in Table 14.

Table 14: Proposed laboratory analysis schedule

Analysis	Coal Stack	Adjacent Land	Fire Fighter Training Area Boundary	AEC 4 Slab	Gardeners Shed and Water Tank	Coal Handling Plant "Clean" Water Pond and Western Settling Basin	Perimeter Channel and Coal Handling Plant bunker
Combustible Content and % Sulfur	9	-	-	-	-	-	-
Asbestos in soil (NEMP Method)	17	10	-	-	2	-	-
PFAS in soil/sediment	24	14	9	-	2	2	13
PFAS in ASLP (soil/sediment)	3	2	2	-	2	1	2
TRH, BTEX, PAH, OCP/OPP, PCB, Metals and Metalloids in soil/sediment	17	10	-	-	2	2	-
TRH, BTEX, PAH, in soil/sediment	-	-	-	20	-	-	-
PFAS in surface water (trace level)	-	-	-	-	-	2	-
TRH, BTEX, PAH, OCP/OPP, PCB, Metals and Metalloids in surface water	-	-	-	-	-	2	-
PFAS in groundwater (trace level)	10	1	6	1	2		-
TRH, BTEX, PAH, OCP/OPP, PCB, Metals and Metalloids in groundwater	10	1	-	1	2	-	-

6.12 LABORATORY ANALYTICAL METHODS

Table 15: Nominated NATA accredited laboratories and analytical methods

Nominated Laboratory	Analytical Method
Envirolab (Primary)	PFAS (soil): Liquid chromatography combined with mass spectrometry (LC-MS/MS) with basified methanol extraction. Reference Method: In-house based on USEPA 537, ASTM D7968 and ISO25101 PFAS (leachate): Preparation - Tumbling. Reference Method: AS4439. Analysis of liquid phase: LC-MS/MS Reference Method: In-house based on USEPA 537, ASTM D7968 and ISO25101 Asbestos: AS4964-2004 with WA DoH Guidelines Metals: ICP-OES. Reference Method: US EPA 200.7 (ICP) TRH: P&T / GC-MS + GC-FID. Reference Methods: USEPA 8260 + 8000 BTEX: P&T / GC-MS. Reference Method: USEPA 8260 PAH: GC-MS. Reference method USEPA 8270 OCP/OPP: GC-ECD/MS. Reference Method: USEPA 8270 or 8141 PCB: GC-ECD/MS. Reference Method: USEPA 8082
ALS (Secondary)	PFAS (soil): Liquid chromatography combined with mass spectrometry LC-MS-MS with MTBE extraction. PFAS (leachate): Preparation - Tumbling. Reference Method: AS4439. Analysis of liquid phase: LC-MS/MS Asbestos: AS4964-2004 with WA DoH Guidelines Metals: ICPAES, CV/FIMS/ICPMS. Reference Method: USEPA 200.2 TRH: P&T/HS-GC/MS + GC/FID Reference Methods: US EPA 3510/8015 & US EPA 5030/8260 & USEPA 3510/8015 BTEX: GC/FID. Reference Method: US EPA 3510/8015 PAH: GC/MS – SIM. Reference Method: US EPA 3510/8270 OCP/OPP: Reference Method: US EPA 3510/8270 PCB: Reference Method: US EPA 3510/8270

6.13 DETECTION LIMTS

Given that PFAS are currently under scrutiny by the NSW EPA, CES proposes to use trace level detection limits for the three CoPC in surface water and groundwater, with standard detection limits for soil and sediment, as follows:

In surface water and groundwater:

- PFHxS - 0.0002 µg/L;
- PFOS - 0.0002 µg/L; and
- PFOA - 0.0002 µg/L.

In soil/sediment:

- PFHxS - 0.1 µg/kg;
- PFOS - 0.1 µg/kg; and
- PFOA - 0.1 µg/kg.

Detection limits for TRH, BTEX, PAH and common metals and metalloids will be consistent with standard Australian laboratory detection limits, suitable for comparison with the adopted screening criteria.

6.14 FIELD QUALITY ASSURANCE / QUALITY CONTROL PROGRAMME

Field QA/QC for this project consists of rinsate samples, blind replicates, split samples and trip blanks. A description of each of these samples and their proposed frequency of testing is provided below. The proposed field and laboratory QA / QC programmes comply with requirements of the PFAS NEMP (HEPA 2018) and ASC NEPM (NEPC 2013) where applicable.

Environmental Samples

Environmental samples or primary samples are the representative samples of groundwater, surface water, or sediment collected for analysis to determine aspects of their chemical composition.

Blind Replicate Samples

Blind replicate samples are provided by the collection of two environmental samples from the same location or successively from the same monitoring bore. These samples are preserved, stored, transported, prepared and analysed in an identical manner. As a minimum, the results of analyses on the blind replicate sample pair are assessed by calculating the Relative Percentage Differences (RPDs) between the results. The RPD is calculated as the difference between the results divided by their mean value and expressed as a percentage. If the RPD exceeds the value adopted for any analytes, additional investigation will be required, or justification provided for not conducting additional investigation.

One blind replicate will be collected for every ten environmental samples, in accordance with the requirements of the PFAS NEMP 2.0 (HEPA 2020), and one for every 20 environmental samples in accordance with ASC NEPM (NEPC 2013). This frequency will be sufficient to

ensure that each batch of samples is accompanied by a blind replicate. If not, an additional blind replicate will be carried out.

Split Samples

Split samples provide a check on the analytical proficiency of the laboratories. Split samples are collected from the same location or successively from the same monitoring bore. Split samples must be taken from the same location as the blind replicate, thus becoming a triplicate sample. Spilt samples (triplicates) are preserved, stored, transported, prepared and analysed, at the secondary laboratory. Split samples will be collected at a rate of one split sample for every 10 environmental samples in accordance with the requirements of the PFAS NEMP 2.0 (HEPA 2020), and one for every 20 environmental samples in accordance with ASC NEPM (NEPC 2013). This frequency will be sufficient to ensure that each batch of samples is accompanied by a split sample. If not, an additional split sample will be carried out.

Rinsate Samples

Rinsate (equipment) blanks will consist of pre-preserved bottles filled with certified PFAS-free laboratory-prepared deionised water that has been passed over decontaminated field equipment. Rinsate blanks are prepared on site, labelled with a unique CES sample identification number and transported to the principal laboratory for analysis as regular environmental samples. The purpose of the rinsate blank is to assess the efficiency of decontamination procedures.

Rinsate blanks will be collected at a rate of one in 10 environmental samples.

Rinsate samples are not required if field equipment is dedicated for the specific sampling location.

Trip Blanks

Trip blanks consisting of pre-washed bottles containing laboratory certified PFAS-free distilled or de-ionised water or uncontaminated soil. The role of trip blanks is to detect potential contamination during sample transport. These samples reside in transport vessels during sampling activities and are not opened in the field. Trip blanks are analysed at the laboratory as regular samples.

Trip blanks will be prepared and analysed for each cool box presented to the laboratory.

A summary of QAQC sample rates is presented in Table 15.

Trip Spikes

Trip blanks consisting of pre-washed bottles containing laboratory certified PFAS-free distilled or de-ionised water or uncontaminated soil mixed with a known mass of contaminant. The role of trip spike is to detect potential volatile contaminant loss during sample transport. These samples reside in transport vessels during sampling activities and are not opened in the field. Trip spikes are analysed at the laboratory as regular samples.

Trip spikes will be prepared and analysed for each cool box presented to the laboratory.

Table 16: QAQC Sample Summary

Sample Type and Analysis	Number of Samples
Soil/sediment Duplicates/Triplicates (PFAS)	8 Duplicates/ 8Triplicates
Surface water/groundwater Duplicates/Triplicates (PFAS)	3 Duplicates/ Triplicates
Soil/sediment Duplicates/Triplicates (PFAS 8 metals, BTEXN, TRH, PAH, OCP, OPP, PCBs)	2 Duplicates/2 Triplicates
Surface water/groundwater Duplicates/Triplicates (8 metals, BTEXN, TRH, PAH, OCP, OPP, PCBs)	1 Duplicates/ 1Triplicates
Equipment Blank/Rinsate Sample (PFAS 8 metals, BTEXN, TRH, PAH, OCP, OPP, PCBs)	10 Blanks
PFAS Blank, Trip Blank and Trip Spike	4 PFAS Blank /4 Trip Blank/4Trip Spike

6.15 LABORATORY INTERNAL QA / QC PROGRAMME

The reliability of test results from the analytical laboratories will be monitored according to the QA / QC procedures used by the NATA accredited laboratory. The QA/QC programme employed by Envirolab (the primary laboratory) and ALS (the secondary laboratory) will specify holding times, extraction dates, method descriptions, Chain of Custody (COC) requirements, analysis, PQLs and acceptance criteria for the results. Laboratory QA/QC requirements to be undertaken by Envirolab are based on NEPM requirements and are outlined below (NEPC, 2013).

Laboratory Duplicate Samples

Laboratory duplicates provide data on analytical precision for each batch of samples. Where required and in order to provide sufficient sample for analysis of laboratory duplicate, two batches of samples are collected at the first site listed on the Chain of Custody form. This is done in order to ensure that sufficient sample is collected.

Laboratory duplicates are performed at a rate of one duplicate for batches of 6-14 samples with an additional duplicate for each subsequent ten samples.

Laboratory Control Samples

Laboratory control samples consist of a clean matrix (de-ionised water or clean sand) spiked with a known concentration of the analyte being measured. These samples monitor method

recovery in clean samples and can also be used to evaluate matrix interference by comparison with matrix spikes. Laboratory control samples may be certified reference materials.

Surrogates

For organic analyses, a surrogate is added at the extraction stage in order to verify method effectiveness. The surrogate is then analysed with the batch of samples. Percent recovery is calculated.

Matrix Spike

A matrix spikes consist of samples spiked with a known concentration of the analyte being measured, in order to identify properties of the matrix that may hinder method effectiveness. Samples are spiked with concentrations equivalent to 5 to 10 times the PQL. Percent recovery is calculated.

Method Blanks

Method blanks (de-ionised water or clear sand) are carried through all stages of sample preparation and analysis at a rate of approximately 10%. Analyte concentrations in blanks should be less than the stated PQL. Reagent blanks are run if the method blank exceeds the PQL. The purpose of method blanks is to detect laboratory contamination.

6.16 ANALYTICAL RESULTS DATA QUALITY INDICATORS

QA / QC indicators will be based on the assessment of field and laboratory quality control sample results and in accordance with Australian Standard 4482.1-2005 and ASC NEPM (NEPC 2013). Specific indicators for field and laboratory QA / QC samples are shown in Table 13.

6.17 GENERAL FIELD QAQC PROCEDURES

Sample Handling and Transport Methods

All samples will be labelled with a unique identifier consisting of the sample location. Groundwater/Surface Water/Sediment/soil samples will be placed into laboratory prepared and supplied sample containers. After collection, samples will be placed directly into an ice-filled esky and transported to a NATA accredited laboratory for the analytes selected, under chain of custody (COC) protocols.

Field Quality and Quality Control

Quality assurance procedures adopted for the groundwater assessment will include:

1. Ensuring field screening instruments are calibrated;
2. Conducting daily spot checks on calibrated equipment (PID, water quality meter);
3. Ensuring that the procedures and measures listed in Table 1A of the WA DER *Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)* are followed;

4. Placing samples immediately on ice following sampling;
5. Ensuring correct sampling containers and preservatives are employed for contaminants being analysed; and
6. Ensuring analysis is performed within recommended holding times.

7 ADOPTED SCREENING CRITERIA

7.1 SOIL SEDIMENT AND CONCRETE

7.1.1 PFAS

To assess the results of soil sample analysis, primary reference has been made to soil investigation levels from PFAS National Environment Management Plan, (PFAS NEMP 2.0) as listed in Table 17 below.

Table 17: Soil and Sediment Investigation Levels for PFAS

Adopted Guidelines	Rationale	Criteria	
PFAS NEMP 2.0 HILs	**Soil Health Investigation Levels (HILs):** As the site will be used for industrial/commercial purposes, reported PFAS analytical results will be assessed against the commercial/industrial criteria detailed in Table 2 of the PFAS NEMP 2.0 (i.e. HIL-D).	Sum of PFOS and PFHxS: 20 mg/kg PFOA: 50 mg/Kg	
PFAS NEMP 2.0 EGVs	**Soil Ecological Guideline Values (EGVs):** Ecological direct & indirect exposure values for PFAS have been adopted that are applicable to all land uses.	Ecological direct exposure	PFOS: 1 mg/Kg
			PFOA: 10 mg/Kg
		Ecological indirect exposure	PFOS: 0.01 mg/Kg
			ASBETOSPFOA: -
Simpson, S. et al. (2021) Chronic effects and thresholds for estuarine and marine benthic organism exposure to perfluorooctane sulfonic acid (PFOS)-contaminated sediments: Influence of organic carbon and exposure routes	**Sediment Ecological Guideline Values (EGVs)** 99% species protection value and considered to be a conservative screening value that accounts for both direct toxicity and secondary poisoning (i.e. bioaccumulation).	PFOS 60 µg/kg	

7.1.2 ASBESTOS

To assess the human health risk presented by potential asbestos soil contamination, reference will be made to the National Environment Protection Council (1999) *National Environment*

Protection (Assessment of Site Contamination) Measure 1999 (NEPM) (as amended 2013) and WA DoH (2021) *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*.

Health screening levels for asbestos contamination in soil are outlined in Table 19 and adopted criteria in Table 18.

Table 18: Rationale for the adopted NEPM Health Screening Levels for Asbestos Contamination in Soil

Adopted Guidelines	Rationale
NEPM, 2013 Soil HSLs/WA DoH 2021	Soil Health Screening Levels (HSLs): As the site will be used for industrial/commercial purposes, reported analytical results were assessed against the commercial/industrial criteria detailed in the NEPM 2013 (i.e Commercial/Industrial D).

Table 19: NEPM/ WA DoH 2021 Health Screening Levels for Asbestos Contamination in Soil

	Health Screening Level (w/w)			
Form of Asbestos	**Residential A[1]**	**Residential B[2]**	**Recreational C[3]**	**Commercial/Industrial D[4]**
Bonded ACM	0.01%	0.04%	0.02%	0.05%
FA and AF[5] (friable asbestos)	0.001%			
All forms of asbestos	No visible asbestos for surface soil			

1: Residential A with garden/accessible soil also includes children's day care centres, preschools and primary schools.

2: Residential B with minimal opportunities for soil access; includes dwelling with fully and permanently paved yard space such as high-rise buildings and apartments.

3: Recreational C includes public open space such as park, playground, playing fields (e.g. ovals), secondary schools and unpaved footpaths.

4: Commercial/industrial D includes premises such as shops, offices, factories and industrial sites.

5: The screening level of 0.001% w/w asbestos in soil for friable asbestos only applies where the friable asbestos and asbestos fibres are able to be quantified by gravimetric procedures. This screening level is not applicable for free fibres.

7.1.3 OTHER CONTAMINANTS OF POTENTIAL CONCERN

To assess the human health risk presented by potential soil contamination, reference will be made to the National Environment Protection Council (1999) *National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM) (as amended 2013)*

Table 20: Soil Investigation Levels for COPC

Adopted Guidelines	Rationale
NEPM, 2013 Soil HILs and HSLs	**Soil Health Investigation Levels (HILs):** As the site will be used for industrial/commercial purposes, reported analytical results will be assessed against the commercial/industrial criteria detailed in the NEPM 2013 (i.e. HIL-D).
	Soil Health Screening Levels (HSLs): Soil concentrations to be assessed against NEPM 2013 HSL-D levels for commercial/industrial sites.
NEPM, 2013 Soil EILs and ESLs	**Ecological Investigation Levels (EILs):** Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) have been adopted in accordance with the NEPM in a commercial/industrial land use acceptance level.
	Ecological Screening Levels (ESLs): ESLs for aged copper, nickel and zinc will be calculated in accordance with the NEPM using pH and cation exchange values of the Australian reference soil and based on high traffic adjacent site, unless stated otherwise.

Where guidance is not provided within *National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM) (as amended 2013)* and *PFAS National Environment Management Plan*, (PFAS NEMP 2.0, HEPA 2020) , reference has been made to guideline values from alternate sources (see below).

- Canadian Council of Ministers of the Environment (CCME) (2020) Environmental Quality Guidelines Summary Table.
- United States Environmental Protection Agency (2020) Regional Screening Levels (RSLs) - Generic Tables. Tables as of: May 2020
- Direct contact values from Friebel & Nadebaum (2011) Health screening levels for petroleum hydrocarbons in soil and groundwater: summary, CRC CARE Technical Report 10.

Combustible Content and Sulfur Content criteria presented in Table 1 of The coal washery rejects order 2014 made under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014.

7.2 GROUNDWATER SURFACE WATER AND LEACHATE

Results of groundwater/surface water/leachate analysis will be compared to Ecological water quality guideline values indicated in *PFAS National Environment Management Plan*, (PFAS NEMP 2.0, HEPA 2020) and human health screening levels (groundwater) as listed in Table 21.

Table 21: Groundwater/Surface water/Leachate analysis Investigation Levels

Adopted Guidelines	Rationale
PFAS NEMP 2.0 Ecological water quality guideline values	Ecological water quality guideline values (EWGVs): Relevant surface water receptors comprise the Inlet and Outlet Canals, onsite water management dams and the Tuggerah Lakes, the reported analytical results will be assessed against the Ecological water quality guideline values for freshwater reported in Table 5 of PFAS NEMP 2.0 - 95% species protection – slightly to moderately disturbed systems for the Canals and Tuggerah Lakes and 95% species protection for onsite water management dams.
ANZG (2018) Default Guideline Values	
Human Health Screening Levels ASC NEPM (NEPC 2013)	Health screening levels (HSLs) have been developed for selected petroleum compounds and carbon bands and are applicable to assessing human health risk via the inhalation pathway. Groundwater HSLs are not applicable in conditions where groundwater is less than 2 m below ground level, due to the limitations of the Johnson and Ettinger Model which was used to derive the groundwater HSLs. The site in its current condition does not contain built structures and as such the groundwater HSLs are considered to be appropriate and conservative screening criteria. The HSLs for commercial/industrial land use for sand soil types at depths of 2-4 m below ground level have been adopted as screening criteria
Guidelines for Managing Risk in Recreational Water (NHMRC, 2008)	For the protection of primary and secondary recreational contact, the Guidelines for Managing Risk in Recreational Water (NHMRC, 2008) recommends that the Australian Drinking Water Guidelines Criteria should be adjusted from the consumption of 2 L/day to the consumption of 0.2 L/day.

8 REPORTING

CES will provide a report in accordance with the requirements of a detailed site investigation – Table 2.3 of *Consultants Reporting on Contaminated Land Contaminated Land Guidelines* NSW EPA 2020. The report will include the following:

- Confirmation of the soil, sediment, surface water and groundwater sampling methodology;
- Discussion of the QA/QC sampling and whether the results of the QA/QC analysis provide robust confidence in the sampling procedures, sample handling and laboratory performance;
- Presentation of the guideline values for assessment of soil, sediment, surface water and groundwater analysis;
- Presentation of the analytical results, including tabular presentation of the results to allow comparison with the guideline values. Exceedances of the screening criteria will be presented on figures;
- Presentation of the location of residual buried services onsite which may be constructed of asbestos cement, based on site plans or site walkover combined with a survey;
- Assessment and discussion of the analytical results including potential areas of concern or areas requiring further investigation/assessment/remediation/ management, in the event that the detected concentrations are above the currently available guideline values;
- Presents a revised Conceptual Site Model; and
- Presents an assessment of site suitability and makes recommendations for further assessment and/or remedial work if considered to be necessary.

9 LIMITATIONS OF THIS REPORT

This report has been prepared for use by the client who commissioned the works in accordance with the project brief and based on information provided by the client. The advice contained in this report relates only to the current project and all results, conclusions and recommendations should be reviewed by a competent person with experience in geotechnical and environmental investigations before being used for any other purpose. CES accepts no liability for use or interpretation by any person or body other than the client. This report must not be reproduced except in full and must not be amended in any way without prior approval by the client and CES.

Should information become available regarding conditions at the site including previously unknown sources of contamination, CES reserves the right to review the report in the context of the additional information.

10 REFERENCES

Catherine Hill Bay Acid Sulphate Soils Risk Map (Department of Natural Resources (CJ Murphy, 1997, Edition 2, 1:25,000

Consulting Earth Scientists 2018, *Munmorah Power Station: Groundwater Flow Assessment* (document reference: CES170608-GPM-AD Rev 2, dated 06 July 2018

Consulting Earth Scientists 2019a, *Per- and Poly-Fluoroalkyl Substances (PFAS) Investigation Report* (CES Document Reference CES170608-GPM-AI, 2019);

Consulting Earth Scientists 2019b, *Preliminary Site Investigation: Former Munmorah Power Station* (CES Document Reference CES170608-GPM-AW, 2019b)

Consulting Earth Scientists 2019c *AEC4 – Coal Stack Above Ground Storage Tanks Investigation Report Former Munmorah Power Station* (CES document reference CES170608-GPM-BL, 2019c)

Consulting Earth Scientists 2021 *Preliminary Sediment Characterisation Report Former Munmorah Power Station* (CES document reference CES170608-GPM-CX, 2021)

Consulting Earth Scientists 2022 *Sampling and Analysis Quality Plan Crushed Concrete Stockpiles Assessment* (CES170608-GPM-DI dated 15 July 2022)

CRC Care, (2017) *Technical Report No.38 – Assessment, management and remediation for PFOS and PFOA.*

Department of Environment and Energy, (2016) *Commonwealth Environmental Management Guidance on Perfluoro-octane Sulfonic Acid (PFOS) and Perfluoro-octonoic Acid (PFOA).*

Department of Health, n.d. *Final Health Based Guidance Values for PFAS For Use in Site Investigations in Australia*.

Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, (2016) *enHealth Guidance Statements on per- and poly-fluoroalkyl substances*.

Environmental Resources Management Australia (ERM), *Project Symphony – Colongra Power Station Stage 2 Environmental Site Assessment* Reference 0237749, 2014;

Gosford – Lake Macquarie 1:100, 000 Geological Series Map (9131, 9231)

Gosford – Lake Macquarie 1:100, 000 Soil Landscape Series Map (9131, 9231)

Government of Western Australia, Department of Environment Regulation, (2016) *Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS).*

Government of Western Australia, Department of Environment Regulation, 2021 *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*

Heads of EPAs Australia and New Zealand (HEPA, 2020). *PFAS National Environment Management Plan*, Version 2.0.

National Environment Protection Council (NEPC), 1999 as amended 2013 *National Environment Protection (Assessment of site Contamination) Measure 1999*, as amended 2013 (ASC NEPM).

NSW EPA (1995) *Sampling Design Guidelines.*

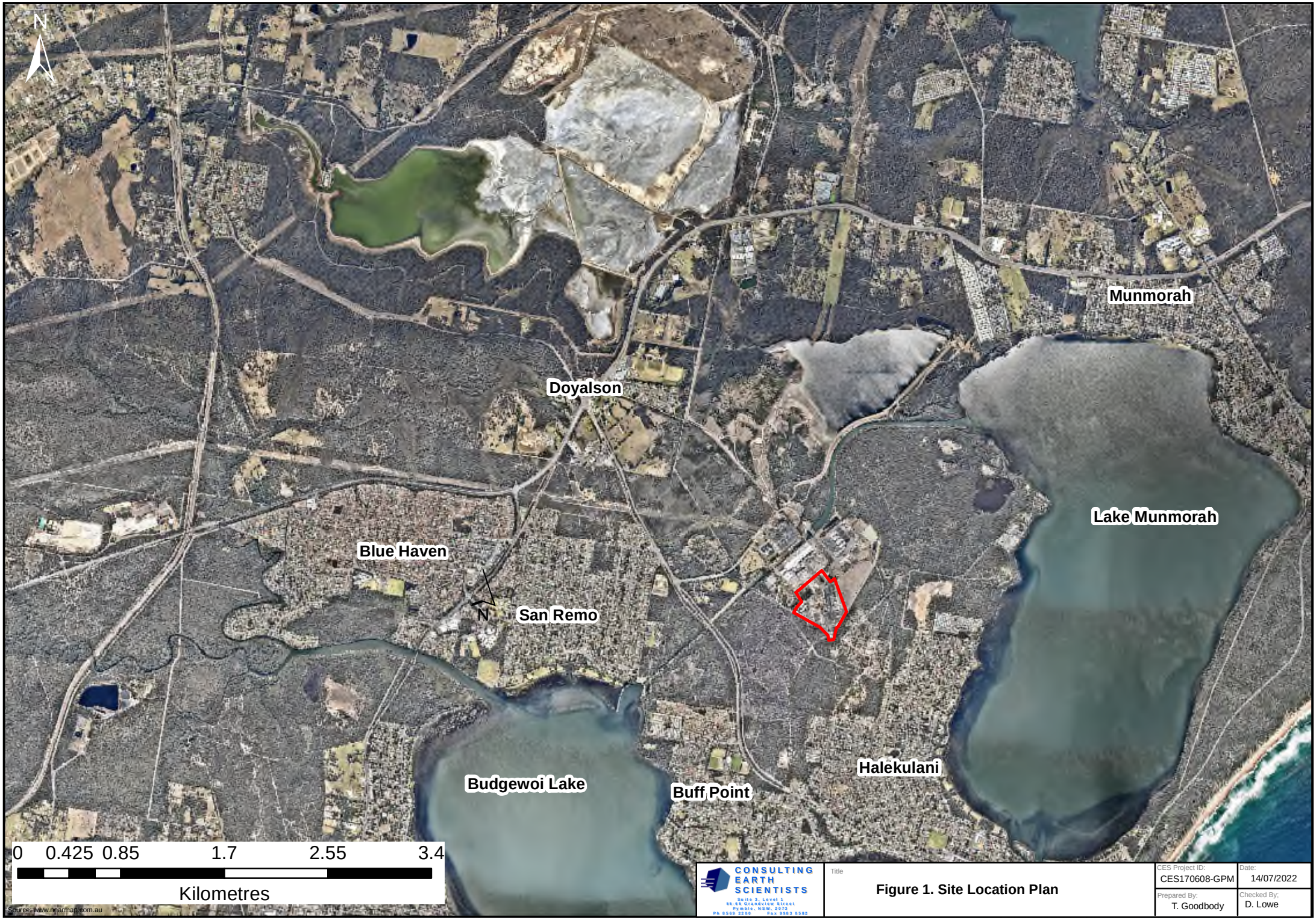
NSW EPA (2016) *Designing Sampling Programs for Site Potentially Contaminated by PFAS.*

NSW EPA, (2020) *Consultants reporting on contaminated land: Contaminated Land Guidelines.*

National Health Medical Research Council (NHMRC, 1992) *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites.*

NSW OEH Science (2017) *PFAS Screening Criteria*.

Figures



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Pymble, NSW, 2073
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Title

Figure 1. Site Location Plan

CES Project ID:	Date:
CES170608-GPM	14/07/2022
Prepared By: T. Goodbody	Checked By: D. Lowe

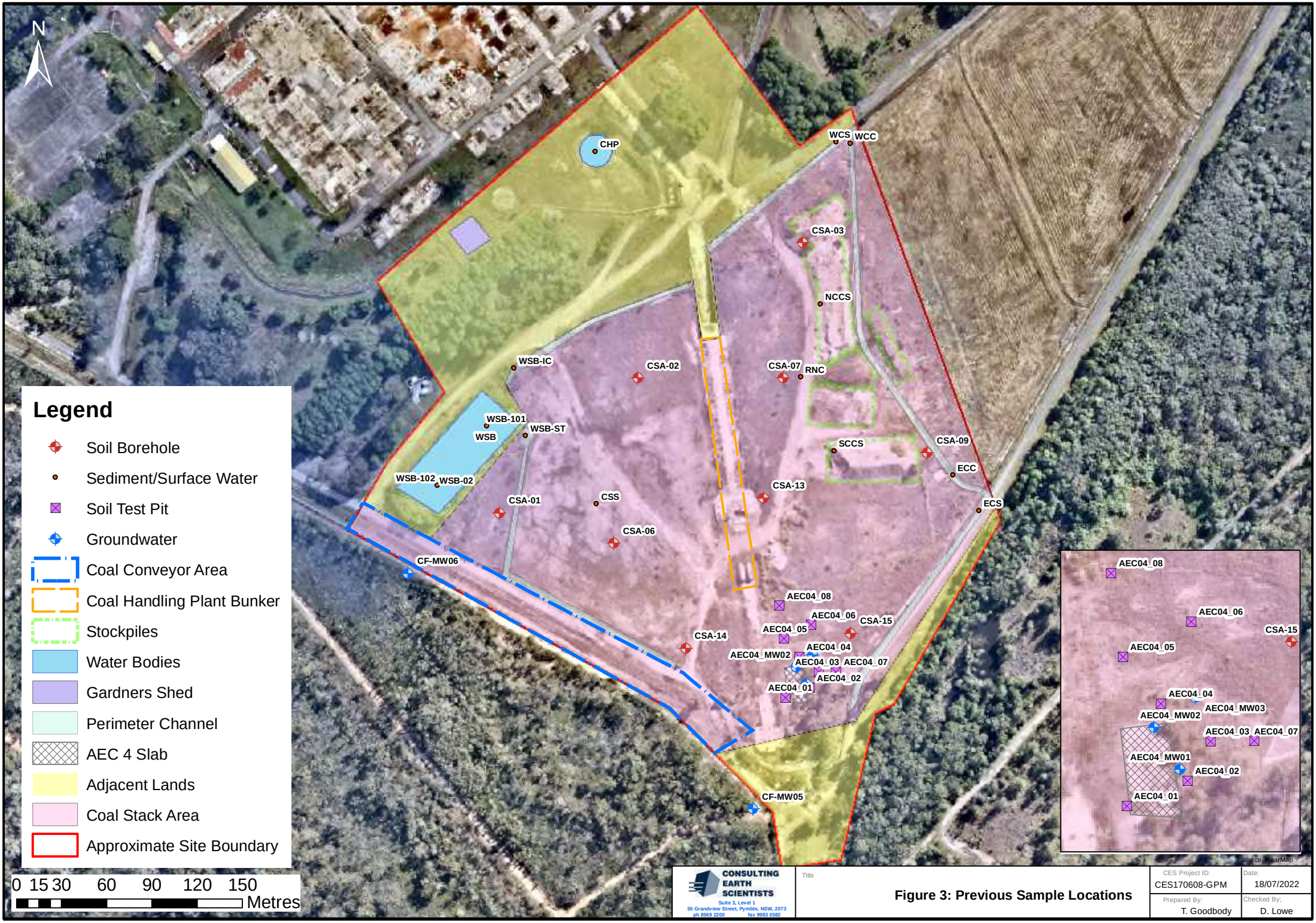


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Title

Figure 2:Site Layout Plan

CES Project ID:	Date:
CES170608-GPM	18/07/2022
Prepared By: T. Goodbody	Checked By: D. Lowe


N
CHP
WCS
WCC
CSA-03
NCCS
WSB-IC
CSA-02
CSA-07
RNC
WSB-101
WSB
WSB-ST
SCCS
CSA-09
ECC
WSB-102
WSB-02
CSA-13
CSA-01
CSS
ECS
CSA-06
CF-MW06
AEC04_08
AEC04_06
CSA-15
AEC04_05
CSA-14
AEC04_04
AEC04_MW02
AEC04_03
AEC04_07
AEC04_02
AEC04_01
CF-MW05
AEC04_MW03
AEC04_MW01
Legend
Soil Borehole
Sediment/Surface Water
Soil Test Pit
Groundwater
Coal Conveyor Area
Coal Handling Plant Bunker
Stockpiles
Water Bodies
Gardners Shed
Perimeter Channel
AEC 4 Slab
Adjacent Lands
Coal Stack Area
Approximate Site Boundary
0 15 30 60 90 120 150
Metres
Source: NearMap
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55 Grandview Street, Pymble, NSW, 2073
ph 8569 2200 fax 9983 0582
Title
Figure 3: Previous Sample Locations
CES Project ID:
CES170608-GPM
Date:
18/07/2022
Prepared By:
T. Goodbody
Checked By:
D. Lowe



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Title

Figure 4: Proposed Soil Sample Locations

CES Project ID:	Date:
CES170608-GPM	01/08/2022
Prepared By: T. Goodbody	Checked By: D. Lowe


N
Legend
Stockpiles
Approximate Site Boundary
Water Bodies
Gardners Shed
Perimeter Channel
AEC 4 Slab
Adjacent Lands
Coal Stack Area
Groundwater Sample Locations
Existing
New
0 1530 60 90 120 150
Metres
Source: NearMap
CONSULTING EARTH SCIENTISTS
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Title
Figure 5: Proposed Groundwater Sample Locations
CES Project ID:
CES170608-GPM
Date:
01/08/2022
Prepared By:
T. Goodbody
Checked By:
D. Lowe



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Suite 3, Level 1
55 Grandview Street, Pymble, NSW, 2073
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Title

Figure 6: Proposed Surface water and Sediment Sample Locations

CES Project ID:	Date:
CES170608-GPM	18/07/2022
Prepared By: T. Goodbody	Checked By: D. Lowe



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Title
Figure 7: Proposed Concrete Sample Locations

CES Project ID:	Date:
CES170608-GPM	18/07/2022
Prepared By: T. Goodbody	Checked By: D. Lowe



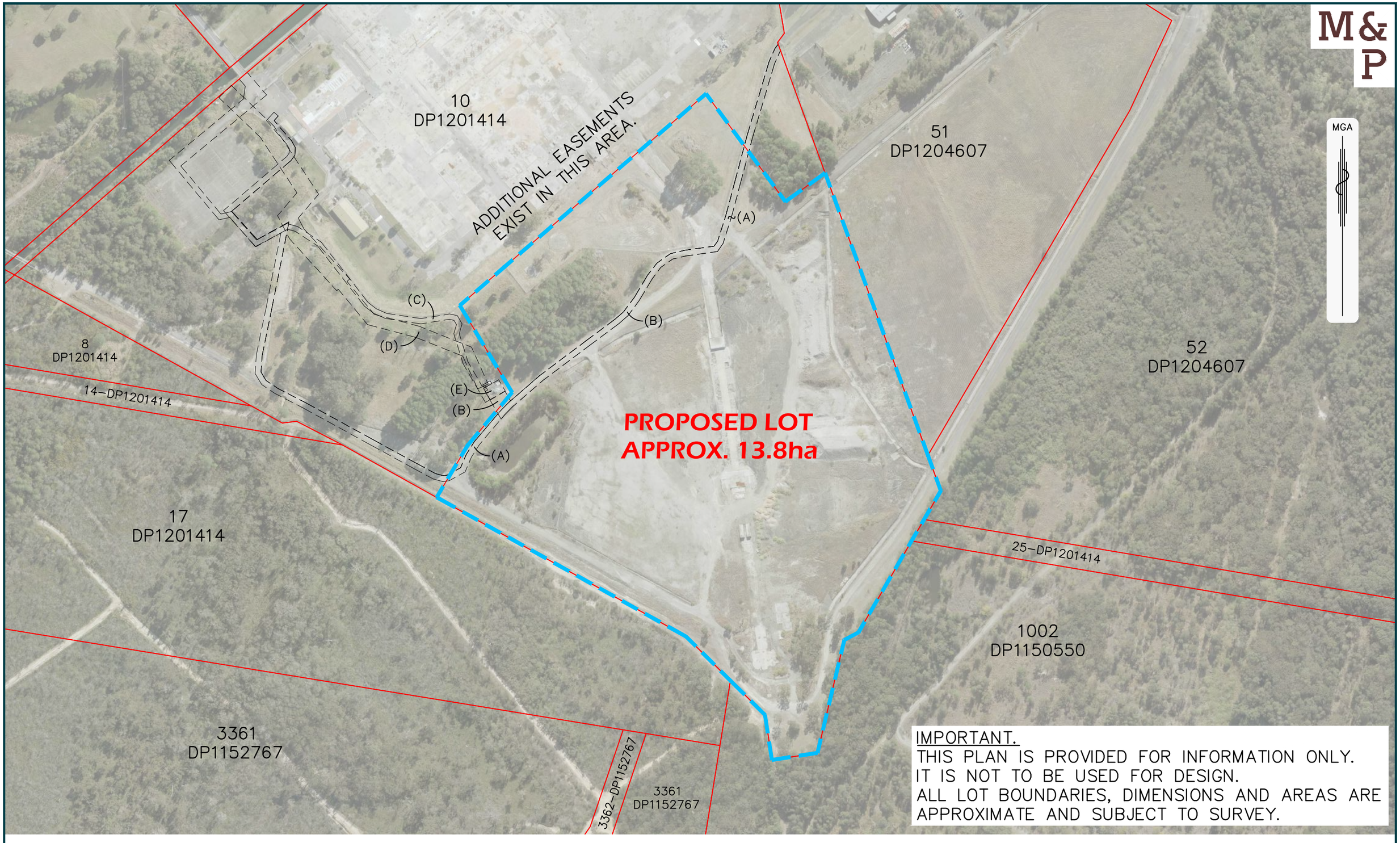
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Title

Figure 8: Proposed Sample Locations Combined Plan

CES Project ID:	Date:
CES170608-GPM	01/08/2022
Prepared By: T. Goodbody	Checked By: D. Lowe

Appendix A



IMPORTANT.
THIS PLAN IS PROVIDED FOR INFORMATION ONLY.
IT IS NOT TO BE USED FOR DESIGN.
ALL LOT BOUNDARIES, DIMENSIONS AND AREAS ARE APPROXIMATE AND SUBJECT TO SURVEY.

(A) – RIGHT OF ACCESS (5 WIDE) (DP 1198575)
(B) – EASEMENT FOR ACCESS (DP 1203848)
(C) – RIGHT OF CARRIAGEWAY (DP 1195040)
(D) – EASEMENT FOR ELECTRICITY & OTHER PURPOSES (DP 1195040)
(E) – LEASE VIDE (3461716) (7213454) (3643903) (8153333) (3461717) (7213455) (7643904) (DP 1195040)

REVISIONS						
1	ISSUE TO CLIENT	M&P	MAK	BJB	15/07/22
No	REVISION	SVY	DFT	CHK	DATE

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NEWCASTLE SYDNEY GUNNEDAH MUSWELLBROOK

Surveyed	Drafted	Checked
M&P	JS	BJB

REGISTERED SURVEYOR

@A3 :	Original Size
1:3000	A3
DO NOT SCALE	

Client: GENERATOR PROPERTY MANAGEMENT

Title: PROPOSED SUBDIVISION PLAN
BATTERY SITE
MUNMORAH

CAD File: 170050K_01 | Ref No: 170050 | Date: 09/06/2022

Sheet No. 1/1

Revision 1

Appendix B

FOR STATION AREA DRAINAGE REFER TO:
MM638781....FOR CLEAN WATER DRAINAGE - SYSTEMS D1, D13 & ROOF
MM638782....FOR DIRTY WATER DRAINAGE - SYSTEMS D2 TO D12
MM638783....FOR OTHER MISC. DRAINAGE SYSTEMS

FOR DRAINAGE AND PONDS EAST OF MAIN STATION
REFER TO DRG.....MM639044

CONVEYOR ROAD
CLEAN WATER CHANNEL
DIRTY WATER POND
PUMP PIT
CHIMNEY STACK No1
CHIMNEY STACK No2
DEMINERALISING PLANT AREA
TO D205
D205
D206
D207
D208A
S19
TC PIT D513
COAL BRITT SUMP
PUMP PIT
D209
D601
D602
SEWERAGE PUMPING STN. 2
250 PUMPED FROM CONTRACTORS AREA
GARDENERS WAY
D2078
GARDENERS STORAGE SHED
GARDENERS SHED
GREEN HOUSE
SHED
CLEAN STORMWATER COLLECTION POND
COAL CONVEYOR OVER
300 RISING MAIN
COAL PLANT ROAD
COAL PLANT ROAD
RETENTION ROAD
WEISNER ST
POZZO ST
OIL STORE
C.C.COAL OFFICES
GARAGE
CONCRETE PAVING
C.C.COAL WORKSHOP
PUMP PIT T8
SOIL TESTING LABORATORY
STORE BUILDING
RAMP
VEHICLE GARAGE
DRAIN PIT
TRAP T28
BULLDOZER WASHDOWN AREA
BUND DRAINS
FIRE DRILL AREA
TO TRANSPIRATION POND
OIL TRAP
COLLECTION POND
DISCHARGE FROM 6ML DIRTY WATER RETENTION BASIN
EASTERN SETTLING BASIN
OVERFLOW OUTLET BLOCKED OFF
NEW OVERFLOW
WESTERN SETTLING BASIN
DISH DRAIN ACROSS ROAD
DISUSED CHANNEL
COAL STORAGE AREA
COAL STACK ROAD
PERIMETER CHANNEL
DOZER CROSSING
PERIMETER CHANNEL
DISH DRAIN ACROSS ROAD
COAL STORAGE AREA
PERIMETER CHANNEL ROAD
EXISTING CREEK
SAMPLE CRUSHER HOUSE
VALVE PIT
RAISED HUMP
DEISEL PUMP
DRAIN PIT
OIL TRAP T21
MAIN REJECTS HOPPER
DEISEL BUND
WORKERS SHED
SEPTIC TANK
GARAGE
ELECTRICAL SUB STATION
TRANSFORMER CUBICLES
SAMPLE CRUSHER HOUSE

LEGEND

- GRATED PIT
- GATIC COVERED PIT
- COVERED PIT
- OIL TRAPS
- WELL
- GRATED DRAINS
- EXISTING LAYOUT
- STORMWATER PIPELINES
- SEWER PIPELINES
- CABLE TUNNELS
- ASH/DUST PIPELINE TRENCH
- ASH/DUST SLUICEWAY
- PUMPED LINES
- Ø150 AG AGRICULTURAL DRAINAGE LINES
- DEMINERALISED EFFLUENT LINE
- DIRTY WATER LINE (OIL/GRIT)

1:1000 0 20 40 60 80 100 m
20 16 12 8 4

REFERENCE DRAWING

MM638780.....KEY PLAN FOR STATION DRAINAGE DRAWINGS

THIS PRINT MAY BE OF REDUCED SIZE

4

The Electricity Commission of New South Wales trading as Pacific Power.

AMENDMENTS

671x950mm

PACIFIC POWER SERVICES

CONTRACT No.	DRAWN	DM		KKS CODING UG	PACIFIC POWER
	DESIGN			ORIGINAL DRAWING APPROVED BY	MUNMORAH POWER STATION
	CHECKED DO	RT		C STARK per VI	STATION DRAINAGE
	CHECKED ENG			MANAGER/PPE 18-APR-1995	COAL HANDLING PLANT AREA
	PASSED	VI		APPROVED	DRAINAGE
	cad	DO NOT AMEND MANUALLY		DRAWING STATUS SCALE 1:1000	LAYOUT
					B1 MM638784 PREFIX NUMBER SHEET AMDT

PLOT ISSUE No. 10 | PLOT ISSUE DATE 18APR95 | COPIED FROM | SUPERSEDES | SUPERSEDED BY | INDEX CLASS'N -

Appendix C

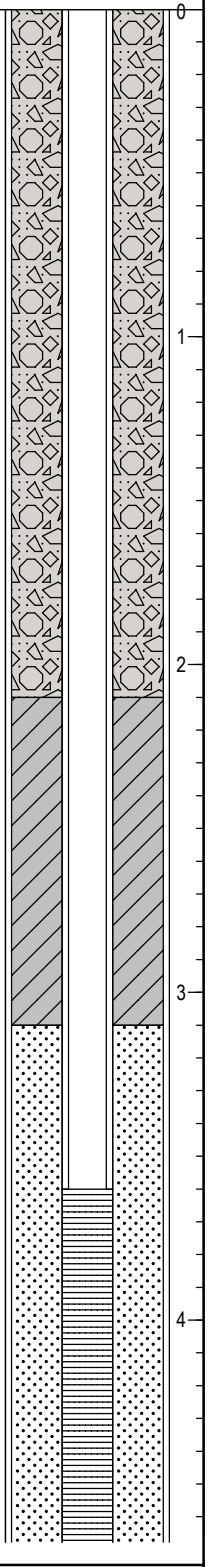
Project ID:	CES170608-GPM-E
Client:	Generator Property Management Pty Ltd
Project:	Hydrocarbon Investigation and RAP
Location:	Coal Stack Area

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WELL ID: AEC04_MW01

X-Coord:	364330.64	GDA 94 MGA 56	**Date Commenced:**	06/03/2019	**Logged by:** HJN
Y-Coord:	6323786.50		**Date Completed:**	06/03/2019	**Checked by:** TG
Surface Elevation (R.L) :	16.04	mAHD	**Hole Diameter (mm):**	m AHD	**Stickup (m)** 0.8

Drilling Information				LITHOLOGY				Samples		Notes and Additional Observations	Well Installation Detail
Depth (mBGL)	R.L. (m)	Method (Support)	Water	Symbol	USCS Symbol	Description SOIL TYPE: plasticity or particle characteristics colour, moisture, secondary and minor components	Consistency / Density	Sample ID	Type		
0.0	16					FILL: Gravelly SAND, medium to coarse, dark grey. Gravel is fine, dark grey, angluar. Trace coal tailings. Moist. No odour, no staining.					
						FILL: Clayey SAND, fine to medium, pale yellow. Moist. Strong diesel odour. No staining.					
						No odour, no staining.					
1.0	15				CL	Sandy CLAY: Low plasticity, mottled red/pale grey. Sand is fine to medium. Trace gravels, fine, pale yellow, angular. MC=PI. Stiff. No odour, no staining. (Residual)	St				
					CI	Silty CLAY: Medium plasticity, pale grey. MC=PI. Stiff. No odour, dark grey staining. (Residual)					
2.0	14					Strong diesel odour, dark grey staining.					
					CH	Silty CLAY: High plasticity, mottled pale grey/red. MC=PI. Stiff. Slight diesel odour, grey staining. (Residual)					
3.0	13					Diesel odour, no staining.					
4.0	12					Very slight diesel odour, no staining.					



Drill Company:	Numac Drilling Pty Ltd	**Operator Name:**	Hunter Bredin
Machine Type:	Geoprobe	**Operators Licence No.:**	7822DT

Refer to Standard Sheets for details of abbreviations

Project ID:	CES170608-GPM-E
Client:	Generator Property Management Pty Ltd
Project:	Hydrocarbon Investigation and RAP
Location:	Coal Stack Area

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X-Coord:	364330.64	GDA 94 MGA 56	**Date Commenced:**	06/03/2019	**Logged by:** HJN
Y-Coord:	6323786.50		**Date Completed:**	06/03/2019	**Checked by:** TG
Surface Elevation (R.L) :	16.04 mAHD		**Hole Diameter (mm):**	m AHD	**Stickup (m)** 0.8

Drilling Information				LITHOLOGY				Samples		Notes and Additional Observations	Well Installation Detail
Depth (mBGL)	R.L. (m)	Method (Support)	Water	Symbol	USCS Symbol	Description SOIL TYPE: plasticity or particle characteristics colour, moisture, secondary and minor components	Consistency / Density	Sample ID	Type		
5.0	11		▼								
6.0	10					Moisture content increasing, MC>PI					
			▽		CI	Sandy CLAY: Medium plasticity, dark grey/reddish yellow. Firm. MC>PI. Slight diesel odour, no staining.	F				
7.0	9										
						Highly Weathered Conglomerate: Sandy CLAY, medium plasticity, dark grey/reddish yellow. MC>PI. Slight diesel odour, no staining.					
8.0	8					Target depth reached at 8.1m. Groundwater well installed.					
9.0											

Drill Company:	Numac Drilling Pty Ltd	**Operator Name:**	Hunter Bredin
Machine Type:	Geoprobe	**Operators Licence No.:**	7822DT

Refer to Standard Sheets for details of abbreviations

Project ID:	CES170608-GPM-E
Client:	Generator Property Management Pty Ltd
Project:	Hydrocarbon Investigation and RAP
Location:	Coal Stack Area

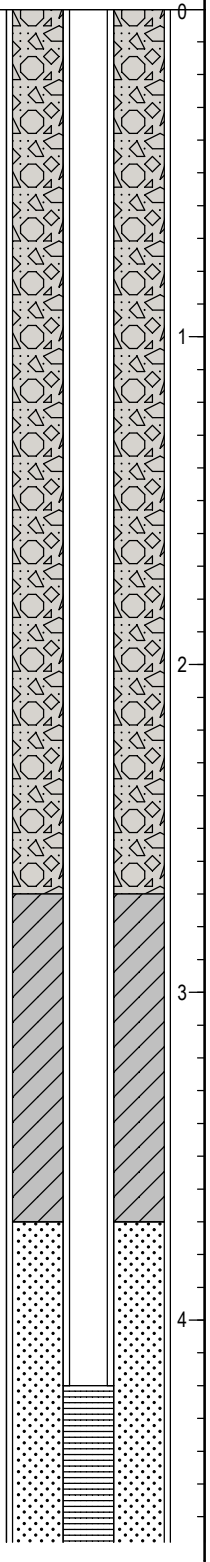
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WELL ID: AEC04_MW02

Sheet: 1 of 2

X-Coord:	364323.78	GDA 94 MGA 57	**Date Commenced:**	06/03/2019	**Logged by:** HJN
Y-Coord:	6323797.48		**Date Completed:**	06/03/2019	**Checked by:** TG
Surface Elevation (R.L) :	16.47	mAHD	**Hole Diameter (mm):**	m AHD	**Stickup (m)** 0.8

Drilling Information				LITHOLOGY				Samples		Notes and Additional Observations	Well Installation Detail
Depth (mBGL)	R.L. (m)	Method (Support)	Water	Symbol	USCS Symbol	Description SOIL TYPE: plasticity or particle characteristics colour, moisture, secondary and minor components	Consistency / Density	Sample ID	Type		
0.0						FILL: Silty SAND, fine, dark grey. Trace tailings and roots. Moist. No odour, no staining.					
	16					FILL: Gravelly SAND, fine to medium, pale yellow. Gravel is fine, dark grey, angular. Moist. No odour, no staining.					
						FILL: Tailings; Silty SAND, fine to medium, black. With fine gravel sized coal particles, black. Slight diesel odour, no staining.					
1.0					CL	FILL: Gravelly SAND, fine to medium, pale yellow. Gravel is fine, dark grey, angular. Moist. No odour, no staining.	St				
	15					FILL: Tailings; Silty SAND, fine to medium, black. With fine gravel sized coal particles, black. Slight diesel odour, no staining.					
						Sandy CLAY: Low plasticity, mottled pale grey/reddish brown/yellow. Sand is fine. MC=PI. Stiff. No odour, no staining.					
2.0											
	14				CH	Silty CLAY: High plasticity, mottled pale grey/reddish brown. MC=PI. Stiff. No odour, no staining.					
3.0											
	13										
4.0											
	12										



Drill Company:	Numac Drilling Pty Ltd	**Operator Name:**	Hunter Bredin
Machine Type:	Geoprobe	**Operators Licence No.:**	7822DT

Refer to Standard Sheets for details of abbreviations

Project ID:	CES170608-GPM-E
Client:	Generator Property Management Pty Ltd
Project:	Hydrocarbon Investigation and RAP
Location:	Coal Stack Area

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WELL ID: AEC04_MW02

Sheet: 2 of 2

X-Coord:	364323.78	GDA 94 MGA 57	**Date Commenced:**	06/03/2019	**Logged by:** HJN
Y-Coord:	6323797.48		**Date Completed:**	06/03/2019	**Checked by:** TG
Surface Elevation (R.L) :	16.47	mAHD	**Hole Diameter (mm):**	m AHD	**Stickup (m)** 0.8

Drilling Information				LITHOLOGY				Samples		Notes and Additional Observations	Well Installation Detail
Depth (mBGL)	R.L. (m)	Method (Support)	Water	Symbol	USCS Symbol	Description SOIL TYPE: plasticity or particle characteristics colour, moisture, secondary and minor components	Consistency / Density	Sample ID	Type		
5.0						Slight diesel odour, no staining.					
	11										
			▼								
6.0											
	10										
			◁		CI	Sandy CLAY: Medium plasticity, dark grey/reddish yellow. Firm. MC>PI. Slight diesel odour, no staining.	F				
7.0											
	9					Highly Weathered Conglomerate: Sandy CLAY, medium plasticity, dark grey/reddish yellow. MC>PI. Slight diesel odour, no staining.					
8.0											
	8										
9.0						Target depth reached at 8.7m. Groundwater well installed.					

Drill Company:	Numac Drilling Pty Ltd	**Operator Name:**	Hunter Bredin
Machine Type:	Geoprobe	**Operators Licence No.:**	7822DT

Refer to Standard Sheets for details of abbreviations

Project ID:	CES170608-GPM-E
Client:	Generator Property Management Pty Ltd
Project:	Hydrocarbon Investigation and RAP
Location:	Coal Stack Area

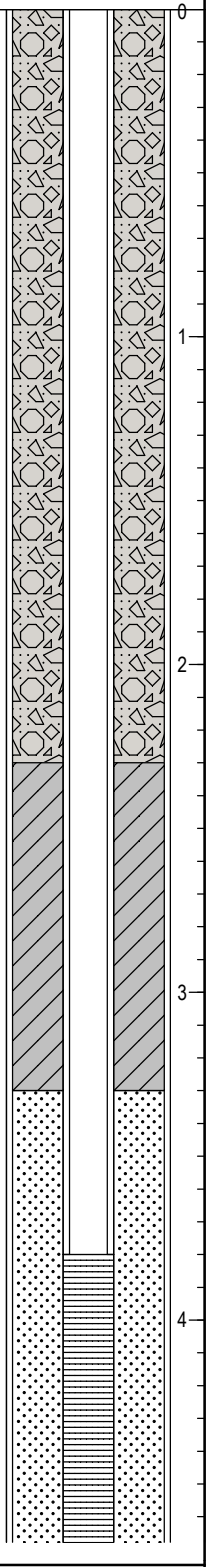
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WELL ID: AEC04_MW03

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X-Coord:	364334.683	GDA 94 MGA 58	**Date Commenced:**	28/03/2019	**Logged by:** HJN
Y-Coord:	6323805.432		**Date Completed:**	28/03/2019	**Checked by:** TG
Surface Elevation (R.L) :	15.26	mAHD	**Hole Diameter (mm):**	m AHD	**Stickup (m)** 0.8

Drilling Information				LITHOLOGY				Samples		Notes and Additional Observations	Well Installation Detail
Depth (mBGL)	R.L. (m)	Method (Support)	Water	Symbol	USCS Symbol	Description SOIL TYPE: plasticity or particle characteristics colour, moisture, secondary and minor components	Consistency / Density	Sample ID	Type		
0.0	15					FILL: Silty SAND, fine, dark grey. Moist. No odour, no staining.					
						FILL: Gravelly SAND, fine to medium, dark grey. Gravel is fine, dark grey, angular. Trace coal tailings. Moist. Strong diesel odour, no staining.					
1.0	14				CL	Sandy CLAY: Low plasticity, pale reddish brown. Sand is fine to medium. MC=PI. Very stiff. Trace roots. Slight diesel odour, no staining. (Residual)	VSt				
						Becoming mottled pale grey/red. Very slight diesel odour, no staining.					
						No odour, no staining.					
2.0	13					Becoming pale grey. Strong diesel odour, grey staining.					
3.0	12				CH	Silty CLAY: High plasticity, mottled pale grey/red. Very slight diesel odour. MC=PI. Stiff.	St				
						No odour, no staining.					
4.0	11		▼								



Drill Company:	Numac Drilling Pty Ltd	**Operator Name:**	Hunter Bredin
Machine Type:	Geoprobe	**Operators Licence No.:**	7822DT

Refer to Standard Sheets for details of abbreviations

Project ID:	CES170608-GPM-E
Client:	Generator Property Management Pty Ltd
Project:	Hydrocarbon Investigation and RAP
Location:	Coal Stack Area

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Suite 121
26-32 Pirrama Road, Pyrmont NSW 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399
www.consultingearth.com.au

WELL ID: AEC04_MW03

X-Coord:	364334.683	GDA 94 MGA 58	**Date Commenced:**	28/03/2019	**Logged by:** HJN
Y-Coord:	6323805.432		**Date Completed:**	28/03/2019	**Checked by:** TG
Surface Elevation (R.L) :	15.26 mAHD		**Hole Diameter (mm):**	m AHD	**Stickup (m)** 0.8

Drilling Information				LITHOLOGY				Samples			
Depth (mBGL)	R.L. (m)	Method (Support)	Water	Symbol	USCS Symbol	Description SOIL TYPE: plasticity or particle characteristics colour, moisture, secondary and minor components	Consistency / Density	Sample ID	Type	Notes and Additional Observations	Well Installation Detail
5.0	10		▽		CI	Sandy CLAY: Medium plasticity, dark grey/reddish yellow. Firm. MC>PI. Slight diesel odour, no staining.	F				
6.0	9										
7.0	8					Highly Weathered Conglomerate: Sandy CLAY, medium plasticity, dark grey/reddish yellow. MC>PI. Slight diesel odour, no staining.					
8.0	7					Target depth reached at 8.3m. Groundwater well installed.					
9.0											

Drill Company:	Numac Drilling Pty Ltd	**Operator Name:**	Hunter Bredin
Machine Type:	Geoprobe	**Operators Licence No.:**	7822DT

Refer to Standard Sheets for details of abbreviations

Client: **Delta Electricity**
Project No.: **0237749**
Project Name: **Project Symphony**
Site Name: **Colongra Power Station**
Site Address: **Scenic Drive, Doyalson, NSW 2262**

ID: CF_MW05

ERM

ERM Australia Pty Ltd

Drill Start Date: **17/03/2014**	Total Depth (m): **6.8**	Final Water Level (m bgl): **4.895**
Drill Finish Date: **17/03/2014**	Hole Diam. / Width (mm): **150**	Elevation (Ground): **16.964**
Drill Co: **Numac**	Casing Type: **UPVC**	Elevation (Case): **17.688**
Driller: **Eric Grimma**	Casing Diam. (mm): **50**	Easting (MGA): **364294.9**
Drill Method: **NDD/PT/SFA**	Surface Completion: **Monument**	Northing (MGA): **6323703.02**
Hole Type: **Monitoring well**	Water Strike (m bgl): **5**	

Lithology	Symbol	Well	Depth (m)	Recovery	Sample Type	Analysed	PPT (kPa)	PID (ppm)	Sample Details	Remarks
Ground Surface			0							
Sand Light brown and dark brown, medium dense, fine grained size, sub rounded, homogenous.					DS	Y		4.5	CF_MW05_0.2	
Sandy Clay Reddish brown, medium stiff, low plasticity, heterogenous.					DS	Y		5.1	CF_MW05_0.5	
Clayey Sand Red and grey, loose, fine to medium grained size, moderately sorted, sub rounded, minor gravel inclusions, gravel inclusions increases from 1.4 m bgs.			1					2.1		
Sandy Clay Light grey, moist, stiff, medium plasticity, homogenous, roots throughout, brown and red mottling from 1.9 m bgs, no odour, no staining.			2					5.3		
Clayey Sand Reddish brown, moist, medium dense, fine to medium coarse, well sorted.			3		US	Y		1.2	CF_MW05_2.7	
Sandy Clay Reddish brown, moist, soft, medium plasticity, heterogenous, no odour, no staining.			4 5 6							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Log By: **SP/TA**
Checked By: **KD**

Client: **Delta Electricity**
Project No.: **0237749**
Project Name: **Project Symphony**
Site Name: **Colongra Power Station**
Site Address: **Scenic Drive, Doyalson, NSW 2262**

ID: CF_MW05

ERM

ERM Australia Pty Ltd

Drill Start Date: **17/03/2014**	Total Depth (m): **6.8**	Final Water Level (m bgl): **4.895**
Drill Finish Date: **17/03/2014**	Hole Diam. / Width (mm): **150**	Elevation (Ground): **16.964**
Drill Co: **Numac**	Casing Type: **UPVC**	Elevation (Case): **17.688**
Driller: **Eric Grimma**	Casing Diam. (mm): **50**	Easting (MGA): **364294.9**
Drill Method: **NDD/PT/SFA**	Surface Completion: **Monument**	Northing (MGA): **6323703.02**
Hole Type: **Monitoring well**	Water Strike (m bgl): **5**	

Lithology	Symbol	Well	Depth (m)	Recovery	Sample Type	Analysed	PPT (kPa)	PID (ppm)	Sample Details	Remarks
End of Log			7 8 9 10 11 12							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Log By: **SP/TA**
Checked By: **KD**

Client: **Delta Electricity**
Project No.: **0237749**
Project Name: **Project Symphony**
Site Name: **Colongra Power Station**
Site Address: **Scenic Drive, Doyalson, NSW 2262**

ID: CF_MW06

ERM

ERM Australia Pty Ltd

Drill Start Date: **17/03/2014**	Total Depth (m): **5.8**	Final Water Level (m bgl): **4.024**
Drill Finish Date: **17/03/2014**	Hole Diam. / Width (mm): **150**	Elevation (Ground): **15.248**
Drill Co: **Numac**	Casing Type: **UPVC**	Elevation (Case): **15.974**
Driller: **Eric Grimma**	Casing Diam. (mm): **50**	Easting (MGA): **364064.86**
Drill Method: **NDD/PT/SFA**	Surface Completion: **Monument**	Northing (MGA): **6323859.72**
Hole Type: **Monitoring well**	Water Strike (m bgl): **4.8**	

Lithology	Depth (m)	Recovery	Sample Type	Analysed	PPT (kPa)	PID (ppm)	Sample Details	Remarks
Ground Surface	0							
Topsoil With Grass			DS	Y		0.2	CF_MW06_0.2	
Clayey Silt Light brown, loose, homogenous, rootlet inclusions.			DS	Y		2.1	CF_MW06_0.5	
Sandy Clay Reddish brown, medium stiff, low plasticity, heterogenous, reddish grey and gravel inclusions from 1.4 m bgs, gravel content decreases from 1.6 m bgs.	1					3.3		
Clayey Sand Brown, moist, medium dense, fine to medium coarse, well sorted, reddish brown from 3.0 m bgs, clay content increases from 4.5 m bgs, light brown from 5.0 m bgs, no odour, no staining.	2					4		
			US	Y		0.1	CF_MW06_1.8	
	3							
	4							
	5							
End of Log	6							

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Log By: **SP**
Checked By: **KD**

Appendix O

Asbestos Field Screening Field Data Sheets

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Munmorah Super Battery Site Investigation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site		
Date Commenced: 2 August 2022					**CES Personnel:** V. Arias/T. Goodbody		
Date Completed: 18 August 2022							
Sample Location	CS110	CS110	CS109	CS109	CS111	CS111	CS107
Depth	0-0.1	0.1-0.2	0-0.1	0.1-0.2	0.0-0.1	0.1-0.2	0-0.1
Soil Description	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog
Mass of 10L Soil (g)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)
Assessment Method	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual
Bonded ACM Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Bonded ACM (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Suspected Fibrous Asbestos (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional Comments							

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Munmorah Battery Site Investigation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Battery Site		
Date Commenced: 2 August 2022					**CES Personnel:** V. Arias/T. Goodbody		
Date Completed: 18 August 2022							
Sample Location	CS107	CS107	CS104	CS104	CS104	CS108	CS108
Depth	0.1-0.2	0.5-0.6	0-0.1	0.1-0.2	0.4-0.5	0-0.1	0.1-0.2
Soil Description	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog
Mass of 10L Soil (g)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density)	~16 kg (from assumed density)	~16 kg (from assumed density)	~16 kg (from assumed density)	~16 kg (from assumed density)	~16 kg (from assumed density)
Assessment Method	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual
Bonded ACM Observed	Yes/**No**	Yes/**No**	**Yes**/No	Yes/**No**	**Yes**/No	**Yes**/No	**Yes**/No
Mass of Bonded ACM (g)	N/A	N/A	<10 g	N/A	300 g	<10 g	<10 g
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Suspected Fibrous Asbestos (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional Comments			Pink mattered material sampled (CS104 MAT1)		White insulation material sampled (CS104 MAT2)	White insulation board material sampled (CES108 MAT01)	Brown woven Material Sampled (CES108 MAT02)

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Munmorah Super Battery Site Investigation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site		
Date Commenced: 2 August 2022					**CES Personnel:** V. Arias/T. Goodbody		
Date Completed: 18 August 2022							
Sample Location	CS105	CS113	CS102	CS102	CS102	CS103	CS114
Depth	0-0.1	0-0.1	0-0.1	0.1-0.2	0.5-0.6	0-0.1	0-0.1
Soil Description	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog
Mass of 10L Soil (g)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)
Assessment Method	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual
Bonded ACM Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Bonded ACM (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Suspected Fibrous Asbestos (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional Comments							

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Munmorah Super Battery Site Investigation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site		
Date Commenced: 2 August 2022					**CES Personnel:** V. Arias/T. Goodbody		
Date Completed: 18 August 2022							
Sample Location	CS115	CS115	FI209	FI209	FI208	FI208	FI208
Depth	0-0.1	0.1-0.2	0-0.1	0.1-0.1	0-0.1	0.1-0.2	0.5-0.6
Soil Description	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog
Mass of 10L Soil (g)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)
Assessment Method	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual
Bonded ACM Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Bonded ACM (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Suspected Fibrous Asbestos (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional Comments							

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Munmorah Super Battery Site Investigation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site		
Date Commenced: 2 August 2022					**CES Personnel:** V. Arias/T. Goodbody		
Date Completed: 18 August 2022							
Sample Location	FI202	FI202	FI202	FI203	FI203	FI204	FI204
Depth	0-0.1	0.1-0.2	0.5-0.6	0-0.1	0.1-0.2	0-0.1	0.1-0.2
Soil Description	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog
Mass of 10L Soil (g)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)
Assessment Method	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual
Bonded ACM Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Bonded ACM (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Suspected Fibrous Asbestos (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional Comments							

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Munmorah Super Battery Site Investigation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site		
Date Commenced: 2 August 2022					**CES Personnel:** V. Arias/T. Goodbody		
Date Completed: 18 August 2022							
Sample Location	FI206	FI206	FI207	FI207	GS501	GS501	FB302
Depth	0-0.1	0.1-0.2	0-0.1	0.1-0.2	0-0.1	0.1-0.2	0-0.1
Soil Description	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog
Mass of 10L Soil (g)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)
Assessment Method	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual
Bonded ACM Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Bonded ACM (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Suspected Fibrous Asbestos (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional Comments							

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Munmorah Super Battery Site Investigation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site		
Date Commenced: 2 August 2022					**CES Personnel:** V. Arias/T. Goodbody		
Date Completed: 18 August 2022							
Sample Location	FB302	FB302	FB302	FB302	FB303	FB303	FB307
Depth	0.2-0.3	0.5-0.6	1.0-1.1	1.4-1.5	0-0.1	0.2-0.3	0-0.1
Soil Description	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog
Mass of 10L Soil (g)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)
Assessment Method	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual	**7 mm sieve**/Visual
Bonded ACM Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Bonded ACM (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Suspected Fibrous Asbestos (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional Comments							

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Munmorah Super Battery Site Investigation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site		
Date Commenced: 2 August 2022					**CES Personnel:** V. Arias/T. Goodbody		
Date Completed: 18 August 2022							
Sample Location	A4404	A4404	A4409	A4409	A4409	A4411	A4411
Depth	0.5-0.6	0.6-0.7	0.3-0.4	0.4-0.5	0.6-0.7	0.35-0.45	0.45-0.55
Soil Description	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog	Refer to borelog
Mass of 10L Soil (g)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)
Assessment Method	**7 mm sieve/**Visual	**7 mm sieve/**Visual	**7 mm sieve/**Visual	**7 mm sieve/**Visual	**7 mm sieve/**Visual	**7 mm sieve/**Visual	**7 mm sieve/**Visual
Bonded ACM Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Bonded ACM (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**
Mass of Suspected Fibrous Asbestos (g)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Additional Comments							

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Munmorah Super Battery Site Investigation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site		
Date Commenced: 2 August 2022					**CES Personnel:** V. Arias/T. Goodbody		
Date Completed: 18 August 2022							
Sample Location	A4412	A4412					
Depth	0.3-0.4	0.4-0.5					
Soil Description	Refer to borelog	Refer to borelog					
Mass of 10L Soil (g)	~16 kg (from assumed density of 1.6 kg/L)	~16 kg (from assumed density of 1.6 kg/L)					
Assessment Method	**7 mm sieve/**Visual	**7 mm sieve/**Visual					
Bonded ACM Observed	Yes/**No**	Yes/**No**					
Mass of Bonded ACM (g)	N/A	N/A					
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**					
Mass of Suspected Fibrous Asbestos (g)	N/A	N/A					
Additional Comments							

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NSW GOVERNMENT