Consulting Earth Scientists

VALIDATION REPORT

WARATAH SUPER BATTERY

301 SCENIC DRIVE, DOYALSON, NSW

PREPARED FOR GENERATOR PROPERTY MANAGEMENT PTY LTD

CES Document Reference: CES170608-GPM-EA

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VALIDATION REPORT

WARATAH SUPER BATTERY

301 SCENIC DRIVE, DOYALSON, NSW

PREPARED FOR GENERATOR PROPERTY MANAGEMENT PTY LTD

CES Document Reference: CES170608-GPM-EA

Executive Summary

Consulting Earth Scientists Pty Ltd (CES) was commissioned by Generator Property Management Pty Ltd (GPM) to undertake validation assessment of Lot 110 Deposited Plan (DP) 1293105 which is part of the GPM Landholding located at 301 Scenic Drive, Doyalson NSW 2262 (the site). The Site is legally described as Lot 110 DP 1293105 (formerly Part Lot 10 in Deposited Plan (DP) 1201414).

The site has been selected for the construction of the Waratah Super Battery by Energy Corporation of NSW (EnergyCo) as a Priority Transmission Infrastructure Project under the Electricity Infrastructure Investment Act 2020.

Infrastructure Approval under Section 5.19 of the Environmental Planning and Assessment Act 1979 was granted for the Waratah Super Battery Project – Munmorah by the Minister of Planning on 21 February 2023 (Application Number SSI 48492458).

In order to prepare the site for the Waratah Super Battery and satisfy conditions B26 to B28 of the Infrastructure Approval GPM was required to complete the rehabilitation and demolition works associated with the Former Munmorah Power Station and complete the remediation works presented in the *Remediation Action Plan Waratah Super Battery* (the RAP, CES Document Reference CES170608-GPM-DS Revision 3 dated 27 March 2023a).

Based on the Remediation Options Assessment presented in the RAP the adopted remedial approach comprised removal of contaminated media to offsite areas of the GPM Landholding for ongoing management.

The approach was selected as the most suitable method of delivering the site in condition suitable for the Waratah Super Battery in a timely manner which meets the project timeline

The remediation goal is to make the site suitable for the proposed land use, as an 850 MW network standby battery; the Waratah Super Battery, considered to comprise a commercial/industrial land use.

Remediation was carried out in general accordance with the requirements of the RAP.

Remediation works were completed progressively between 06 December 2022 and 04 May 2023 comprising excavation and relocation of impacted materials to areas of the GPM Landholding with approximately 73,500 m^3 of materials removed from site and relocated to suitable areas of the GPM Landholding for ongoing management, of which 69,140 m^3 comprised remediation derived materials.

No material was imported to the site as part of the remediation works, where required materials for backfilling of excavations was won onsite.

No material was exported from the GPM Landholding for management or disposal.

Remediation was completed by CMA Contracting Pty Ltd.

Validation sampling, analysis and assessment demonstrate that the remediation works completed and the remediation endpoints specified in the RAP have been achieved.

Based on the results of the remediation validation, site observations, materials handling documentation, the Remediation Action Plan has been successfully implemented and the site in its current condition is suitable for the proposed land use, as an 850 MW network standby battery: the Waratah Super Battery, on the basis of a commercial/industrial land use setting.

Groundwater underlying two areas of the site were identified to have PFAS concentrations is excess of the adopted Tier 1 screening criteria. Locations of the elevated PFAS concentrations in groundwater are presented on Figure 3. The source of PFAS impacts have been identified to be the offsite former Fire Fighting Training Area (north east corner of the site) and leaching of PFAS from impacted near surface soils, possibly resulting from a localised release of AFFF, which were removed from site as part of the remediation works (AEC 4 area in the south of the site). Based on the assessment undertaken, including the depth of groundwater onsite (approximately 4.8 m to 6.5 m in the north eastern corner and 3.8 m to 4.8 m in the AEC 4 area) and the sites hydrogeological characteristics, the elevated concentrations are considered to be a low risk to offsite receptors and future site users.

Soils and materials removed from the site and relocated to offsite areas of the GPM Landholding (Red Tip and Orange Tip in the GPM Landholding Asbestos Dump Area and the Managed PFAS Impacted Materials Temporary Storage Area) require ongoing management in

accordance with an Environmental Management Plan to ensure that appropriate management systems are in place and clear monitoring and maintenance requirements area identified and implemented. The Environmental Management Plans should remain in place until such time as the materials are either treated, disposed of offsite at a suitably waste facility capable and licenced to accept the waste or otherwise confirmed suitable for reuse with no environmental management required (Subject to NSW EPA and/or Site Auditor Approval).

Two draft Environmental Management Plans have been prepared: *Long Term Environmental Management Plan - Temporary PFAS and Asbestos Stockpiles 1 and 2* prepared by EMM Consulting Pty Ltd Referenced E230489 RP#1 dated 16 May 2023 for the Red and Orange Tips, and *Long Term Environmental Management Plan - Temporary PFAS and Asbestos Stockpile 3* prepared by EMM Consulting Pty Ltd Referenced E230489 RP#1 dated 16 May 2023 for the Managed PFAS Impacted Materials Temporary Storage Area.

An unexpected finds procedure should be prepared for the construction works, as required by condition B29 of the Infrastructure Approval under Section 5.19 of the Environmental Planning and Assessment Act 1979 (Application Number SSI 48492458).

VALIDATION REPORT

WARATAH SUPER BATTERY

301 SCENIC DRIVE, DOYALSON, NSW

PREPARED FOR GENERATOR PROPERTY MANAGEMENT PTY LTD

CES Document Reference: CES170608-GPM-EA

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LIST OF ABBREVIATIONS

ACM	Asbestos Containing Material
AEC	Area of Environmental Concern
AFFF	Aqueous Film Forming Foam
AHD	Australian Height Datum
ASLP	Australian Standard Leaching Procedure
ASS	Acid Sulfate Soil
AST	Aboveground Storage Tank
BTEX	Benzene, Toluene, Ethylbenzene and Total Xylenes
CES	Consulting Earth Scientists Pty Ltd
CLM	Contaminated Land Management
COC	Chain of Custody
COPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
DAC	Data Acceptance Criteria
DECCW	Department of Environment and Climate Change and Water
DLA	David Lane Associates
DLWC	Department of Land and Water Conservation
DNAPL	Dense Non-Aqueous Phase Liquid
DP	Douglas Partners
DQO	Data Quality Objectives
EIL	Ecological investigation levels
ESL	Ecological screening levels
EPA	Environment Protection Authority
EPL	Environment Protection Licence
ESA	Environmental Site Assessment

GAC	Groundwater Assessment Criteria
GIL	Groundwater investigation levels
GPM	Generator Property Management Pty Ltd
HDPE	High-Density Polyethylene
HIL	Health investigation levels
HSL	Health screening levels
km	Kilometre
LCSM	LNAPL Conceptual Site Model
LGA	Local Government Area
LiDAR	Light Detecting and Ranging
LIF	Laser Induced Fluorescence
LNAPL	Light Non-Aqueous Phase Liquid
LPI	Land and Property Information Division
LEP	Local Environmental Plan
m	Metre
MAH	Monochromatic Aromatic Hydrocarbons
mm	Millimetre
mbgl	metres Below Ground Level
mAHD	metres Australian Height Datum
MMAD	Munmorah Ash Dam
MPE	Multi-Phase Extraction
MPS	Munmorah Power Station
MW	Mega Watt
NAPL	Non-Aqueous Phase Liquids
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council

NEPM	National Environment Protection Measure
NSW	New South Wales
OCP	Organochlorine Pesticide
OEH	Office of Environment and Heritage
PAH	Polycyclic Aromatic Hydrocarbon
PARCC	Precision, Accuracy, Representativeness Completeness Comparability
PCE	Tetrachloroethene
PCSM	Preliminary Conceptual Site Model
PFAS	Per- and Poly- Fluoroalkyl Substances
PID	Photo-ionization Detector
PSI	Preliminary Site Investigation
PSP	Project Safety Plan
QA/QC	Quality Assurance and Quality Control
QWP	Quality Work Procedure
RPD	Relative Percentage Difference
SAC	Soil Assessment Criteria
SAQP	Sample Analysis and Quality Plan
SKP	Sinclair Knight Partners Pty Ltd
SWL	Standing Water Level
TRH	Total Recoverable Hydrocarbons
UPSS	Underground Petroleum Storage Systems
UV LED	Ultraviolet Light-Emitting Diode
VCH	Volatile Chlorinated Hydrocarbons
VHPT	Variable Head Permeability Testing
VOC	Volatile Organic Compounds

1 INTRODUCTION

Consulting Earth Scientists Pty Ltd (CES) was commissioned by Generator Property Management Pty Ltd (GPM) to undertake validation assessment of Lot 110 Deposited Plan (DP) 1293105 which is part of the GPM Landholding located at 301 Scenic Drive, Doyalson NSW 2262 (the site). The Site is legally described as Lot 110 DP 1293105 (formerly Part Lot 10 in Deposited Plan (DP) 1201414).

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 has been selected for the construction of the Waratah Super Battery by Energy Corporation of NSW (EnergyCo) as a Priority Transmission Infrastructure Project under the Electricity Infrastructure Investment Act 2020.

Infrastructure Approval under Section 5.19 of the Environmental Planning and Assessment Act 1979 was granted for the Waratah Super Battery Project – Munmorah by the Minister of Planning on 21 February 2023 (Application Number SSI 48492458). The Infrastructure Approval states:

REMEDIATION

Remedial Works

B26. Prior to carrying out construction, the Proponent must develop and implement a Remedial Action Plan prepared in accordance with the relevant guidelines produced or approved under the Contaminated Lands Management Act 1997. Remediation works must be undertaken by a suitably qualified and experienced consultant(s).

Validation Report

B27. Within one month of the completion of the remediation works, the Proponent must submit a copy of a validation report/letter to the EPA, Council and the Planning

Secretary, which has been prepared, or reviewed and approved, by a consultant certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) Scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme.

Site Audit Report and Site Audit Statement

B28. Within six months of the completion of remediation works the Proponent must submit a Site Audit Report and Site Audit Statement to the EPA, Council and the Planning Secretary. The reports must be prepared by the Site Auditor in accordance with relevant guidelines produced or approved under the Contaminated Lands Management Act 1997 and must confirm:

(a) the remedial works have been completed in accordance with the RAP and REMP and the site is suitable for its intended land use; and

(b) the risks to human health and the environment have been addressed in accordance with the objectives of the RAP.

In order to prepare the site for the Waratah Super Battery and satisfy conditions B26 to B28 of the Infrastructure Approval GPM was required to complete the rehabilitation and demolition works associated with the Former Munmorah Power Station and complete the remediation works presented in the *Remediation Action Plan Waratah Super Battery* (the RAP, CES Document Reference CES170608-GPM-DS Revision 3 dated 27 March 2023a).

Rehabilitation and demolition work to be completed by GPM included partial demolition and removal of the Coal Handling Plant bunker and backfilling of the residual bunker void, removal of residual concrete slabs and the concrete lined stormwater channels (the Perimeter Channel), safe removal of asbestos containing material (ACM) conduit from the Coal Handling Bunker and southern site subsurface, removal of coal residue and other demolition derived materials from the site surface, and removal of demolition derived materials stockpiles on the site.

The remediation works comprised excavation and relocation of impacted near surface soils, demolition derived materials on the site surface, sediments from the Western Settling Basin and management of unexpected finds.

The goal of the works undertaken by GPM is to complete the demolition and rehabilitation and make the site suitable for the proposed land use, as an 850 MW network standby battery; the Waratah Super Battery, considered to comprise a commercial/industrial land use.

The objective of the validation work detailed in this Validation Report is to demonstrate that the remediation works have been completed in general accordance with the RAP, and demonstrate that, at the completion of the rehabilitation, demolition and remediation works, the site is suitable for the proposed use in terms of contamination.

With respect to the remediation required, based on the findings of the *Environmental Site Investigation Report Waratah Super Battery Site Former Munmorah Power Station* (CES Document Referenced CES170608-GPM-DP dated 10 November 2022a), *Stockpiled Material Assessment Waratah Super Battery Site Former Munmorah Power Station* (CES Document Referenced CES170608-GPM-DQ dated 10 November 2022b) and *Data Gap Investigation Report Waratah Super Battery Site Former Munmorah Power Station* (CES Document Referenced CES170608-GPM-DW dated 24 February 2023b), and issues identified during the site works, the following areas of environmental concern were identified requiring remediation or management. It is noted that there is considerable overlap between the works completed as part of the rehabilitation and demolition works and remediation works. The remediation required is presented below:

- Asbestos in soils:
    - Three localised hotspots of asbestos fines and fibrous asbestos were detected associated with the residual demolition processing of materials on the site surface. Based on sampling undertaken to validate the remediation of these hotspots, which detected further asbestos impacts, the decision was taken during the works to remove all demolition derived materials from the western portion of the former Coal Stockpile Area.
    - ACM conduit was identified in near surface soils associated with the concrete slabs removed from the southern area of the site and embedded in the concrete walls of the Coal Handling Plant Bunker.
    - Stockpiled Materials: demolition derived materials near the north-eastern boundary of the site were identified in seven stockpiles (SP1-7). 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. It is noted that removal of the stockpiled material also forms part of the demolition and rehabilitation works.
- PFAS in soils:
    - AEC 4 PFAS impacted soils: An area of PFAS impacted surface soils were identified in the area of the site referred to as AEC 4, which is likely to be the source of elevated PFAS concentrations in groundwater in that area of the site. Based on the detected soil concentrations and the concentrations in groundwater

it is likely that soil impacts in the AEC 4 area of the site are leaching from near surface soils, migrating through the soil column and impacting groundwater. To mitigate the elevated concentrations of PFAS in groundwater and elevated concentrations of PFAS remediation of PFAS in soils is required in the AEC 4 area of the site.

  - PFAS were detected in stockpiled materials (with the exception of SP1) based on the assessment of results in accordance with Figure 5 of the PFAS NEMP 2.0 (HEPA 2020), materials contained within Stockpiles SP2, SP4, SP5 and SP6 are likely to be suitable for reuse without a detailed risk assessment however SP3 and SP7 require further, more detailed, risk assessment and may require remediation or management to make them suitable for reuse. As noted removal of the stockpiled material also forms part of the demolition and rehabilitation works

- Coal Impacted Soils:
  - A majority of the site, the Coal Stack Area was used during the operation of the former Munmorah Power Station for coal storage and supply. As a result the site surface soils contains a thin discontinuous layer of coal fragments and coal fragment containing soils. Coal fragments were also detected in materials stockpiled onsite. Exceedance of the adopted screening criteria for combustible content were detected in 44% of samples analysed, indicating that removal of coal fragments and coal fragment containing soils is required. It is noted that removal of residual coal fragments also forms part of the demolition and rehabilitation works.
- Unexpected Find – Underground Storage Tank (UST):
  - During remediation excavation works a previously unknown UST was encountered in the southern area of the site, in a location of the site previously used for providing fuel to Coal Stack mobile plant (bulldozers). This area was subject to extensive investigations due to the site history and the presence of diesel containing Aboveground Storage Tanks (ASTs) and fuel delivery infrastructure, however the presence of the previously decommissioned UST was not identified.

The impacts identified by CES (2022a) requiring remediation are noted to have arisen from the recent incomplete demolition works only, and not from the site previous use as part of the Munmorah Power Station, with the exception of the ACM conduit, and the AEC 4 PFAS impacted soils.

In addition to the remediation areas identified above, the following impacts not requiring remediation or management were identified:

- The sum of PFOS and PFHxS concentrations in excess of the adopted human health assessment criteria were detected in groundwater in two discrete areas of the site: in the northern area of the site and in the AEC 4 area of the site. Elevated PFOS in excess of the adopted ecological screening criteria were also detected. Due to the depth to water, the location of the site with respect to groundwater receiving water bodies, and the absence of groundwater extraction these exceedances are unlikely to pose a risk to future site users. While the groundwater concentrations are low risk to future site users, and beneficial use of groundwater is considered to be unlikely given the sites hydrogeological setting, to minimise the further mobilisation of PFAS at the site management of groundwater abstraction is recommended.
  The likely source of the PFAS in AEC 4 has been assessed to be impacted near surface soils. Remediation of the PFAS impacted soils in AEC 4 is proposed. Implementation of the proposed remediation of the source area is considered likely to reduce the PFAS concentrations in groundwater in this area of the site.

This Validation Report has been prepared in general accordance with:

- NSW EPA, 2020 *Consultants reporting on contaminated land: Contaminated Land Guidelines*;
- NSW EPA, 2017 *Contaminated Land Management Guidelines for the NSW Site Auditor Scheme (3rd edition)*;
- HEPA, January 2020 *PFAS National Environmental Management Plan version 2.0;* and
- National Environmental Protection Council, 2013 *National Environment Protection Measure (Assessment of Site Contamination) Measure 1999* (as amended 2013).

This report should be read in conjunction with the RAP (CES 2023a).

Early construction works for the Waratah Super Battery (WSB) project within the site may be undertaken in conjunction with ongoing remediation and/or validation works, subject to those works being undertaken outside the identified remediation areas and conducted in a manner that would not result in any direct or indirect impact on the remediation areas, subject to prior confirmation from/agreement with the Site Auditor.

2 OBJECTIVE AND SCOPE OF WORK

2.1 Objectives

The objectives were:

- Undertake the validation works required to demonstrate that the remediation works have been completed in generally accordance with the RAP, and demonstrate that, at the completion of the rehabilitation, demolition and remediation works, the site is suitable for the proposed use in terms of contamination.
- Based on the works prepare a Validation Report in accordance with *Consultants reporting on contaminated land: Contaminated Land Guidelines* (NSW EPA, 2020) to document the processes and sampling locations selected to validate the remediation works undertaken at the site.

2.2 Scope of Work

To achieve the objectives, CES has undertaken the following Scope of Work:

- Review and assessment of documentation provided by GPM and their Contractor (CMA) including:
    - Material handling and tracking documentation.
    - Coal Handling Bunker backfill geotechnical construction quality assurance report.
    - Asbestos Removal Clearance Inspection Reports and Air Monitoring Reports.
    - PFAS Impacted Material Temporary Storage Area construction documentation.
- Completion of a visual assessment of the following areas for validation of remediation excavations by a CES Senior Environmental Scientist:
    - General site surface
    - The western site surface area
    - Stockpiles 3, 5, 6 and 7 footprints
    - AEC4 Remediation Area
    - Western Settling Basin
    - Unexpected Find – UST excavation
- Field screening in accordance with Section 11.3.2 of ASC NEPM Schedule B2 (NEPC 2013) and collection of samples for Fibrous Asbestos and Friable Asbestos (AF/FA) (500 ml sample) analysis for validation purposes from hot spots H13, F9 and CS108 as follows:

  - 32 10L samples for field screening on 10 March 2023 and 10 10 L samples on 23 March 2023.
  - 32 500 ml samples for AF/FA analysis on 10 March 2023 and 10 500 ml samples on 23 March 2023.
- Field screening in accordance with Section 11.3.2 of ASC NEPM Schedule B2 (NEPC 2013) and collection of samples for Fibrous Asbestos and Friable Asbestos (AF/FA) (500 ml sample) analysis for validation purposes from the western site surface asbestos area as follows:
  - 16 500 ml samples for AF/FA analysis on 18 April 2023.
- Field screening in accordance with Section 11.3.2 of ASC NEPM Schedule B2 (NEPC 2013) and collection of samples for Fibrous Asbestos and Friable Asbestos (AF/FA) (500 ml sample) analysis for validation purposes from the footprint of Stockpiles 3, 5, 6 and 7:
  - 32 10L samples for field screening on 27 April 2023 and 1 10L sample on 03 May 2023.
  - 32 500 ml samples for AF/FA analysis on 27 April 2023 and 1 500 ml sample on 03 May 2023.
- Collection of soil samples from stockpiles footprint of Stockpiles 3 and 7:
  - 16 samples for PFAS in soil analysis on 27 April 2023.
  - 16 samples for PFAS ASLP analysis on 27 April 2023.
- Collection of soil samples from the base and sidewalls of the AEC4 excavation:
  - Wall samples: 10 for PFAS in soils and PFAS in ASLP analysis on 28 April 2023 and 5 samples on 03 May 2023.
  - Base samples: 9 for PFAS in soils and PFAS in ASLP analysis on 28 April 2023 and 1 sample on 03 May 2023.
- Collection of concrete samples from a concrete slab in AEC4:
  - 9 samples for PFAS (extended suite) and PFAS in ASLP (extended suite) analysis on 10 March 2023.
- Collection of samples from the Western Settling Basin:
  - 18 samples for Combustible Content and Sulfur content analysis (two rounds of 9 samples on 18 April and 03 May 2023).
- Collection of general site surface samples:
  - 37 samples for Combustible Content and Sulfur content analysis (29 initial samples collected on 18 April (17) 21 April (10) and 27 April (2) 2023 plus 8 additional samples collected on 03 May 2023).
  - 29 Samples for PFAS and PFAS in ASLP (extended suite) analysis on 18 April (17) 21 April (10) and 27 April (2) 2023.

- Collection of samples from the Unexpected Find – UST excavation
    - 2 samples from the excavation base for Benzene Toluene Ethylbenzene and Xylene (BTEX), Total Recoverable Hydrocarbon (TRH) and Polycyclic Aromatic Hydrocarbons (PAH) analysis on 28 April 2023.
    - 4 samples from the excavation sidewalls for Benzene Toluene Ethylbenzene and Xylene (BTEX), Total Recoverable Hydrocarbon (TRH) and Polycyclic Aromatic Hydrocarbons (PAH) analysis on 28 April 2023.
- Collection of 13 QAQC samples for Asbestos (AF/FA) analysis.
- Collection of 17 QAQC samples for PFAS and PFAS in ASLP (extended suite) analysis.
- Collection of 8 QAQC samples for Combustible Content Sulfur content analysis.
- Collection of 3 QAQC samples for Benzene Toluene Ethylbenzene and Xylene (BTEX) and Total Recoverable Hydrocarbon (TRH) analysis.
- Submission of collected samples to a National Association of Testing Authorities (NATA) accredited laboratory for the analysis required.
- Preparation of validation report in accordance with Table 2.6 of *Consultants reporting on contaminated land: Contaminated Land Guidelines* (NSW EPA, 2020), which details:
    - The site location and identification;
    - A summary of the site history and environmental setting;
    - Conceptual Site Model (CSM);
    - Implementation of Remediation Action Plan;
    - Sampling Methodology;
    - Validation results and Discussion;
    - Quality assurance/quality control data evaluation;
    - Recommendations; and
    - A statement of site suitability.

3 SUMMARY OF SITE ENVIRONMENTAL SETTING

A summary of the environmental setting of the Site is presented in Table 1, for additional detail refer to the detailed site investigation report (*Environmental Site Investigation Report Waratah Super Battery Site Former Munmorah Power Station* (CES Document Referenced CES170608-GPM-DP dated 10 November 2022)).

Table 1 Environmental Setting Summary

Site Address	301 Scenic Drive, Colongra, New South Wales (NSW) 2262.
Environmental Regulator	NSW EPA.
Local Council	Central Coast Council.
Site Auditor	Kylie Lloyd of Geosyntec Consultants Pty Ltd.
Site Identification	Lot 110 DP 1293105 (formerly Part Lot 10 in Deposited Plan (DP) 1201414) A lot and DP plan of the site as defined in this report is presented as Appendix A. A Site Layout Plan is presented as Figure 2.
Site Zoning	SP2 Infrastructure – Electricity Generating Works (Central Coast Council Local Environmental Plan 2022)
Site Description	The site area is approximately 13.7 Ha. The site is irregular in shape. The site is subject to Demolition, Site Restoration and Remediation works Site features, as observed by CES on 08 July 2022, prior to the Demolition, Site Restoration and Remediation works 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, ranging in size from small fragments of swarf and dross generated by steel cutting to sections of steel reinforcement up to 0.5 m in length. The metal fragments are widely distributed over the Coal Stack Area where demolition

	materials were processed, west of the Coal Handling Plant Bunker, however at a low density and frequency. • 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. • 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.
Proposed Land Use	The proposed development comprises an 850 MW network standby battery: the Waratah Super Battery. The current design of the development presented in Appendix B and includes: • Cut/fill operations and site re profiling to create a suitable surface for the construction of battery infrastructure, battery units and switchyard; • Finishing the site surface with a suitable aggregate material in accordance with an engineered specification; • 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. • Filling/partial filling of the Western Settling Basin and the Coal Handling Plant "Clean" Water Pond. The future use of the site is likely to be classified as commercial/industrial, however the standard commercial/industrial exposure model presented in ASC NEPM (NEPC 1999 as amended 2013) is likely to be overly conservative.
Surrounding Land Use	The site is bound by other areas of the GPM Landholding. The Colongra Power Station (owned by Snowy Hydro Ltd) is located approximately 200 m northeast of the site and is also used for electricity generating purposes.
Sensitive Local Environments (Distance to receptor from nearest site boundary)	• Current and Future Site Workers (Human Health – Commercial/Industrial, acute) 0 m • Colongra Power Station Site Workers (Human Health – Commercial/Industrial) 200 m, Northeast • Inlet and Outlet Canals (Ecological) 270 m/260 m, northwest • Lake Munmorah (Human Health – Recreational; Ecological) 1.2 km, East • Budgewoi Lake (Human Health – Recreational; Ecological.)1.3 km, South West • Residents of surrounding areas (Human Health – Residential) 0.6 km (closest), all directions.
Site Topography	Topography is highly modified. A Light Detecting and Ranging (LiDAR) survey was provided by GPM, completed prior to the Demolition, Site Restoration and Remediation works. 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. An updated site survey at the completion of the Demolition, Site Restoration and Remediation works is provided in Appendix C.
Site Geology	• Qa, Unconsolidated alluvial quartzose sand and polymictic gravel, silcrete and quartz- and iron- cemented sandstone and • "Rnm", Conglomerate, pebbly sandstone, grey to green shale (Munmorah Conglomerate) of the Narrabeen Group (Clifton Subgroup) of the Mesozoic age. [*Gosford – Lake Macquarie 1:100, 000 Geological Series Map (9131, 9231)*]

Site Soils	• 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."* [Gosford – Lake Macquarie 1:100, 000 Soil Landscape Series Map (9131, 9231)]
Encountered Stratigraphy	Fill (depth to based: 0.3 to 1.2 m) • Gravelly sand, medium to coarse, dark grey. Gravel is fine, dark grey, angular. Occasional traces of coal fragments. Moist or dry. No staining observed, no odours reported, with the exception of in the AEC 4 area. Residual (depth to base: 7.2 to 7.9m) • 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 in the AEC 4 area. 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 in the AEC 4 area. Munmorah Conglomerate (depth to base: undefined) Highly weathered conglomerate: Sandy clay, medium plasticity, dark grey/reddish yellow. Moisture content greater than plastic limit. Occasional slight diesel odour in the AEC 4 area. No staining observed.
Site Hydrogeology	The identified geological units have been assessed to be hydrogeologically connected and behave as phreatic and unconfined aquifers. Permeability ranges for each of the geological units identified are: • Fill (0 to 1.2 m) 2.2 x 10^{-5} m/s • Residual (0 to 7.9 m) 1.1 x 10^{-6} to 7.8 x 10^{-6} m/s • Munmorah Conglomerate (7.2 m to undefined) 3.3 x 10^{-6} to 4.7 x 10^{-9} m/s Based on interpolated groundwater contours the inferred groundwater flow direction is generally to the north with some localised variations.
Site Hydrology	Run off from the site is likely to be captured by the GPM Landholding stormwater management system which is divided between "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 those areas of the site where catchment activities have the potential to produce contaminated run off such as the Coal Stack Area, coal conveyor line, and the former firefighting training area (located offsite, partially within the GPM Landholding and partially on lands held by Snowy Hydro Ltd). 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. 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 Plant 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 Plant 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. The "Clean" stormwater system discharges offsite directly, to the Outlet Canal. As noted above as part of the site development a new stormwater management system will be constructed.
Meteorology	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.
Boundary Condition	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 land.
Records of Complaints	Records of complaints for the site were not available on the site's Objective and Hunter Records databases, and as such are not currently available for review.
Environment Protection Licence	The site is subject to an Environment Protection Licence (EPL) No. 759.

3.1 Demolition and Rehabilitation Works Summary

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), a copy of which is presented in Appendix D)

Based on information provided by GPM in addition to the scope of works presented in *Munmorah Coal Handling Plant Structures Specification for Demolition and Site Restoration* prepared by Aurecon Pty Ltd dated 21 July 2022 (Referenced 500382-003-014), the following works will be completed as part of the rehabilitation and site restoration works package:

- Demolition of the former coal handling bunker to greater depths to meet final surface level contours of the Waratah Super Battery design;
- Removal of the existing perimeter channel drainage system from the whole of the site;
- Removal of all concrete slabs present onsite;
- Removal of residual coal identified in the coal handling bunker to the offsite Vales Point Power Station;

- Excavation, chase out and removal of ACM conduit identified while removing concrete slabs from site; and
- Removal of sediments from the Western Settling Basin.

With respect to the scope of works presented in *Munmorah Coal Handling Plant Structures Specification for Demolition and Site Restoration* prepared by Aurecon Pty Ltd dated 21 July 2022 (Referenced 500382-003-014), the *Waratah Super Battery – Munmorah Environmental Impact Statement* prepared by GHD Pty Ltd dated November 2022 (Referenced 12582669 Rev 1) states:

"*GPM will complete any outstanding remediation and rehabilitation works to demolish remaining infrastructure (including the coal bunker and other concrete infrastructure), removing the remaining coal residue, contouring the landscape, installing erosion control measures and weed management, including the removal of exotic pine trees on the site.*

These works are being progressed in accordance with existing approvals (DA 413/2014) and relevant Part 5 approvals and will be completed prior to possession of the site by the service provider."

Three drawings have been provided by the Client related to the final condition of the site (provided in Appendix B):

- *Waratah Super Battery 330kV Substation and BESS Yard Demolition Plan* (Drawing Reference 12590-CI-DR-00151 Rev B dated 15 December 2022).
- *Waratah Super Battery 330kV Substation and BESS Yard Demolition Long Section* (Drawing Reference 12590-CI-DR-00152 Rev B dated 15 December 2022).
- *Waratah Super Battery 330kV Substation and BESS Yard Demolition Cross Section*s (Drawing Reference 12590-CI-DR-0015 Rev B dated 15 December 2022).

A detailed survey completed between 03 and 06 September 2022 which includes the site as defined in this report prior to the remediation works has also been provided in Appendix B:

- *Detail Survey of Munmorah Coal Stacks Area Munmorah Power Station* (Reference 22/0523 Revision 4 dated 16 November 2022).

A detailed survey completed on 04 and 05 May 2023 following the remediation works has also been provided in Appendix C.

4 SITE HISTORY SUMMARY

A summary of the history of the Site is presented in Table 2. For additional detail refer to the detailed site investigation report (*Environmental Site Investigation Report Waratah Super Battery Site Former Munmorah Power Station* (CES Document Referenced CES170608-GPM-DP dated 10 November 2022)).

Table 2 Site History Summary

Historic Title Information	The site was owned by Crown Land and private individuals from the earliest records up to 1961, when the site was purchased by The Electricity Commission of New South Wales/Delta Electricity. The site was transferred to the current landowner (GPM) in 2017. This indicates that there are no records from the previous owners of the site for any significant contamination source, other than The Electricity Commission of New South Wales/Delta Electricity.
Historic Lease Information	Historic Lease Information did not identify any previous leaseholders that may have introduced contamination sources.
Historic Aerial Photographs	The site was undeveloped and agricultural land prior to the construction of the Munmorah Power Station, after which the site was utilised for the storage and handling of coal materials. Following decommissioning of the Munmorah Power Station the site was used during the demolition works as a demolition material processing and load out area. An area to the south of the site was used during the operation of the Munmorah Power Station for the storage of hydrocarbon fuels (diesel) in two ASTs, for the site's mobile plant. As such, no other potential source of contamination, other than the use of the site for coal storage, hydrocarbon fuel storage and demolition works, has been identified. The site and its surrounds were extensively modified during the construction and operation of the Munmorah Power Station.
Historical Topographical Maps	The review of historical topographical maps indicates that the site was undeveloped land prior to the construction of the Munmorah Power Station. Two of the available historic topographical maps provide elevation contours (copies of the maps were provided in Appendix C of the *Preliminary Site Investigation: Former Munmorah Power Station* (CES Document Reference CES170608-GPM-AW, 2019b): • 1999 Map (presented in the Land Insights Report) indicates that the site elevation ranges between approximately 10 m AHD in the north east to approximately 20 m AHD in the south;

	• 1928 Map (Referenced Lake Macquarie NSW 1:63360 Sheet 404) indicates that the site elevation ranges between approximately 7.6 m AHD (25 ft) in the north east to approximately 15.2 m AHD (50 ft) in the south
Contamination Sources	Relevant contamination sources are presented in the Conceptual Site Model presented in Section 6.

4.1 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.

5 PREVIOUS RELEVANT INVESTIGATIONS

The following 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 *Comprehensive PFAS Investigation, Colongra Power Station: PFAS Investigation Conceptual Model* Reference: IA069200-N-RPT-001 | Rev 3 final (December 2017).
- 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).
- Consulting Earth Scientists Pty Ltd, *AEC4 – Coal Stack Above Ground Storage Tanks Investigation Report Former Munmorah Power Station* (CES document reference CES170608-GPM-BL, 2019c).
- Consulting Earth Scientists Pty Ltd, *Preliminary Sediment Characterisation Report Former Munmorah Power Station* (CES document reference CES170608-GPM-CX, 2021).
- *Surface Water Sampling – Douglas Partners 2021*
- Nation Partners *Former Munmorah Power Station, Ecological Risk Assessment* (November 2021).
- Nation Partners *Former Munmorah Power Station, Ecological Risk Assessment* (August 2022).
- Consulting Earth Scientists Pty Ltd, *Environmental Site Investigation Report Waratah Super Battery Site Former Munmorah Power Station* (CES Document Referenced CES170608-GPM-DP dated 10 November 2022).
- Consulting Earth Scientists Pty Ltd, *Stockpiled Material Assessment Waratah Super Battery Site Former Munmorah Power Station* (CES Document Referenced CES170608-GPM-DQ dated 10 November 2022).
- Consulting Earth Scientists Pty Ltd, *Data Gap Investigation Report Waratah Super Battery Site Former Munmorah Power Station* (CES Document Referenced CES170608-GPM-DW dated 24 February 2023b)

The information relating to the site history, historic potentially contaminating activities and investigation results have been combined and incorporated into the Detailed Conceptual Site Model presented in Section 6.

Environmental sampling results from previous reports are presented in Appendix C of the RAP. Where additional detail is required, please refer to the historic reports.

6 CONCEPTUAL SITE MODEL

6.1 Contaminant Source Information

6.1.1 Coal Impacted Soils

Residual coal particles were identified during previous investigations (CES, 2019c, 2022a) in the Coal Stack area and along the western site boundary, underlying the former coal conveyor line, in Western Settling Basin sediments, and discrete areas of the adjacent lands, in the north eastern area of the site. The residual coal material is noted to be distributed on the site surface in a thin discontinuous layer.

Localised areas of elevated TRH concentrations (in excess of the adopted ESL) in the Coal Stack Area and the adjacent lands are considered to be associated with the presence of coal fragments. With respect to the ESL exceedances the proposed use of the site includes the application of a suitable engineered gravel surface dressing, and as such the site use is not expected to include areas of planting or vegetation.

Coal fragments were observed in samples collected from demolition derived material stockpiles 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.

Exceedance of the adopted screening criteria for combustible content were detected in 44% of samples (4 out of 9 samples) analysed.

The Waratah Super Battery developer has stated that materials with coal fragment content below 10% w/w are suitable retention onsite however based on the current works plan no coal containing materials will be retained onsite.

6.1.2 Asbestos in Soils and Stockpiled Material

The Coal Stack area was used for processing of demolition materials during the power station demolition works, undertaken from 2013 to November 2018 (inclusive). Works undertaken in the Coal Stack area included demolition material storage, concrete crushing and screening, scrap metal sorting, breakdown and cutting for transport off site for recycling.

Three localised asbestos (fibrous asbestos containing material and asbestos fibres) hotspots CS108, F9 and H13 were identified during site investigations. Delineation/validation sampling undertaken of soils surrounding the identified asbestos impacts (analysis results provided in Section 11) identified more widespread asbestos impacts in the surface soils of the western portion of the former Coal Stack area. The impacted materials were assessed to comprise a

layer of residual demolition derived material – crushed concrete with inclusions of brick, metal, timber, and plastic fragments. Asbestos containing materials had previously been removed from this area of the site as detailed in CES (2023b).

Asbestos fines and fibrous asbestos associated with the stockpiled demolition processing products were detected in excess of the adopted human health criteria in samples SP3-5 and SP6-1. In addition, 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.

Removal of asbestos impacted materials is required to make the site suitable for the proposed development.

6.1.3 PFAS Impacted Soils, Groundwater, and Stockpiled Materials

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

Use of dust suppression water sourced from the Eastern Retention Basin (also known as the 25 ML dam) by the Demolition Contractor was identified by CES during a site walkover. Elevated PFAS concentrations have been identified in water in the Eastern Retention Basin, associated with the known offsite Fire Fighter Training Area, located offsite to the northeast. The CES (2019a) report identified a direct hydraulic connection between the surface water drainage of the offsite former Fire Fighter Training Area and the Eastern Retention Basin, through the former Munmorah Power Station dirty water system.

A water truck fill point was observed to draw water from the Eastern Retention Basin. It was reported at the time that this was set up by the demolition contractor as a source for dust suppression water. A water truck was the observed using spray irrigation to reduce dust generation. Irrigation was observed and reported to be undertaken in the Coal Stack area of the site, demolition haul roads and offsite areas of the GPM Landholding.

It is understood that this was continued throughout the demolition works (early 2013 to November 2018), however irrigation on the Coal Stack is likely to have been limited to early 2016 to November 2018 when the Coal Stack was used for material processing.

It is noted that during this period the Coal Stack is likely to have been subject to a higher irrigation rate than haul roads due to the type works and dust generation potential of processes undertaken.

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 generally at low concentrations below the adopted SAC, with the exception of AEC 4 soils.

Comparison between the AEC 4 area PFAS concentrations and the wider Waratah Super Battery site PFAS concentrations indicate that the AEC 4 area of the site was likely the location of an additional release of PFAS, different from the impacts associated with dust suppression irrigation with PFAS impacted water, and as such the concentrations detected in groundwater in AEC 4 were likely to be a result of a localised source, it is possible that AFFF was used in this area of the site to manage a fire incident associated with the former ASTs.

Based on the assessment PFAS in soils are not considered to be a human health or ecological risk, with the exception of localised areas in AEC 4 (refer to Section 6.1.3.3), however in accordance with the PFAS NEMP 2.0 (HEPA 2020) where site soils are considered for re use, assessment is required.

Elevated PFAS concentrations were detected in groundwater samples collected from discrete areas of the site, as discussed below. The location of elevated groundwater concentrations is presented on Figure 3.

6.1.3.1 PFAS in Stockpiled Materials

PFAS were not detected in excess of the laboratory Practical Quantitation Limit (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, and re use is subject to agreement and approval from the regulator.

Elevated concentrations of PFAS detected in samples analysed by ASLP from stockpile SP3 and SP7. Based on the leachability of PFAS in SP3 and SP7 management of the two stockpiles are required.

6.1.3.2 North-eastern Corner of the Site

Groundwater investigation results identified that groundwater near the site boundary with of the offsite former Fire Fighter Training Area. Groundwater monitoring wells FB304, FB305, FB306 and FB309 detected PFOS concentrations in excess of the freshwater 95% species protection screening value (NEMP 2.0, HEPA 2020). Elevated PFAS concentrations were not

detected in soil samples collected from sampling locations in the north eastern corner of the site.

Based on the inferred groundwater flow direction it is likely that the elevated PFAS concentrations in groundwater are migrating offsite to the north of the site. That is to say that the elevated PFAS concentrations in groundwater are migrating through the site in the northern corner of the site.

With respect to the potential for site operations during and following development to increase the risk of migration and exposure of sensitive receptors to PFAS detected migrating through the site the follow is noted:

- As the PFAS source is located offsite and upgradient, remediation of groundwater is unlikely to permanently reduce the elevated concentrations, and therefore is of limited benefit.
- Installation of methods to modify groundwater migration from the offsite source such as cut off walls or similar may modify the site hydrogeological regime resulting in increased PFAS migration.
- Groundwater in the north-eastern corner of the site was recorded to be at between 4.8 m and 6.5 m below ground level (groundwater level of between 0.7 to 3.7 m AHD);
- The proposed development doesn't include construction works or structures in the north eastern area of the site, with the exception of overhead transmission lines, the supporting structures for which will not be completed in this area of the site. As a result activities and future development of this area of the site will be restricted.
- The proposed development comprises recontouring of the site with a maximum cut of 2 m (in the south west of the site) and no earthworks proposed in the north eastern corner. Following recontouring, the Waratah Super Battery will comprise construction of on grade, within no deep excavations or basements. Localised service trenching will be limited to less that 2 m excavation. As such the development will not require excavation into groundwater requiring dewatering during or following development or which could result in exposure to PFAS in groundwater, mobilisation of PFAS impacts through discharge of pumped groundwater or localised temporary or permanent variation in groundwater flow directions or elevations which could increase or vary the migration of PFAS from the offsite source area.
- As discussed in Section 3, the hydrogeological profile of the natural subsurface of the site comprises low permeability soils and rock (coefficient of permeability ranging from 1.1×10^{-6} m/s to 4.7×10^{-9} m/s). where identified, areas of higher permeability (sandy clay soils and sandstone bands in Munmorah Conglomerate) are localised and discontinuous, as a result the geological units as a whole tend towards the lower end of

the coefficient of permeability range, which further limits the likelihood of the development introducing an increased risk of PFAS migration or exposure.

Based on the above the PFAS concentrations in the north-eastern corner pose a low risk to human health or the environment onsite during and following development and remediation of PFAS in groundwater in the north-eastern corner of the site is of limited benefit as the source of PFAS in groundwater is located offsite.

In addition, with respect to mobilisation and exposure of PFAS in groundwater through groundwater abstraction, the hydraulic characteristics of the shallow aquifer indicates that low yields would be likely, therefore it is unlikely that the development works, or site operations would utilise abstracted groundwater to provide water for dust suppression or irrigation.

In consideration of the above details, noting the characterisation and remediation of the offsite PFAS source is likely to be completed in the future, no ongoing management of PFAS in groundwater in the north-eastern corner of the site is required.

In a letter to GPM *Ongoing Regulation of Contamination at the Munmorah Power Station and Review of Remediation Action Plan* dated 31 March 2021 the NSW EPA stated, with respect to hydrocarbon and PFAS contamination at the GPM site, that:

"*The contamination is considered Significant under the CLM Act* [Contaminated Land Management Act 1997]"

And

"As the contamination is considered to be significant under the CLM Act, and there is the potential for unacceptable risks to be posed to sensitive off-site ecological receptors, the EPA considers that declaration and regulation of the contamination under the CLM Act is the most appropriate and effective way forward for regulation of the hydrocarbon and PFAS contamination."

As the NSW EPA intends to declare some or all of the GPM site as significantly contaminated under the Contaminated Land Management Act 1997 further investigation followed by remediation and management of the offsite source of PFAS in groundwater in the north eastern corner of the site will be required. The adopted remediation or management approach will include measures to address the migration of PFAS impacts in groundwater and as such will address the impacted groundwater underlying the northeast corner of the site.

6.1.3.3 AEC 4

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, and some distance away from, 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.

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.

PFAS results for soil samples from AEC 4 reported three exceedances of adopted ecological indirect exposure criteria for PFOS were reported at three locations (A4435 0.0-0.05, A4439 0.0-0.05, and A4446 0.1-0.15) in the surface soils.

A4446 0.1-0.15 m detected PFOS in ASLP concentrations of 0.48 µg/L and A4443 1.5-1.6 m which detected PFOS in ASLP concentration of 0.19 µg/L in excess of the interim marine 95% species protection criteria of 0.13 µg/L.

Comparison between the AEC 4 area concentrations and the wider Waratah Super Battery site concentrations indicate that the AEC 4 area of the site was likely the location of an additional release of PFAS, different from the impacts associated with dust suppression irrigation with PFAS impacted water, and as such the concentrations detected in groundwater in AEC 4 were likely to be a result of a localised source.

Higher Sum PFAS (n=28) concentrations were detected in near surface soils, in comparison to samples collected at greater depths in the soil column, indicative of a surface release combined with vertical migration through the soil column, impacting soils and underlying groundwater.

Groundwater PFOS concentrations ranged from 0.013 µg/L in well FI211 to 1.3 µg/L in well A4435.

Four groundwater exceedances (AEC4-MW03, A4407, A4435, and A4439) of adopted PFAS NEMP 2.0 interim marine 95% species protection criteria and three exceedances (AEC4-MW03, A4435 and A4439) of adopted *Guidelines for Managing Risk in Recreational Water* (NHMRC, Updated September 2022) were detected.

Upgradient well (FI211) reported the majority of PFAS concentrations marginally above or below the laboratory limit of detection.

Highest PFAS concentrations reported in groundwater at A4435 and A4439 where elevated PFOS concentrations were detected in surface soils, which may indicate the source of the elevated groundwater detections is located in the vicinity of A4435 and A4439. The highest

concentration of PFOS in ASLP was detected at location A4446, approximately 10 m upgradient from well A4435.

Low concentrations detected in well FI211 indicate that the PFAS source is localised to the AEC 4 area of the site, where the soil investigation has been undertaken.

Based on the detected soil concentrations and the concentrations in groundwater it is likely that soil impacts in the AEC 4 area of the site are leaching from near surface soils, migrating through the soil column and impacting groundwater. To mitigate the elevated concentrations of PFAS in groundwater and elevated concentrations of PFAS remediation of PFAS in soils is required in the AEC 4 area of the site.

It is likely that following ongoing source removal the concentrations of PFAS in groundwater at AEC 4 will attenuate over time.

In addition to PFAS concentrations, elevated TRH Fraction 2 concentrations in excess of the TRH Management Limits for fine grained soils (1,000 mg/kg) were detected in near surface soils in the area of PFAS impacted soils, with concentrations up to 2,600 mg/kg detected.

As with the northeast corner of the site groundwater in the AEC 4 area is between 3.8 m and 4.8 m below ground level (groundwater levels between 12.2 and 12.7 m AHD), with a cut of less than 1 m to a final surface level of between 14.8 to 16.2 m AHD proposed in this area of the site.

As noted in Section 6.1.3.2 the development will not require excavation into groundwater requiring dewatering during or following development or which could result in exposure to PFAS in groundwater, mobilisation of PFAS impacts through discharge of pumped groundwater or localised temporary or permanent variation in groundwater flow directions or elevations which could increase or vary the migration of PFAS.

The elevated PFAS concentrations in groundwater at AEC 4 are located approximately 340 m from the site boundary in the direction of groundwater flow, based on the inferred groundwater contours (to the north). As noted previously the soils and rock underlying the site are of low permeability, with localised discontinuous bands and lenses of higher permeability materials unlikely to present a preferential migration pathway. Based on the hydraulic characteristics of the site it is unlikely that the PFAS in groundwater in the AEC 4 area of the site will migrate offsite without considerable dilution and attenuation. It is therefore unlikely that the exceedances detected at AEC 4 will migrate offsite.

Groundwater sampling of wells installed in as part of site investigations support this assessment, with no exceedances of the adopted screening criteria detected in downgradient sampling points CS106, CS116 and FB301 (located at the downgradient boundary).

In addition, based on the comparatively limited disturbance of the site it is unlikely that continuous anthropogenic preferential migration pathways are present in the subsurface.

Based on the above discussion the PFAS concentrations in the AEC 4 area of the site pose a low risk to human health or the environment on and offsite during and following development and remediation of PFAS in groundwater in the AEC 4 area of the site is not required beyond secondary source removal.

With respect to mobilisation and exposure of PFAS in groundwater through groundwater abstraction, the hydraulic characteristics of the shallow aquifer indicates that low yields would be likely, therefore it is unlikely that the development works, or site operations would utilise abstracted groundwater to provide water for dust suppression or irrigation.

In consideration of the above details no ongoing management of PFAS in groundwater in the AEC 4 area of the site is required.

6.1.4 Residual services/structures underground

The demolition works completed prior to the Demolition, Restoration and Remediation works were limited to above ground structures, which included the above ground elements of the Coal Handling Plant, the Main Receiving Hopper, Sample Crushing House, Storeroom, ASTs, Workers Shed, and Garage. 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 environmental investigations completed prior to the works did not encounter or identify any residual services/structures underground containing asbestos.

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).

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.

The demolition and site restoration works includes the demolition and removal of structures and services to a minimum of 2 m below ground level, with ACM removed prior to demolition.

Review of a recently identified Plan *Mummorah Power Station Coal Handling Plant 3.3 kV Cable Route Layout* (MM225272B/2 dated 04/02/1965) states that electrical cables for the coal handling plant were direct buried, without potentially asbestos containing conduit.

In addition to asbestos containing conduit, there is a potential for asbestos to have been used in the construction of high voltage electrical cable insulation and cable joints. Observations of the electrical cables at penetrations of the Coal Handling Bunker and in ground during the works did not identify potential asbestos containing insulation materials, however the location and frequency of cable joints are unknown. There is therefore a low risk of isolated asbestos containing cable joints remaining in the site subsurface associated with the residual direct buried high voltage cables.

Prior to commencing works the remediation contractor commissioned a Licenced Asbestos Assessor to prepare an Asbestos Register for the site. A copy of the report *Asbestos Materials Survey Report Munmorah Power Station* prepared by Property Risk Australia (Referenced PRJ001239 _V1 dated 12 December 2022) is presented in Appendix N.

In addition to the Coal Handling Plant Bunker, there is a potential for asbestos containing conduit to be associated with buried services in the south of the site, where the Coal Stack Amenities building, and other structures were located.

It is noted that ACM conduit service penetrations and weepholes at depths greater than 2 m below final surface level in the Coal Handling Plant Bunker are proposed to be grouted and retained. Given the depth below final surface level, the ACM will be fully encased in concrete and grout filled, this residual asbestos is considered to represent a low risk to future site users and no remediation or no ongoing management is required.

Where encountered ACM conduit was removed to make the site suitable for the proposed development.

6.2 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.

6.3 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

6.4 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.

The remediation approach adopted comprises disruption to source pathway receptor linkages through removal of exposure source.

7 IMPLEMENTATION OF REMEDIATION ACTION PLAN

7.1 Site Visits and Validation Sampling

CES attended the site for collection of validation samples and inspection of excavation on the following dates:

- 07 March 2023
- 09 March 2023
- 10 March 2023
- 23 March 2023
- 18 April 2023
- 21 April 2023
- 27 April 2023
- 28 April 2023
- 01 May 2023
- 03 May 2023

7.2 Summary of Remedial Strategy

Based on the Remediation Options Assessment presented in the RAP the adopted remedial approach comprised removal of contaminated media to offsite areas of the GPM Landholding for ongoing management.

The approach was selected as the most suitable method of delivering the site in condition suitable for the Waratah Super Battery in a timely manner which meets the project timeline.

7.3 Remediation Objectives and Remediation Acceptance Criteria

7.3.1 Objectives

The remediation goal is to make the site suitable for the proposed land use, as an 850 MW network standby battery; the Waratah Super Battery, considered to comprise a commercial/industrial land use.

7.3.2 Remediation Extents, Endpoints and Assessment Criteria

Based on the Remediation objective and the remediation option selected, specific remediation endpoints applicable to specific contaminants have been defined and are presented in Table 3.

Due to the generally low level of contamination detected onsite, the timing constraints on the project, and the specifics of the project site, Remediation Assessment Criteria have been selected based on conservative Tier 1 screening criteria.

Table 3 also presents the extent of remediation required.

Table 3: Remediation Extents, Endpoints and Remediation Acceptance Criteria

Area	Remediation Extent	Remediation Endpoint Site	Remediation Acceptance Criteria
Asbestos in surface soils And Asbestos in stockpiled materials	Presented on Figure 4 <u>Western Coal Stack Surface</u> Extent 2.3 ha Depth – variable (mean 0.2 m) Volume 4,600 m^3 <u>Stockpile 3</u> Footprint 1,910 m^2 Volume 6,050 m^3 <u>Stockpile 5</u> Footprint 580 m^2 Volume 880 m^3 <u>Stockpile 6</u> Footprint 1,810 m^2 Volume 1,810 m^2 <u>Stockpile 7</u> Footprint 1,540 m^2 Volume 1,230 m^2	Asbestos impacted soils are removed from site. Asbestos impacted areas are validated to demonstrate that underlying and surrounding soils meet the Remediation Acceptance Criteria	HSL D (ASC NEMP (NEPC 1999 as amended 2013) Bonded Asbestos 0.05% w/w FA/AF 0.001 % w/w No asbestos visible on the site surface
Asbestos in Residual Buried Services and Asbestos Containing Materials	Presented on Figure 5	Potential Asbestos containing materials are identified and removed form site in accordance with asbestos control plan.	HSL D (ASC NEMP (NEPC 1999 as amended 2013) Bonded Asbestos 0.05% w/w FA/AF 0.001 % w/w No asbestos visible on the site surface
PFAS in stockpiled materials PFAS impacted AEC 4 soils	Presented on Figure 4 and 5 <u>Stockpile 3</u> Footprint 1,910 m^2 Volume 6,050 m^3	PFAS impacted soils are removed from site. Stockpile footprints and excavations are validated to demonstrate that underlying and surrounding soils meet the Remediation Acceptance Criteria.	PFAS NEMP 2.0 Soil Health Investigation Levels (HILs): Sum of PFOS and PFHxS: 20 mg/kg PFOA: 50 mg/kg PFAS NEMP 2.0 Soil Ecological Guideline Values (EGVs)

Area	Remediation Extent	Remediation Endpoint Site	Remediation Acceptance Criteria
	Stockpile 7 Footprint 1,540 m^2 Volume 1,230 m^2 AEC 4 Soils Extent 2,600 m^2 Depth 0.7 m Volume 1,820 m^3		Ecological direct exposure PFOS: 1 mg/kg PFOA: 10 mg/kg Ecological indirect exposure PFOS: 0.01 mg/kg Simpson, S. et al. (2021) Sediment Ecological Guideline Values (EGVs) 99% species protection value: PFOS 60 µg/kg PFAS NEMP 2.0 Ecological water quality guideline values 95% species protection: PFOS in ASLP: 0.13 µg/L PFOA in ASLP: 220 µg/L
Former coal handling and storage area Coal Impacted Site Surface Soils	Presented on Figure 4 Extent 5.3 to 8 Ha Depth Mean: 0.3 m <0.6 m Volume 15,900 to 24,000 m^3	Coal fragment impacted soils at former coal handling and storage area	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: Maximum Average Concentration 30% Combustible Content 0.5% Sulfur Absolute Maximum Concentration 40% Combustible Material 1% Sulfur
Unexpected Find – UST	Presented on Figure 5 Extent 72 m^2 Depth 2.9 m Volume 200 m^3 (Excluding Tank)	UST and impacted soils excavated and removed from site	HSL D (ASC NEPM (NEPC 2013) Sand 0 - <1 m Fraction 1 TRH 260 mg/kg Fraction 2 TRH No Limit (NL) Benzene 3 mg/kg Toluene NL Ethylbenzene NL Xylene 230 mg/kg

7.4 Description of Remedial Activities

Remediation was carried out in general accordance with the requirements of the RAP.

Remediation works were completed progressively between 06 December 2022 and 04 May 2023 comprising excavation and relocation of impacted materials to areas of the GPM Landholding with approximately 67,430 m^3 of materials removed from site and relocated to

suitable areas of the GPM Landholding for ongoing management, of which 51,500 m^3 comprised remediation derived materials.

No material was imported to the site as part of the remediation works, where required materials for backfilling of excavations was won onsite.

No material was exported from the GPM Landholding for management or disposal.

Remediation was completed by CMA Contracting Pty Ltd.

The following deviations from the RAP are noted:

- As noted in Section 6.1.2 the remediation extent was expanded to include fill materials the western site asbestos area due to reassessment of the CSM based on samples collected to validate the remediation of areas previously considered to comprise localised hotspots H13, F9 and CS108 (refer to Section 7.3.1.1).
- Western Settling Basin was included in validation sampling programme based on observations of coal fines within the sediments during excavation.
- An unexpected find, a previously unidentified UST was encountered in the excavation of the AEC 4 PFAS impacted soils. The UST was observed to have been previously decommissioned (by grout filling and removal of pipe connections). Details with respect to treatment of the UST are presented in Section 7.12.

It is noted that early versions of the RAP included retention of a portion of the contaminated materials present onsite in an engineered cell in accordance with a Long-Term Environmental Management Plan, however due to overall project constraints this remediation approach was not adopted in the final version of the RAP. The Coal Handling Bunker void was filled using uncontaminated site won crushed concrete or site won soils.

7.5 Materials Handling and Tracking

Details of material handling was provided by the remediation contractor CMA Contracting Pty Ltd. Information provided by the remediation contractor relating to the completion of the works is presented in the following sections.

7.5.1 Remediation Derived Materials Tracking and Handling

A summary of remediation material handling and tracking is presented in Table 4. Extents of remediation works are presented on Figures 4 and 5. Material placement locations are presented on Figure 6 and 7.

Table 4: Remediation Materials Tracking and Handling

Remediation Area	Remediation Approach	Date Commenced	Date Completed	Volume (m^3)	Final location	Haulage documentation provided?
Asbestos Impacted Demolition Materials on Western Site Surface	Excavate and relocate offsite	1/03/23	24/04/2023	11,250	Red Tip GPM Landholding Asbestos Dump Area	Yes See Appendix E
Stockpile 3	Excavate and relocate offsite	1/04/23	18/04/2023	10,700	Managed PFAS Impacted Material Temporary Storage Area	Yes See Appendix E
Stockpile 5	Excavate and relocate offsite	17/02/23	03/05/2023	950	Orange Tip GPM Landholding Asbestos Dump Area	Yes See Appendix E
Stockpile 6	Excavate and relocate offsite	18/01/23	28/02/23	6,250	Red Tip GPM Landholding Asbestos Dump Area	Yes See Appendix E
Stockpile 7	Excavate and relocate offsite	13/04/23	19/04/2023	1,700	Managed PFAS Impacted Material Temporary Storage Area	Yes See Appendix E
AEC 4 PFAS Impacted Soils	Excavate and relocate offsite	28/04/2023	03/05/2023	2,000	Managed PFAS Impacted Material Temporary Storage Area	Yes See Appendix E
AEC 4 Concrete Slab	Excavate and relocate offsite	28/04/2023	28/04/2023	Included in AEC 4 PFAS Impacted Soils	Managed PFAS Impacted Material Temporary Storage Area	Yes See Appendix E
Coal Impacted Soils on Site Surface	Excavate and relocate offsite	6/12/22	3/05/23	26,900	Orange Tip GPM Landholding Asbestos Dump Area	Yes See Appendix E
Stockpile 1	Excavate and relocate offsite	6/12/22	3/04/23	Included in Coal Impacted soils	Orange Tip GPM Landholding Asbestos Dump Area	Yes See Appendix E

Stockpile 2	Excavate and relocate offsite	6/12/22	3/04/23	Included in Coal Impacted soils	Orange Tip GPM Landholding Asbestos Dump Area	Yes See Appendix E
Stockpile 4	Excavate and relocate offsite	21/02/23	28/02/23	590	Orange Tip GPM Landholding Asbestos Dump Area	Yes See Appendix E
Western Settling Basin Sediments	Excavate and relocate offsite	2/03/23	1/04/23	7,000	Orange Tip GPM Landholding Asbestos Dump Area	Yes See Appendix E
AEC 4 UST	Excavate and relocate offsite	28/04/2023	28/04/2023	Included in AEC 4 PFAS Impacted Soils	Managed PFAS Impacted Material Temporary Storage Area	Yes See Appendix E
AEC 4 Hydrocarbon impacted soils	Excavate and relocate offsite	28/04/2023	28/04/2023	Included in AEC 4 PFAS Impacted Soils	Managed PFAS Impacted Material Temporary Storage Area	Yes See Appendix E
Asbestos Containing Materials	Safely remove in accordance with the Asbestos Control Plan and Relocate offsite	07/12/2023	23/03/2023	1,800	Red Tip GPM Landholding Asbestos Dump Area	Yes See Appendix E

7.5.2 Non-Remediation Derived Materials Tracking and Handling

A summary of non-remediation material handling and tracking provided by CMA is presented in Table 5.

Table 5: Non-Remediation Material Tracking

Material Sources	Material handling details	Date Commenced	Date Completed	Volume (m^3)	Haulage documentation provided?
Coal Handling Bunker concrete	Crushed and utilised as Coal Handling Bunker void fill	22/03/23	14/04/23	4,160 m^3	Yes See Appendix E

Perimeter Channel concrete	Crushed and utilised as Coal Handling Bunker void fill	22/03/23	31/03/23	Included in Coal Handling Bunker concrete volume	Yes See Appendix E
Other concrete slabs	Crushed and utilised as Coal Handling Bunker void fill	22/03/23	31/03/23	Included in Coal Handling Bunker concrete volume	Yes See Appendix E
Vegetation removed form site.	Vegetation relocated to Orange Tip GPM Landholding Asbestos Dump Area	6/12/22	28/04/23	200	Yes See Appendix E

7.6 Reconciliation of Remediation Volumes with Material Handing Records

Reconciliation between estimated remediation volumes and volumes removed from site provided by CMA are presented in Table 6.

Table 6: Remediation Volume Reconciliation

Area	Estimated Volume	Volume Removed from Site
Western Coal Stack Surface	4,600 m^3	11,250 m^3
Stockpile 1	140 m^3	Included in Coal Impacted soils
Stockpile 2	912 m^3	Included in Coal Impacted soils
Stockpile 3	6,050 m^3	10,700 m^3
Stockpile 4	438 m^3	590 m^3
Stockpile 5	880 m^3	950 m^3
Stockpile 6	1,810 m^3	6,250 m^3
Stockpile 7	1,230 m^3	1,700 m^3
AEC 4 Soils	1,820 m^3	2,000 m^3
Coal Impacted Site Surface Soils	15,900 to 24,000 m^3	26,900 m^3 (Including Stockpile 1 and 2)
UST Hydrocarbon Impacted Soils	200 m^3 (Excluding Tank)	Included in AEC 4 Soils

Area	Estimated Volume	Volume Removed from Site
Western Settling Basin	4,000 m^3	7,000 m^3
Asbestos Containing Materials	Unknown	1,800 m^3

7.7 Preparation of Managed PFAS Impacted Material Temporary Storage Area

The Managed PFAS Impacted Material Storage Area was prepared in general accordance with the specification presented in Appendix D of the RAP, which was designed in accordance with the requirements of the PFAS NEMP 2.0 (HEPA 2020).

The location and extent of the Managed PFAS Impacted Material Temporary Storage Area is presented on Figure 7.

Photographs of the completed Managed PFAS Impacted Material Temporary Storage Area are presented in Appendix F.

Construction quality assurance documentation is presented in Appendix G and includes:

- Standard compaction testing certificates of analysis.
- Proof roll test documentation.
- Survey prior to material placement.

Materials relocated to this area of the GPM Landholding are presented in Table 5.

The PFAS impacted material retained in the Managed PFAS Impacted Material Temporary Storage Area should be managed in accordance with the requirements of the GPM Environmental Management Plan for the Managed PFAS Impacted Material Temporary Storage Area.

7.8 Management of GPM Landholding Storage Areas

The location and extent of the GPM Landholding Storage Areas (Red Tip and Orange Tip) are presented on Figure 6.

Photographs of the completed GPM Landholding Storage Areas following placement of materials are presented in Appendix F.

The GPM Landholding Storage Areas (Red Tip and Orange Tip) comprise areas of the GPM landholding historical used for the management of power station waste materials including coal ash, coal fines, detergents and oil sheens, asbestos containing materials, chemical spill residues, oil and chemically impacted soil, other waste materials generated by power station operations, and large concrete structures identified to contain asbestos during the demolition works (for which development consent was granted to utilise the areas).

Materials relocated to this area of the GPM Landholding are presented in Tables 5 and 6.

As presented in Section 9.1 and 9.2 of the RAP, materials from the site relocated to GPM Landholding Storage Areas (Red Tip and Orange Tip) included materials containing low levels of PFAS concentrations. Assessment of these materials in accordance with Figure 5 Section 12.1 of the PFAS NEMP 2.0 (HEPA 2020) for re use is presented in Section 9.2 of the RAP. It is noted that the PFAS NEMP 2.0 (HEPA 2020) requires that re use is subject to approval from the regulator.

The GPM Landholding Storage Areas (Red Tip and Orange Tip) comprise areas of the GPM landholding historical used for the management of power station waste materials and as such are subject to GPM care and maintenance programme, and the GPM overall site management strategy. Investigation and remediation of the historic waste disposal areas, understood as likely to comprise the construction of suitably designed formal capping, is required. An investigation brief has been prepared by GPM with the intention of issuing a request for proposal to undertake the investigation works.

Disposal of asbestos and asbestos containing materials in the asbestos disposal sites GPM Landholding is allowable under Condition 22 of the demolition consent (DA/413/2014/D).

It is also noted that up to 21 January 2015 (EPL Variation Notice 1525902) the sites EPL (759) under condition L5.1 allowed for:

The following wastes generated on the premises may be disposed of to the ash dam or within the ash dam catchment.

(i) *Ash,*

(ii) *Coal, coal fines, mill pyrites, residual detergents and oil sheens, sand, concrete products, boiler blowdown, minor chemical spill residues, chemicals for environmental control, ash dam water treatment plant residues, dust returned from the ash recovery plant, marine growth, debris, seaweed, chemical cleaning solutions, oil and chemically impacted soil, de-silting of settling basins, dredge spoil, waste wood, wood chips, dirty water drains, treatment plant discharges, coal*

handling plant stormwater, neutralised demineralisation effluent, polisher plant effluent, spent ion exchange resins, chlorine plant storage vessel precipitates, cable tunnel drainage, fabric filter bags, coal chitter and soil capping materials, coal mine dewatering discharges, (iii) Any other material approved in writing by the EPA.

Based on the above details, materials relocated to the GPM Landholding Storage Areas (which are located within the Ash Dam Catchment) by the remediation works are unlikely to increase the risk of contamination in this area of the GPM Landholding.

The GPM Landholding Storage Areas are subject to ongoing management in accordance with the Environmental Management Plan for the GPM Landholding Storage Areas *Long Term Environmental Management Plan - Temporary PFAS and Asbestos Stockpiles 1 and 2 prepared by EMM Consulting Pty Ltd Referenced E230489 RP#1 dated 16 May 2023*.

7.9 General Remediation Methodology

Remediation was completed by excavation of impacted materials. Material was typically excavated directly to haulage plant for relocation to the designated offsite area.

Following excavation validation samples were collected.

Additional excavation, where required was completed in a similar manner. The following areas required additional excavation and validation:

- Western Settling Basin (Combustible Content);
- Asbestos Hotspots CS108, F9 and H13/ Western Site Surface (asbestos);
- Site Surface in four discrete locations (Combustible Content);
- AEC 4 PFAS soils in two locations (PFOS in ASLP);
- Stockpile 5 footprint in one location (Asbestos).

7.10 Coal Handling Plant Bunker Filling

The former Coal Handling Plant Bunker was part demolished in preparation for filling of the void to create an engineered structural fill pad suitable to provide a suitable bearing surface suitable for the construction of the proposed battery.

The Coal Handling Plant Bunker void was filled using uncontaminated site won crushed concrete and soils.

The filling was completed under geotechnical supervision. Construction Quality Assurance documentation for the filling works is presented in Appendix H.

Filling works were commenced on 31 March 2023 and completed 04 May 2023.

Uncontaminated site won materials were utilised to fill the void. The crushed concrete was derived from the partially demolished bunker and the perimeter channel. The soils were won from the area immediately adjacent to the Coal Handling Bunker following completion of the remediation in this area of the site.

7.11 Asbestos Containing Material Conduit in The Coal Handling Plant Bunker

Prior to part demolition of the Coal Handling Plant bunker asbestos containing conduit embedded in the bunker walls were removed by over coring in accordance with an Asbestos Removal Control Plan. Once removed ACM (including incidental fragments and debris collected by emu picking and wet wiping techniques) were encapsulated in 200 µm plastic wrapping. Removal was completed to a minimum of 2 m below surface levels. Residual ACM (below 2 m depth) had a sealant applied to exposed surfaces and was grout filled.

A clearance inspection was undertaken by Property Risk Australia (PRA) following completion of the sealing and removal works, on 19 January 2023 (Report Referenced PRJ001239-ACM001, presented in Appendix I).

Asbestos Containing materials were transported to the Asbestos Laydown Area then to the Red Tip in the GPM Landholding.

7.12 Asbestos Laydown Area

During the works a temporary asbestos containing materials lay down area was established in the south of the site, adjacent to the AEC 4 PFAS Impacted Soils area. This asbestos laydown area was utilised to store asbestos containing materials removed from the Coal Handling Plant Bunker during demolition works prior to transfer offsite. Temporary storage was required prior to preparation of the GPM Landholding Storage Areas. During temporary storage, materials were covered with geofabric. Asbestos containing materials were then removed from site to the “Red Tip” in the GPM Landholding in accordance with an Asbestos Removal Control Plan.

Following removal and decommissioning of the Asbestos Laydown Area a clearance inspection was completed by Property Risk Australia (PRA) on 08 and 09 March 2023.

The clearance inspection report (Property Risk Australia (PRA) Report Reference PRJ001239-ACM002) is presented in Appendix I.

7.13 Asbestos Containing Material Conduit

During removal of concrete slabs from the site surface in the southern area of the site, asbestos containing conduit was encountered associated with buried services (power supply) to the former Coal Stack amenities buildings and Coal Handling Plan which were located in this area of the site. The asbestos conduit was encased in concrete and extended for approximately 15 metres. The conduit was removed by CMA under supervision from Pure Contracting Pty Ltd in accordance with an Asbestos Removal Control Plan and a clearance inspection was undertaken by Property Risk Australia (PRA) following completion on 08 and 09 March 2023.

The clearance inspection report (Property Risk Australia (PRA) Report Reference PRJ001239-ACM002) is presented in Appendix I.

Electrical cables where encountered outside of the southern area of the site, were observed to be direct buried, with "electric" embossed bricks lain over the cables, consistent with the details presented on recently identified *Plan Mummorah Power Station Coal Handling Plant 3.3 kV Cable Route Layout* (MM225272B/2 dated 04/02/1965) which states that electrical cables for the coal handling plant were direct buried, without potentially asbestos containing conduit.

7.14 Air Monitoring Results

During the works air monitoring was undertaken using the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres. Monitoring was completed on:

- 07 December 2022 – 4 locations around the removal works area (Property Risk Australia (PRA) Report Reference PRJ001239-AM001)
- 08 December 2022– 4 locations around the removal works area (Property Risk Australia (PRA) Report Reference PRJ001239-AM002)
- 06 March 2023 – 4 locations, 2 at the removal works area, 1 on the haulage route and 1 at the tipping area (Property Risk Australia (PRA) Report Reference PRJ001239-AM004)
- 07 March 2023 – 4 locations, 2 at the removal works area, 1 on the haulage route and 1 at the tipping area (Property Risk Australia (PRA) Report Reference PRJ001239-AM005)
- 08 March 2023– 6 locations, 4 at the removal works area, 1 on the haulage route and 1 at the tipping area (Property Risk Australia (PRA) Report Reference PRJ001239-AM006)

- 09 March 2023 – 7 locations, 5 at the removal works area, 1 on the haulage route and 1 at the tipping area (Property Risk Australia (PRA) Report Reference PRJ001239-AM007)

Monitoring undertaken did not detect asbestos fibres in excess of 0.01 fibre/ml.

Air monitoring reports are presented in Appendix I.

7.15 Unexpected Find – UST

During excavation of PFAS impacted Soils from the AEC 4 area of the site, on 28 April 2023, a previously decommissioned UST was encountered, underlying the former Coal Stack mobile plant AST area concrete slab.

The UST was estimated to be approximately 10,000 L and had been decommissioned by grout filling and removal of delivery and filling pipework. The grout filling appeared to fill an estimated 80% of the tank volume.

The tank was removed by excavation of the surrounding soils and lifting with a 50 tonne excavator. Following removal, visual and olfactory assessment was used to target further excavation of potentially impacted soils. Following excavation, validation samples were collected from the base and walls of the excavation.

Following UST removal and excavation of the impacted soils, the excavation dimensions were estimated to be 12 m by 6 m and 2.9 m deep.

UST destruction evidence is provided in Appendix F and disposal documentation is provided in Appendix J.

As the UST and impacted soils were excavated from a PFAS remediation area the UST and soils were transported to the Managed PFAS Impacted Material Temporary Storage Area for ongoing management.

8 VALIDATION SAMPLING 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.

8.1 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:

- Has the remediation end point and therefore remediation goal presented in Section 7.3 been achieved?

The objective is to confirm or otherwise that the remediation has been successfully completed.

The remediation contractor is CMA Pty Ltd, the landholder is GPM, and the future developer for the Waratah Super Battery is Akesha Energy on behalf of EnergyCo NSW.

The consultant project team will comprise Tristan Goodbody (Associate Environmental Engineer, Project Manager) with Victor Arias (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 conceptual site model is presented in Section 6. The implementation of the remediation action plan is presented in Section 7.

The site has been selected for the construction of the Waratah Super Battery by Energy Corporation of NSW (EnergyCo) as a Priority Transmission Infrastructure Project under the Electricity Infrastructure Investment Act 2020., there are no practical constraints, as the land is identified as high value and a sufficient budget is available. Additional investigations, or remediation will be conducted as required.

8.2 Step 2 – Identify the Goals

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 is the mean, standard deviation and 95% UCL of the mean of contaminant concentrations in the validation areas?
- Do contaminant concentrations exceed the remediation acceptance criteria?
- Do contaminant concentrations pose an unacceptable risk to human health or the environment?

It is expected that by resolving these questions, it will be possible to determine if the remediation end point been reached, and as such the remediation objective been achieved resolve the objectives of the project.

8.3 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.

- Site Observations.
- Photographic Records.
- Details of the bunker void backfilling including dates and geotechnical supervision reporting.
- Construction quality assurance documentation for the offsite PFAS Impacted Material Temporary Storage Area;
- A survey of the final site surface following completion of the works (the site in the condition at the point of auditor sign off).
- Asbestos Clearance certificates
- Validation sampling results;
- Conceptual Site Model (Section 6);
- The adopted remediation acceptance criteria are discussed in Section 7.2.2.

Sampling and analytical methods will be consistent with existing guidance, including NEPC (2013). Analytical laboratories will be NATA accredited and/or subject to proficiency testing and use analytical methods based on NEPC, USEPA and APHA methods.

- The acceptable limits for the QA/QC samples collected during the assessment are presented in Appendix K.

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.

8.4 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, approximately 9 m; and
- This project involves the collection of spot sampling events at the selected 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 concentrations, then additional sampling may be required.

8.5 Step 5 – Develop the Decision Rule

For the assessment of contaminant concentrations in the following decision rules will be adopted for systematic sampling:

1. Is the 95% Upper Confidence Limit of the arithmetic mean of contaminant concentrations detected in excess of the adopted Tier 1 Remediation Acceptance Criteria?
2. Is the standard deviation of contaminant concentrations >50% of the adopted Tier 1 Remediation Acceptance Criteria?

3. Are contaminant concentrations detected in excess of 250% of the adopted Tier 1 Remediation Acceptance Criteria?
4. Is the mean of contaminant concentrations different from the adopted Tier 1 screening criteria as assessed using null hypothesis significance testing (NHST) at a confidence level of 95%? This assessment is not applicable where contaminant concentrations are not detected above the laboratory Practical Quantitation Limit (PQL).
5. Do contaminant concentrations pose an unacceptable risk to the receptors identified in the CSM?

For the assessment of contaminant concentrations in the following decision rules will be adopted for targeted sampling, where insufficient samples have been collected for statistical analysis or where insufficient numbers of samples have reported concentrations to allow for statistical assessment:

1. Is the mean of contaminant concentrations detected in excess of the adopted Remediation Acceptance Criteria?
2. Do individual sample concentrations exceed the adopted Remediation Acceptance Criteria?

8.6 Step 6 – Specify Limits on Decision Errors

This step involves specifying the decision-maker's acceptable limits on decision errors.

Specify the decision rule as a statistical hypothesis test:

- The null hypothesis is that the site is contaminated and exceeds the adopted Remediation Acceptance Criteria. The alternative hypothesis is that the material is not contaminated above the adopted criteria.

There are two types of errors:

a) The site or decision area is considered not to be contaminated when it actually is – a Type I error. Type I errors can lead to unacceptable risks to human health and the environment, so the regulatory framework is established to protect against Type I errors.
b) The site or decision area is considered to be contaminated when it actually is not – a Type II error. Type II errors can lead to sites or decision areas being remediated unnecessarily, or land being used for a less-sensitive land use, or unwarranted restrictions on the surrounding environment.

The more severe consequences are with decision error (a) since the risk of jeopardising human health outweighs the consequences of paying more for remediation/management.

For performance criteria, the acceptable limits on the likelihood of making decision errors to be applied are:

- alpha risk (Type I error) of $\alpha = 0.05$
- beta risk (Type II error) of $\beta = 0.2$.

8.7 Step 7 – Optimise the Fieldwork Program Design

The optimised program for the validation was presented in Section 9.

9 VALIDATION SAMPLING AND ANALYSIS

The validation sampling plan in accordance to Section 10 of the RAP was implemented to demonstrate that remediation endpoints have been achieved.

The sampling methods are detailed in Table 7 below, and final validation sampling locations are presented in Figures 8 to 11.

Table 7: Field Methodologies

Task	Methodology
Western Coal Stack (Bonded and friable asbestos areas)	To validate asbestos impacts in exposed surfaces following excavation of the western coal stack site surface, a visual inspection for fill material was carried out. A 500 mL sample was then also collected and submitted for analysis from each sample location. 500 mL samples were submitted to a NATA Accredited laboratory for AF/FA analysis in accordance with ASC NEMP (NEPC 2013). In accordance with Tables 4 and 5 of WA DoH (2021), based on an area of 2.1 ha and a "possible" likelihood of asbestos sixteen sampling locations on a systematic square grid were determined for the assessment of the western coal stack site surface.
Stockpile footprint (Bonded and friable asbestos areas) Stockpiles 3, 5, 6, and 7	To validate asbestos impacts following removal of asbestos impacted stockpiles, a 10 L soil sample was collected from each sampling location and field screened by passed through a 7 mm sieve or spread out on contrasting coloured plastic sheet and inspected for ACM fragments. ACM fragments (where observed) were collected and placed in a zip-lock sample bag for weighing and asbestos presence analysis. A 500 mL sample was then also collected from each sample location. 500 mL samples were submitted to a NATA Accredited laboratory for AF/FA analysis in accordance with ASC NEMP (NEPC 2013). In accordance with the RAP and Table 2 of NSW EPA (2022a) eight sampling locations were selected on a systematic square grid patten for each discrete stockpile footprint.
Stockpiles footprint (PFAS) Stockpiles 3 and 7	To validate PFAS impacts following removal of PFAS impacted stockpiles, samples were collected and placed in dedicated laboratory supplied HDPE containers. Collected sampled were submitted to a NATA accredited laboratory for PFAS and PFAS in Australian Standard Leaching Procedure (ASLP) analysis. In accordance with the RAP and Table 2 of NSW EPA (2022a) eight sampling locations were selected on a systematic square grid patten for each discrete stockpile footprint.

Task	Methodology
AEC4 PFAS Impacted Soils (PFAS)	To validate PFAS impacts following excavation samples were collected from the excavation based and sidewalls and placed in dedicated laboratory supplied HDPE containers. Collected sampled were submitted to a NATA accredited laboratory for PFAS and PFAS in Australian Standard Leaching Procedure (ASLP) analysis. In accordance with the RAP and Table 2 of NSW EPA (2022a) eight sampling locations were selected on a systematic square grid patten for the excavation base. In accordance with the RAP ten samples were collected form the excavation sidewalls at a rate of one sample per 20 m.
Western Settling Basin (Coal Fragments)	To verify that the site surface which had contained coal fragments do not pose a risk to future site users, samples were collected from the Western Settling Basin and placed in dedicated laboratory supplied containers. Collected samples were submitted to a NATA accredited laboratory for Combustible Content and Sulfur content analysis. In accordance with the RAP and Table 2 of NSW EPA (2022a) eight sampling locations were selected on a systematic square grid patten for the Western Settling Basin. In addition, one water sample was collected and submitted for to a NATA accredited laboratory for PFAS analysis.
Site Surface (Coal fragments and PFAS)	To verify that the site surface which had contained coal fragments and detectable PFAS concentrations do not pose a risk to future site users following the site demolition restoration and remediation works, samples were collected from areas of the site which had coal fragments observed during the site investigations. Samples were collected and samples were collected and placed in dedicated laboratory supplied HDPE containers (PFAS samples), and glass containers with Teflon lined lids. Samples were submitted to a NATA accredited laboratory for Combustible Content and Sulfur content and PFAS and PFAS in ASLP analysis. In accordance with the RAP a systematic sampling pattern was selected based on 95% confidence level for detecting a circular hotspot 75 m in diameter was selected. Based on the formulas presented in Appendix C of *Contaminated Land Guidelines Sample Design Part 1 Application* (NSW EPA 2022a), the number of samples required for a square gird is 28 samples with grid spacing of 64 m. It is noted that based on the site shape, a 64 m square grid required 29 sample locations or 2.5 samples per ha.
AEC 4 UST Excavation	To verify that impacted soils surrounding the UST had been excavated and concentrations of hydrocarbons in soils did not pose an unacceptable risk to human health of the environment, samples were collected from the base and sidewalls of the UST excavation. Samples were collected directly from the

Task	Methodology
	excavation sidewalls using new nitrile gloves and placed in laboratory supplied glass sample containers with Teflon lined lids. Samples were submitted to a NATA accredited laboratory for Benzene, Toluene, Ethylbenzene and Xylene (BTEX) and Total Recoverable Hydrocarbon (TRH) analysis. Samples were collected on a targeted/judgemental sampling pattern, One sample from each sidewall and two samples from the excavation base, underlying the location of the former UST.
Sample handling/preservation	Soil samples were stored in an insulated cooler box with ice immediately after sampling. The samples were kept chilled prior to and during delivery to national association of testing authorities (NATA) accredited laboratory via a courier under appropriate 'chain of custody' documentation.
Decontamination	All samples were collected directly from the base, wall or surface and using a new pair of nitrile gloves per sample. No decontamination of equipment was required.
Quality Assurance/ quality control (QAQC)	The following QA/QC samples were collected: • Soil duplicate samples (intra-lab and inter-lab) were collected in the field at a rate of 1 in 20 primary samples for asbestos analysis (AF/FA), combustible content and sulfur, and 1 in 10 for PFAS analysis. Field duplicate soil samples were collected from soil immediately adjacent to the primary sample by placing approximately equal portions of the primary sample into two sample containers. Samples were not homogenised in the field to minimise the risk of liberating asbestos fibres and cross contamination risks, particularly of concern with PFAS samples. • 2 PFAS trip blanks were collected during the validation.

10 QUALITY ASSURANCE / QUALITY CONTROL RESULTS

10.1 General Field QAQC Procedures

Sample Handling and Transport Methods

All samples were labelled with a unique identifier consisting of the sample location. Soil samples were placed into laboratory prepared and supplied sample containers. After collection, samples were placed directly into an ice-filled esky and transported to a NATA accredited laboratory for the analytes selected, under chain of custody (COC) protocols.

Samples for asbestos analysis were collected in 500 ml ziplock bags. No preservation of samples was required.

Samples for PFAS analysis were collected in laboratory supplied HDPE sample containers.

Samples for other analysis were collected in laboratory supplied glass sample containers with Teflon lined lids.

Field Quality and Quality Control

Quality assurance procedures adopted for the soil assessment included:

1. Placing samples immediately on ice following sampling;

2. Ensuring correct sampling containers and preservatives are employed for contaminants being analysed;

3. Ensuring analysis was performed within recommended holding times;

4. Collection of samples undertaken by experienced CES field staff in accordance with standard operation procedures.

10.2 Field QA / QC Results

Field QA/QC for this project consisted of:

- 9, 9 and1 blind soil replicates for AF/AF, PFAS and PFAS ASLP, and BTEX and TRH analysis, respectively.
- 6 and 8 split soil samples, for AF/AF and PFAS and PFAS ASLP analysis, respectively.
- 5 blind soil replicates for Combustible and Sulfur Content.
- 4 split soil samples for Combustible and Sulfur Content.

- 4 trip soil blank samples for PFAS analysis.
- 1 blind water sample for PFAS analysis.
- 1 trip spike and 1 trip blank for BTEX analysis.

The results of the QAQC assessment including the Relative Percentage Difference (RPD) calculations are presented in Tables K2 to K4 within Appendix K.

Field QAQC assessment results are discussed below.

Blind Replicate Samples

Blind replicate samples for asbestos, combustibility and sulfur content were collected at a rate in excess of one for every twenty environmental samples, in accordance with the requirements of the ASC NEPM (NEPC 1999 as amended 2013) of 5% of samples.

Blind replicate samples for PFAS and PFAS ASLP analysis were collected at a rate in excess one for every ten environmental samples, in accordance with the requirements of the PFAS NEMP 2.0 (HEPA 2020).

Blind replicate RPD results conformed to the Data Acceptance Criteria (DAC) presented in Table K1 within Appendix K. It was noted that there is no Limit of Reporting (LOR) provided by the laboratory for FA and AF Estimation (g) and therefore the calculated elevated RPD values for FA and AF Estimation (g) cannot be compared to determine the acceptable range. Moreover, low levels measured of up to 4 decimals digits in a scale can introduce significant error and also asbestos are well known to be randomly distributed.

Reported elevated RPD values are likely due to concentrations asbestos being reported at low concentrations and their random distribution rather than been reflective of a material discrepancy in sample collection or laboratory analysis.

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

Split Samples

Split samples for asbestos, combustibility and sulfur content were collected at a rate in excess of one for every twenty environmental samples, in accordance with the requirements of the ASC NEPM (NEPC 1999 as amended 2013) of 5% of samples.

Split samples for PFAS and PFAS ASLP analysis were collected at a rate in excess of one for every ten environmental samples, in accordance with the requirements of the PFAS NEMP 2.0 (HEPA 2020).

Split replicate RPD results conformed to the Data Acceptance Criteria (DAC) presented in Tables K1 within Appendix K, with the only exception of Perfluorononanoic acid in the paired samples SS-V1 and QAQC02. The soil samples submitted for analysis were not homogenised in the field. This RPD exceedance is 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. It was also noted as indicated earlier, that there is no Limit of Reporting (LOR) provided by the laboratory for FA and AF Estimation (g) and therefore the calculated elevated RPD values for FA and AF Estimation (g) cannot be compared to determine the acceptable range. Moreover, as also mentioned earlier, low levels measured of up to 4 decimals digits in a scale can introduce significant error and also asbestos are well known to be randomly distributed.

It is considered that the split samples confirm that the primary laboratory analyses of the soil/concrete samples are repeatable and accurate.

Trip Blanks

Four trip blanks were collected for PFAS Analysis and one trip blank was collected for BTEX and TRH analysis. The trip blanks conform to the DAC listed in Table K5 within Appendix K.

Trip Spikes

One trip blank was collected for BTEX analysis. The trip spike conform to the DAC listed in Table K5 within Appendix K.

10.3 Laboratory Internal QA / QC Results

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 by Envirolab (the primary laboratory) and ALS (the secondary laboratory) specifies 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.

Laboratory QA/QC assessment results are presented in the Laboratory Certificates of Analysis and documentation presented in Appendix L. Review of QAQC comments in the laboratory

Certificates of Analysis did not identify issues which would indicate that are likely to have had a material effect on the assessment of laboratory analytical data.

10.4 QAQC Assessment Summary

The field procedures applied, and laboratory QA/QC programme demonstrates that the data provided by the laboratory is representative of the properties of the samples provided by CES.

The samples were collected by experienced CES field staff in accordance with established CES SOPs. The QA/QC assessment did not detect any issues with the quality of the data collected therefore 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.

11 VALIDATION RESULTS

11.1 Fieldwork Observations and Validation Activities

The following observations were made on 07 March 2023:

- Remediation works are ongoing.
- Removal of asbestos containing conduit was being undertaken in the AEC 4 area of the site. Asbestos conduit was identified during the removal of concrete slabs to the south of the AEC 4 PFAS Impacted soils. The conduit was concrete encase and appeared in good condition. The conduit was "chased out" to the north where the electrical cables were observed to be direct buried in sand backfill.
- Air monitoring units were located near the work area boundary. The works area was isolated with flag taping and signage identifying an asbestos works zone.
- Coal Handling Bunker demolition and preparation works for backfill of the void were ongoing.
- Asbestos areas CS108, F9 and H13 had been excavated to natural soils in preparation for validation.
- Excavation of the Western Settling Basin sediments was ongoing, with excavated sediments temporarily placed in a bunded area adjacent to the dam for drying prior to transport offsite.
- The soil placement in the "Red Tip" offsite soil management area in the GPM Landholding was observed to be ongoing. The "Orange Tip" area filling had been temporarily halted, and the "Orange Tip" surface had been contoured to shed stormwater and reduce infiltration.

The following observations were made on 09 March 2023:

- Remediation works are ongoing.
- Coal Handling Bunker preparation works for backfill of the void were ongoing.
- Excavation of the Western Settling Basin sediments was ongoing, with excavated sediments temporarily placed in a bunded area adjacent to the dam for drying prior to transport offsite.
- Direct buried electrical cables were observed between the Coal Handling Plant Bunker and the AEC 4 area of the site, running north-south. Cables were bedded in sand and overlain by bricks embossed with "Electric".

The following observations were made on 10 March 2023:

- Remediation works are ongoing.
- AEC4 is still partially covered with a concrete hardstand. Samples were collected from the concrete to assess for PFAS impact and inform material handling.
- Approximate dimensions of excavations of hot spots were as follows:
    - CS108: Approx. Area: 25 m^2 and Approx. Depth: 0.7m BGL
    - F9: Approx. Area: 375 m^2 and Approx. Depth: 0.7m BGL
    - H13: Approx. Area: 316 m^2 and Approx. Depth: 0.6m BGL
- CS108, large portion of F9 and H13 was observed to have natural soils exposed.
- ACM was not observed on the surface of the natural soils or fill in CS108, F9 and H13.
- Validation sampling was completed from the walls of the hotspot excavations, comprising 10 L field screening and the collection of 500 ml samples for laboratory analysis.
- Western Settling Basin has been drained as part of the rehabilitation and site restoration works. A water sample and duplicate were collected and submitted to a NATA accredited laboratory for PFAS analysis.

The following observations were made on 23 March 2023:

- Remediation works are ongoing.
- Excavation of Western Settling Basin sediments was ongoing.
- Additional excavations were undertaken in the asbestos excavations (CS108, F9 and H13).
- Approximately 2 m was excavated from each sidewall to expand the lateral extent of the remediation excavations, excavations were extended to the depth of natural soils, consistent with previous excavations.
- ACM was not observed on the surface of the natural soils or fill present in sidewalls in CS108, F9 and H13.
- Validation sampling was completed from the walls of the hotspot excavations where asbestos was detected in excess of the Remediation Acceptance Criteria in samples collected on 10 March 2023, comprising 10 L field screening and the collection of 500 ml samples for laboratory analysis. 10 samples were collected.

The following observations were made on 18 April 2023:

- Remediation works are ongoing.
- Excavations on the Western Site Surface were extended to depth of natural soils. The extent of excavations is indicated in Figure 4.
- Concrete hardstand has been stockpiled within AEC4 area.

- Concrete across Perimeter Channel has been removed.
- Stockpiled materials remain in the north-eastern side.
- Large portions of the north-eastern side were observed to have natural soils exposed.
- Validation sampling was completed from:
    - the Western Settling Basin (WSB) accessible areas, comprising collection of samples for combustible content and % sulfur laboratory analysis.
    - various locations across the site surface, comprising collection of samples for combustible content, % sulfur, PFAS and PFAS ASLP laboratory analysis; and
    - the Western side excavations, comprising 10 L field screening, the collection of 500 ml samples for AF/FA laboratory analysis.
- Coal (fines and coarse) was observed on the side walls across the Western Settling Basin during sampling.

The following observations were made on 21 April 2023:

- Remediation works are ongoing.
- Stockpiles have been removed and relocated to the GPM Landholding.
- Large portions of the north-eastern side were observed to have natural soils exposed.
- Validation sampling was completed from the remaining locations across the site surface, consisting of collection of samples for combustible content, % sulfur, PFAS and PFAS ASLP laboratory analysis.
- Concrete was removed from the drain channel on the northern side of the site.
- Coal fragments observed on the surface on the east side.
- PFAS contaminated materials management/storage area, asbestos dump and soil storage area were inspected. The following was noted:
    - PFAS contaminated materials management/storage area is bunded.
    - Spill response kit on Asbestos Dump area observed.

The following observations were made on 27 April 2023:

- Remediation works are ongoing.
- Validation sampling was completed from:
    - stockpiles footprint, comprising 10 L field screening, the collection of 500 ml samples for AF/FA laboratory analysis and collection of samples for PFAS in soil and PFAS ASLP laboratory analysis; and
    - collection of two samples from the two final site surface locations for combustible content, % sulfur, PFAS and PFAS ASLP laboratory analysis.

- Additional excavations of the Western Settling Basin to remove coal material were observed.
- Excavation of PFAS impacted soils in AEC4 commenced.

The following observations were made on 28 April 2023:

- Remediation works are ongoing.
- Unexpected finding in AEC4 on the northern side of the excavation and that is an Underground Storage Tank (UST) (Refer to photographs). The UST was observed to be filled with a black gravelly sandy material and no fuel/diesel within the tank observed. The approximate tank dimensions were: 2 m diameter and 3.8 m length.
- Impacted soils (visual/olfactory assessment) were chased out and excavated, following which validation samples were collected from the base and sidewalls. The approximate extent of excavation was 72 m^2 to a depth of 2.9 m.
- The UST has been temporarily relocated to the PFAS Impacted Material Temporary Storage Area (off the Waratah Super Battery Site, on the GPM Landholding).
- Validation sampling was also completed from the base and walls of AEC4 remediation excavations, consisting of collection of samples for PFAS and PFAS ASLP laboratory analysis.
- The approximate extent of AEC4 remediation excavations was 2,520 m^2 (40mx63m) to a maximum depth of 2.9 m.

The following observations were made on 01 May 2023:

- Site works are nearing completion.
- Filling works in the Coal Handling Plant Bunker were ongoing, however appeared near completion.
- Trimming and leveling works were observed to be ongoing.
- Shallow excavations were being undertaken to remove topsoil and mulch from the north western area of the site, in preparation for construction of a hardstanding laydown area for the battery development. Excavated materials were stockpiled in the north eastern area of the site.
- The concrete Perimeter Channel had previously been removed, however the channel remained in place outside of the eastern site boundary.
- The Western Settling Basin overflow spillway weir remains in place.
- Visual assessment of water retained in the UST excavation on AEC 4 did not detect evidence of gross impact or free NAPL.

- A buried stormwater pipe was observed in the eastern side wall of the AEC 4 PFAS excavation, approximately 450 mm in diameter. It is likely that the pipe extends to the Perimeter Channel to the east.
- GPM reported that the former decommissioned septic had been encountered during excavations and removed with the AEC 4 excavated soils. No visual evidence of impact was observed.
- Direct buried electrical cables wee observed in the northern AEC 4 excavation sidewall.
- Materials from AEC 4, Stockpile 3 and Stockpile 7 were observed in the Managed PFAS Impacted Material Temporary Storage Area.
- Trimming and adjustment of the stockpiled material was ongoing.
- Stockpile covers and erosion controls had not been completed.
- Low bunds (estimated <1 m high) had been constructed around the boundary of the area.
- Stormwater/leachate was observed retained within the area, at the designed leachate collection point (low point to the north east of the area).
- The decommissioned UST was also observed in the Managed PFAS Impacted Material Temporary Storage Area, partially destroyed and grout filled.

The following observations were made on 03 May 2023:

- Final remediation and validation works completed.
- Observations of the Western Settling Basin indicated that the vast majority of the coal material was removed.
- The perimeter channel offsite to the east was dammed in two locations with a soil bund. The bunds prevent stormwater in the offsite perimeter channel from migrating onsite. It is noted that the perimeter channel concrete lining has been removed from site, however a residual channel is present in the landform.
- Additional excavations were undertaken in the footprint of Stockpile SP5 (SP5-V5-2), from where asbestos was detected in excess of the Remediation Acceptance Criteria in samples collected on the 27 April 2023. The approximate extent of SP5-V5-2 excavations was 100 m (10mx10m) to the depth of natural soils, consistent with previous excavations.
- ACM was not observed on the surface of the natural soils or fill present in sidewalls in SP5-V5-2.
- Additional excavations were undertaken in SS-V3-2 where combustibility was detected in excess of The coal washery rejects order 2014. The approximate extent of SS-V3-2 excavations was 54 m^2 (9mx6m) to a depth of 1.8 m.

- Additional excavations were undertaken in AEC4 on AEC4-V6B to expand the vertical extent of the remediation excavations and in one sidewall to expand the lateral extent of the remediation excavations, where PFAS ASLP was detected in excess of remediation acceptance criteria. The extent of additional excavations were 10 m^2 (5mx5m) to the depth of natural soils and 4 m^2 (2mx2m) to the depth of natural soils, respectively.
- Validation sampling was completed from:
    - the base and walls of AEC4 remediation excavations where PFAS ASLP was detected in excess of remediation acceptance criteria collected on the 28 April 2023, comprising of collection of samples for PFAS in soils and PFAS ASLP laboratory analysis;
    - from the base of stockpile footprint SP5-V5-2 where asbestos was detected in excess of the Remediation Acceptance Criteria in samples collected on 28 April 2023, comprising 10 L field screening and the collection of 500 ml samples for AF/FA laboratory analysis.
    - from SS-V3-2, SS-V15-2, SS-V16-2, SS-V27-2 where combustibility was detected in excess of The coal washery rejects order 2014 in samples collected between the 18 and 27 April 2023, comprising collection of samples for combustible content, % and sulfur laboratory analysis.

11.2 Observed Soils

Based on observations made from the surface samples as summary of the site surface at the site at the time of the validation sampling is presented in Table 8.

Table 8: Surface Profile

Unit	Description
AEC4	
Fill	Fill: Sand, coarse, dark brown
	Fill: Gravelly sand, coarse, dark brown, gravel is medium to coarse
Natural Materials	Clayey Sand: fine to medium, red/orange with grey mottling, clay is of low plasticity.
The western site surface asbestos area	
Natural Materials	Clayey Sand: fine to medium, grey with red/orange mottling or red/orange with grey mottling, clay is of low plasticity.
Stockpiles 3, 5, 6 and 7 footprints	
Fill	Fill: Gravelly sand with coal traces, coarse, dark brown. Gravel is coarse.
	Fill: Clayey sand with coal traces, fine to medium, dark brown or red/orange, clay is of low plasticity
Natural	Clayey Sand: fine to medium, dark brown/ grey with red/orange mottling, clay is of low plasticity
Site Surface	
Fill	Topsoil: Sand, coarse, dark brown
	Fill: Sandy gravel, coarse, dark brown, Gravel is coarse
Natural	Clayey Sand: fine to medium, grey with red/orange mottling or red/orange with grey mottling, clay is of low plasticity.
Western Settling Basin	
Fill	Fill: Clayey sand with coal traces, fine to medium, grey with red/orange mottling or orange with grey mottling, clay is of low plasticity.
Natural	Clayey Sand: fine to medium, grey with red/orange mottling or orange with grey mottling, clay is of low plasticity.

11.3 Visual Inspection Results

No ACM or suspected ACM were observed in areas assessed i.e. AEC4, the western site surface asbestos area, Stockpiles 3, 5, 6 and 7 footprints, the site surface on 10 March 2023, 23 March 2023, 18 April 2023, 21 April 2023, 27 April 2023 28 April 2023, 01 May 2023 and 03 May 2023.

Photographs of the site condition on 10 March 2023, 23 March 2023, 18 April 2023, 21 April 2023, 27 April 2023, 28 April 2023, 01 May 2023 and 03 May 2023 are presented in Appendix F.

11.4 Analytical Results

Validation results are presented as Tables T1 to T6 and laboratory certificates of analysis, sample receipt notifications, and chain of custody forms are presented in Appendix L.

11.4.1 Western Coal Stack Site Surface

11.4.1.1 Asbestos Validation Results of Excavations Hotspots CS108, F9 and H13

Two rounds of validation sampling were completed in asbestos areas CS108, F9 and H13 on 10 March 2023 and 23 March 2023. Additional excavation was undertaken between the validation sampling rounds.

Results of validation sampling are presented in Table T1.

Laboratory certificates of analysis, sample receipt notifications, and chain of custody forms are presented in Appendix L.

Asbestos validation results of excavations hotspots CS108, F9 and H13 are summarised below:

- 11 out of 40 primary samples (28%) submitted for AF/FA analysis were above the adopted remediation acceptance criteria of 0.001 % (w/w).
- Asbestos ID in soil analysis positively identified asbestos in 24 out of 40 primary samples (60%).

Based on the above it was considered that the remediation goal was not achieved, and additional excavations were required. After consultation with GPM, the preferred option was to remove the demolition derived materials from the site surface and relocate the materials to the GPM Landholding Soil Storage Areas, followed by surface validation sampling.

The excavation was extended to the western site surface and extended to the level of natural soils as indicated in Figure 4.

11.4.1.2 Asbestos Validation Results of the Western Site Surface

Following excavation validation sampling of the Western Site Surface (which includes the area of CS108, F9 and H13) was completed on 18 April 2023.

Results of validation sampling are presented in Table T1.

Laboratory certificates of analysis, sample receipt notifications, and chain of custody forms are presented in Appendix L.

Asbestos validation results of excavation of the Western Site Surface Asbestos Area are summarised below:

- Field screening for asbestos in accordance with Section 11.3.2 of ASC NEPM Schedule B2 (NEPC 2013) was not undertaken as the excavation was assessed to have been extended to natural soils throughout the western site area.
- No exceedances of adopted remediation acceptance criteria of 0.001 % (w/w) for AF/FA were reported.
- No asbestos was detected in samples submitted for analysis.

Due to insufficient sample concentrations detected in above the laboratory Practical Quantitation Limit (PQL), statistical analysis and comparison to the Remediation Acceptance Criteria was not undertaken.

Based on no exceedance of the Remediation Acceptance Criteria having been detected in validation sample results no further remediation excavation is required.

11.4.2 Asbestos Validation Results of Stockpiles 3, 5, 6 and 7 Footprints

Validation sampling of the asbestos impacted stockpiles footprints (Stockpiles 3, 5, 6 and 7) was completed 27 April 2023.

Results of validation sampling are presented in Table T2.

Laboratory certificates of analysis, sample receipt notifications, and chain of custody forms are presented in Appendix L.

Asbestos validation results of Stockpiles 3, 5, 6 and 7 footprints are summarised below:

- Field screening for asbestos in accordance with Section 11.3.2 of ASC NEPM Schedule B2 (NEPC 2013) did not identify potential asbestos containing materials. Field data sheets are presented in Appendix M.
- No exceedances of adopted remediation acceptance criteria of 0.001 % (w/w) were reported, with the exception of SP5-V5 which detected AF/FA of 0.0047 % w/w which exceeded the Remediation Acceptance Criteria of 0.001% w/w.
- All other asbestos analytical results did not detect asbestos or asbestos containing materials.

Additional excavation and validation were undertaken in the area of SP5-V5 on 03 May 2023. No exceedances of adopted remediation acceptance criteria of 0.001 % (w/w) was detected.

Due to insufficient sample concentrations detected in above the laboratory Practical Quantitation Limit (PQL), statistical analysis and comparison to the Remediation Acceptance Criteria was not undertaken.

Based on no exceedance of the Remediation Acceptance Criteria detected in validation sampling results no further remediation excavation is required.

11.4.3 PFAS Validation Results of Stockpiles 3 and 7 Footprints

Validation sampling of the PFAS impacted stockpile footprints (Stockpiles 3 and 7) was completed 27 April 2023.

Results of validation sampling are presented in Table T2 and T3.

Laboratory certificates of analysis, sample receipt notifications, and chain of custody forms are presented in Appendix L.

PFAS and PFAS in ASLP validation results of Stockpiles 3 and 7 footprints are summarised below:

- All PFAS and PFAS in ASLP concentrations were below adopted remediation acceptance criteria.
- PFOA and PFHxS were not detected in excess of the laboratory PQL.
- Maximum PFOS concentration detected was 0.4 µg/kg in location SP3-V6.
- PFOS, PFOA and PFHxS in ASLP were not detected in excess of the laboratory PQL, with the exception of PFOS in sample SP3-V6 which detected 0.02 µg/L.

Due to insufficient sample concentrations detected in above the laboratory Practical Quantitation Limit (PQL), statistical analysis and comparison to the Remediation Acceptance Criteria was not undertaken.

Based on no exceedance of the Remediation Acceptance Criteria detected in validation sampling results no further remediation excavation is required.

11.4.4 PFAS Validation Results AEC4 Excavation

PFAS and PFAS in ASLP validation results of AEC4 are summarised below:

Validation sampling of the PFAS impacted AEC 4 soils was completed 28 April 2023.

Results of validation sampling are presented in Table T3 and T4.

Laboratory certificates of analysis, sample receipt notifications, and chain of custody forms are presented in Appendix L.

PFAS and PFAS in ASLP validation results of AEC 4 soils excavation are summarised below:

- PFAS and PFAS in ASLP concentrations were detected below adopted remediation acceptance criteria with the exception of AEC4-V6B and AEC4-V10W which detected PFOS in ASLP of 0.13 µg/L and 0.25 µg/L respectively in excess of the Remediation Acceptance Criteria of 0.13 µg/L.

The mean, standard deviation and 95% UCL for PFOS, PFOA and PFOS in ASLP concentrations calculated using US EPA ProUCL 5.2 are presented in Table 9.

Table 9: PFOS, PFOS in ASLP and PFOA Statistical Assessment

Contaminant	Remediation Acceptance Criteria	Number of results >PQL	Mean	Maximum	Standard Deviation	95% UCL	Calculation method
PFOS	10 µg/kg	11	1.61 µg/kg	5.3 µg/kg	1.93 µg/kg	7.4 µg/kg	Chebyshev (Mean, Sd) UCL Non-Parametric Distribution
PFOS in ASLP	0.13 µg/L	7	0.09 µg/L	**0.25** µg/L	0.09 µg/L	**0.152** µg/L	Student's-T UCL Normally Distributed
PFOA	220 µg/kg	4	0.25 µg/kg	0.5 µg/kg	0.19 µg/kg	0.48 µg/kg	Student's-T UCL Normally Distributed

Based on the assessment presented in Table 9, the further excavation was assessed to be required to complete the remediation of AEC 4 PFAS impacted soils. Further excavation and validation were undertaken in the areas of samples which were detected in excess of the remediation acceptance criteria AEC4-V6B and AEC4-V10W.

Additional validation samples were collected on 03 May 2023.

PFAS and PFAS in ASLP concentrations were below adopted remediation acceptance criteria.

Substituting the additional validation sampling results for the failed validation samples the mean, standard deviation and 95% UCL for PFOS, PFOA and PFOS in ASLP concentrations calculated using US EPA ProUCL 5.2 are presented in Table 10.

Table 10: PFOS in ASLP Updated Statistical Assessment

Contaminant	Remediation Acceptance Criteria	Number of results >PQL	Mean	Maximum	Standard Deviation	95% UCL	Calculation method
PFOS	10 µg/kg	9	1.42 µg/kg	4.9 µg/kg	1.55 µg/kg	2.16 µg/kg	Student's-T UCL Normally Distributed
PFOS in ASLP	0.13 µg/L	14	0.06 µg/L	**0.19** µg/L	0.06 µg/L	0.10 µg/L	Student's-T UCL Normally Distributed
PFOA	220 µg/kg	5	0.18 µg/kg	0.5 µg/kg	0.18 µg/kg	0.53 µg/kg	Chebyshev (Mean, Sd) UCL Non-Parametric Distribution

The results of one sample t-test hypothesis testing for PFOS, PFOS in ASLP and PFOA are presented in Table 11. Based on the results of the assessment, the true mean of PFOS, PFOS in ASLP and PFOA in the site surface do not exceed the Remediation Acceptance Criteria at a confidence level of 95%.

Table 11: One Sample T-Test PFOS, PFOS in ASLP and PFOA – AEC 4

Contaminant	Remediation Acceptance Criteria (SC)	Mean (μ)	H_0	H_A	α	Degrees of freedom	Test Value	p-value	Recommendation
PFOS	10 µg/kg	1.42	μ > SC	μ ≤ SC	0.05	13	-20.63-	1.282E-11	Reject H_0 Mean <SC
PFOS in ASLP	0.13 µg/kg	0.06	μ > SC	μ ≤ SC	0.05	8	-3.468	0.00423	Reject H_0 Mean <SC
PFOA	220 µg/kg	0.18	μ > SC	μ ≤ SC	0.05	4	-2748	5.236E-14	Reject H_0 Mean <SC

The number of samples required to determine if the mean of contaminant concentrations Combined Risk Value method presented in the *Sampling Design Guidelines – Part 1 Application* (NSW EPA 2022) was utilised to assess if sufficient samples were collected and analysed. The number of samples collected (23) exceed the number required for PFOS, PFOS in ASLP and PFOA (n=<1, 5 and <1 respectively) estimated for $\alpha = 0.05$ and $\beta = 0.2$.

The updated mean and 95% UCL for PFOS in ASLP did not exceed the Remediation Acceptance Criteria, and the one sample t-test hypothesis testing indicate that the true mean of PFOS, PFOS in ASLP and PFOA concentrations in the walls and base of the AEC 4 excavation do not exceed the Remediation Acceptance Criteria at a confidence level of 95%.

One sample detected PFOS in ASLP in excess of the screening criteria, however based on the statistical assessment this was not assessed as requiring further excavation.

Based on this assessment and the absence of individual exceedance of the Remediation Acceptance Criteria for PFOA, PFOS in ASLP and PFOA in ASLP, no further remediation excavation is required.

11.4.4.1 PFAS Results of AEC 4 Concrete Slab

PFAS and PFAS in ASLP validation results of concrete slab tested on the 10 March 2023 are summarised below:

- PFAS concentrations were below adopted remediation acceptance criteria.
- PFAS in ALSP concentrations were below adopted remediation acceptance criteria.

While PFAS were not detected in excess of the remediation acceptance criteria, based on the detection of PFAS in the concrete samples, the detection of PFAS in ASLP and a qualitative assessment that the concrete slab was located in a known area of PFAS impact, the concrete was assessed as unsuitable for crushing and use as backfill for the Coal Handling Plant bunker void. The concrete was transferred with the AEC 4 excavated soils to the Managed PFAS Impacted Material Storage Area offsite.

11.4.5 Validation Results of Site Surface

A detailed visual assessment of the site surface was undertaken during validation sample collection.

The site surface was generally free from coal fragments and coal fragment impacted soils. Minor areas of the site were observed to include discrete patches of coal fragment impacted soils, however these areas were assessed to comprise less than 1 % of the site surface and were typically less than 7 m^2 in extent. Site surface photographs are presented in Appendix F.

The Waratah Super Battery developer undertook a site walkover on 05 May 2023 and the developer confirmed that the site condition was suitable for the proposed development with respect to residual coal fragments.

Coal fragment (Combustible Content and Total Sulfur), PFAS and PFAS in ASLP validation results from the site surface are summarised below.

Validation sampling was completed 18 April, 21 April, and 28 April 2023.

Results of validation sampling are presented in Table T3 and T5.

Laboratory certificates of analysis, sample receipt notifications, and chain of custody forms are presented in Appendix L.

Combustibility and Total Sulfur Results are summarised below:

- No exceedance of the Remediation Acceptance Criteria for Total Sulfur was detected.
- No exceedance of the Remediation Acceptance Criteria for Combustible Content was detected with the exception of the following locations:
    - SS-V3 – 49% w/w exceeds the Absolute Maximum Concentration Criteria
    - SS-V15 – 77% w/w exceeds the Absolute Maximum Concentration Criteria

- SS-V16 – 32% w/w exceeds the Maximum Average Concentration Criteria
- SS-V27 – 31% w/w exceeds the Maximum Average Concentration Criteria

The mean, standard deviation and 95% UCL for Combustible content and Total Sulfur concentrations calculated using US EPA ProUCL 5.2 are presented in Table 12.

Table 12: Combustible Content and Statistical Assessment – Site Surface

Contaminant	Remediation Acceptance Criteria	Number of results >PQL	Mean	Maximum	Standard Deviation	95% UCL	Calculation method
Combustible Content	30 % w/w (mean) 40 % w/w (maximum)	29	14.4 % w/w	**77** % w/w	16.0 % w/w	20.8 % w/w	H- UCL Lognormal Distribution
Total Sulfur	0.5 % w/w (mean) 1 % w/w (maximum)	29	0.063 % w/w	0.21 % w/w	0.040 % w/w	0.075 % w/w	Student's-T UCL Normally Distributed (assumed)

The results of one sample t-test hypothesis testing for combustible content is presented in Table 13. Based on the results of the assessment, the true mean of combustible content concentrations in the site surface does not exceed the Remediation Acceptance Criteria at a confidence level of 95%.

Table 13: One Sample T-Test Combustible Content - Site Surface

Contaminant	Remediation Acceptance Criteria (SC)	Mean (μ)	H_0	H_A	α	Degrees of freedom	Test Value	p-value	Recommendation
Combustible Content	30 % w/w	14.4	μ > SC	μ ≤ SC	0.05	28	-5.278	6.4819E-6	Reject H_0 Mean <SC
Total Sulfur	0.5 % w/w (mean)	0.063	μ > SC	μ ≤ SC	0.05	28	-58.96	3.236E-31	Reject H_0 Mean <SC

The number of samples collected (29) exceed the number required for combustible content (n=7) and total sulfur (n=0) estimated using the Combined Risk Value Method for $\alpha = 0.05$ and $\beta = 0.2$.

While the mean and 95% UCL for Combustible Content did not exceed the Remediation Acceptance Criteria, and the one sample t-test hypothesis testing indicate that the true mean of combustible content concentrations in the site surface does not exceed the Remediation Acceptance Criteria at a confidence level of 95%, there is uncertainty with respect to the use of statistical assessment for comparison of concentrations to the adopted Remediation Acceptance Criteria for Combustible Content due to the limited availability of information on the determination of the criteria presented in *The coal washery rejects order 2014 made under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014*. In consideration of this uncertainty additional excavation and removal of material from site was completed in the areas represented by samples SS-V3, SS-V15, SS-V16, and SS-V27.

Additional validation samples were collected on 03 May 2023.

No exceedance of the remediation acceptance criteria was detected in the additional validation samples.

Based on the statistical assessment and the new validation sample results no further remediation excavation is required. Reassessment of the statistical analysis was not considered to be required as the updated validation results are unlikely to effect the assessment.

PFAS and PFAS in ASLP validation results of site surface tested on the are summarised below:

- PFAS concentrations were below adopted remediation acceptance criteria.
- PFAS in ALSP concentrations were below adopted remediation acceptance criteria.

Due to insufficient sample concentrations detected in above the laboratory Practical Quantitation Limit (PQL), statistical analysis and comparison to the Remediation Acceptance Criteria for PFOA, PFOS in ASLP and PFOA in ASLP was not undertaken.

The mean, standard deviation and 95% UCL for PFOS concentrations calculated using US EPA ProUCL 5.2 are presented in Table 14.

Table 14: PFOS Statistical Assessment – Site Surface

Contaminant	Remediation Acceptance Criteria	Number of results >PQL	Mean	Maximum	Standard Deviation	95% UCL	Calculation method
PFOS	10 µg/kg	16	0.59 µg/kg	4.8 µg/kg	1.14 µg/kg	1.83 µg/kg	Chebyshev (Mean, Sd) UCL Non-Parametric Distribution

The results of one sample t-test hypothesis testing for combustible content is presented in Table 15. Based on the results of the assessment, the true mean of combustible content concentrations in the site surface does not exceed the Remediation Acceptance Criteria at a confidence level of 95%.

Table 15: One Sample T-Test PFOS - Site Surface

Contaminant	Remediation Acceptance Criteria (SC)	Mean (µ)	H_0	H_A	α	Degrees of freedom	Test Value	p-value	Recommendation
PFOS	10 µg/kg	0.59	µ > SC	µ ≤ SC	0.05	15	-32.92	1.052E-15	Reject H_0 Mean <SC

The number of samples collected (29) exceed the number required for PFOS (n=0) using the Combined Risk Value Method for $\alpha = 0.05$ and $\beta = 0.2$.

The mean and 95% UCL for PFOS did not exceed the Remediation Acceptance Criteria, and the one sample t-test hypothesis testing indicate that the true mean of PFOS concentrations in the site surface does not exceed the Remediation Acceptance Criteria at a confidence level of 95%. Based on this assessment and the absence of individual exceedance of the Remediation Acceptance Criteria for PFOA, PFOS in ASLP and PFOA in ASLP, no further remediation excavation is required.

11.4.6 Validation Western Settling Basin

Coal fragment (Combustible Content and Total Sulfur) validation results from the Western Settling Basin are summarised below

Validation sampling was completed 18 April 2023.

Results of validation sampling are presented in Table T6 and T7.

Laboratory certificates of analysis, sample receipt notifications, and chain of custody forms are presented in Appendix L.

Combustibility and Total Sulfur Results are summarised below:

- No exceedance of the Remediation Acceptance Criteria for Total Sulfur was detected.
- 7 of the 9 samples collected detected combustible content concentrations in excess of the Remediation Acceptance Criteria, the maximum concentration detected was 66% at sample location WSB-V5.

Based on the elevated Combustible Content concentrations further excavation and validation sampling was conducted.

Further validation sampling was completed on 03 May 2023.

- No exceedance of the Remediation Acceptance Criteria for Total Sulfur was detected.
- No exceedance of the Remediation Acceptance Criteria for Combustible Content was detected.

The mean, standard deviation and 95% UCL for Combustible content and Total Sulfur concentrations from the Western Settling Basin calculated using US EPA ProUCL 5.2 are presented in Table 16.

Table 16: Combustible Content and Total Sulfur Statistical Assessment – Western Settling Basin

Contaminant	Remediation Acceptance Criteria	Number of results >PQL	Mean	Maximum	Standard Deviation	95% UCL	Calculation method
Combustible Content	30 % w/w (mean) 40 % w/w (maximum)	9	6.3 % w/w	14 % w/w	3.7 % w/w	8.6 % w/w	Student's-T UCL Normal Distribution
Total Sulfur	0.5 % w/w (mean) 1 % w/w (maximum)	9	0.05 % w/w	0.06 % w/w	0.007 % w/w	0.05 % w/w	Student's-T UCL Normally Distributed

The results of one sample t-test hypothesis testing for combustible content is presented in Table 17. Based on the results of the assessment, the true mean of combustible content concentrations in the site surface does not exceed the Remediation Acceptance Criteria at a confidence level of 95%.

Table 17: One Sample T-Test Combustible Content and Total Sulfur – Western Settling Basin

Contaminant	Remediation Acceptance Criteria (SC)	Mean (μ)	H_0	H_A	α	Degrees of freedom	Test Value	p-value	Recommendation
Combustible Content	30 % w/w	6.3	μ > SC	μ ≤ SC	0.05	8	-19.25	2.7537E-8	Reject H_0 Mean <SC
Total Sulfur	0.5 % w/w (mean)	0.05	μ > SC	μ ≤ SC	0.05	8	-187.7	3.638E-16	Reject H_0 Mean <SC

The number of samples collected (29) exceed the number required for combustible content (n=7) and total sulfur (n=0) estimated using the Combined Risk Value Method for $\alpha = 0.05$ and $\beta = 0.2$.

The mean and 95% UCL for Combustible Content did not exceed the Remediation Acceptance Criteria, and the one sample t-test hypothesis testing indicate that the true mean of combustible content concentrations in the site surface does not exceed the Remediation Acceptance Criteria at a confidence level of 95%, and no exceedance of the Absolute Maximum Concentration was detected, therefore no further excavation is required in the Western Settling Basin.

11.4.7 PFAS Western Settling Basin Water Sample Results

A summary of results of Western Settling Basin water sample collected on the 10 March 2023 during sediment excavation are presented below:

- PFAS concentrations in excess of the laboratory PQL were reported including PFHxS, PFOS and PFOA.
    - No exceedances of adopted remediation acceptance criteria (PFAS NEMP 2.0 Interim- Freshwater 95% species protection: PFOS - 0.13 µg/L, PFOA - 220 µg/L) were detected.
    - No exceedances of criteria presented in NHMRC, Updated September 2022 for Primary and Secondary Recreational Contact (PFOS - 5.6 µg/L, Sum of PFOS

and PFHxS µg/L – 0.7 µg/L) and Australian Drinking Water Guidelines Updated September 2022 (PFOA – 0.56 µg/L; Sum of PFOS and PFHxS – 0.07 µg/L) were detected.

- Consistent with previous investigations, with the exception of PFHxS (23 August 2022 result: 0.0077 µg/L and 10 March 2023 result: 0.035 µg/L).

The analysis result indicates that increased PFAS concentrations in water were not generated by the sediment excavation works.

11.4.8 Observations of Buried Services

Photographs of direct buried electrical cables are presented in Appendix F.

11.4.9 Unexpected Find – UST

Validation sampling was completed 28 April 2023.

Results of validation sampling are presented in Table T8.

Laboratory certificates of analysis, sample receipt notifications, and chain of custody forms are presented in Appendix L.

No exceedance of the adopted Remediation Acceptance Criteria was detected:

- Fraction 1 TRH and BTEX were not detected in excess of the laboratory PQL.
- Maximum Fraction 2 TRH concentrations (270 mg/kg) were detected in sample T-V3W, collected from the excavation side wall to the west of the UST.

Due to the absence of applicable screening criteria for Fraction 2, no statistical assessment of detected TRH concentrations was undertaken.

TRH >C10-C16 was detected in excess of the ecological screening criteria, however as noted in Section 6.1.1 the proposed use of the site includes the application of a suitable engineered gravel surface dressing, and as such the site use is not expected to include areas of planting or vegetation.

Based on the sample results no further excavation of soils from the UST excavation was required.

12 DISCUSSION

12.1 Validation Sampling Results

Validation sampling, analysis and assessment presented in Section 11 demonstrate that the remediation works completed and the remediation endpoints specified in the RAP have been achieved.

Where possible, in accordance with the *Sampling Design Guidelines – Part 2 Interpretation* (NSW EPA 2022), statistical assessment was utilised to demonstrate that validation sample results meet the remediation acceptance criteria and therefore the remediation endpoint.

12.2 Revised CSM

12.2.1 Contaminant Source Information

12.2.1.1 Coal Impacted Soils

Based on the validation results, concentrations of combustible material and total sulfur do not exceed the adopted tier 1 screening criteria and therefore are not considered further. Coal impacted soils are no longer identified as a contaminant source.

With respect to the minor areas of the site were observed to include discrete patches of coal fragment impacted soils estimated to be less than 7m^2 in extent and estimated to represent less than 1% of the site surface, the risk from combustible material in these areas is considered to be low as the areas comprise discrete “patches” and do not form a continuous layer, the deposits are thin, likely to have formed in small pockets or depressions in the site surface, and following completion of the remediation and sign off, the site will be subject to further cut and fill and recontouring works which will have the effect of further treating the minor areas, and further reduce combustible content concentrations.

12.2.1.2 Asbestos in Soils and Stockpiled Material

Based on the validation results, concentrations of asbestos in site soils do not exceed the adopted tier 1 screening criteria and therefore are not considered further. Asbestos impacted soils are no longer identified as a contaminant source.

12.2.1.3 PFAS Impacted Soils and Stockpiled Materials

Based on the validation results, concentrations of PFAS and leachable PFAS do not exceed the adopted tier 1 screening criteria.

Detectable PFAS concentrations were reported in site soils, however the detected concentrations were low. The PFAS concentrations detected demonstrate that in addition to removal of concentrations in excess of the adopted tier 1 screening criteria the remediation works have generally reduced the PFAS mass contained in site environmental media.

Based on the above PFAS impacted soils and materials are no longer identified as a contaminant source.

12.2.1.3.1 PFAS in Groundwater – AEC 4

As noted in Section 6.1.3 it is likely that following ongoing source removal the concentrations of PFAS in groundwater at AEC 4 will attenuate over time.

In addition to the qualitative discussion which identifies that the AEC 4 PFAS impacts in groundwater do not require ongoing management or monitoring due to:

- The development and site operations having a low risk of PFAS mobilisation or exposure through interaction with groundwater in excavations or through groundwater pumping.
- Downgradient monitoring points indicating that elevated concentrations are localised to the AEC 4 area.
- Continuous anthropogenic preferential migration pathways are not present, and natural preferential pathways have been identified as localised discontinuous bands and lenses of higher permeability materials unlikely to present a preferential migration pathway.

To further consider the potential for offsite migration, the volumetric flow velocity of groundwater between the source area (well AEC04-MW02) and the well closest to the downgradient (well CS116), located approximately 300 m down hydraulic gradient from the AEC PFAS impacts. Groundwater gauging using a calibrated interface probe between 22 and 25 August 2022 determined groundwater elevations of 12.49 m AHD and 2.75 m AHD in AEC04-MW02 and CS116 respectively.

The volumetric flow velocity of groundwater can be calculated using an equation derived from Darcy's Law (Darcy Flux/specific discharge equation):

$$V = -\frac{k\ dh}{dl}$$

Where:

k = the coefficient of permeability [m/s]

dh/dl = change in potential divided by distance between points [m/m]

v = volumetric flow [m/s]

With respect to the use of Darcy's Law it is noted that the assumption that the aquifer is isotropic and homogeneous is not satisfied by site conditions, however the adopted coefficient of permeability values are have been calculated from real world assessment of similar soil and rock types, and as such are considered to account for local scale heterogeneity such as the discrete discontinuous sandy lenses, and as such at the scale of the assessment, the assumptions can be considered to have been met.

It is also noted the Darcy equation accounts for advective flow only and does not consider diffusion effects.

Using the permeability range for natural site soils presented in Section 6.1.3 determined by CES in nearby investigations in similar soil types and the equation above volumetric flow velocity between the AEC 4 PFAS impact area and the downgradient site boundary ranges from 0.005 m/year to 1.12 m/year. It is noted however that this equation assumes flow through the whole soil mass, which underestimates groundwater velocities, as the equation assumes flow is occurring throughout the cross sectional area of the matrix, including through particles.

The pore water velocity is calculated by dividing the Darcy Flux by the effective porosity of the matrix:

$$Vx = -\frac{k\ dh}{n\ dl}$$

Where:

n = effective porosity

V_x = pore water velocity

Assuming an effective porosity of 0.1 (Pells 2015) for Munmorah Conglomerate and its residual soils, using the second equation pore water velocity between the AEC 4 PFAS impact area and the downgradient site boundary ranges from 0.05 m/year to 11.2 m/year, indicating that contaminants in AEC 4 are likely to take between 30 to 6800 years to migrate offsite, and as such are considered a low risk.

Further considering the closest downgradient receiving water body, the Outlet Canal is located 640 m from AEC 4 at its closest point (which is noted to not represent the distance in the

direction of the inferred groundwater flow direction), contaminants in AEC 4 are likely to take between 58 to 13,000 years to migrate offsite, and as such are considered a low risk.

It is noted that the above assessment does not consider the effects of the various adsorption/desorption, degradation and diffusion processes on contaminant concentrations in groundwater during migration through the site.

Table 18: Groundwater Velocity Calculation Inputs

Input	Value adopted	Source
dh/dl change in potential divided by distance between points	Groundwater elevation 12.49 m AHD AEC04-MW02 2.75 m AHD CS116 Distance 300 m	CES (2022) Nearmap
k coefficient of permeability	1.1 x 10^{-6} m/s – Residual Soil of Munmorah Conglomerate 4.7 x 10^{-9} m/s – Munmorah Conglomerate	Minimum and maximum Variable Head Permeability Testing results detected in soil types consistent with those identified on the Site. CES (2020)
n effective porosity	0.1	Munmorah Conglomerate Pells (2015)
Distance to downgradient site boundary	340 m (inferred direction of groundwater flow)	Nearmap
Distance to downgradient aquatic receptor	650 m (shortest distance between AEC04-MW02 and the Outlet Canal)	Nearmap

12.2.1.4 Residual services/structures underground

Where encountered, asbestos containing conduit was removed in accordance with the Asbestos Removal Control Plan for the works.

Asbestos conduit in soils was limited to the AEC 4 area of the site, with services direct buried in other areas of the site, where encountered. The observations concur with the details presented on the plan *Mummorah Power Station Coal Handling Plant 3.3 kV Cable Route Layout* (MM225272B/2 dated 04/02/1965) states that electrical cables for the coal handling plant were direct buried, without potentially asbestos containing conduit.

As noted, asbestos containing conduit was used to form service penetrations and weep holes in the bunker. The Asbestos Clearance Inspection Report (Report Referenced PRJ001239-ACM001) removal of asbestos conduit from the Coal Handling Plant Bunker was completed to a minimum of 2 m below surface levels. Residual ACM (below 2 m depth) had a sealant applied to exposed surfaces and were grout filled.

With respect to potential health risks arising from the minor residual asbestos conduit the following is noted:

- The asbestos in in bonded form, in good condition, end sealed, and grout filled. ASC NEPM (NEPC 2013) states: *"Bonded ACM in sound condition represents a low human health risk*" and "*It is an inappropriate response to declare a site a human health risk on the basis of the presence of bonded ACM alone*";
- The asbestos is a minimum of 2 m below the site surface. WA DoH (2020) states that "*Contamination from below 1 m is less likely to be disturbed and still more so with increasing depth. If such material is disturbed by deep digging or excavation, any associated exposure may be short-lived as an infrequent activity with the material being reinstated or taken offsite for disposal subject to waste disposal regulations*";
- Based on the low frequency of asbestos conduit service penetrations and weep holes along the bunker length, the mass of concrete in which the conduit is encased in comparison to the mass of asbestos conduit and assuming asbestos concentration in bonded asbestos of 15% w/w, it is unlikely that the asbestos concentration within a discrete layer cross section of the coal handling bunker selected at any depth will exceed the remediation acceptance criteria for bonded asbestos of 0.05% w/w.

Based on the above details, site observations and clearance inspection reports asbestos containing material conduit is not considered a risk to human health and not considered further. No ongoing management is required. Details of the presence of bonded asbestos in the former Coal Handling Plant Bunker should be retained on the GPM Landholding Asbestos Register.

12.2.1.5 Hydrocarbon Impacted Soils – UST

No exceedance of the adopted tier 1 screening criteria was identified in validation samples collected from the UST excavation following removal of soils immediately adjacent to the UST.

Visual and olfactory assessment of soils surrounding the UST did not identify gross hydrocarbon impact typically associated with large hydrocarbon spills or losses such as visually oily of dark stained soils.

Water observed in the UST excavation on 01 May 2023 did not contain visual evidence of hydrocarbon impact in the form of a hydrocarbon sheen.

The UST had been decommissioned by grout filling and no hydrocarbon liquids remained contained in the UST. No records of the UST had been identified in previous reports and assessments, therefore there is uncertainty with respect to when the decommissioning was undertaken. Fill and delivery lines were also removed previously.

Extensive soil and groundwater investigations have been completed in the vicinity of and down hydraulic gradient of the UST location. Investigations did not identify concentrations of hydrocarbons soil or groundwater indicative of the presence of LNALP. A summary of sampling results is presented in Tables 19 to 21. The corresponding sample locations are presented on Figure 13.

Table 19: AEC 4 Soil Sampling Results - CES (2019)

		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 20: AEC 4 Groundwater Sampling Results - CES (2019)

		AEC04-MW01	AEC04-MW02	AEC04-MW03
		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

Table 21: AEC 4 Groundwater Sampling Results - CES (2022)

		AEC04-MW01	AEC04-MW02	AEC04-MW03	A4407	CS106
		22-Aug-22	22-Aug-22	22-Aug-22	22-Aug-22	22-Aug-22
Fraction 1 TRH	µg/L	<10	100	<10	<10	<10
Fraction 2 TRH	µg/L	230	1400	<50	340	130
TRH >C16 - C34	µg/L	320	1200	<100	580	<100
TRH >C34 - C40	µg/L	<100	<100	<100	<100	<100
Benzene	µg/L	<1	14	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	18	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	5	<1	<1	<1

Previous investigation locations relative to the location of the UST are presented on Figure 12.

Two sets of inferred groundwater contour plots are presented, from February 2019 (indicating north easterly groundwater flow) and September 2022 (indicating north north westerly groundwater flow). Differing inferred groundwater contours may be a result of changes to the sites hydrogeological setting or a result of assessment resolution. The September 2022 assessment was based on a greater number of data points, over the whole of the site, whereas the February 2019 contours were calculated based on wells in the vicinity of the UST only and are more likely to capture the localised groundwater flows.

Based on the inferred groundwater flow to the south or west of the UST is considered unlikely. The most likely groundwater flow direction is northerly or to the north east.

Groundwater monitoring wells AEC4_MW02 and A4407 are located 2 m north and 8 m south of the UST, respectively. No LNAPL or dissolved concentrations indicative of LNAPL were detected in either well in 2019 or 2022, or any other wells assessed in the vicinity of the UST.

Test pits AEC04-03 and AEC04-04 are located 15 m east and 7 m north of the UST location, respectively. Test pits AEC04-03 and AEC04-04 were extended to 5.5 m, 10.1 m AHD and 11.4 m AHD respectively.

Test pits A4-409 and A4-412 are located 4 m west of the UST location and were excavated to 1.9 m and 1.8 m (approximately 14.0 and 14.1 m AHD respectively). Fraction 2 TRH concentrations in samples collected from the test pits ranged from 170 mg/kg (A4-409 0.0-0.1 m) to 1,400 mg/kg (A4-412 0.6-0.9 m). No hydrocarbon staining was observed, and faint hydrocarbon odours were reported.

Based on the above, the previous sampling and assessment locations are well positioned to have detected impacts arising from the UST, and no impacts indicative of LNAPL or which pose a risk to human health or the environment have been identified. This assessment is supported by the relatively low concentrations detected in the UST excavation validation samples.

In addition, in the unlikely event that LNAPL impacts are present and have not been identified by the previous sampling and assessment, the following is noted:

- The extensive investigations completed to date indicate that if present, unidentified LNAPL impacts are likely to be limited in lateral and vertical extent, and most likely limited to the area of the site immediately underlying the UST. Based on excavation validation sampling this is unlikely.
- The UST was previously decommissioned by grout filling. Documentation related to the insitu decommissioning was not identified in previous investigations and GPM record searches. Extensive historic documents for the GPM site are available and have been reviewed by CES. As such there is uncertainty with respect to the date of decommissioning. It is likely, however that the decommissioning occurred some time ago, at a minimum prior to 1997 as the UST is not identified on *MM624528_01 Amendment 11B Munmorah Power Station Units 1-4 Fences, Street Names and Hazardous Substances Layout* dated 14 February 1997. As such any impact is unlikely to remain a risk for ongoing migration and is likely to be stable and or reducing.
- Based on the likely age of potential impact bioremediation and natural attenuation effects are likely to have degraded the impact, reduced the mobility and volatility of the hydrocarbons.

- The site development does not include any battery units or other built environment in this area of the site, with the potential for vapour intrusion risks.
- As noted in Section 6, the hydraulic characteristics of the shallow aquifer indicates that low yields would be likely, therefore it is unlikely that the development works, or site operations would utilise abstracted groundwater to provide water for dust suppression or irrigation.

12.2.2 Exposure Pathways

Potential exposure pathways for human receptors are:

- Direct dermal contact with impacted water.
- Incidental ingestion of impacted water; and
- Consumption of impacted terrestrial produce.

Potential pathways for ecological receptors include:

- Ingestion and uptake of PFAS or other contaminant from groundwater; and
- Ingestion of bioaccumulated PFAS or other contaminant in food sources.

12.2.3 Receptors

Potential human receptors are:

- 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

12.2.4 Source Pathway Receptor Linkages

As noted in Section 6.4 in situations where the source – pathway – receptor relationship is incomplete there can be no risk to receptors from contamination, as identified contaminant sources have been addressed by the remediation works no source – pathway – receptor are considered to be present, with the exception of elevated PFAS in groundwater in the AEC 4 area and north eastern corner of the site, which has been assessed as a low and acceptable risk in Sections 6.1.3.2, 6.1.3.3 and 12.2.1.3.1.

While this source – pathway – receptor linkage has been identified, no remediation of groundwater or ongoing management is considered to be required.

13 RECOMMENDATIONS

Details of remediation implementation, materials handling and site observations indicate that the remediation works were successfully implemented, in general accordance with the RAP.

Validation sampling, analysis and assessment demonstrate that the remediation works completed and the remediation endpoints specified in the RAP have been achieved, and there is a low risk to human health and the environment from contamination at the site.

The remediation goal was to make the site suitable for the proposed land use, as an 850 MW network standby battery; the Waratah Super Battery, considered to comprise a commercial/industrial land use.

Based on the results of the remediation validation, site observations, materials handling documentation, the Remediation Action Plan has been successfully implemented and the site in its current condition is suitable for the proposed land use, as an 850 MW network standby battery: the Waratah Super Battery, on the basis of a commercial/industrial land use setting.

An unexpected finds procedure should be prepared for the construction works, as required by condition B29 of the Infrastructure Approval under Section 5.19 of the Environmental Planning and Assessment Act 1979 (Application Number SSI 48492458).

Groundwater underlying two areas of the site were identified to have PFAS concentrations is excess of the adopted Tier 1 screening criteria. Locations of the elevated PFAS concentrations in groundwater are presented on Figure 3. The source of PFAS impacts have been identified to be the offsite former Fire Fighting Training Area (north east corner of the site) and leaching of PFAS from impacted near surface soils, possibly resulting from a localised release of AFFF, which were removed from site as part of the remediation works (AEC 4 area in the south of the site). Based on the assessment undertaken, including the depth of groundwater onsite (approximately 4.8 m to 6.5 m in the north eastern corner and 3.8 m to 4.8 m in the AEC 4 area) and the sites hydrogeological characteristics, the elevated concentrations are considered to be a low risk to offsite receptors and future site users.

Soils and materials removed from the site and relocated to offsite areas of the GPM Landholding (Red Tip and Orange Tip in the GPM Landholding Asbestos Dump Area and the Managed PFAS Impacted Materials Temporary Storage Area) require ongoing management in accordance with an Environmental Management Plan to ensure that appropriate management systems are in place and clear monitoring and maintenance requirements area identified and implemented. The Environmental Management Plans should remain in place until such time as the materials are either treated, disposed of offsite at a suitably waste facility capable and

licenced to accept the waste or otherwise confirmed suitable for reuse with no environmental management required (Subject to NSW EPA and/or Site Auditor Approval).

Two draft Environmental Management Plans have been prepared: *Long Term Environmental Management Plan - Temporary PFAS and Asbestos Stockpiles 1 and 2* prepared by EMM Consulting Pty Ltd Referenced E230489 RP#1 dated 16 May 2023 for the Red and Orange Tips, and *Long Term Environmental Management Plan - Temporary PFAS and Asbestos Stockpile 3* prepared by EMM Consulting Pty Ltd Referenced E230489 RP#1 dated 16 May 2023 for the Managed PFAS Impacted Materials Temporary Storage Area.

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15 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. 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.

The assessment is based on the collection of discrete samples of environmental media at discrete points in time, and as such the samples represent the condition of the targeted media at the point of sample collection.

Assessments undertaken are subject to the assumptions and limitations of the assessment including by not limited to, laboratory analytical methods, sample collection methodology, statistical assessment methods, and generic exposure conceptual site model presented in ASC NEPM (NEPC 2013) or where adopted, the site specific exposure model assumptions presented in the report.

Figures



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Title

Figure 1. Site Location Plan

CES Project ID:	Date:
CES170608-GPM	18/05/2023
Prepared By: T. Goodbody	Checked By: D. Lowe



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Figure 2:Site Layout Plan

CES Project ID:	Date:
CES170608-GPM	18/05/2023
Prepared By: T. Goodbody	Checked By: D. Lowe



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Figure 3: Impacted Groundwater Plan

CES Project ID:	Date:
CES170608-GPM	18/05/2023
Prepared By: T. Goodbody	Checked By: D. Lowe



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Title

Figure 4: Remediation Extents Plan

CES Project ID:	Date:
CES170608-GPM	18/05/2023
Prepared By: T. Goodbody	Checked By; D. Lowe

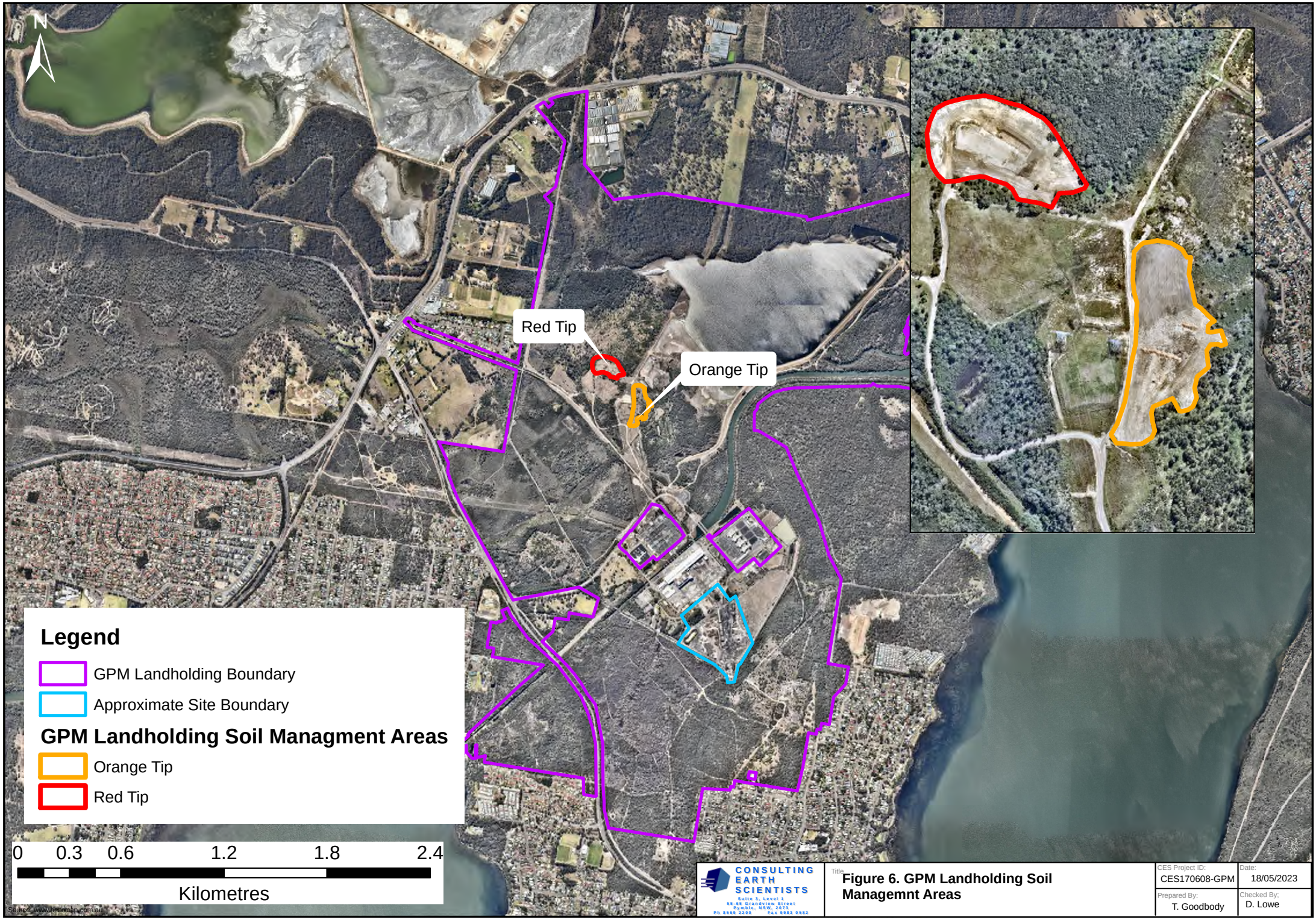


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Figure 5: AEC 4 and UST Remediation Extents Plan

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Prepared By: T. Goodbody	Checked By: D. Lowe



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Title: **Figure 6. GPM Landholding Soil Managemnt Areas**

CES Project ID:	Date:
CES170608-GPM	18/05/2023
Prepared By: T. Goodbody	Checked By: D. Lowe



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Title: **Figure 7 PFAS Impacted Material Temporary Storage Area Location Plan**

CES Project ID:	Date:
CES170608-GPM	18/05/2023
Prepared By: T. Goodbody	Checked By: D. Lowe



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Title

Figure 8:Western Coal Stack Asbestos Validation Sample Locations

CES Project ID:	Date:
CES170608-GPM	18/05/2023
Prepared By: T. Goodbody	Checked By: D. Lowe

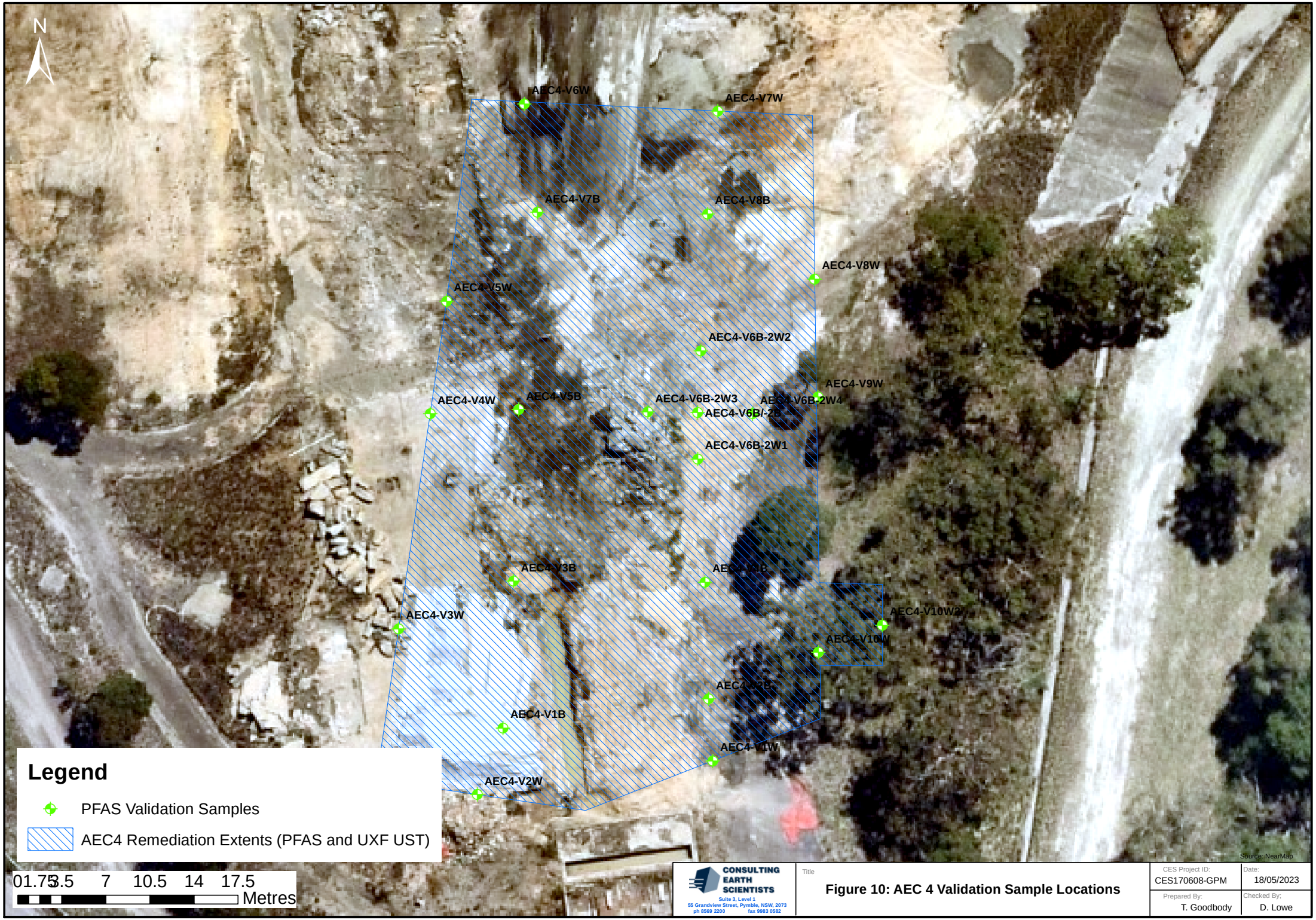


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Title

Figure 9: Stockpile Footprint Validation Sample Locations

CES Project ID:	Date:
CES170608-GPM	18/05/2023
Prepared By: T. Goodbody	Checked By: D. Lowe



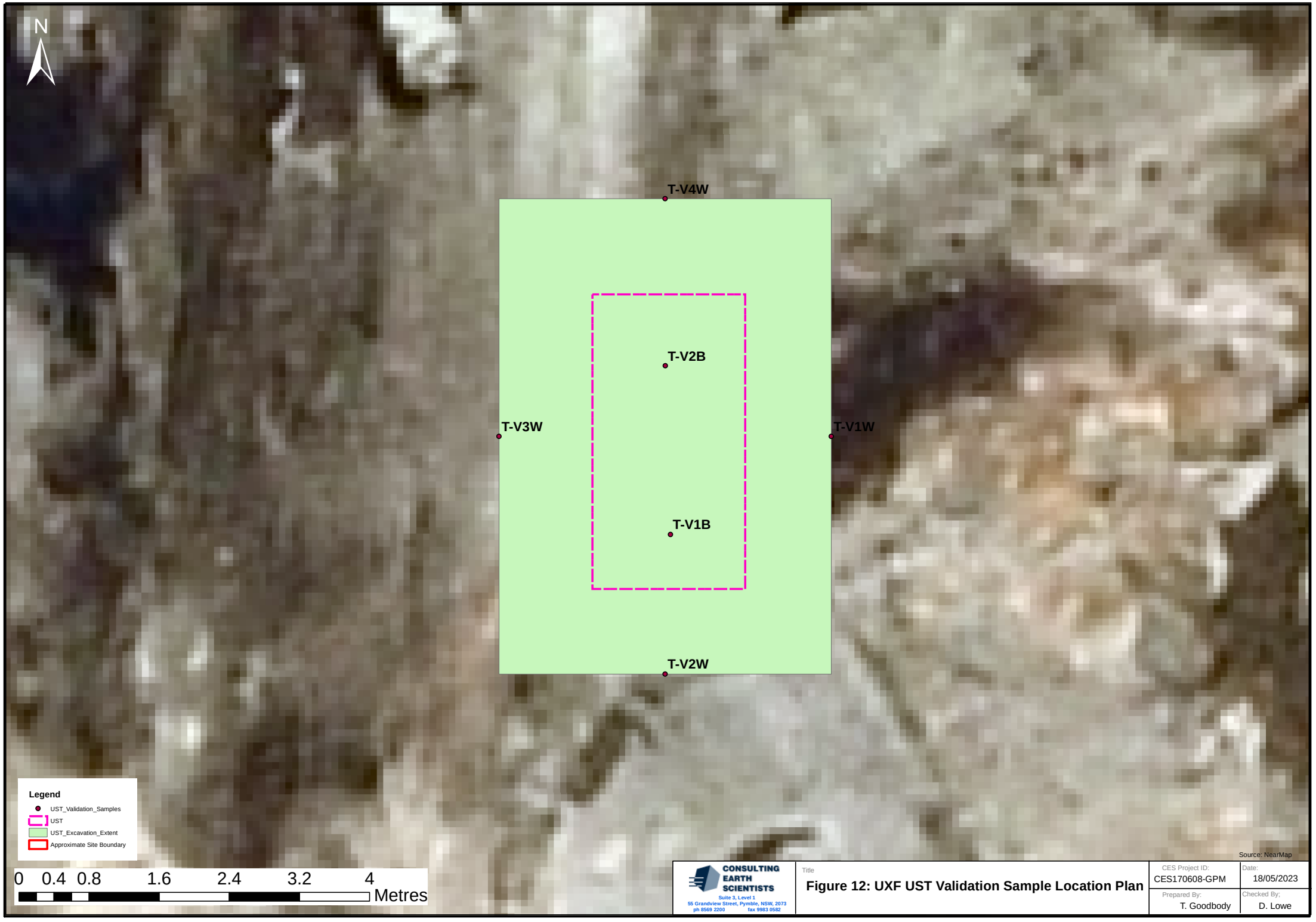
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Title

Figure 10: AEC 4 Validation Sample Locations

CES Project ID:	Date:
CES170608-GPM	18/05/2023
Prepared By: T. Goodbody	Checked By: D. Lowe


N
SS-V29
SS-V28
SS-V22
SS-V21
SS-V23
SS-V19
SS-V20
SS-V27
SS-V24
SS-V18
SS-V13
SS-V12
WSB-V4
WSB-V3
WSB-V5
WSB-V2
WSB-V6
WSB-V7
SS-V26
WSB-V1
SS-V25
SS-V17
SS-V14
SS-V11
SS-V9
SS-V4
WSB-V9
WSB-V8
SS-V16
SS-V15
SS-V10
SS-V8
SS-V5
SS-V3
SS-V7
SS-V6
SS-V2
SS-V1
Legend
Western Settling Basin Sample Locations
Site Surface Sample Locations
Western Settling Basin
Surface Soils (Coal Fragments)
Approximate Site Boundary
0 15 30 60 90 120 150
Metres
Source: NearMap
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Title
Figure 11: Site Surface and Western Settling Basin Sample Locations
CES Project ID: CES170608-GPM
Date: 18/05/2023
Prepared By: T. Goodbody
Checked By: D. Lowe



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Figure 12: UXF UST Validation Sample Location Plan

CES Project ID:	Date:
CES170608-GPM	18/05/2023
Prepared By: T. Goodbody	Checked By: D. Lowe



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Title

Figure 13: UXF UST and Previous Sample Location Plan

CES Project ID:	Date:
CES170608-GPM	18/05/2023
Prepared By: T. Goodbody	Checked By: D. Lowe

Tables

Table T1: Western Coal Stack Site Surface Validation Sampling Resu

Area of Environmental Concern			HSL D (sand 2-<4m)	HIL D	*H13*	*H13*	*H13*	*H13*	*H13*	*H13*	*H13*	*H13*
Sample Location					*H13-VW1*	*H13-VW2*	*H13-VW2-2*	*H13-VW3*	*H13-VW4*	*H13-VW4-2*	*H13-VW5*	*H13-VW6*
Date Sampled					*10-Mar-23*	*10-Mar-23*	*23-Mar-23*	*10-Mar-23*	*10-Mar-23*	*23-Mar-23*	*10-Mar-23*	*10-Mar-23*
Depth					*0.4*	*0.5*	*0.5*	*0.1*	*0.2*	*0.2*	*0.2*	*0.4*
Laboratory report					*318570*	*318570*	*319378*	*318570*	*318570*	*319378*	*318570*	*318570*
Parameters	**Unit**	**PQL**										
Asbestos ID in soil(AS4964) >0.1g/kg	-	-			*NAD*	*NAD*	*NAD*	*NAD*	*NAD*	*NAD*	*NAD*	*NAD*
Trace Analysis	-	-			*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*
Asbestos ID in soil <0.1g/kg	-	N/A			*Chrysotile*	*Chr, Am*	*NVAD*	*NVAD*	*Chrysotile*	*Amosite*	*NVAD*	*Chrysotile*
ACM >7mm Estimation*	g	--			–	–	–	–	–	–	–	-
FA and AF Estimation*	g	--			*0.0034*	*0.0092*	–	–	*0.0559*	*0.0025*	–	*0.001*
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*
FA and AF Estimation*#2	%(w/w)	<0.001		0.001	*<0.001*	*0.0012*	*<0.001*	*<0.001*	*0.0072*	*<0.001*	*<0.001*	*<0.001*

Chr - Chrysotile
Am - Amosite
Cro- Crocidolite
- Not tested
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
Italics - Samples Superceeded

Table T1: Western Coal Stack Site Surface Validation Sampling Resu

Area of Environmental Concern					*H13*	*H13*	*H13*	*H13*	*H13*	*H13*	*H13*	*H13*	*F9*
Sample Location					*H13-VW7*	*H13-VW8*	*H13-VW9*	*H13-VW9-2*	*H13-VW10*	*H13-VW11*	*H13-VW12*	*H13-VW12-2*	*F9-VW1*
Date Sampled			**HSL D (sand 2-<4m)**	**HIL D**	*10-Mar-23*	*10-Mar-23*	*10-Mar-23*	*23-Mar-23*	*10-Mar-23*	*10-Mar-23*	*10-Mar-23*	*23-Mar-23*	*10-Mar-23*
Depth					*0.1*	*0.2*	*0.2*	*0.2*	*0.4*	*0.2*	*0.1*	*0.2*	*0.3*
Laboratory report					*318570*	*318570*	*318570*	*319378*	*318570*	*318570*	*318570*	*319378*	*318570*
Parameters	**Unit**	**PQL**											
Asbestos ID in soil(AS4964) >0.1g/kg	-	-			*NAD*	*NAD*	*NAD*	*NAD*	*NAD*	*NAD*	*NAD*	*NAD*	*NAD*
Trace Analysis	-	-			*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*
Asbestos ID in soil <0.1g/kg	-	N/A			*NVAD*	*NVAD*	*Chrysotile*	*NVAD*	*NVAD*	*NVAD*	*Chrysotile*	*NVAD*	*Amosite*
ACM >7mm Estimation*	g	--			-	–	-	–	-	–	–	–	–
FA and AF Estimation*	g	--			–	–	*0.0359*	–	–	–	*0.0159*	–	*0.0042*
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*
FA and AF Estimation*#2	%(w/w)	<0.001		0.001	*<0.001*	*<0.001*	*0.0042*	*<0.001*	*<0.001*	*<0.001*	*0.0017*	*<0.001*	*<0.001*

Chr - Chrysotile
Am - Amosite
Cro- Crocidolite
- Not tested
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
Italics - Samples Superceeded

Table T1: Western Coal Stack Site Surface Validation Sampling Resu

Area of Environmental Concern			HSL D (sand 2-<4m)	HIL D	F9	F9	F9	F9	F9	F9	F9	F9	F9	F9
Sample Location					F9-VW2	F9-VW3	F9-VW3-2	F9-VW4	F9-VW5	F9-VW6	F9-VW7	F9-VW7-2	F9-VW8	F9-VW8-2
Date Sampled					10-Mar-23	10-Mar-23	23-Mar-23	10-Mar-23	10-Mar-23	10-Mar-23	10-Mar-23	23-Mar-23	10-Mar-23	23-Mar-23
Depth					0.1	0.2	0.2	0.7	0.5	0.2	0.2	0.2	0.2	0.2
Laboratory report					318570	318570	319378	318570	318570	318570	318570	319378	318570	319378
Parameters	**Unit**	**PQL**												
Asbestos ID in soil(AS4964) >0.1g/kg	-	-			NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Trace Analysis	-	-			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			Crocidolite	Chrysotile	Chrysotile	Chrysotile	Chrysotile	NVAD	Chrysotile	NVAD	Chr, Cro	NVAD
ACM >7mm Estimation*	g	--			–	–	–	–	–	–	–	–	–	–
FA and AF Estimation*	g	--			0.0005	0.0086	0.003	0.0006	0.0003	–	0.0118	–	0.0296	–
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	0.0012	<0.001	<0.001	<0.001	<0.001	0.0017	<0.001	0.0034	<0.001

Chr - Chrysotile
Am - Amosite
Cro- Crocidolite
- Not tested
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
Italics - Samples Superceeded

Table T1: Western Coal Stack Site Surface Validation Sampling Resu

Area of Environmental Concern					F9	F9	F9	F9	F9	F9	F9	F9	F9
Sample Location					F9-VW9	F9-VW10	F9-VW10-2	F9-VW11	F9-V11-2	F9-VW12	F9-VW13	F9-VW14	F9-V5B
Date Sampled			HSL D (sand 2-<4m)	HIL D	10-Mar-23	10-Mar-23	23-Mar-23	10-Mar-23	23-Mar-23	10-Mar-23	10-Mar-23	10-Mar-23	10-Mar-23
Depth					0.5	0.7	0.7	0.2	0.2	0.3	0.1	0.5	0.7
Laboratory report					318570	318570	319378	318570	319378	318570	318570	318570	318570
Parameters	**Unit**	**PQL**											
Asbestos ID in soil(AS4964) >0.1g/kg	-	-			NAD	NAD	Chr, Am	NAD	NAD	NAD	NAD	NAD	NAD
Trace Analysis	-	-			NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Total Asbestos#1	g/kg	<0.1			<0.1	<0.1	2.1531	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg	-	N/A			Chrysotile	Chr,:Am	see above	Chrysotile	NVAD	NVAD	Chrysotile	Chrysotile	NVAD
ACM >7mm Estimation*	g	--			–	–	–	–	–	–	–	–	–
FA and AF Estimation*	g	--			0.0038	0.0273	2.1568	0.01	–	–	0.0006	0.0019	–
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
FA and AF Estimation*#2	%(w/w)	<0.001		0.001	<0.001	0.0036	0.2153	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001

Chr - Chrysotile
Am - Amosite
Cro- Crocidolite
- Not tested
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
Italics - Samples Superceeded

Table T1: Western Coal Stack Site Surface Validation Sampling Resu

Area of Environmental Concern			HSL D (sand 2-<4m)	HIL D	F9	CS108	CS108	CS108	Western	Western	Western	Western	Western	Western
Sample Location					F9-V8B	CS108-VW1	CS108-VW1-2	CS108-VW2	WA-V1	WA-V2	WA-V3	WA-V4	WA-V5	WA-V6
Date Sampled					10-Mar-23	10-Mar-23	23-Mar-23	10-Mar-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23
Depth					0.7	0.4	0.2	0.3	~0.8	~0.8	~0.8	~0.8	~0.8	~0.8
Laboratory report					318570	318570	319378	318570	321312	321312	321312	321312	321312	321312
Parameters	**Unit**	**PQL**												
Asbestos ID in soil(AS4964) >0.1g/kg	-	-			Chr, Am,Cro	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Trace Analysis	-	-			NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Total Asbestos#1	g/kg	<0.1			0.3143	<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			see above	Chr, Am, Cro	NVAD	Chrysotile	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD
ACM >7mm Estimation*	g	--			0.206	–	–	–	–	–	–	–	–	–
FA and AF Estimation*	g	--			–	0.0107	–	0.0005	–	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01		0.05	0.0314	<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	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Chr - Chrysotile
Am - Amosite
Cro- Crocidolite
- Not tested
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
Italics - Samples Superceeded

Table T1: Western Coal Stack Site Surface Validation Sampling Resu

Area of Environmental Concern			HSL D (sand 2-<4m)	HIL D	Western	Western	Western	Western	Western	Western	Western	Western	Western	Western
Sample Location					WA-V7	WA-V8	WA-V9	WA-V10	WA-V11	WA-V12	WA-V13	WA-V14	WA-V15	WA-V16
Date Sampled					18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23
Depth					~0.8	~0.8	~0.8	~0.8	~0.8	~0.8	~0.8	~0.8	~0.8	~0.8
Laboratory report					321312	321312	321312	321312	321312	321312	321312	321312	321312	321312
Parameters	**Unit**	**PQL**												
Asbestos ID in soil(AS4964) >0.1g/kg	-	-			NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Trace Analysis	-	-			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	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD
ACM >7mm Estimation*	g	--			–	–	–	–	–	–	–	–	–	–
FA and AF Estimation*	g	--			–	–	–	–	–	–	–	–	–	–
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	<0.001	<0.001	<0.001	<0.001	<0.001

Chr - Chrysotile
Am - Amosite
Cro- Crocidolite
- Not tested
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
Italics - Samples Superceeded

Table T2: Stockpile Footprint Validation Sampling Results

Area of Environmental Concern			HIL D	ESL/EIL Commercial/ Industrial	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint
Sample Location					SP3-V1	SP3-V2	SP3-V3	SP3-V4	SP3-V5	SP3-V6	SP3-V7	SP3-V8	SP5-V1
Date Sampled					27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
Depth					0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Laboratory report					321855	321855	321855	321855	321855	321855	321855	321855	321855
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	-
Perfluoropentanesulfonic acid	µg/kg	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			<0.1	<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	<0.1	<0.1	-
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1		Direct: 1,000 / Indirect:10	<0.1	0.2	0.3	<0.1	<0.1	0.4	<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	-
Perfluorobutanoic acid	µg/kg	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	-
Perfluorohexanoic acid	µg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<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	-
Perfluorooctanoic acid PFOA	µg/kg	0.1	50,000	Direct: 10,000	<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	<0.1	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	-
Perfluoroundecanoic acid	µg/kg	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	-
Perfluorotridecanoic acid	µg/kg	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	-
4:2 FTS	µg/kg	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	-
8:2 FTS	µg/kg	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	-
Perfluorooctane sulfonamide	µg/kg	1			<1	<1	<1	<1	<1	<1	<1	<1	-
N-Methyl perfluorooctane sulfonamide	µg/kg	1			<1	<1	<1	<1	<1	<1	<1	<1	-
N-Ethyl perfluorooctanesulfonamide	µg/kg	1			<1	<1	<1	<1	<1	<1	<1	<1	-
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1			<1	<1	<1	<1	<1	<1	<1	<1	-
N-Et perfluorooctanesulfonamidoethanol	µg/kg	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	-
EtPerfluorooctanesulfamid oacetic acid	µg/kg	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		<0.1	0.2	0.3	<0.1	<0.1	0.4	<0.1	<0.1	-
Asbestos ID in soil(AS4964) >0.1g/kg	-	-			NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Trace Analysis	-	-			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
Asbestos ID in soil <0.1g/kg	-	N/A			NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD
ACM >7mm Estimation*	g	--			–	–	–	–	–	–	–	–	–
FA and AF Estimation*	g	--			–	–	–	–	–	–	–	–	–
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
FA and AF Estimation*#2	%(w/w)	<0.001	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

- Not tested
Chr - Chrysotile
Am - Amosite
Cro- Crocidolite
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
Italics - Samples Superceeded

Table T2: Stockpile Footprint Validation Sampling Results

Area of Environmental Concern			HIL D	ESL/EIL Commercial/ Industrial	SP Footprint	SP Footprint	SP Footprint	*SP Footprint*	SP Footprint	SP Footprint	SP Footprint	SP Footprint
Sample Location					SP5-V2	SP5-V3	SP5-V4	*SP5-V5*	SP5-V5-2	SP5-V6	SP5-V7	SP5-V8
Date Sampled					27-Apr-23	27-Apr-23	27-Apr-23	*27-Apr-23*	3-May-23	27-Apr-23	27-Apr-23	27-Apr-23
Depth					0.1	0.1	0.1	*0.1*	0.1	0.1	0.1	0.1
Laboratory report					321855	321855	321855	*321855*	322273	321855	321855	321855
Parameters	**Unit**	**PQL**										
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		Direct: 1,000 / Indirect:10	-	-	-	-	-	-	-	-
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	50,000	Direct: 10,000	-	-	-	-	-	-	-	-
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 perfluorooctanesulfonamide	µg/kg	1			-	-	-	-	-	-	-	-
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1			-	-	-	-	-	-	-	-
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5			-	-	-	-	-	-	-	-
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2			-	-	-	-	-	-	-	-
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2			-	-	-	-	-	-	-	-
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1	20,000		-	-	-	-	-	-	-	-
Asbestos ID in soil(AS4964) >0.1g/kg	-	-			NAD	NAD	NAD	*NAD*	NAD	NAD	NAD	NAD
Trace Analysis	-	-			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
Asbestos ID in soil <0.1g/kg	-	N/A			NVAD	NVAD	NVAD	*Chrysotile*	NVAD	NVAD	NVAD	NVAD
ACM >7mm Estimation*	g	--			–	–	–	–	–	–	–	–
FA and AF Estimation*	g	--			–	–	–	*0.0372*	–	–	–	–
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
FA and AF Estimation*#2	%(w/w)	<0.001	0.001		<0.001	<0.001	<0.001	*0.0047*	<0.001	<0.001	<0.001	<0.001

- Not tested
Chr - Chrysotile
Am - Amosite
Cro- Crocidolite
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
Italics - Samples Superceeded

Table T2: Stockpile Footprint Validation Sampling Results

Area of Environmental Concern			HIL D	ESL/EIL Commercial/ Industrial	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint
Sample Location					SP6-V1	SP6-V2	SP6-V3	SP6-V4	SP6-V5	SP6-V6	SP6-V7	SP6-V8	SP7V1
Date Sampled					27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
Depth					0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Laboratory report					321855	321855	321855	321855	321855	321855	321855	321855	321855
Parameters	**Unit**	**PQL**											
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		Direct: 1,000 / Indirect:10	-	-	-	-	-	-	-	-	<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	50,000	Direct: 10,000	-	-	-	-	-	-	-	-	<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 perfluorooctanesulfonamide	µg/kg	1			-	-	-	-	-	-	-	-	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1			-	-	-	-	-	-	-	-	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5			-	-	-	-	-	-	-	-	<5
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2			-	-	-	-	-	-	-	-	<0.2
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2			-	-	-	-	-	-	-	-	<0.2
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1	20,000		-	-	-	-	-	-	-	-	<0.1
Asbestos ID in soil(AS4964) >0.1g/kg	-	-			NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
Trace Analysis	-	-			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
Asbestos ID in soil <0.1g/kg	-	N/A			NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD
ACM >7mm Estimation*	g	--			–	–	–	–	–	–	–	–	–
FA and AF Estimation*	g	--			–	–	–	–	–	–	–	–	–
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
FA and AF Estimation*#2	%(w/w)	<0.001	0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

- Not tested
Chr - Chrysotile
Am - Amosite
Cro- Crocidolite
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
Italics - Samples Superceeded

Table T2: Stockpile Footprint Validation Sampling Results

Area of Environmental Concern			HIL D	ESL/EIL Commercial/ Industrial	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint
Sample Location					SP7V2	SP7V3	SP7V4	SP7V5	SP7V6	SP7V7	SP7V8
Date Sampled					27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
Depth					0.1	0.1	0.1	0.1	0.1	0.1	0.1
Laboratory report					321855	321855	321855	321855	321855	321855	321855
Parameters	**Unit**	**PQL**									
Perfluorobutanesulfonic acid	µg/kg	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
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1			<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	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1		Direct: 1,000 / Indirect:10	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1
Perfluorodecanesulfonic acid	µg/kg	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
Perfluoropentanoic acid	µg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	0.1			<0.1	<0.1	<0.1	<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
Perfluorooctanoic acid PFOA	µg/kg	0.1	50,000	Direct: 10,000	<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	<0.1	<0.1	<0.1
Perfluorodecanoic acid	µg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	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
Perfluorotridecanoic acid	µg/kg	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
4:2 FTS	µg/kg	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
8:2 FTS	µg/kg	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
Perfluorooctane sulfonamide	µg/kg	1			<1	<1	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	1			<1	<1	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	1			<1	<1	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1			<1	<1	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	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
EtPerfluorooctanesulfamid oacetic acid	µg/kg	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		<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1
Asbestos ID in soil(AS4964) >0.1g/kg	-	-			NAD	NAD	NAD	NAD	NAD	NAD	NAD
Trace Analysis	-	-			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
Asbestos ID in soil <0.1g/kg	-	N/A			NVAD	NVAD	NVAD	NVAD	NVAD	NVAD	NVAD
ACM >7mm Estimation*	g	--			–	–	–	–	–	–	–
FA and AF Estimation*	g	--			–	–	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	0.05		<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	<0.001	<0.001

- Not tested
Chr - Chrysotile
Am - Amosite
Cro- Crocidolite
NAD -No Asbestos Detected
NVAD -No Visible Asbestos Detected
Italics - Samples Superceeded

Table T3: PFAS in ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4
Sample Location				AEC4-CCV1	AEC4-CCV2	AEC4-CCV3	AEC4-CCV4	AEC4-CCV5	AEC4-CCV6	AEC4-CCV7
Date Sampled				10-Mar-23	10-Mar-23	10-Mar-23	10-Mar-23	10-Mar-23	10-Mar-23	10-Mar-23
Laboratory report				318571	318571	318571	318571	318571	318571	318571
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/L	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
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	0.03	0.02	<0.01
Perfluoroheptanesulfonic acid	µg/L	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	0.05	0.02	<0.01
Perfluorodecanesulfonic acid	µg/L	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
Perfluoropentanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	0.05	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	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
Perfluorononanoic acid	µg/L	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
Perfluoroundecanoic acid	µg/L	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
Perfluorotridecanoic acid	µg/L	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
4:2 FTS	µg/L	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	0.02	0.04
8:2 FTS	µg/L	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
Perfluorooctane sulfonamide	µg/L	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
N-Ethyl perfluorooctanesulfon amide	µg/L	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
N-Et perfluorooctanesulfonamid oethanol	µg/L	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
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Table T3: PFAS in ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	*AEC4*
Sample Location				AEC4-CCV8	AEC4-V1B	AEC4-V2B	AEC4-V3B	AEC4-V4B	AEC4-V5B	*AEC4-V6B*
Date Sampled				10-Mar-23	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23	*28-Apr-23*
Laboratory report				318571	321970	321970	321970	321970	321970	*321970*
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/L	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*
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01		0.01	<0.01	0.04	<0.01	<0.01	0.02	*<0.01*
Perfluoroheptanesulfonic acid	µg/L	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	0.11	<0.01	0.08	<0.01	*0.13*
Perfluorodecanesulfonic acid	µg/L	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	*0.03*
Perfluoropentanoic acid	µg/L	0.02		<0.02	<0.02	0.03	<0.02	<0.02	<0.02	*0.22*
Perfluorohexanoic acid	µg/L	0.01		0.01	<0.01	0.04	<0.01	<0.01	0.01	*0.14*
Perfluoroheptanoic acid	µg/L	0.01		<0.01	<0.01	0.01	<0.01	<0.01	<0.01	*0.03*
Perfluorooctanoic acid PFOA	µg/L	0.01	220	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	*0.02*
Perfluorononanoic acid	µg/L	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*
Perfluoroundecanoic acid	µg/L	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*
Perfluorotridecanoic acid	µg/L	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*
4:2 FTS	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	*<0.01*
6:2 FTS	µg/L	0.01		0.04	<0.01	<0.01	<0.01	<0.01	<0.01	*1.2*
8:2 FTS	µg/L	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*
Perfluorooctane sulfonamide	µg/L	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*
N-Ethyl perfluorooctanesulfon amide	µg/L	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*
N-Et perfluorooctanesulfonamid oethanol	µg/L	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*
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	*<0.02*

Table T3: PFAS in ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4
Sample Location				AEC4-V6B-2B	AEC4-V6B-2W1	AEC4-V6B-2W2	AEC4-V6B-2W3	AEC4-V6B-2W4	AEC4-V7B	AEC4-V8B
Date Sampled				3-May-23	3-May-23	3-May-23	3-May-23	3-May-23	28-Apr-23	28-Apr-23
Laboratory report				322273	322273	322273	322273	322273	321970	321970
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/L	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
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01		<0.01	0.02	<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
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.13	0.03	0.19	0.03	0.02	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	0.02		<0.02	0.04	<0.02	<0.02	<0.02	<0.02	0.04
Perfluoropentanoic acid	µg/L	0.02		0.03	0.08	0.04	<0.02	<0.02	<0.02	0.32
Perfluorohexanoic acid	µg/L	0.01		0.01	0.06	0.02	<0.01	<0.01	<0.01	0.13
Perfluoroheptanoic acid	µg/L	0.01		0.01	0.02	0.01	<0.01	<0.01	<0.01	0.06
Perfluorooctanoic acid PFOA	µg/L	0.01	220	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Perfluorononanoic acid	µg/L	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
Perfluoroundecanoic acid	µg/L	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
Perfluorotridecanoic acid	µg/L	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
4:2 FTS	µg/L	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	0.06	0.01	<0.01	<0.01	<0.01	0.15
8:2 FTS	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03
10:2 FTS	µg/L	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
N-Methyl perfluorooctane sulfonamide	µg/L	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
N-Me perfluorooctanesulfonamid oethanol	µg/L	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
MePerfluorooctanesulf-amid oacetic acid	µg/L	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

Table T3: PFAS in ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4
Sample Location				AEC4-V9B	AEC4-V1W	AEC4-V2W	AEC4-V3W	AEC4-V4W	AEC4-V5W	AEC4-V6W
Date Sampled				28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23
Laboratory report				321970	321970	321970	321970	321970	321970	321970
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/L	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
Perfluorohexanesulfonic acid - PFHxS	µg/L	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
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.13	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	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
Perfluoropentanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01		<0.01	<0.01	<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
Perfluorooctanoic acid PFOA	µg/L	0.01	220	<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
Perfluorodecanoic acid	µg/L	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
Perfluorododecanoic acid	µg/L	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
Perfluorotetradecanoic acid	µg/L	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
6:2 FTS	µg/L	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
10:2 FTS	µg/L	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
N-Methyl perfluorooctane sulfonamide	µg/L	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
N-Me perfluorooctanesulfonamid oethanol	µg/L	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
MePerfluorooctanesulf-amid oacetic acid	µg/L	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

Table T3: PFAS in ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	AEC4	AEC4	AEC4	*AEC4*	AEC4	SP Footprint	SP Footprint
Sample Location				AEC4-V7W	AEC4-V8W	AEC4-V9W	*AEC4-V10W*	AEC4-V10W	SP3-V1	SP3-V2
Date Sampled				28-Apr-23	28-Apr-23	28-Apr-23	*28-Apr-23*	3-May-23	27-Apr-23	27-Apr-23
Laboratory report				321970	321970	321970	*321970*	322273	321855	321855
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/L	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
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01		<0.01	<0.01	<0.01	*0.02*	0.03	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	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	0.03	*0.25*	0.07	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	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
Perfluoropentanoic acid	µg/L	0.02		0.03	<0.02	<0.02	*<0.02*	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01		0.02	<0.01	<0.01	*0.02*	<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
Perfluorooctanoic acid PFOA	µg/L	0.01	220	<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
Perfluorodecanoic acid	µg/L	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
Perfluorododecanoic acid	µg/L	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
Perfluorotetradecanoic acid	µg/L	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
6:2 FTS	µg/L	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
10:2 FTS	µg/L	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
N-Methyl perfluorooctane sulfonamide	µg/L	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
N-Me perfluorooctanesulfonamid oethanol	µg/L	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
MePerfluorooctanesulf-amid oacetic acid	µg/L	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

Table T3: PFAS in ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint
Sample Location				SP3-V3	SP3-V4	SP3-V5	SP3-V6	SP3-V7	SP3-V8	SP7-V1
Date Sampled				27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
Laboratory report				321855	321855	321855	321855	321855	321855	321855
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/L	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
Perfluorohexanesulfonic acid - PFHxS	µg/L	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
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.13	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	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
Perfluoropentanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01		<0.01	<0.01	<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
Perfluorooctanoic acid PFOA	µg/L	0.01	220	<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
Perfluorodecanoic acid	µg/L	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
Perfluorododecanoic acid	µg/L	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
Perfluorotetradecanoic acid	µg/L	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
6:2 FTS	µg/L	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
10:2 FTS	µg/L	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
N-Methyl perfluorooctane sulfonamide	µg/L	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
N-Me perfluorooctanesulfonamid oethanol	µg/L	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
MePerfluorooctanesulf-amid oacetic acid	µg/L	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

Table T3: PFAS in ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint	SP Footprint
Sample Location				SP7-V2	SP7-V3	SP7-V4	SP7-V5	SP7-V6	SP7-V7	SP7-V8
Date Sampled				27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23	27-Apr-23
Laboratory report				321855	321855	321855	321855	321855	321855	321855
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/L	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
Perfluorohexanesulfonic acid - PFHxS	µg/L	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
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	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
Perfluoropentanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01		<0.01	<0.01	<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
Perfluorooctanoic acid PFOA	µg/L	0.01	220	<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
Perfluorodecanoic acid	µg/L	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
Perfluorododecanoic acid	µg/L	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
Perfluorotetradecanoic acid	µg/L	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
6:2 FTS	µg/L	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
10:2 FTS	µg/L	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
N-Methyl perfluorooctane sulfonamide	µg/L	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
N-Me perfluorooctanesulfonamid oethanol	µg/L	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
MePerfluorooctanesulf-amid oacetic acid	µg/L	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

Table T3: PFAS in ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	SS	SS	SS	SS	SS	SS	SS
Sample Location				SS-V1	SS-V2	SS-V3	SS-V4	SS-V5	SS-V6	SS-V7
Date Sampled				21-Apr-23	21-Apr-23	21-Apr-23	18-Apr-23	18-Apr-23	27 Apil 2023	18-Apr-23
Laboratory report				321584	321584	321584	321311	321311	321855	321311
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/L	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
Perfluorohexanesulfonic acid - PFHxS	µg/L	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
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	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
Perfluoropentanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01		<0.01	<0.01	<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
Perfluorooctanoic acid PFOA	µg/L	0.01	220	<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
Perfluorodecanoic acid	µg/L	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
Perfluorododecanoic acid	µg/L	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
Perfluorotetradecanoic acid	µg/L	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
6:2 FTS	µg/L	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
10:2 FTS	µg/L	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
N-Methyl perfluorooctane sulfonamide	µg/L	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
N-Me perfluorooctanesulfonamid oethanol	µg/L	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
MePerfluorooctanesulf-amid oacetic acid	µg/L	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

Table T3: PFAS in ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	SS	SS	SS	SS	SS	SS	SS
Sample Location				SS-V8	SS-V9	SS-V10	SS-V11	SS-V12	SS-V13	SS-V14
Date Sampled				18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	21-Apr-23	27 Apil 2023	18-Apr-23
Laboratory report				321311	321311	321311	321311	321584	321855	321311
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/L	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
Perfluorohexanesulfonic acid - PFHxS	µg/L	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
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	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
Perfluoropentanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01		<0.01	<0.01	<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
Perfluorooctanoic acid PFOA	µg/L	0.01	220	<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	0.02
Perfluorodecanoic acid	µg/L	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
Perfluorododecanoic acid	µg/L	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
Perfluorotetradecanoic acid	µg/L	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
6:2 FTS	µg/L	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
10:2 FTS	µg/L	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
N-Methyl perfluorooctane sulfonamide	µg/L	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
N-Me perfluorooctanesulfonamid oethanol	µg/L	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
MePerfluorooctanesulf-amid oacetic acid	µg/L	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

Table T3: PFAS in ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	SS	SS	SS	SS	SS	SS	SS
Sample Location				SS-V15	SS-V16	SS-V17	SS-V18	SS-V19	SS-V20	SS-V21
Date Sampled				18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	21-Apr-23	21-Apr-23	21-Apr-23
Laboratory report				321311	321311	321311	321311	321584	321584	321584
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/L	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
Perfluorohexanesulfonic acid - PFHxS	µg/L	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
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	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
Perfluoropentanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01		<0.01	<0.01	<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
Perfluorooctanoic acid PFOA	µg/L	0.01	220	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	0.01		<0.01	<0.01	0.07	<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
Perfluoroundecanoic acid	µg/L	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
Perfluorotridecanoic acid	µg/L	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
4:2 FTS	µg/L	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	0.03	<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
10:2 FTS	µg/L	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
N-Methyl perfluorooctane sulfonamide	µg/L	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
N-Me perfluorooctanesulfonamid oethanol	µg/L	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
MePerfluorooctanesulf-amid oacetic acid	µg/L	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

Table T3: PFAS in ASLP Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	SS	SS	SS	SS	SS	SS	SS
Sample Location				SS-V22	SS-V23	SS-V24	SS-V25	SS-V26	SS-V27	SS-V28
Date Sampled				21-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	21-Apr-23
Laboratory report				321584	321311	321311	321311	321311	321311	321584
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
Perfluoropentanesulfonic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.2
Perfluoroheptanesulfonic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.9
Perfluorodecanesulfonic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2
Perfluorobutanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2
Perfluoropentanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2
Perfluorohexanoic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
Perfluoroheptanoic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
Perfluorooctanoic acid PFOA	µg/L	0.01	220	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
Perfluorononanoic acid	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.9
Perfluorodecanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.5
Perfluoroundecanoic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	1
Perfluorododecanoic acid	µg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5
Perfluorotridecanoic acid	µg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6
Perfluorotetradecanoic acid	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
4:2 FTS	µg/L	0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
6:2 FTS	µg/L	0.01		<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.1
8:2 FTS	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2
10:2 FTS	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2
Perfluorooctane sulfonamide	µg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1
N-Methyl perfluorooctane sulfonamide	µg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2

Table T3: PFAS in ASLP Results

		Purpose	PFAS NEMP 2.0 Interim-Marine 95% species protection	SS
		Sample Location		SS-V29
		Date Sampled		21-Apr-23
		Laboratory report		321584
Parameters	**Unit**	**PQL**		
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	0.13	0.09
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	220	<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

Table T4: AEC 4 Validation Sampling Results

Area of Environmental Concern			HSL D (sand 2-<4m)	HIL D	ESL/EIL Commercial/ Industrial	AEC4	AEC4	AEC4	AEC4
Sample Location						AEC4-CCV1	AEC4-CCV2	AEC4-CCV3	AEC4-CCV4
Date Sampled						10-Mar-23	10-Mar-23	10-Mar-23	10-Mar-23
Depth						Surface	Surface	Surface	Surface
Laboratory report						318571	318571	318571	318571
Parameters	**Unit**	**PQL**							
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			Direct: 1,000 / Indirect:10	<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		50,000	Direct: 10,000	<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	<0.2
6:2 FTS	µg/kg	0.1				0.1	<0.1	<0.1	<0.2
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 perfluorooctanesulfonamide	µg/kg	1				<1	<1	<1	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1				<1	<1	<1	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5				<5	<5	<5	<5
MePerfluorooctanesulf-amid oacetic acid	µg/kg	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
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1		20,000		<0.1	<0.1	<0.1	<0.1

- Not tested

Italics - Samples Superceeded

Table T4: AEC 4 Validation Sampling Results

Area of Environmental Concern						AEC4	AEC4	AEC4	AEC4	AEC4
Sample Location						AEC4-CCV5	AEC4-CCV6	AEC4-CCV7	AEC4-CCV8	AEC4-CCV9
Date Sampled			HSL D (sand 2-<4m)	HIL D	ESL/EIL Commercial/ Industrial	10-Mar-23	10-Mar-23	10-Mar-23	10-Mar-23	10-Mar-23
Depth						Surface	Surface	Surface	Surface	Surface
Laboratory report						318571	318571	318571	318571	318571
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/kg	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
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1				0.2	0.1	0.6	<0.1	0.2
Perfluoroheptanesulfonic acid	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1			Direct: 1,000 / Indirect:10	<0.1	0.3	1.1	<0.1	0.8
Perfluorodecanesulfonic acid	µg/kg	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
Perfluoropentanoic acid	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	0.1				<0.1	0.2	0.3	<0.1	0.1
Perfluoroheptanoic acid	µg/kg	0.1				<0.1	<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	<0.1
Perfluorononanoic acid	µg/kg	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
Perfluoroundecanoic acid	µg/kg	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
Perfluorotridecanoic acid	µg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	5				<5	<5	<5	<5	<5
4:2 FTS	µg/kg	0.1				<0.2	<0.2	<0.2	<0.2	<0.2
6:2 FTS	µg/kg	0.1				<0.2	<0.2	0.7	0.1	2.3
8:2 FTS	µg/kg	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
Perfluorooctane sulfonamide	µg/kg	1				<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	1				<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	1				<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1				<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5				<5	<5	<5	<5	<5
MePerfluorooctanesulf-amid oacetic acid	µg/kg	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
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1		20,000		<0.1	0.4	1.7	<0.1	1

- Not tested

Italics - Samples Superceeded

Table T4: AEC 4 Validation Sampling Results

Area of Environmental Concern			HSL D (sand 2-<4m)	HIL D	ESL/EIL Commercial/ Industrial	AEC4	AEC4	AEC4	AEC4	AEC4	*AEC4*
Sample Location						AEC4-V1B	AEC4-V2B	AEC4-V3B	AEC4-V4B	AEC4-V5B	*AEC4-V6B*
Date Sampled						28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23	*28-Apr-23*
Depth						Base	Base	Base	Base	Base	*Base*
Laboratory report						321970	321970	321970	321970	321970	*321970*
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				0.4	1.2	<0.1	0.2	0.4	*0.2*
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	<0.1	4.3	<0.1	2.3	<0.1	*3.5*
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	0.4	<0.2	<0.2	<0.2	*0.9*
Perfluoropentanoic acid	µg/kg	0.2				0.3	0.9	<0.2	0.2	0.2	*4.7*
Perfluorohexanoic acid	µg/kg	0.1				0.4	1	<0.1	0.2	0.3	*3.1*
Perfluoroheptanoic acid	µg/kg	0.1				0.1	0.4	<0.1	<0.1	<0.1	*0.8*
Perfluorooctanoic acid PFOA	µg/kg	0.1		50,000	Direct: 10,000	<0.1	0.1	<0.1	<0.1	<0.1	*0.3*
Perfluorononanoic acid	µg/kg	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*
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	<0.1	<0.1	<0.1	*27*
8:2 FTS	µg/kg	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*
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	5.5	<0.1	2.5	0.4	*3.7*

- Not tested

Italics - Samples Superceeded

Table T4: AEC 4 Validation Sampling Results

Area of Environmental Concern			HSL D (sand 2-<4m)	HIL D	ESL/EIL Commercial/ Industrial	AEC4	AEC4	AEC4	AEC4
Sample Location						AEC4-V6B-2B	AEC4-V6B-2W1	AEC4-V6B-2W2	AEC4-V6B-2W3
Date Sampled						3-May-23	3-May-23	3-May-23	3-May-23
Depth						Base	Side Wall	Side Wall	Side Wall
Laboratory report						322273	322273	322273	322273
Parameters	**Unit**	**PQL**							
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	0.3	<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			Direct: 1,000 / Indirect:10	0.8	4.9	1.4	1
Perfluorodecanesulfonic acid	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	0.2				<0.2	0.8	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.2				0.5	2	0.8	0.3
Perfluorohexanoic acid	µg/kg	0.1				0.2	1.2	0.3	0.1
Perfluoroheptanoic acid	µg/kg	0.1				0.2	0.4	0.3	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.1		50,000	Direct: 10,000	<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				0.2	1.2	0.4	0.2
8:2 FTS	µg/kg	0.2				0.2	<0.2	0.4	<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 perfluorooctanesulfonamide	µg/kg	1				<1	<1	<1	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1				<1	<1	<1	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5				<5	<5	<5	<5
MePerfluorooctanesulf-amid oacetic acid	µg/kg	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
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1		20,000		0.8	5.2	1.4	1

- Not tested

Italics - Samples Superceeded

Table T4: AEC 4 Validation Sampling Results

Area of Environmental Concern			HSL D (sand 2-<4m)	HIL D	ESL/EIL Commercial/ Industrial	AEC4	AEC4	AEC4	AEC4	AEC4
Sample Location						AEC4-V6B-2W4	AEC4-V7B	AEC4-V8B	AEC4-V9B	AEC4-V1W
Date Sampled						3-May-23	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23
Depth						Side Wall	Base	Base	Base	Side Wall
Laboratory report						322273	321970	321970	321970	321970
Parameters	**Unit**	**PQL**								
Perfluorobutanesulfonic acid	µg/kg	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
Perfluorohexanesulfonic acid - PFHxS	µg/kg	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
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1			Direct: 1,000 / Indirect:10	0.4	<0.1	0.1	<0.1	0.3
Perfluorodecanesulfonic acid	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	0.2				<0.2	<0.2	0.8	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.2				0.3	<0.2	5.7	0.4	<0.2
Perfluorohexanoic acid	µg/kg	0.1				0.1	<0.1	2.5	0.3	<0.1
Perfluoroheptanoic acid	µg/kg	0.1				<0.1	<0.1	1.4	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.1		50,000	Direct: 10,000	<0.1	<0.1	0.5	<0.1	<0.1
Perfluorononanoic acid	µg/kg	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
Perfluoroundecanoic acid	µg/kg	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
Perfluorotridecanoic acid	µg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	5				<5	<5	<5	<5	<5
4:2 FTS	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1
6:2 FTS	µg/kg	0.1				0.1	<0.1	3.5	<0.1	<0.1
8:2 FTS	µg/kg	0.2				<0.2	<0.2	1	<0.2	<0.2
10:2 FTS	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorooctane sulfonamide	µg/kg	1				<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	1				<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	1				<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1				<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5				<5	<5	<5	<5	<5
MePerfluorooctanesulf-amid oacetic acid	µg/kg	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
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1		20,000		0.4	<0.1	0.1	<0.1	0.4

- Not tested

Italics - Samples Superceeded

Table T4: AEC 4 Validation Sampling Results

Area of Environmental Concern			HSL D (sand 2-<4m)	HIL D	ESL/EIL Commercial/ Industrial	AEC4	AEC4	AEC4	AEC4	AEC4	AEC4
Sample Location						AEC4-V2W	AEC4-V3W	AEC4-V4W	AEC4-V5W	AEC4-V6W	AEC4-V7W
Date Sampled						28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23
Depth						Side Wall	Side Wall	Side Wall	Side Wall	Side Wall	Side Wall
Laboratory report						321970	321970	321970	321970	321970	321970
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	0.2	0.2	<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
Perfluorobutanoic acid	µg/kg	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	0.4
Perfluorohexanoic acid	µg/kg	0.1				<0.1	<0.1	<0.1	0.2	<0.1	0.2
Perfluoroheptanoic acid	µg/kg	0.1				<0.1	<0.1	<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	<0.1	<0.1
Perfluorononanoic acid	µg/kg	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
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	<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
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		0.2	0.2	<0.1	0.1	<0.1	<0.1

- Not tested

Italics - Samples Superceeded

Table T4: AEC 4 Validation Sampling Results

Area of Environmental Concern			HSL D (sand 2-<4m)	HIL D	ESL/EIL Commercial/ Industrial	AEC4	AEC4	*AEC4*	AEC4
Sample Location						AEC4-V8W	AEC4-V9W	*AEC4-V10W*	AEC4-V10W-2
Date Sampled						28-Apr-23	28-Apr-23	*28-Apr-23*	3-May-23
Depth						Side Wall	Side Wall	*Side Wall*	Side Wall
Laboratory report						321970	321970	*321970*	322273
Parameters	**Unit**	**PQL**							
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	<0.1	*0.3*	0.7
Perfluoroheptanesulfonic acid	µg/kg	0.1				<0.1	<0.1	*<0.1*	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1			Direct: 1,000 / Indirect:10	<0.1	1.5	*5.3*	2.4
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		50,000	Direct: 10,000	<0.1	0.1	*<0.1*	<0.1
Perfluorononanoic acid	µg/kg	0.1				<0.1	0.2	*<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 perfluorooctanesulfonamide	µg/kg	1				<1	<1	*<1*	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1				<1	<1	*<1*	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5				<5	<5	*<5*	<5
MePerfluorooctanesulf-amid oacetic acid	µg/kg	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
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1		20,000		0.2	1.5	*5.6*	3.1

- Not tested

Italics - Samples Superceeded

Table T5: Site Surface Validation Sampling Results

Area of Environmental Concern			HIL D	ESL/EIL Commercial/ Industrial	The coal washery rejects order 2014 (Absolute Maximum Concentration)	SS	SS	*SS*	SS	SS
Sample Location						SS-V1	SS-V2	*SS-V3*	SS-V3-2B	SS-V3-2W1
Date Sampled						21-Apr-23	21-Apr-23	*21-Apr-23*	3-May-23	3-May-23
Depth						Surface	Surface	*Surface*	0.8	0.5
Laboratory report						321584	321584	*321584*	321584	321584
Parameters	**Unit**	**PQL**								
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		Direct: 1,000 / Indirect:10		0.3	<0.1	*0.2*	-	-
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	50,000	Direct: 10,000		<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	*<1*	-	-
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				0.4	<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	<2	*<2*	-	-
N-Methyl perfluorooctane sulfonamide	µg/kg	1				<1	<1	*<1*	-	-
N-Ethyl perfluorooctanesulfonamide	µg/kg	1				<1	<1	*<1*	-	-
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1				<1	<2	*<2*	-	-
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5				<5	<10	*<10*	-	-
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2				<0.2	<0.2	*<0.2*	-	-
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2				<0.2	<0.2	*<0.2*	-	-
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1	20,000			0.3	<0.1	*0.2*	-	-
Combustibility	%	0.1			40	6.4	9.7	*49*	2	7.9
Total Sulphur	%w/w	0.01			1	0.079	0.048	*0.21*	0.05	0.06

- Not tested

Italics - Samples Superceeded

Table T5: Site Surface Validation Sampling Results

Area of Environmental Concern			HIL D	ESL/EIL Commercial/ Industrial	The coal washery rejects order 2014 (Absolute Maximum Concentration)	SS	SS	SS	SS	SS	SS
Sample Location						SS-V3-2W2	SS-V3-2W3	SS-V3-2W4	SS-V4	SS-V5	SS-V6
Date Sampled						3-May-23	3-May-23	3-May-23	18-Apr-23	18-Apr-23	27-Apr-23
Depth						0.5	0.5	0.5	Surface	Surface	Surface
Laboratory report						321584	321584	321584	321311	321311	321855
Parameters	**Unit**	**PQL**									
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	0.2
Perfluoroheptanesulfonic acid	µg/kg	0.1				-	-	-	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1		Direct: 1,000 / Indirect:10		-	-	-	<0.1	0.1	0.6
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	0.3
Perfluorohexanoic acid	µg/kg	0.1				-	-	-	<0.1	<0.1	0.2
Perfluoroheptanoic acid	µg/kg	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
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 perfluorooctanesulfonamide	µg/kg	1				-	-	-	<1	<1	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1				-	-	-	<1	<1	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5				-	-	-	<5	<5	<5
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2				-	-	-	<0.2	<0.2	<0.2
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2				-	-	-	<0.2	<0.2	<0.2
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1	20,000			-	-	-	<0.1	0.1	0.8
Combustibility	%	0.1			40	3	2.2	0.7	11	18	7.7
Total Sulphur	%w/w	0.01			1	0.06	0.05	0.04	0.04	0.05	0.045

- Not tested

Italics - Samples Superceeded

Table T5: Site Surface Validation Sampling Results

Area of Environmental Concern						SS	SS	SS	SS	SS	SS	SS
Sample Location						SS-V7	SS-V8	SS-V9	SS-V10	SS-V11	SS-V12	SS-V13
Date Sampled			HIL D	ESL/EIL Commercial/ Industrial	The coal washery rejects order 2014 (Absolute Maximum Concentration)	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	21-Apr-23	27-Apr-23
Depth						Surface	Surface	Surface	Surface	Surface	Surface	Surface
Laboratory report						321311	321311	321311	321311	321311	321584	321855
Parameters	**Unit**	**PQL**										
Perfluorobutanesulfonic acid	µg/kg	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
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1				<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	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1		Direct: 1,000 / Indirect:10		<0.1	<0.1	<0.1	0.2	<0.1	<0.1	0.6
Perfluorodecanesulfonic acid	µg/kg	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
Perfluoropentanoic acid	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	0.1				<0.1	<0.1	<0.1	<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
Perfluorooctanoic acid PFOA	µg/kg	0.1	50,000	Direct: 10,000		<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	<0.1	<0.1	0.2
Perfluorodecanoic acid	µg/kg	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
Perfluorododecanoic acid	µg/kg	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	<0.5	<0.5
Perfluorotetradecanoic acid	µg/kg	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
6:2 FTS	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2
8:2 FTS	µg/kg	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
Perfluorooctane sulfonamide	µg/kg	1				<1	<1	<1	<1	<1	<1	<1
N-Methyl perfluorooctane sulfonamide	µg/kg	1				<1	<1	<1	<1	<1	<1	<1
N-Ethyl perfluorooctanesulfonamide	µg/kg	1				<1	<1	<1	<1	<1	<1	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1				<1	<1	<1	<1	<1	<1	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	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
EtPerfluorooctanesulfamid oacetic acid	µg/kg	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			<0.1	<0.1	<0.1	0.2	<0.1	<0.1	0.7
Combustibility	%	0.1			40	3.8	9.7	4.7	1.4	8.4	6.2	5.9
Total Sulphur	%w/w	0.01			1	0.04	0.05	0.04	0.03	0.04	0.05	0.053

- Not tested

Italics - Samples Superceeded

Table T5: Site Surface Validation Sampling Results

Area of Environmental Concern			HIL D	ESL/EIL Commercial/ Industrial	The coal washery rejects order 2014 (Absolute Maximum Concentration)	SS	*SS*	SS	*SS*	SS	SS	SS	SS
Sample Location						SS-V14	*SS-V15*	SS-V15-2	*SS-V16*	SS-V16-2	SS-V17	SS-V18	SS-V19
Date Sampled						18-Apr-23	*18-Apr-23*	3-May-23	*18-Apr-23*	3-May-23	18-Apr-23	18-Apr-23	21-Apr-23
Depth						Surface	*Surface*	0.2	*Surface*	0.2	Surface	Surface	Surface
Laboratory report						321311	*321311*	322273	*321311*	321311	321311	321311	321584
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		0.2	*<0.1*	-	*<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
Perfluorobutanoic acid	µg/kg	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
Perfluorohexanoic acid	µg/kg	0.1				<0.1	*<0.1*	-	*<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
Perfluorooctanoic acid PFOA	µg/kg	0.1	50,000	Direct: 10,000		0.2	*<0.1*	-	*<0.1*	-	0.1	<0.1	<0.1
Perfluorononanoic acid	µg/kg	0.1				0.4	*<0.1*	-	*<0.1*	-	0.3	<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*	-	*<0.1*	-	0.6	<0.1	0.3
8:2 FTS	µg/kg	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
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			0.3	*<0.1*	-	*<0.1*	-	<0.1	<0.1	0.1
Combustibility	%	0.1			40	3.3	*77*	4.6	*32*	5.8	5.9	5.5	8.5
Total Sulphur	%w/w	0.01			1	0.04	*0.07*	0.25	*0.07*	0.05	0.03	0.05	0.053

- Not tested

Italics - Samples Superceeded

Table T5: Site Surface Validation Sampling Results

Area of Environmental Concern			HIL D	ESL/EIL Commercial/ Industrial	The coal washery rejects order 2014 (Absolute Maximum Concentration)	SS	SS	SS	SS	SS	SS	SS	*SS*
Sample Location						SS-V20	SS-V21	SS-V22	SS-V23	SS-V24	SS-V25	SS-V26	*SS-V27*
Date Sampled						21-Apr-23	21-Apr-23	21-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	18-Apr-23	*18-Apr-23*
Depth						Surface	Surface	Surface	Surface	Surface	Surface	Surface	*Surface*
Laboratory report						321584	321584	321584	321311	321311	321311	321311	*321311*
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*
Perfluoropentanesulfonic acid	µg/kg	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				<0.1	<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	<0.1	*<0.1*
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1		Direct: 1,000 / Indirect:10		0.2	<0.1	0.2	0.2	0.3	0.2	<0.1	*0.3*
Perfluorodecanesulfonic acid	µg/kg	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*
Perfluoropentanoic acid	µg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	*<0.2*
Perfluorohexanoic acid	µg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<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*
Perfluorooctanoic acid PFOA	µg/kg	0.1	50,000	Direct: 10,000		<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	<0.1	<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*
Perfluoroundecanoic acid	µg/kg	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*
Perfluorotridecanoic acid	µg/kg	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*
4:2 FTS	µg/kg	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				0.2	<0.1	<0.1	<0.1	0.4	<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*
10:2 FTS	µg/kg	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*
N-Methyl perfluorooctane sulfonamide	µg/kg	1				<1	<1	<1	<1	<1	<1	<1	*<1*
N-Ethyl perfluorooctanesulfonamide	µg/kg	1				<1	<1	<1	<1	<1	<1	<1	*<1*
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1				<1	<1	<1	<1	<1	<1	<1	*<1*
N-Et perfluorooctanesulfonamidoethanol	µg/kg	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*
EtPerfluorooctanesulfamid oacetic acid	µg/kg	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			0.2	<0.1	0.2	0.2	0.3	0.2	<0.1	*0.4*
Combustibility	%	0.1			40	9	21	8.6	12	2.4	17	8.1	*31*
Total Sulphur	%w/w	0.01			1	0.063	0.11	0.041	0.05	0.03	0.06	0.05	*0.07*

- Not tested

Italics - Samples Superceeded

Table T5: Site Surface Validation Sampling Results

Area of Environmental Concern			HIL D	ESL/EIL Commercial/ Industrial	The coal washery rejects order 2014 (Absolute Maximum Concentration)	SS	SS	SS
Sample Location						SS-V27-2	SS-V28	SS-V29
Date Sampled						3-May-23	21-Apr-23	21-Apr-23
Depth						0.4	Surface	Surface
Laboratory report						322273	321584	321584
Parameters	**Unit**	**PQL**						
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				-	0.2	0.4
Perfluoroheptanesulfonic acid	µg/kg	0.1				-	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1		Direct: 1,000 / Indirect:10		-	0.9	4.8
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	0.6
Perfluorohexanoic acid	µg/kg	0.1				-	<0.1	0.3
Perfluoroheptanoic acid	µg/kg	0.1				-	<0.1	0.1
Perfluorooctanoic acid PFOA	µg/kg	0.1	50,000	Direct: 10,000		-	<0.1	0.2
Perfluorononanoic acid	µg/kg	0.1				-	0.9	0.4
Perfluorodecanoic acid	µg/kg	0.5				-	<0.5	<0.5
Perfluoroundecanoic acid	µg/kg	0.5				-	1	<0.5
Perfluorododecanoic acid	µg/kg	0.5				-	<0.5	<0.5
Perfluorotridecanoic acid	µg/kg	0.5				-	0.6	<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 perfluorooctanesulfonamide	µg/kg	1				-	<1	<1
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1				-	<1	<1
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5				-	<5	<5
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2				-	<0.2	<0.2
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2				-	<0.2	<0.2
Sum of PFOS and PFHxS (Added from lab data)	µg/kg	0.1	20,000			-	1.1	5.2
Combustibility	%	0.1			40	2.9	12	22
Total Sulphur	%w/w	0.01			1	0.05	0.085	0.19

- Not tested

Italics - Samples Superceeded

Table T6: Western Settling Basin Validation Sampling Results

Area of Environmental Concern			The coal washery rejects order 2014 (Absolute Maximum Concentration)	*WSB*	WSB	*WSB*	WSB	*WSB*	WSB	*WSB*	WSB
Sample Location				*WSB-V1*	WSB-V1-2	*WSB-V2*	WSB-V2-2	*WSB-V3*	WSB-V3-2	*WSB-V4*	WSB-V4-2
Date Sampled				*18-Apr-23*	3-May-23	*18-Apr-23*	3-May-23	*18-Apr-23*	3-May-23	*18-Apr-23*	3-May-23
Depth				-	-	-	-	-	-	-	-
Laboratory report				*321310*	322273	*321310*	322273	*321310*	322273	*321310*	322273
Parameters	**Unit**	**PQL**									
Combustibility	%	0.1	40	*60*	4.1	*36*	8.4	*20*	3.2	*48*	6.9
Total Sulphur	%w/w	0.01	1	*0.3*	0.05	*0.32*	0.04	*0.12*	0.04	*0.24*	0.05

- Not tested

Italics - Samples Superceeded

Table T6: Western Settling Basin Validation Sampling Results

Area of Environmental Concern			The coal washery rejects order 2014 (Absolute Maximum Concentration)	*WSB*	WSB	*WSB*	WSB	*WSB*	WSB	*WSB*	WSB
Sample Location				*WSB-V5*	WSB-V5-2	*WSB-V6*	WSB-V6-2	*WSB-V7*	WSB-V7-2	*WSB-V8*	WSB-V8-2
Date Sampled				*18-Apr-23*	3-May-23	*18-Apr-23*	3-May-23	*18-Apr-23*	3-May-23	*18-Apr-23*	3-May-23
Depth				-	-	-	-	-	-	-	-
Laboratory report				*321310*	322273	*321310*	322273	*321310*	322273	*321310*	322273
Parameters	**Unit**	**PQL**									
Combustibility	%	0.1	40	*66*	3	*54*	14	*38*	3.5	*33*	4.2
Total Sulphur	%w/w	0.01	1	*0.13*	0.04	*0.3*	0.05	*0.28*	0.04	*0.32*	0.04

- Not tested

Italics - Samples Superceeded

Table T6: Western Settling Basin Validation Sampling Results

Area of Environmental Concern			The coal washery rejects order 2014 (Absolute Maximum Concentration)	*WSB*	WSB
Sample Location				*WSB-V9*	WSB-V9-2
Date Sampled				*18-Apr-23*	3-May-23
Depth				-	-
Laboratory report				*321310*	322273
Parameters	**Unit**	**PQL**			
Combustibility	%	0.1	40	*6.9*	9.1
Total Sulphur	%w/w	0.01	1	*0.04*	0.06

- Not tested

Italics - Samples Superceeded

Table T7: Western Settling Basin Water Sampling Results

Purpose			PFAS NEMP 2.0 Interim-Marine 95% species protection	WSB
Sample Location				BD
Date Sampled				10-Mar-23
Laboratory report				318582
Parameters	**Unit**	**PQL**		
Perfluorobutanesulfonic acid	µg/L	0.01		0.0078
Perfluoropentanesulfonic acid	µg/L	0.01		0.009
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01		0.036
Perfluoroheptanesulfonic acid	µg/L	0.01		<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.13	0.0073
Perfluorodecanesulfonic acid	µg/L	0.02		<0.002
Perfluorobutanoic acid	µg/L	0.02		0.041
Perfluoropentanoic acid	µg/L	0.02		0.098
Perfluorohexanoic acid	µg/L	0.01		0.082
Perfluoroheptanoic acid	µg/L	0.01		0.017
Perfluorooctanoic acid PFOA	µg/L	0.01	220	0.0078
Perfluorononanoic acid	µg/L	0.01		0.003
Perfluorodecanoic acid	µg/L	0.02		<0.002
Perfluoroundecanoic acid	µg/L	0.02		<0.002
Perfluorododecanoic acid	µg/L	0.05		<0.005
Perfluorotridecanoic acid	µg/L	0.1		<0.01
Perfluorotetradecanoic acid	µg/L	0.5		<0.05
4:2 FTS	µg/L	0.01		<0.001
6:2 FTS	µg/L	0.01		<0.0004
8:2 FTS	µg/L	0.02		<0.0004
10:2 FTS	µg/L	0.02		<0.002
Perfluorooctane sulfonamide	µg/L	0.1		<0.02
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		<0.002
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02		<0.002

Table T8: UST Excavation Validation Sampling Results

Area of Environmental Concern						AEC4	AEC4	AEC4	AEC4	AEC4	AEC4
Sample Location						T_V1B	T_V2B	T_V1W	T_V2W	T_V3W	T_V4W
Date Sampled			HSL D (sand 2-<4m)	HIL D	ESL/EIL Commercial/ Industrial	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23	28-Apr-23
Depth						Base	Base	Side Wall	Side Wall	Side Wall	Side Wall
Laboratory report						321970	321970	321970	321970	321970	321970
Parameters	**Unit**	**PQL**									
TRH C6 - C9	mg/kg	25				<25	<25	<25	<25	<25	<25
TRH C6 - C10	mg/kg	25			215	<25	<25	<25	<25	<25	<25
Fraction 1 - BTEX	mg/kg	25	630			<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
Toluene	mg/kg	0.5	NL		135	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	1	NL		165	<1	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	2	NL			<2	<2	<2	<2	<2	<2
o-Xylene	mg/kg	1	NL			<1	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	1	NL		180	<1	<1	<1	<1	<1	<1
TRH C10 - C14	mg/kg	50				58	88	<50	<50	140	<50
TRH C15 - C28	mg/kg	100				140	180	<100	<100	280	<100
TRH C29 - C36	mg/kg	100				<100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	50			170	110	160	160	100	<100	270
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	NL			110	<50	<50	<100	<100	<50
TRH >C16-C34	mg/kg	100			1,700	<100	<50	<50	<100	<100	<50
TRH >C34-C40	mg/kg	100			3,300	<100	270	270	150	<100	420
Total +ve TRH (>C10-C40)	mg/kg	50				110	<50	<50	<100	<100	<50
Naphthalene	mg/kg	0.1	NL		370	<0.2	<0.5	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	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
Fluorene	mg/kg	0.1				0.2	0.3	<0.1	<0.1	0.2	<0.1
Phenanthrene	mg/kg	0.1				0.6	0.5	<0.1	<0.1	0.2	<0.1
Anthracene	mg/kg	0.1				<0.2	<0.2	<0.1	<0.1	<0.2	<0.1
Fluoranthene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	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	<0.05	<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
Dibenzo(a,h)anthracene	mg/kg	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
Total +vePAH's	mg/kg	0.05		4,000		0.8	0.8	<0.05	<0.05	0.4	<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

- Not tested

Appendix A

Req:R396575 /Doc:DP 1293105 P /Rev:11-Apr-2023 /NSW LRS /Prt:12-Apr-2023 03:30 /Seq:1 of 7
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COORDINATE SCHEDULE						
MARK	MGA COORDINATES		CLASS	PU	METHOD	STATE
	EASTING	NORTHING				
PM 21038	362919.749	6324396.927	B	0.02	SCIMS	FOUND
PM 21098	364143.906	6327201.714	B	0.02	SCIMS	FOUND
PM 32013	363000.965	6324285.166	B	0.03	SCIMS	FOUND
PM 161389	363722.139	6324533.530	–	–	CADASTRAL TRAVERSE	FOUND
SSM 73185	364694.419	6324480.759	–	–	CADASTRAL TRAVERSE	FOUND
DATE OF SCIMS CO-ORDINATES: 07/03/2023			MGA ZONE: 56		MGA DATUM: GDA2020	
COMBINED SCALE FACTOR: 0.999823						

'Y'
PM21098 FD

348° 33' 43" ~ 2776.571

SSM73185 FD

MGA
SCIMS

201°23'57"~3133.056 (MGA GROUND)
201°23'57"~3133.039 (SURVEY)

23°34'44"~3060.834 (MGA GROUND)
23°34'44"~3060.826 (SURVEY)

PM161389 FD

80°20'18"~814.079

250°59'50"~762.87

107° 03' 58" ~ 690.473

'X'
PM21038 FD

PM32013

143°59'40"~138.179 (MGA GROUND)
143°59'23"~138.179 (SURVEY)

SCENIC DRIVE

52
DP 1204607

122
DP 1290829

123
DP 1290829

201°53'38"~629.62

6
DP1201414

9
DP 1201414

11
DP 1201414

1
DP 1122687

93°06'24"~973.883

60
DP 1065038

1
DP 1191148

111

(C)

REFER
SHEET 2

110

(C)

1002
DP 1150550

25 DP 1201414

(XN)
(RL)
(XL)
(XL)
(XM)
(XN)
(XL)
(C)

17
DP 1201414

7
DP 1201414

8
DP 1201414

12
DP 1201414

14
DP 1201414

(RL) RESERVATIONS & CONDITIONS - SEE CROWN GRANT(S)
(C) LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS & CONDITIONS - SEE CROWN GRANT(S)
(XL) LAND EXCLUDES MINERALS (V570388)
(XM) LAND EXCLUDES MINERALS (W212051)
(XN) LAND EXCLUDES MINERALS (T447400)

170050DPA_03

SURVEYOR
Name: BENJAMEN JOHN BELFIELD
MONTEATH & POWYS PTY LTD
Date: 24/03//2023
Reference: 170050DPA

PLAN OF SUBDIVISION OF
LOT 10 DP1201414 AND
EASEMENT AFFECTING
LOTS 7, 9 AND 11 DP 1201414

LGA: CENTRAL COAST
Locality: COLONGRA
Reduction Ratio: 1:5000
Lengths are in metres.

11/04/2023

DP 1293105

(Q) – RIGHT OF CARRIAGEWAY 4.5 & 10 WIDE & VARIABLE (DP 1195040)
(X) – EASEMENT FOR ELECTRICITY & OTHER PURPOSES 10, 15 & 30 WIDE & VARIABLE (DP 1195040)
(AE) – EASEMENT FOR ACCESS 10 WIDE & VARIABLE (DP 1206992)
(AQ) – RIGHT OF ACCESS (5 WIDE) (DP 1198575)
(AW) – EASEMENT FOR ELECTRICITY CABLES 4 WIDE & VARIABLE WIDTH (DP1198575)
(CA) – EASEMENT FOR ACCESS 5, 10 & 15 WIDE & VARIABLE (DP 1203848)
(CB) – RIGHT OF ACCESS 5 & 10 WIDE & VARIABLE WIDTH

DP1293105

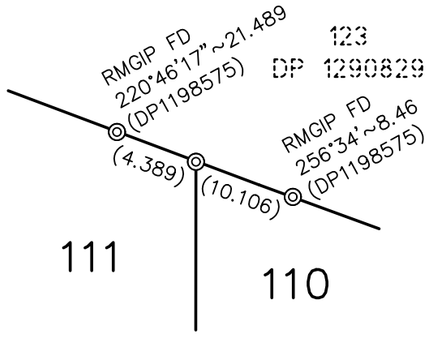


DIAGRAM 'C'
NOT TO SCALE

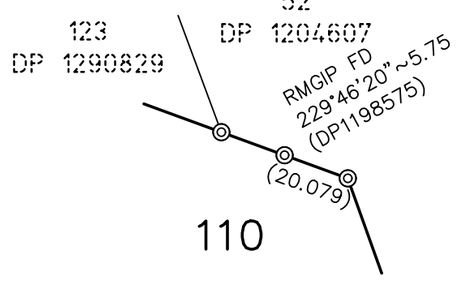
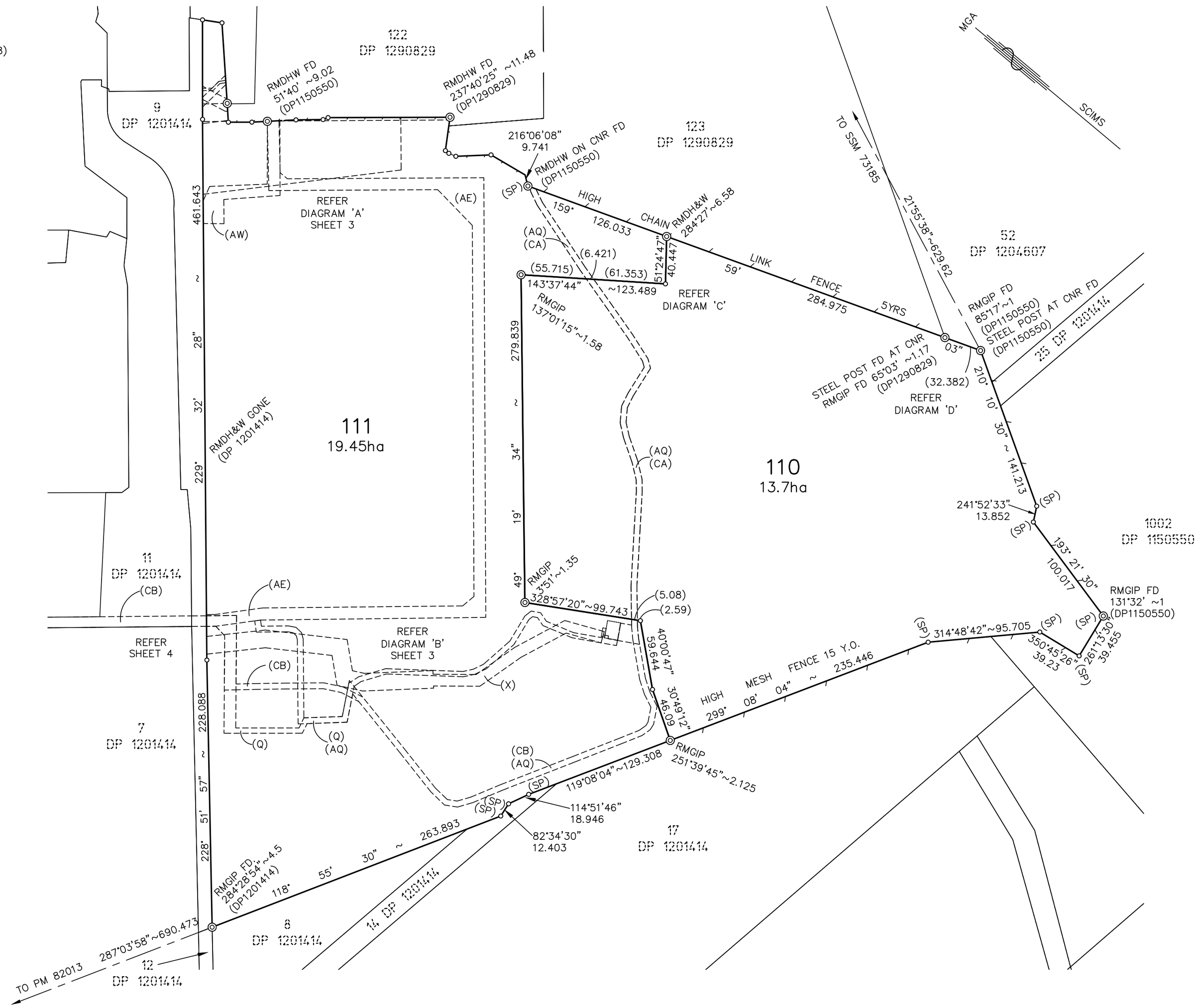


DIAGRAM 'D'
NOT TO SCALE



SURVEYOR Name: BENJAMEN JOHN BELFIELD MONTEATH & POWYS PTY LTD Date: 24/03//2023 Reference: 170050DPA	PLAN OF SUBDIVISION OF LOT 10 DP1201414 AND EASEMENT AFFECTING LOTS 7, 9 AND 11 DP 1201414	LGA: CENTRAL COAST Locality: COLONGRA Reduction Ratio: 1:2500 Lengths are in metres.	REGISTERED 11/04/2023	DP 1293105

170050DPA_03

Req:R396575 /Doc:DP 1293105 P /Rev:11-Apr-2023 /NSW LRS /Prt:12-Apr-2023 03:30 /Seq:2 of 7
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DIAGRAM 'A'
SCALE 1:1000

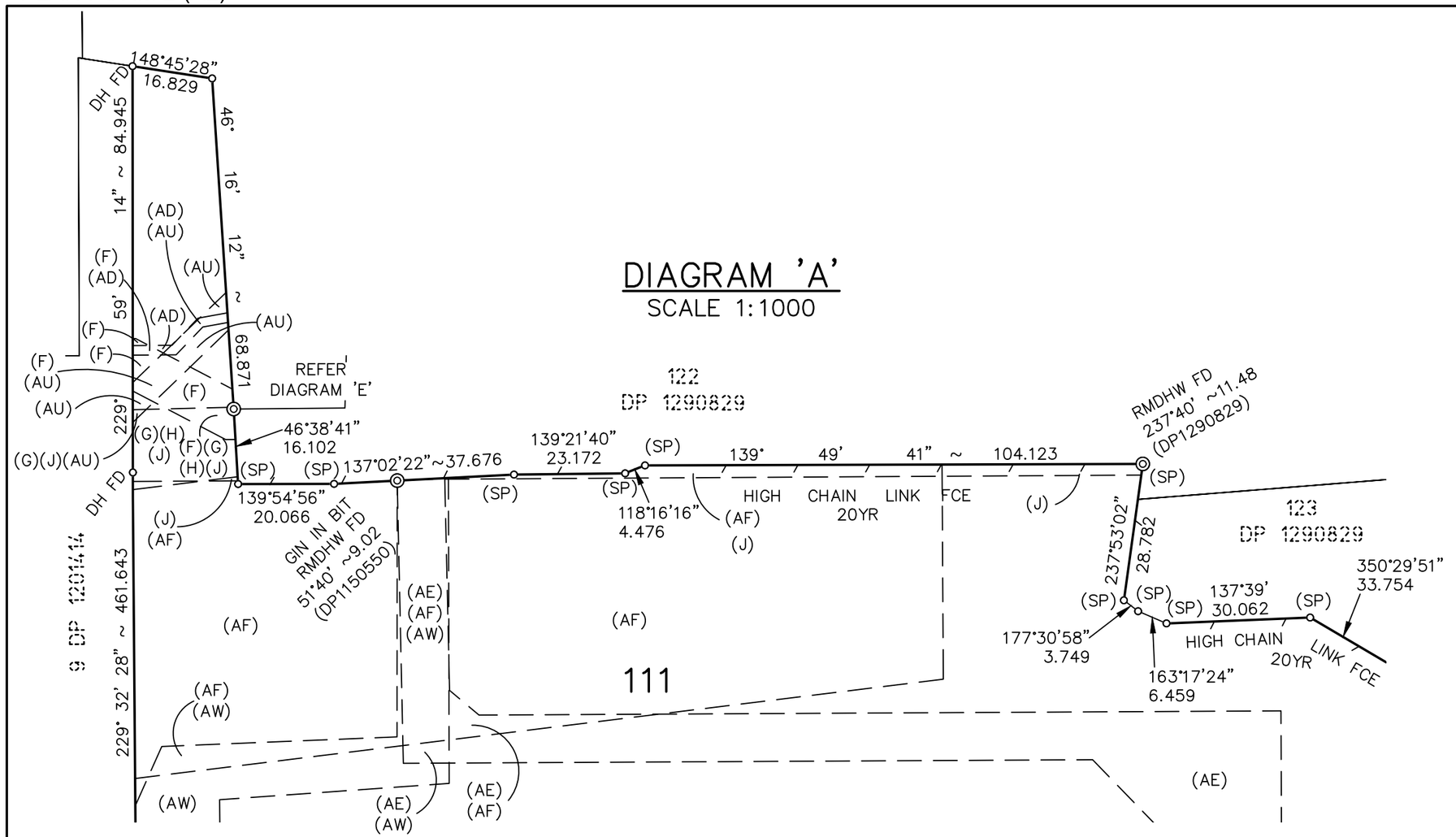
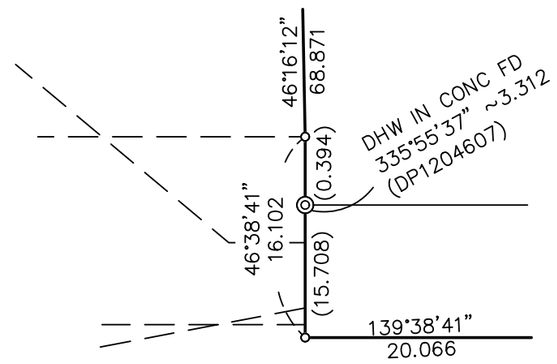
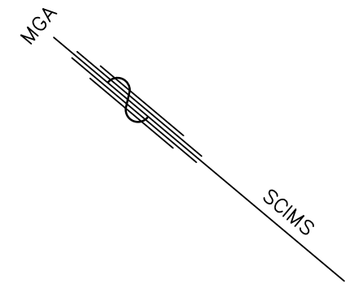


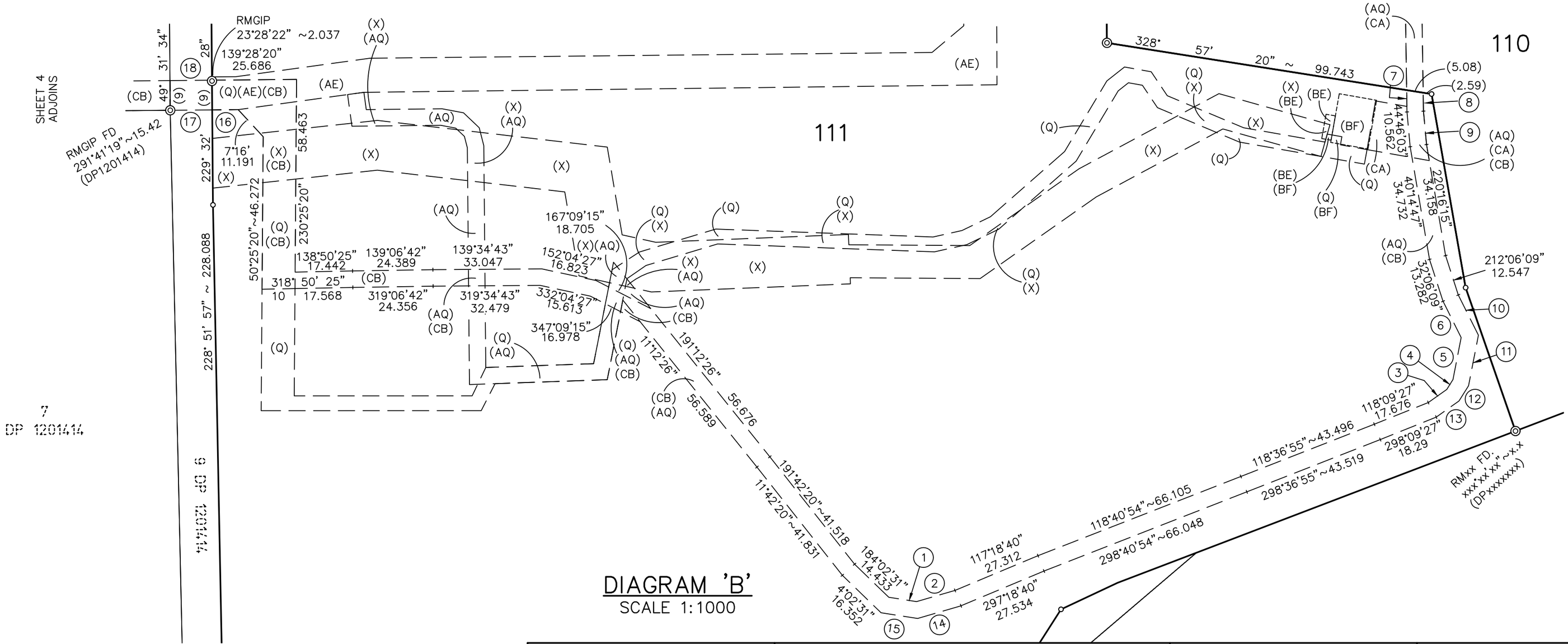
DIAGRAM 'E'
NOT TO SCALE





(F) – EASEMENT FOR WATER SUPPLY 10 WIDE (DP 1134580)
(G) – EASEMENT ACCESS 10, 15 WIDE AND VARIABLE WIDTH (DP 1290829)
(H) – EASEMENT ACCESS 10, 15 WIDE AND VARIABLE WIDTH (DP 1206992)
(J) – EASEMENT FOR ACCESS 10, 15 WIDE AND VARIABLE (DP 1134580) (DP 1150550)
(Q) – RIGHT OF CARRIAGEWAY 4.5 & 10 WIDE & VARIABLE (DP 1195040)
(X) – EASEMENT FOR ELECTRICITY & OTHER PURPOSES 10, 15 & 30 WIDE & VARIABLE (DP 1195040)
(AD) – EASEMENT FOR PIPELINE 2 WIDE & 12 WIDE (LIMITED IN HEIGHT) (DP 1147959)(AF 911147)
(AE) – EASEMENT FOR ACCESS 10 WIDE & VARIABLE (DP 1206992)
(AF) – EASEMENT FOR TRANSMISSION LINE 60 WIDE (DP 1150550)
(AQ) – RIGHT OF ACCESS (5 WIDE) (DP 1198575)
(AU) – EASEMENT FOR DRAINAGE 6 WIDE (DP1198575)
(AW) – EASEMENT FOR ELECTRICITY CABLES 4 WIDE & VARIABLE WIDTH (DP1198575)
(BE) – LEASE VIDE (8901541) (AH116862) (DP 1195040)
(BF) – LEASE VIDE (3461716) (7213454) (3643903) (8153333)(8153334) (3461717) (7213455) (7643904) (DP 1195040)
(CA) – EASEMENT FOR ACCESS 5, 10 & 15 WIDE & VARIABLE (DP 1203848)
(CB) – RIGHT OF ACCESS 5 & 10 WIDE & VARIABLE WIDTH

DIAGRAM 'B'
SCALE 1:1000



SHORT LINE TABLE		
No.	BEARING	DISTANCE
1	148°52'48"	8.526
2	123°46'20"	12.162
3	104°36'58"	6.866
4	82°11'10"	3.521
5	61°03'16"	12.997
6	23°25'51"	12.34
7	49°06'43"	6.688
8	228°55'56"	5.649
9	224°46'03"	10.175
10	203°25'51"	13.664
11	241°03'16"	15.633
12	262°11'10"	5.445
13	284°36'58"	8.451
14	303°46'20"	13.558
15	328°52'48"	11.224
16	319°28'08"	7.893
17	319°28'08"	12.737
18	139°28'08"	12.740

170050DPA_03

SURVEYOR Name: BENJAMEN JOHN BELFIELD MONTEATH & POWYS PTY LTD Date: 24/03//2023 Reference: 170050DPA	PLAN OF SUBDIVISION OF LOT 10 DP1201414 AND EASEMENT AFFECTING LOTS 7, 9 AND 11 DP 1201414	LGA: CENTRAL COAST Locality: COLONGRA Reduction Ratio: 1:1000 Lengths are in metres.	REGISTERED 11/04/2023	DP 1293105

(CB) — RIGHT OF ACCESS 5 & 10 WIDE & VARIABLE WIDTH

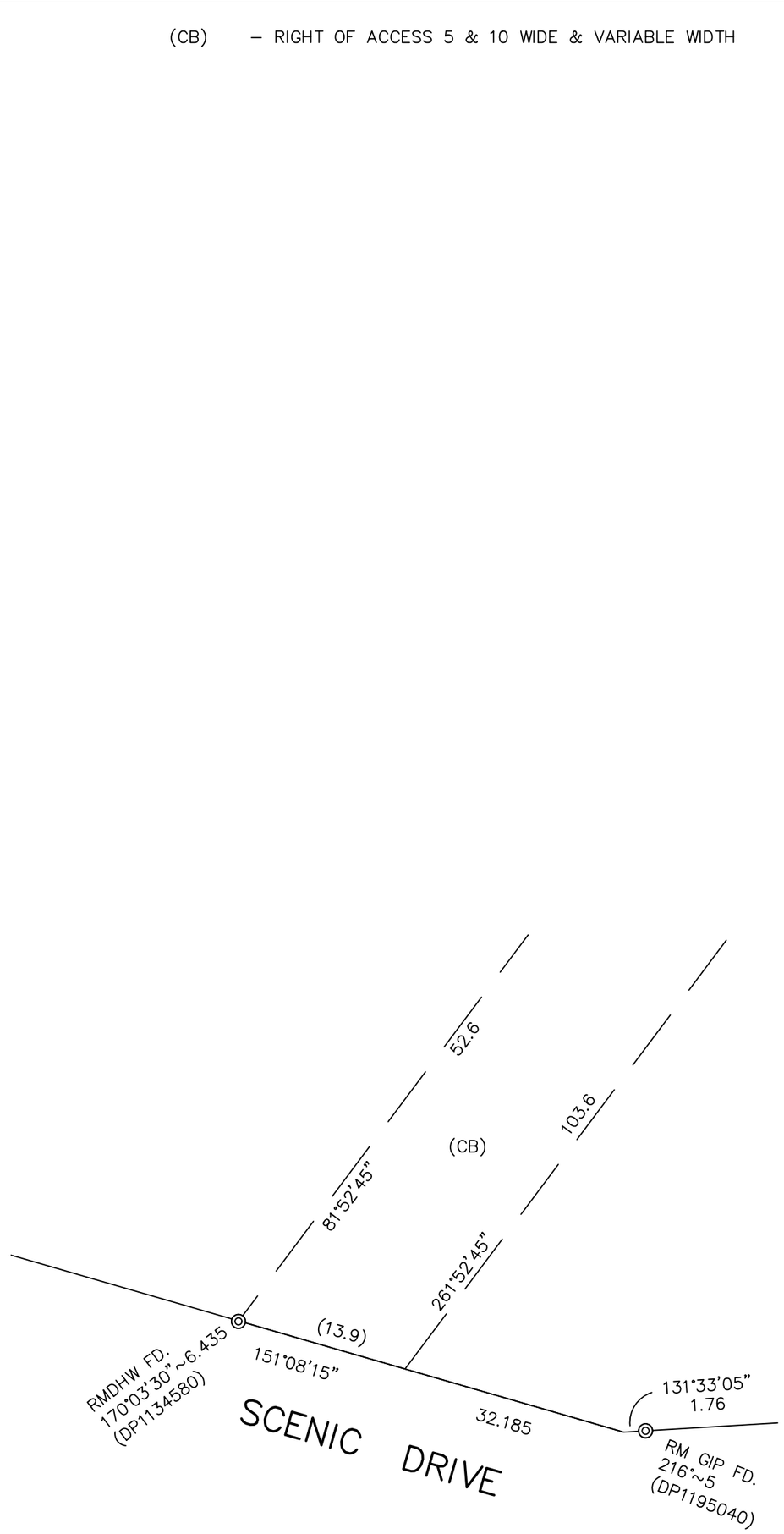
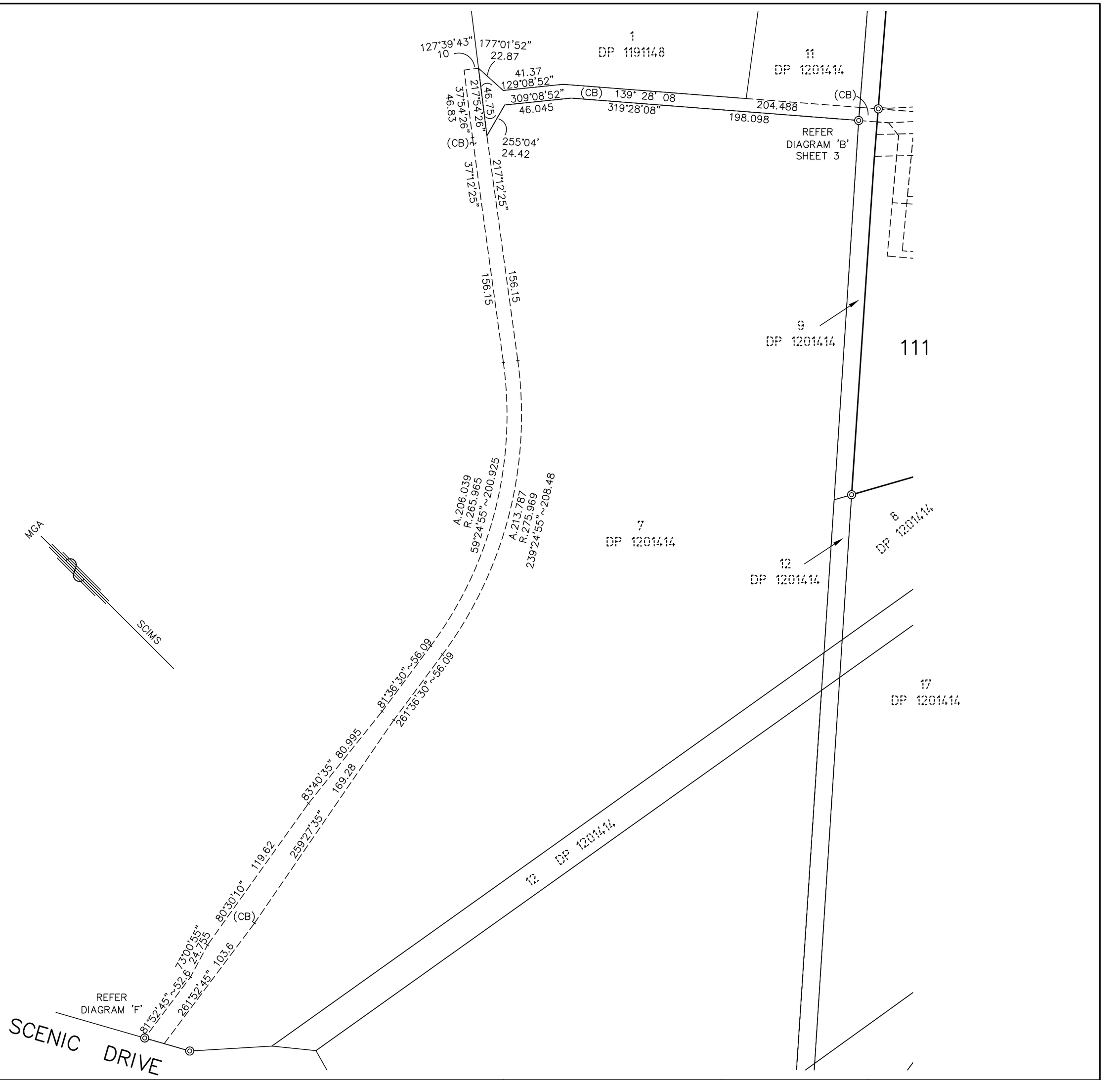


DIAGRAM 'F'
SCALE 1:400



SURVEYOR Name: BENJAMEN JOHN BELFIELD MONTEATH & POWYS PTY LTD Date: 24/03//2023 Reference: 170050DPA	PLAN OF SUBDIVISION OF LOT 10 DP1201414 AND EASEMENT AFFECTING LOTS 7, 9 AND 11 DP 1201414	LGA: CENTRAL COAST Locality: COLONGRA Reduction Ratio: 1:2000 Lengths are in metres.	11/04/2023	DP 1293105

170050DPA_03

Req:R396575 /Doc:DP 1293105 P /Rev:11-Apr-2023 /NSW LRS /Prt:12-Apr-2023 03:30 /Seq:4 of 7
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PLAN FORM 6 (2020) WARNING: Creasing or folding will lead to rejection

DEPOSITED PLAN ADMINISTRATION SHEET

Office Use Only

Registered: 11/04/2023

Title System: TORRENS

Office Use Only

DP1293105

PLAN OF SUBDIVISION OF LOT 10 DP1201414 AND EASEMENT AFFECTING LOTS 7, 9 AND 11 DP1201414

LGA: Central Coast

Locality: Colongra

Parish: Wallarah

County: Northumberland

Survey Certificate

I, Ben Belfield of Monteath & Powys Pty Ltd, PO Box 2270 Dangar NSW 2309, a surveyor registered under the *Surveying and Spatial Information Act 2002*, certify that:

*(a) The land shown in the plan was surveyed in accordance with the *Surveying and Spatial Information Regulation 2017*, is accurate and the survey was completed on ....., or

~~*(b) The part of the land shown in the plan (*being/*excluding ** .....) was surveyed in accordance with the *Surveying and Spatial Information Regulation 2017*, the part surveyed is accurate and the survey was completed on ....., the part not surveyed was compiled in accordance with that Regulation, or~~

~~*(c) The land shown in this plan was compiled in accordance with the *Surveying and Spatial Information Regulation 2017*.~~

Datum Line: 'X' – 'Y'

Type: *~~Urban~~/*Rural

The terrain is *~~Level-Undulating~~ / *~~Steep-Mountainous~~.

Signature: ..... Dated: 05/04/23

Surveyor Identification No: SUR 008462
Surveyor registered under
the *Surveying and Spatial Information Act 2002*

*Strike out inappropriate words.

**Specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey.

Crown Lands NSW/Western Lands Office Approval

I, ... (Authorised Officer) in approving this plan certify that all necessary approvals in regard to the allocation of the land shown herein have been given.

Signature: .....

Date: .....

File Number: .....

Office: .....

Subdivision Certificate

I, NICOLE BREWER

Authorised Person/~~General Manager~~/*~~Registered Certifier~~, certify that the provisions of s.6.15 of the *Environmental Planning and Assessment Act 1979* have been satisfied in relation to the proposed subdivision, new road or ~~reserve~~ set out herein.

Signature: .....

~~Registration number~~: .....

Consent Authority: Director, Energy Assessments as delegate of Minister for Planning

Date of endorsement: 04/04/2023

~~Subdivision Certificate number~~: SSI-48492458

File number: SSI – 48492458

*Strike through if inapplicable.

Plans used in the preparation of survey/compilation.

DP1201414

DP1290829

DP1150550

DP1204607

DP1198575

Statements of intention to dedicate public roads create public reserves and drainage reserves, acquire/resume land.

Surveyor's Reference: 170050DPA

Signatures, Seals and Section 88B Statements should appear on PLAN FORM 6A

Req:R396575 /Doc:DP 1293105 P /Rev:11-Apr-2023 /NSW LRS /Prt:12-Apr-2
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PLAN FORM 6A (2019) **DEPOSITED PLAN ADMINISTRATION SHEET** Sheet 2 of 3 sheets

Registered: 11/04/2023 Office Use Only

Office Use Only

DP1293105

PLAN OF SUBDIVISION OF LOT 10 DP1201414 AND EASEMENT AFFECTING LOTS 7, 9 AND 11 DP1201414

Subdivision Certificate Number: SSI-48492458

Date of Endorsement: 04/04/23

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2017*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

Schedule of Street Addresses

Lot	Street Number	Street Name	Street Type	Location
110	N/A	Scenic	Drive	Colongra
111	N/A	Scenic	Drive	Colongra

Pursuant to Section 88B of the Conveyancing Act 1919, as amended, it is intended to create:

1. Right of Access 5 and 10 Wide and Variable.

If space is insufficient use additional annexure sheet

Surveyor's Reference: 170050DPA

Req:R396575 /Doc:DP 1293105 P /Rev:11-Apr-2023 /NSW LRS /Prt:12-Apr-2
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PLAN FORM 6A (2019) **DEPOSITED PLAN ADMINISTRATION SHEET** Sheet 3 of 3 sheets

Office Use Only

Registered: 11/04/2023

Office Use Only

DP1293105

PLAN OF SUBDIVISION OF LOT 10 DP1201414 AND EASEMENT AFFECTING LOTS 7, 9 AND 11 DP1201414

Subdivision Certificate Number: SSI - 48492458

Date of Endorsement: 07-04-23

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2017*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

Executed by **Generator Property Management**)
(ACN 615 047 295) in accordance with Section 127)
of the Corporations Act 2001 by:)

Signature of Authorised Delegate

Signature of Authorised Delegate

DIANE DIBBEN
Full Name of Authorised Delegate

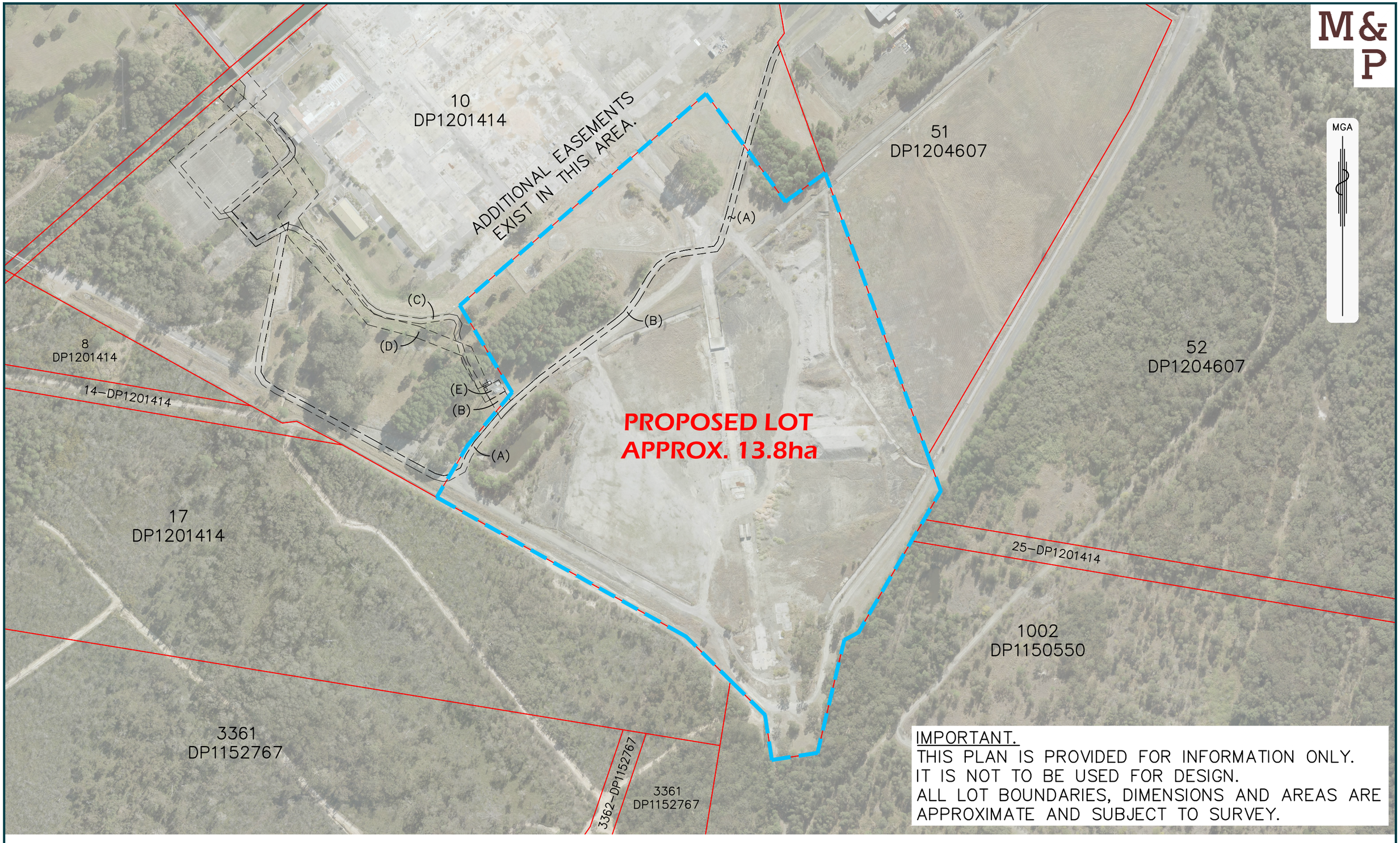
Stephen Kenneth Saladine
Full Name of Authorised Delegate

COMPANY SECRETARY
Authority of Authorised Delegate

Managing Director
Authority of Authorised Delegate

If space is insufficient use additional annexure sheet

Surveyor's Reference: 170050DPA



(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	SVY	DFT	CHK	DATE
1	ISSUE TO CLIENT	M&P	MAK	BJB	15/07/22

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Monteath & Powys
PLANNING PROJECT MANAGEMENT SURVEYING 3D SPATIAL
monteathpowys.com.au
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

DIMENSIONS AS SHOWN. DO NOT SCALE.

PROJECT NORTH

DEMOLISH AND BACKFILL EXISTING DRAINAGE ALIGNMENT TO RESTORE SHEET FLOW CONDITIONS TO DOWNSTREAM BUSHLAND

DEMOLISH EXISTING CONCRETE DRAIN AND RESTORE SHEET FLOW CONDITIONS

EXISTING CONCRETE STRUCTURE. REFER TO THE ELECTRICITY COMMISSION OF N.S.W DRAWING 213298K/9 DATED 20-8-1987 FOR DETAILS

INDICATIVE BACKFILL AREA BY OTHERS, ENSURE BACKFILL (COMPACTED AS PER EARTHWORKS SPECIFICATION) EXTENDS MIN 5.0M (OR AS OTHERWISE ADVISED BY GEOTECHNICAL CONSULTANT) PAST PROPOSED EDGE OF BESS YARD BATTER WORKS TO ALLOW MACHINERY TO OPERATED AROUND

CAP AND ABANDON EXISTING Ø675 CONCRETE PIPE

APPROXIMATE LOCATION OF EXISTING Ø675 DRAINAGE LINE TO REMAIN

APPROXIMATE LOCATION OF PROPOSED TIE INTO EXISTING Ø675 CONCRETE PIPE FOR FUTURE DRAINAGE WORKS PENDING POTHOLED LEVELS OF INVERT AND EXACT LOCATION

EXTENT OF EXISTING CHANNEL TO BE REMOVED AND BACKFILLED

POTENTIAL ADJUSTMENT OF FENCE ALIGNMENT TO AVOID CLASHES WITH EXISTING DRAINAGE LINE

REMOVE CONCRETE BLOCK CAPPING TO EXISTING CHANNEL TO ALLOW OVERFLOW DIRECTLY INTO DOWNSTREAM WATERWAY

1 00154

2 00155

3 00155

DP1201414

DP1150550

DP1120607

3362_DP1152767

3361 DP1152767

DEMOLITION PLAN

SCALE 1:1000

NOTES

1. THE POSITION OF ALL EXISTING SERVICES SHOWN SHOULD BE REGARDED AS APPROXIMATE AND NOT NECESSARILY COMPREHENSIVE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATIONS AND INFORM ALL RELEVANT AUTHORITIES PRIOR TO ANY EXCAVATION
2. EXISTING CONTOURS SHOWN AT 0.2m INTERVALS
3. DESIGN CONTOURS SHOWN AT 0.1m INTERVALS
4. EXISITING CONCRETE IS APPROXIMATE ONLY. STRUCTURE HAS BEEN DRAWN FROM HISTORICAL DESIGN DRAWINGS AND PLACED APPROXIMATELY ON SITE, USING A COMBINATION OF THE EXISTING SITE SURVEY AND SATELLITE IMAGERY

LEGEND

- 16.00 — DESIGN CONTOUR
- 16.00 — EXISTING SURFACE CONTOUR
- SITE BOUNDARY LINE
- EASEMENT LINE
- ASSET PROTECTION ZONE
- SECURITY PERIMETER FENCE
- EXISTING FENCE
- EXISTING DRAINAGE LINE
- E — EXISTING ELECTRICAL SERVICE
- OPT — EXISTING COMMUNICATIONS SERVICE
- EXISTING VEGETATION

SURFACE COMPARISON LEGEND

FILL

- 1.4m to 1.6m
- 1.6m to 1.8m
- 1.8m to 2.0m
- 2.0m to 2.2m
- 2.2m to 2.4m
- 2.4m to 2.6m
- 2.6m to 2.8m
- 2.8m to 3.0m
- 3.0m to 3.2m
- 3.2m to 3.4m

SURFACE COMPARISON NOTE

THIS DRAWING SHOWS A COMPARISON BETWEEN:

- EXISTING SURFACE LEVELS
- DESIGN SURFACE LEVELS LOWERED BY 2m

AREAS REQUIRING FILL TO ACHIEVE BULK EARTHWORKS LEVELS FOLLOWING SITE STRIPPING ARE SHOWN GREEN (REFER CHART)

THE APPROXIMATE VOLUME OF BACKFILL WITH SITE WON MATERIAL FOLLOWING THE DEMOLITION OF THE EXISTING STRUCTURE IS 4900m³. THIS IS THE FILLING REQUIRED TO BRING LEVELS FROM 2m BELOW THE DESIGN SURFACE, UP TO THE EXISTING SURROUNDS. IT DOES NOT INCLUDE ANY VOID FILLING BELOW THE 2.0m LEVEL (i.e. THE LOWER FILLING OF THE BUNKER)

0 20 40 60 80m

1:1000 (A1)

REV	DESCRIPTION	DRN	DES	RVD	APP	DATE
B	ISSUED FOR 25% REVIEW	R.C.F.	P.D.	C.D.	C.D.	15/12/22
A	ISSUED FOR 25% REVIEW	R.C.F.	P.D.	C.D.	C.D.	09/12/22

REVISION DETAILS

REFERENCE DRAWINGS

HATCH

CONSOLIDATED POWER PROJECTS

A QUANTA SERVICES COMPANY

ISSUE FOR REVIEW

DRAWN	R.CHRYSTAL-FOY	15/12/2022
DESIGNED	P.DAVISON	15/12/2022
REVIEWED	C.DAVIES	15/12/2022
APPROVED	C.DAVIES	15/12/2022
SCALE: 1:1000	PROJECT No: 12590	

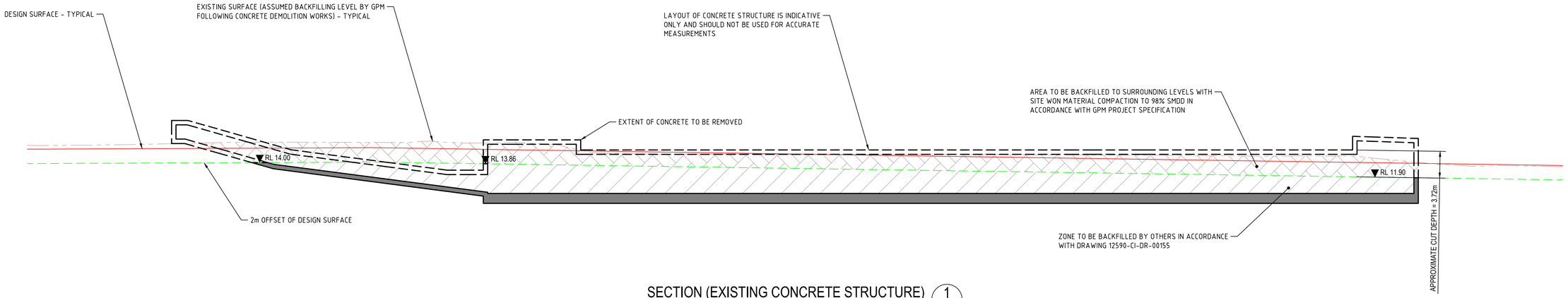
WARATAH SUPER BATTERY
330 kV SUBSTATION AND BESS YARD
DEMOLITION PLAN

A1 | DRAWING No. 12590-CI-DR-00151 | REV B

PLOT DATE: $DATE$
PLOT TIME: $TIME$
FILE PATH: $FILE$

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DIMENSIONS AS SHOWN. DO NOT SCALE.



SECTION (EXISTING CONCRETE STRUCTURE) 1
1:300
00151

0 6 12 18 24m
1:300 (A1)

PLOT DATE: $DATE$
PLOT TIME: $TIME$
FILE PATH: $FILE$

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REV	DESCRIPTION	DRN	DES	RVD	APP	DATE
B	ISSUED FOR 25% REVIEW	R.C.F.	P.D.	C.D.	C.D.	15/12/22
A	ISSUED FOR 25% REVIEW	R.C.F.	P.D.	C.D.	C.D.	09/12/22

REVISION DETAILS

REFERENCE DRAWINGS

HATCH

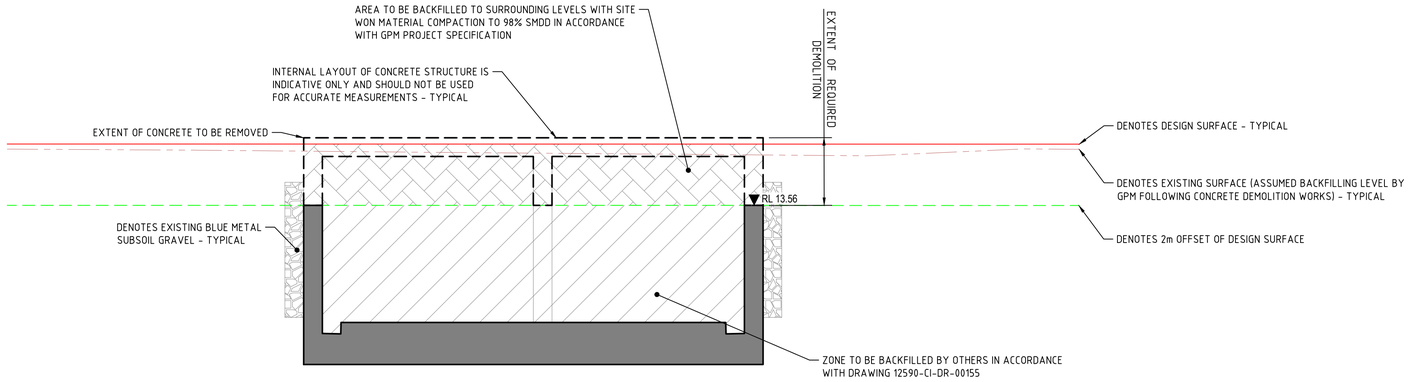
CONSOLIDATED POWER PROJECTS
A QUANTA SERVICES COMPANY

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SCALE: 1:300	PROJECT No: 12590	

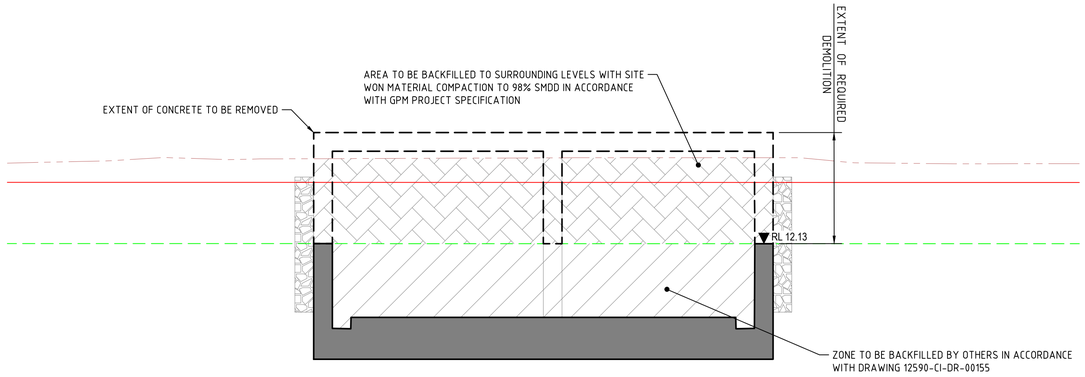
WARATAH SUPER BATTERY
330kV SUBSTATION AND BESS YARD
DEMOLITION LONG SECTION

A1 | DRAWING No. 12590-CI-DR-00152 | REV B

DIMENSIONS AS SHOWN. DO NOT SCALE.



SECTION (EXISTING CONCRETE STRUCTURE) 2
1:100
00151



SECTION (EXISTING CONCRETE STRUCTURE) 3
1:100
00151

0 2 4 6 8m
1:100 (A1)

PLOT DATE: $DATE$
PLOT TIME: $TIME$
FILE PATH: $FILE$

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REVISION DETAILS

REFERENCE DRAWINGS

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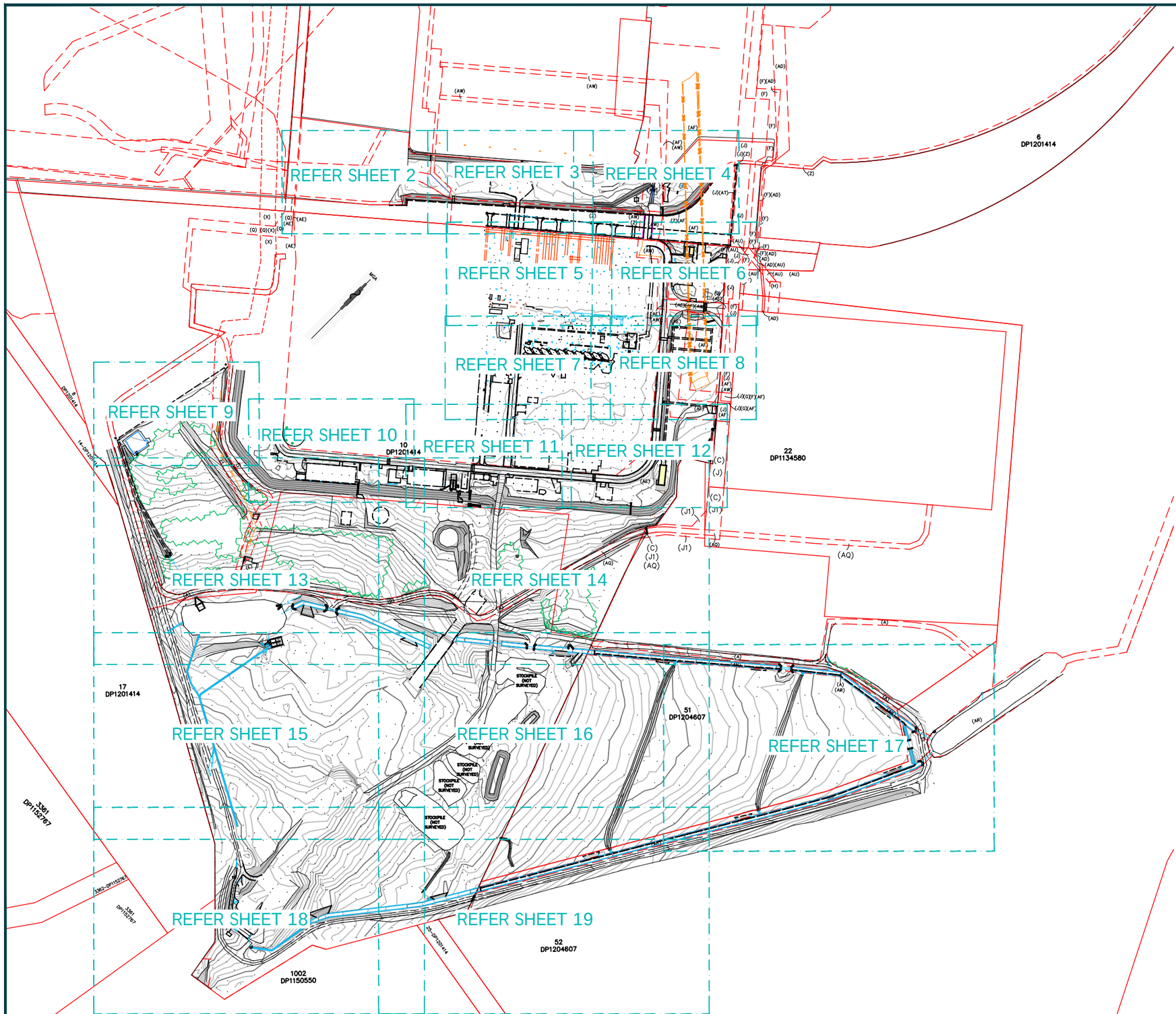
CONSOLIDATED POWER PROJECTS
A QUANTA SERVICES COMPANY

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SCALE: AS SHOWN	PROJECT No: 12590	

WARATAH SUPER BATTERY
330kV SUBSTATION AND BESS YARD
DEMOLITION CROSS SECTIONS

A1 | DRAWING No. 12590-CI-DR-00153 | REV B



SURVEY INFORMATION

1. THE SURVEY IS ON MAP GRID OF AUSTRALIA (MGA) CO-ORDINATES (GDA 94) ZONE 56.

   -THE ORIGIN OF CO-ORDINATES IS PM 32013
   E 363000.540 N 6324283.745
   -SOURCE OF CO-ORDINATES: SCIMS
   -DATE 17/04/2020

2. ALL REDUCED LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (A.H.D)

   -ORIGIN OF LEVELS PM 32013, RL29.269
   -SOURCE OF REDUCED LEVELS: SCIMS
   -DATE OF REDUCED LEVELS 17/04/2020

3. CONTOUR INTERVAL IS 0.2m.

4. MGA AND ISG CO-ORDINATE SYSTEMS ARE BASED ON A MATHEMATICAL EARTH MODEL AND SUBJECT TO VARIABLE SCALE FACTORS. DISTANCES CALCULATED FROM CO-ORDINATES MAY VARY SIGNIFICANTLY FROM GROUND MEASUREMENTS. IF FURTHER CLARIFICATION IS REQUIRED CONTACT MONTEATH AND POWYS.

IMPORTANT NOTES

1. NO CADASTRAL BOUNDARIES HAVE BEEN SHOWN IN THIS SURVEY PLAN.
2. SURVEY WAS CARRIED OUT BETWEEN THE 03/09/2021 & 06/09/2021.
3. AERIAL PHOTOGRAPH WAS SOURCED FROM UAV – DATED 03/09/2021.
4. THE SURVEY WAS COMPLETED USING GNSS METHODS WITH AN ACCURACY HORIZONTALLY & VERTICALLY OF ±50mm.
5. INDEPENDENT INQUIRIES FOR UP TO DATE SERVICE LOCATIONS THROUGH THE RELEVANT AUTHORITIES MUST BE UNDERTAKEN PRIOR TO COMMENCEMENT OF ANY WORKS/EXCAVATION. EXACT SERVICE POSITIONS SHOULD BE ESTABLISHED BY APPROPRIATE MEANS. WE RECOMMEND PROFESSIONAL SERVICE LOCATORS.
6. CRITICAL LEVELS (EG FLOOR LEVELS) AND CRITICAL LOCATIONS (EG STRUCTURES) MUST BE VERIFIED BY FURTHER SURVEY PRIOR TO FINAL DESIGN.
7. CONTOURS SHOWN DEPICT THE TOPOGRAPHY. CONTOURS DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT, EXCEPT AT SPOT LEVELS SHOWN.
8. THIS PLAN MUST REMAIN UNALTERED AS ISSUED BY MONTEATH AND POWYS. ALTERING ANY PART OF THIS PLAN DESTROYS THE INTEGRITY OF THE PLAN. ANY REVISIONS REQUESTED MUST BE ISSUED BY MONTEATH AND POWYS.
9. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN. REPRODUCTION OF THIS PLAN OR OF ANY PART OF THIS PLAN WITHOUT THESE NOTES BEING INCLUDED IN FULL WILL RENDER THE INFORMATION SHOWN ON SUCH REPRODUCTION INVALID AND NOT SUITABLE FOR USE.

LINE TYPES

- DENOTES FENCING
- TOP — DENOTES TOP OF BANK
- TOE — DENOTES TOE OF BANK
- DENOTES EDGE OF TREE LINE
- DENOTES TO WATER LEVEL
- DENOTES DRAINAGE HEAD WALL
- DENOTES CONCRETE
- DENOTES POWERLINES
- DENOTES EDGE OF BITUMEN
- DENOTES EDGE OF GRAVEL
- DENOTES EDGE OF TRACK

(A) – EASEMENT FOR ACCESS 5 WIDE, 15 WIDE AND VARIABLE WIDTH (DP1198575)(AM806133)
(B) – EASEMENT FOR ACCESS (DP1203848)
(C) – RIGHT OF CARRIAGEWAY (DP1195040)
(D) – EASEMENT FOR ELECTRICITY & OTHER PURPOSES (DP1195040)
(E) – LEASE VIDE (3461716) (7213454) (3643903 (8153333) (3461717) (7213455) (7643904) (DP1195040)
(F) – EASEMENT FOR WATER SUPPLY 10 WIDE (DP1134580)
(G) – EASEMENT FOR DRAINAGE OF SEWAGE 10 WIDE (DP1134580)
(H) – EASEMENT FOR DRAINAGE OF WATER 10 WIDE (DP1134580)
(J) – EASEMENT FOR ACCESS 10, 15 WIDE AND VARIABLE (DP1134580)(DP1150550)
(J1) – EASEMENT FOR ACCESS 10, 15 WIDE AND VARIABLE WIDTH (DP1150550)
(Q) – RIGHT OF CARRIAGEWAY 4.5, 10 WIDE AND VARIABLE WIDTH
(X) – EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 10, 15, 30 WIDE & VARIABLE WIDTH (DP1195040)
(Z) – PROPOSED RIGHT OF ACCESS 3 WIDE AND VARIABLE WIDTH
(AD) – EASEMENT FOR PIPE 2 WIDE & 12 WIDE (LIMITED IN HEIGHT)(DP1147959)
(AE) – EASEMENT FOR ACCESS 10 WIDE & VARIABLE (DP1150550)
(AF) – EASEMENT FOR TRANSMISSION LINE 60 WIDE (DP1150550)
(AI) – EASEMENT FOR ELECTRICITY & OTHER PURPOSES 5 WIDE & VARIABLE WIDTH (DP1191148)(AI 813608)
(AQ) – RIGHT OF ACCESS 5 WIDE (DP1198575)
(AR) – EASEMENT TO DRAIN WATER 5 WIDE 10 WIDE & VARIABLE (DP1198575)(A806132)
(AT) – PROPOSED EASEMENT FOR DIESEL PUMP 2 WIDE & VARIABLE WIDTH
(AU) – EASEMENT FOR DRAINAGE 6 WIDE

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0 40 80 120 160 200m
REDUCTION RATIO – 1:2000 (A1)
REDUCTION RATIO – 1:4000 (A3)

REVISIONS						
4	ADDITIONAL SURVEY DATA ADDED	BJ	JS	BJB	01/02/23
3	UPDATED SURVEY OVER ALL OF SITE	LM	MAK	SB	18/01/23
2	UPDATED LEVELS IN AREA OF SHEETS 13, 14, 15, 16, 18 & 19	PW	MAK	BJB	01/12/22
1	ISSUE TO CLIENT AS DRAFT	PW	MAK	BJB	18/11/22
No	REVISION	SVY	DFT	CHK	DATE

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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR
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@A3 : 1:4000
DO NOT SCALE

Original Size: A1

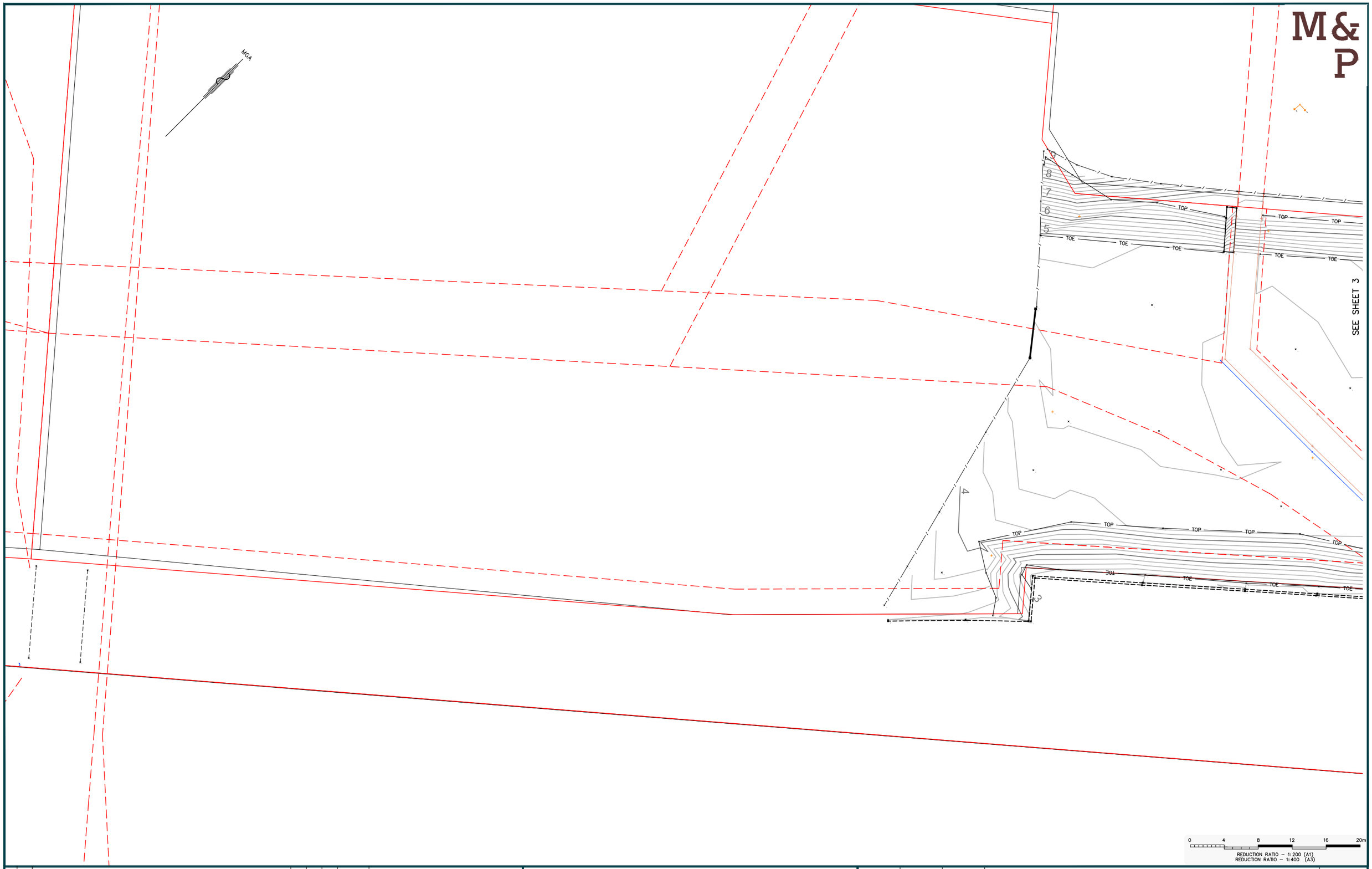
Client: GPM

Title: DETAIL SURVEY OF MUNMORAH COAL STACKS AREA MUNMORAH POWER STATION

CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 1/19

Revision 4



M&P

REVISIONS

No	REVISION	SVY	DFT	CHK	DATE
4	ADDITIONAL SURVEY DATA ADDED	BJ	JS	BJB	01/02/23
3	UPDATED SURVEY OVER ALL OF SITE	LM	MAK	SB	18/01/23
2	UPDATED LEVELS IN AREA OF SHEETS 13, 14, 15, 16, 18 & 19	PW	MAK	BJB	01/12/22
1	ISSUE TO CLIENT AS DRAFT	PW	MAK	BJB	18/11/22

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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

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@A3 : 1:400

DO NOT SCALE

Original Size: A1

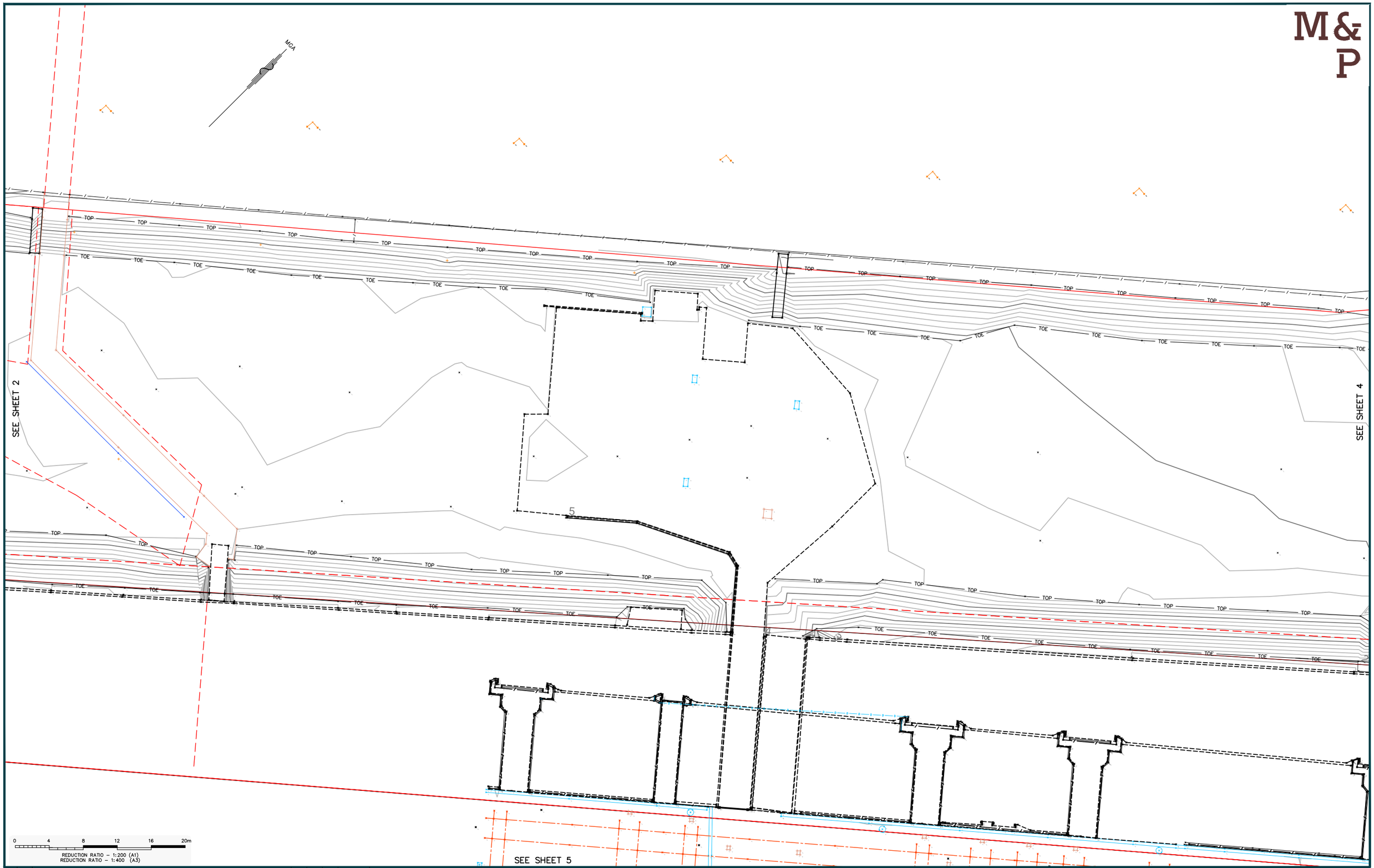
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CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 2/19

Revision 4



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Surveyed	Drafted	Checked
PW	MAK	BJB

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@A1 : 1:200 @A3 : 1:400	Original Size
DO NOT SCALE	A1

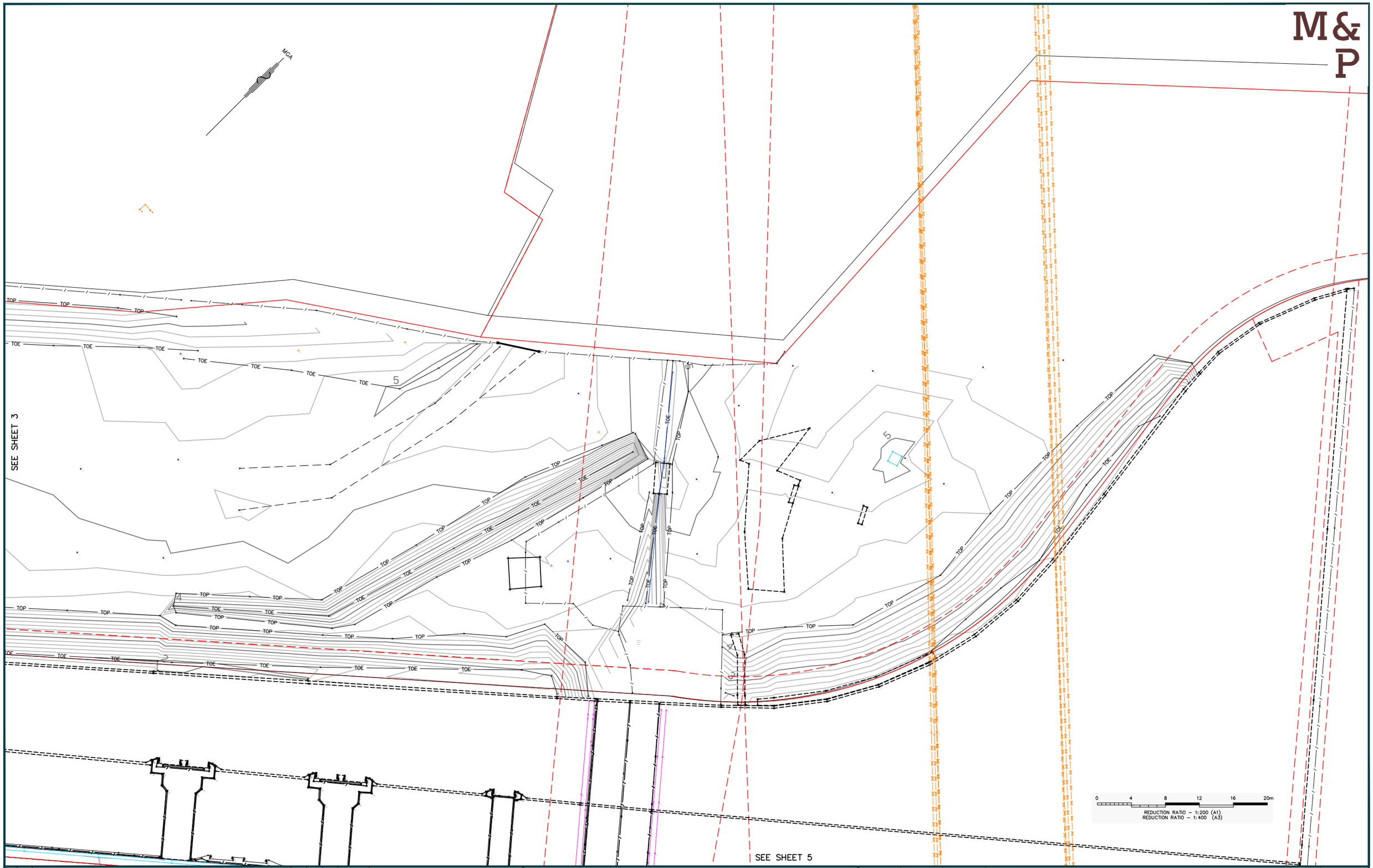
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CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 3/19

Revision 4



REVISIONS						
No	REVISION	SVY	DFT	CHK	DATE	
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Surveyed	Drafted	Checked
PW	MAK	BJB

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@A1 : 1:200 @A3 : 1:400	Original Size
DO NOT SCALE	A1

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CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 4 / 19

Revision 4

SEE SHEET 3

MGA

SEE SHEET 6

TOE

TOE

SEE SHEET 7

0 4 8 12 16 20m

REDUCTION RATIO – 1:200 (A1)
REDUCTION RATIO – 1:400 (A3)

REVISIONS

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Surveyed	Drafted	Checked
PW	MAK	BJB

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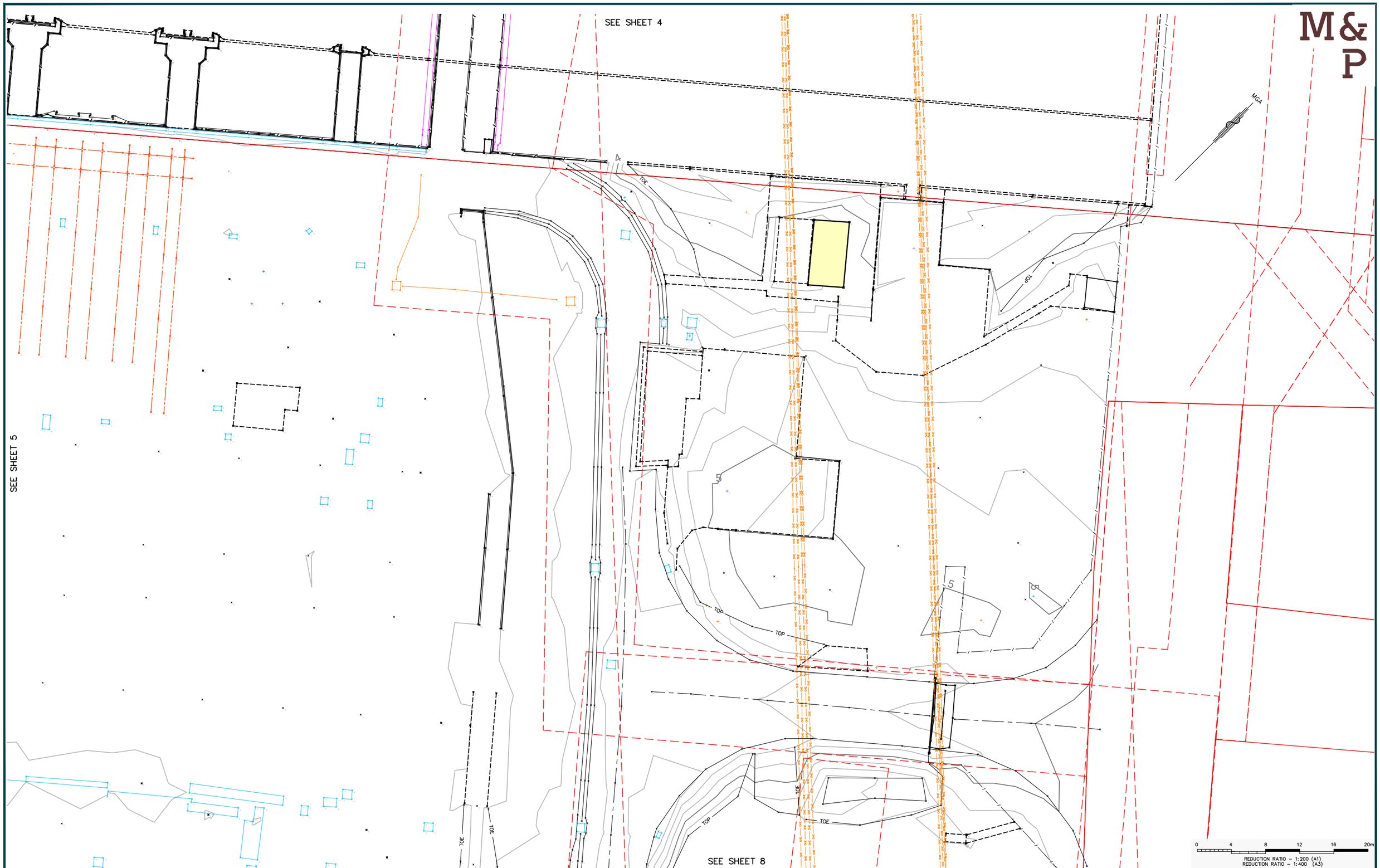
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Sheet No. 5/19

Revision 4



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Surveyed	Drafted	Checked
PW	MAK	BJB

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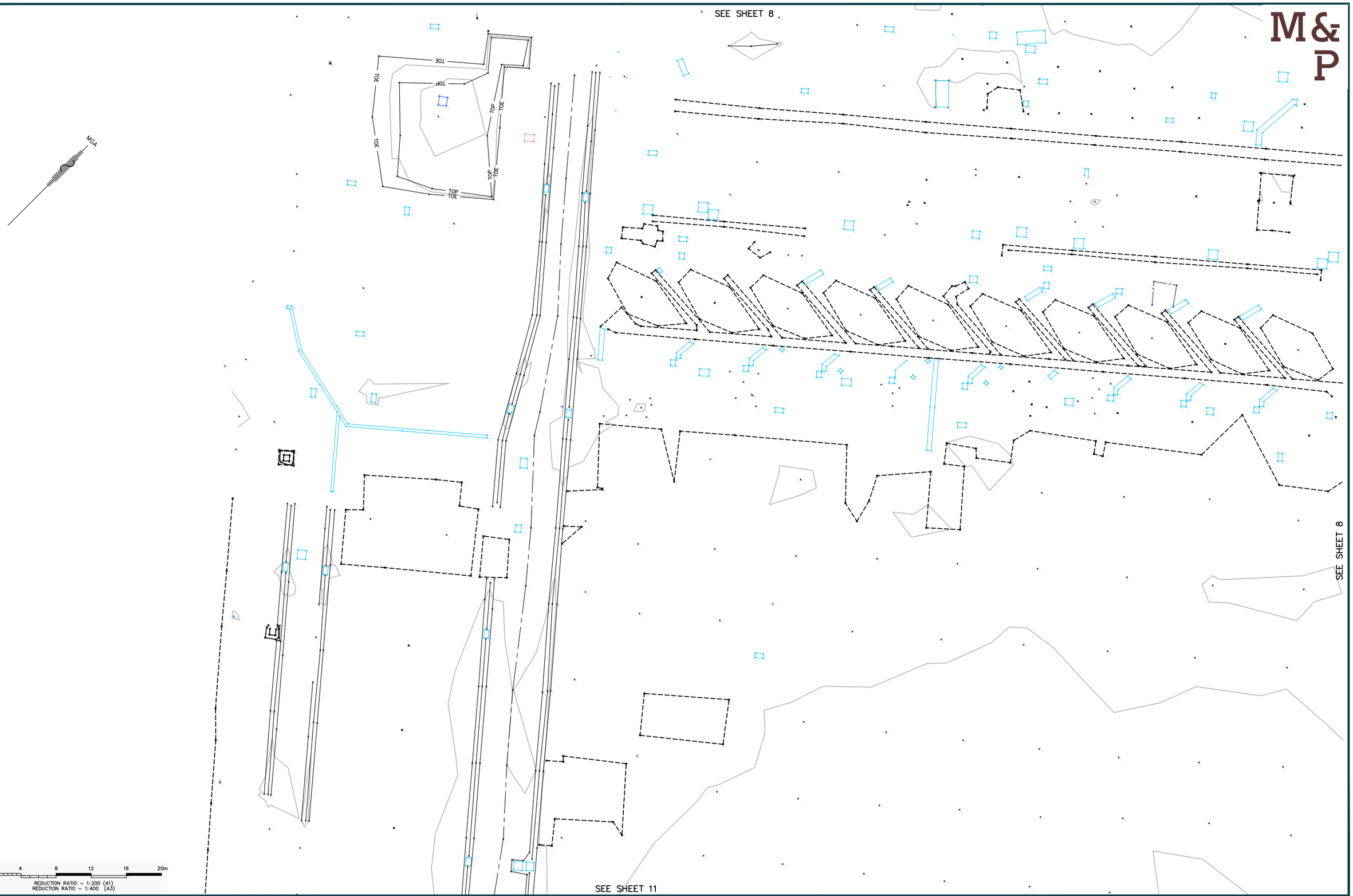
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Sheet No. 6 /19

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Surveyed	Drafted	Checked
PW	MAK	BJB

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@A3 : 1:400

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Original Size: A1

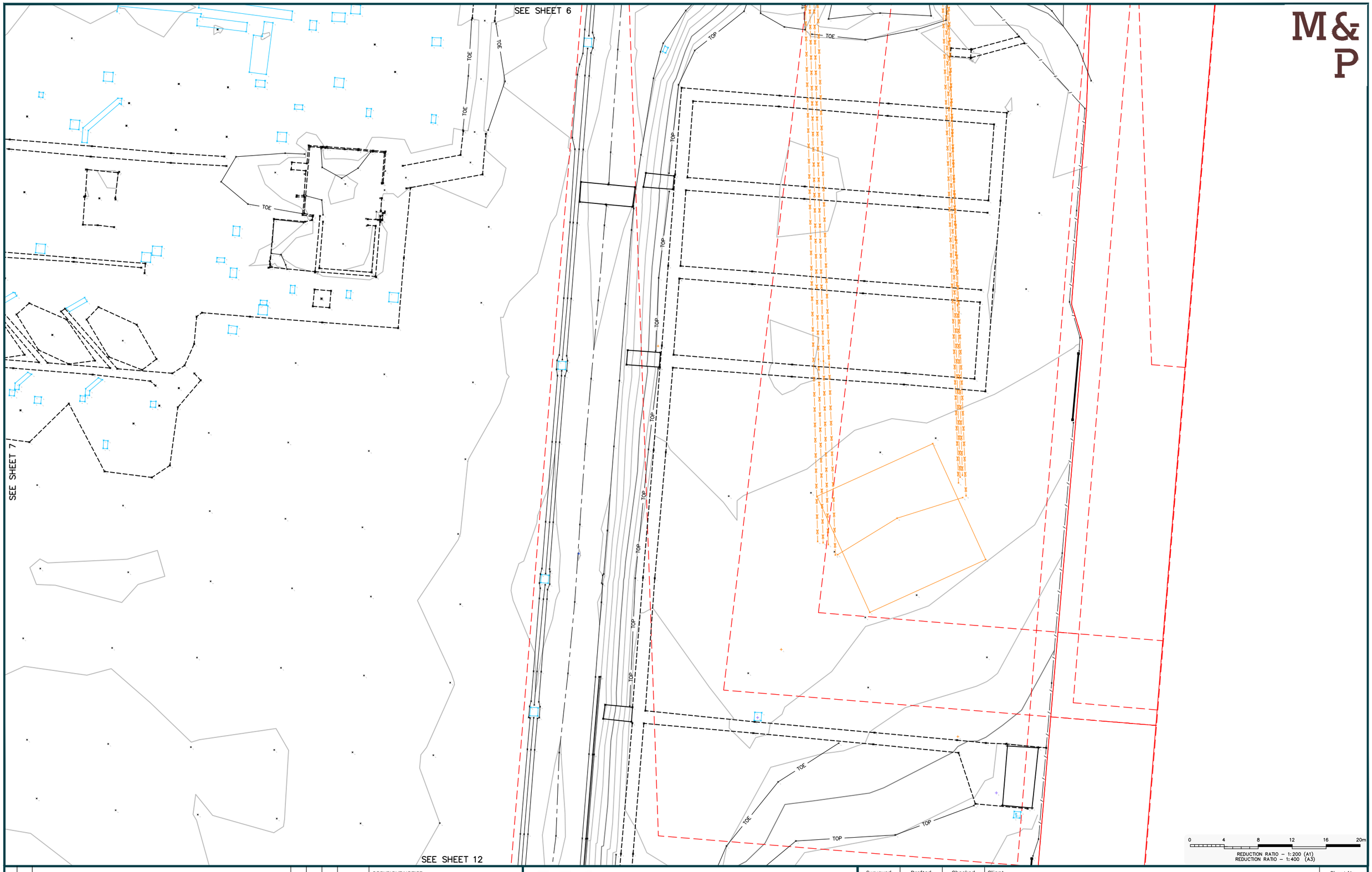
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Sheet No. 7 /19

Revision 4



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REVISIONS						
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No	REVISION	SVY	DFT	CHK	DATE

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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

@A1 : 1:200 @A3 : 1:400	Original Size
DO NOT SCALE	A1

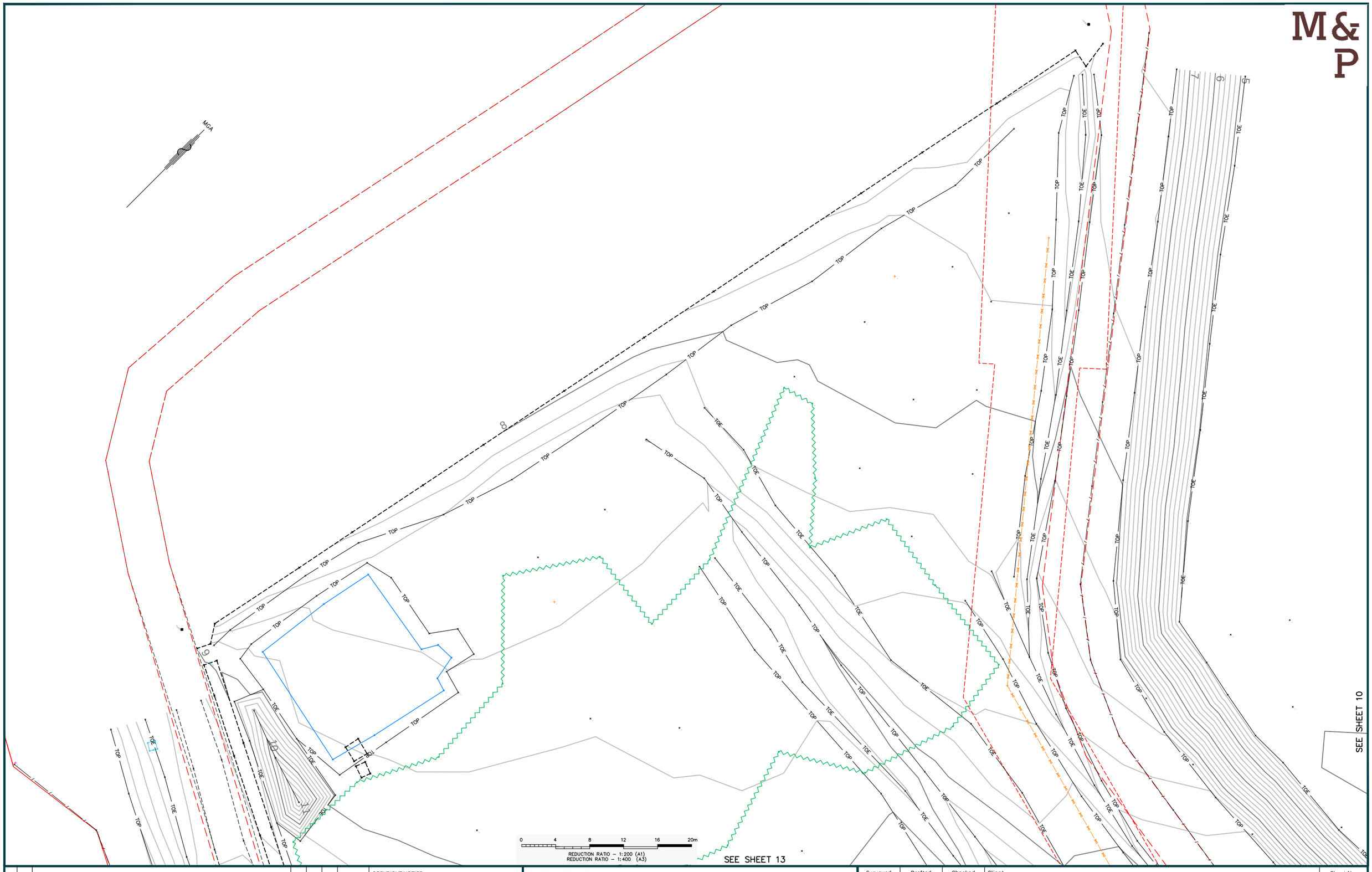
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Sheet No. 8/19

Revision 4



REVISIONS						
No	REVISION	SVY	DFT	CHK	DATE	
4	ADDITIONAL SURVEY DATA ADDED	BJ	JS	BJB	01/02/23	
3	UPDATED SURVEY OVER ALL OF SITE	LM	MAK	SB	18/01/23	
2	UPDATED LEVELS IN AREA OF SHEETS 13, 14, 15, 16, 18 & 19	PW	MAK	BJB	01/12/22	
1	ISSUE TO CLIENT AS DRAFT	PW	MAK	BJB	18/11/22	

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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

@A1 : 1:200
@A3 : 1:400

DO NOT SCALE

Original Size: A1

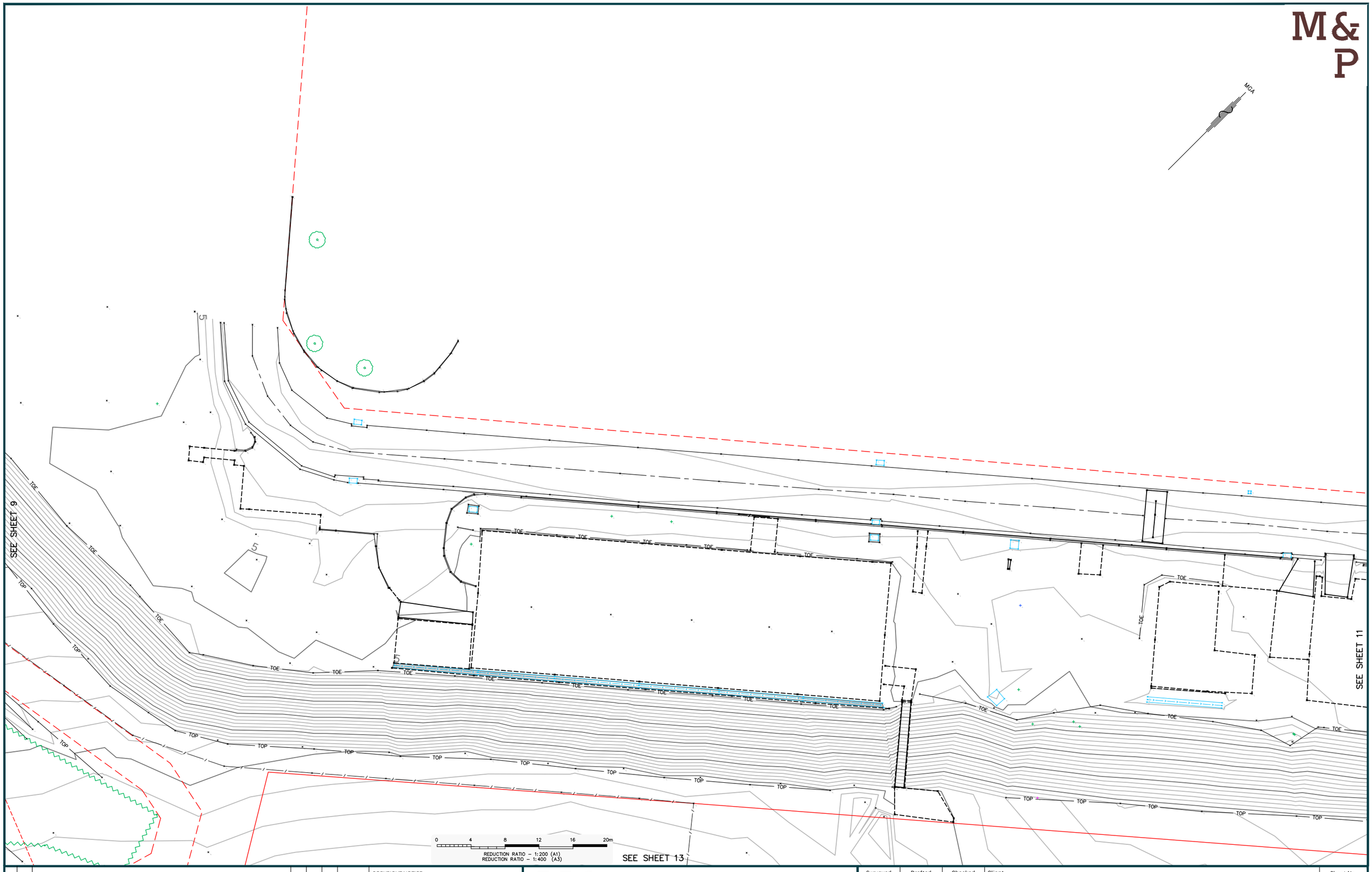
Client: GPM

Title: DETAIL SURVEY OF MUNMORAH COAL STACKS AREA MUNMORAH POWER STATION

CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 9/19

Revision 4



REVISIONS							
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	3	UPDATED SURVEY OVER ALL OF SITE	LM	MAK	SB	18/01/23
	2	UPDATED LEVELS IN AREA OF SHEETS 13, 14, 15, 16, 18 & 19	PW	MAK	BJB	01/12/22
	1	ISSUE TO CLIENT AS DRAFT	PW	MAK	BJB	18/11/22
	No	REVISION	SVY	DFT	CHK	DATE

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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

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DO NOT SCALE	A1

Client: GPM

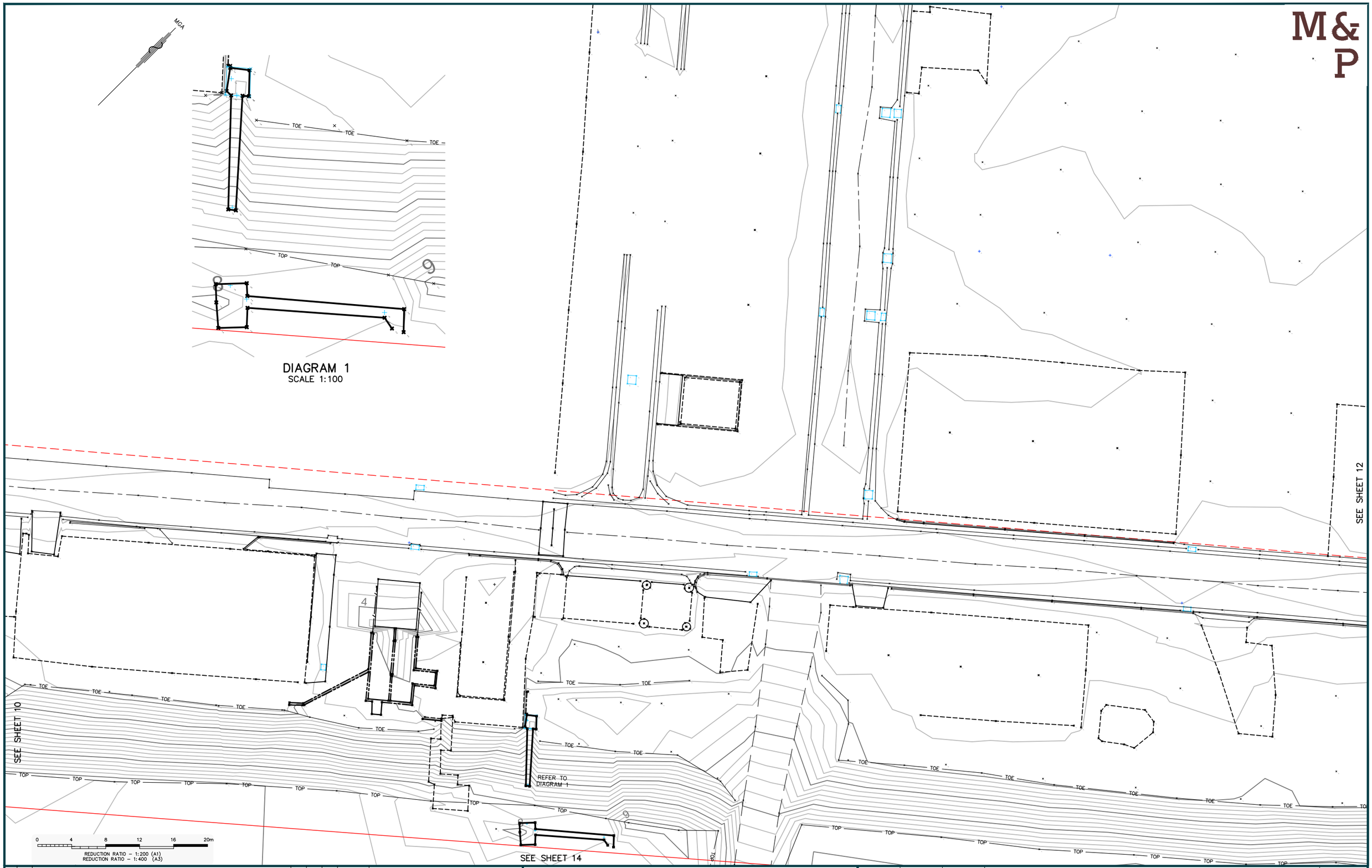
Title: DETAIL SURVEY OF MUNMORAH COAL STACKS AREA MUNMORAH POWER STATION

CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 10 /19

Revision 4

DIAGRAM 1
SCALE 1:100



REVISIONS	No	REVISION	SVY	DFT	CHK	DATE
	4	ADDITIONAL SURVEY DATA ADDED	BJ	JS	BJB	01/02/23
	3	UPDATED SURVEY OVER ALL OF SITE	LM	MAK	SB	18/01/23
	2	UPDATED LEVELS IN AREA OF SHEETS 13, 14, 15, 16, 18 & 19	PW	MAK	BJB	01/12/22
	1	ISSUE TO CLIENT AS DRAFT	PW	MAK	BJB	18/11/22

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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR
@A1 : 1:200
@A3 : 1:400
DO NOT SCALE

Original Size
A1

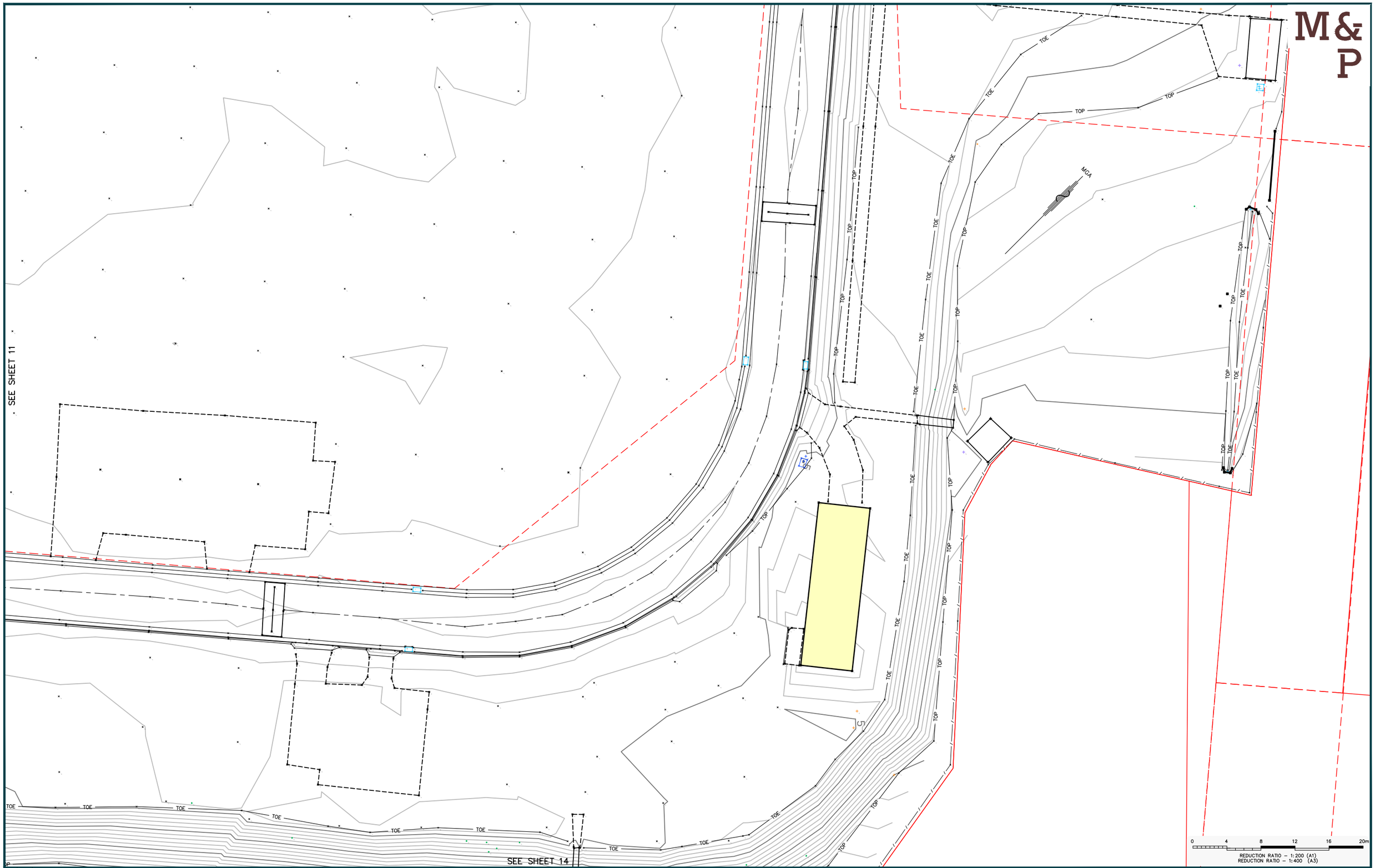
Client: GPM

Title: DETAIL SURVEY OF MUNMORAH COAL STACKS AREA MUNMORAH POWER STATION

CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 11/19

Revision 4



REVISIONS						
4	ADDITIONAL SURVEY DATA ADDED	BJ	JS	BJB	01/02/23
3	UPDATED SURVEY OVER ALL OF SITE	LM	MAK	SB	18/01/23
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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

@A1 : 1:200 @A3 : 1:400	Original Size
DO NOT SCALE	A1

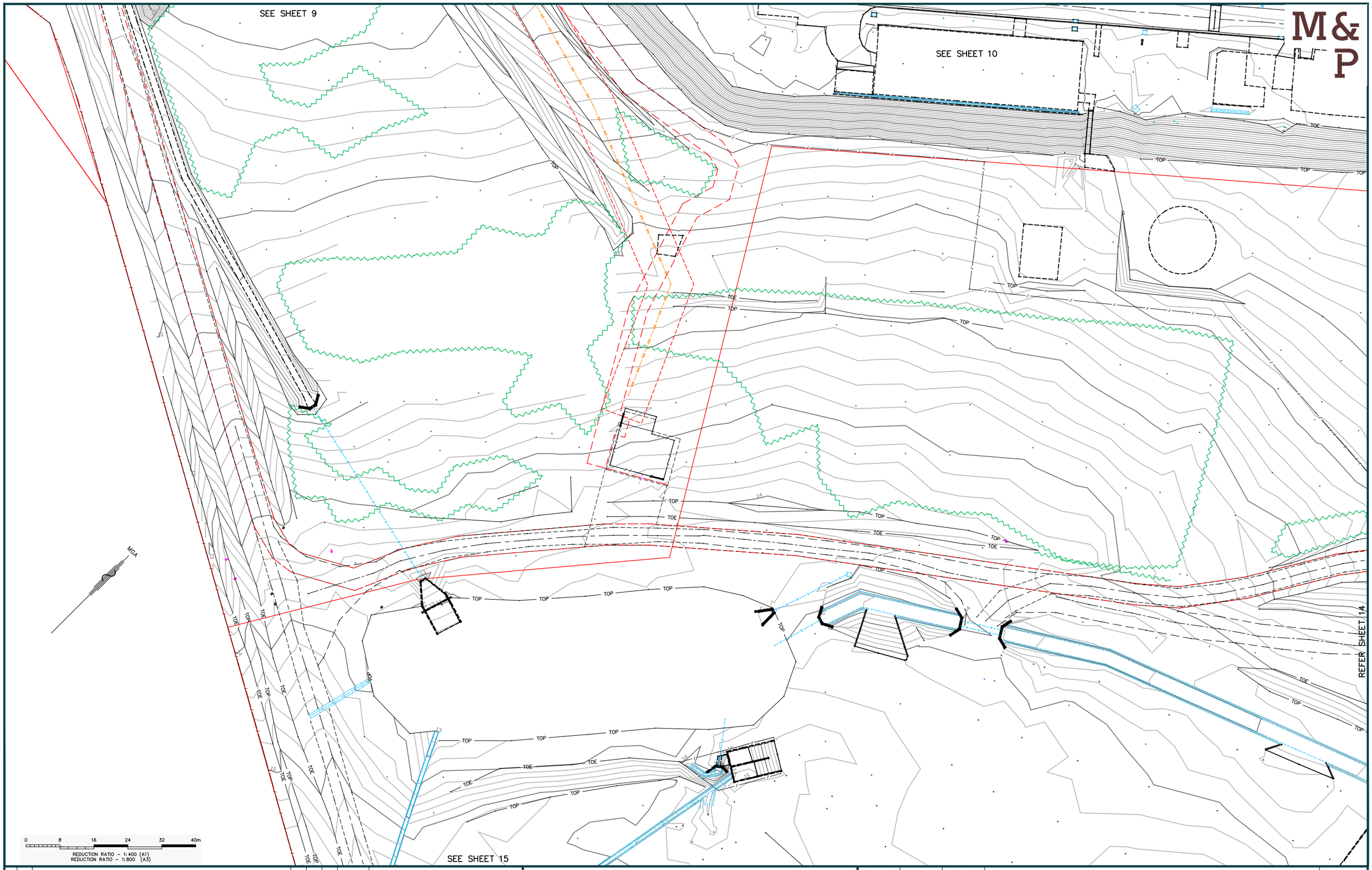
Client: GPM

Title: DETAIL SURVEY OF MUNMORAH COAL STACKS AREA MUNMORAH POWER STATION

CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 12 /19

Revision 4



REVISIONS						
4	ADDITIONAL SURVEY DATA ADDED	BJ	JS	BJB	01/02/23
3	UPDATED SURVEY OVER ALL OF SITE	LM	MAK	SB	18/01/23
2	UPDATED LEVELS IN AREA OF SHEETS 13, 14, 15, 16, 18 & 19	PW	MAK	BJB	01/12/22
1	ISSUE TO CLIENT AS DRAFT	PW	MAK	BJB	18/11/22
No	REVISION	SVY	DFT	CHK	DATE

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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

@A1 : 1:400
@A3 : 1:800

DO NOT SCALE

Original Size: A1

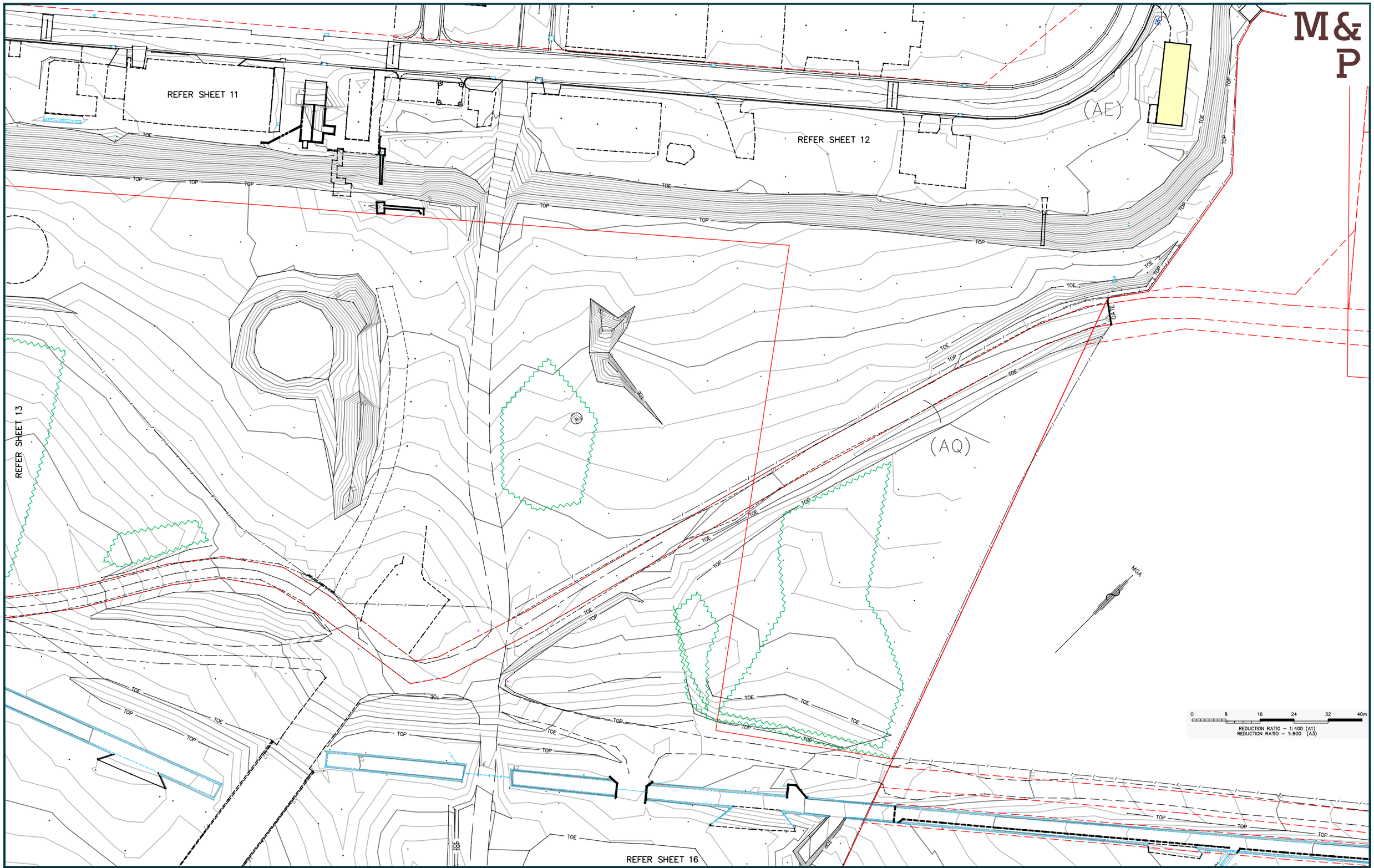
Client: GPM

Title: DETAIL SURVEY OF MUNMORAH COAL STACKS AREA MUNMORAH POWER STATION

CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 13/19

Revision 4



REVISIONS						
4	ADDITIONAL SURVEY DATA ADDED	BJ	JS	BJB	01/02/23
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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

@A1 : 1:400
@A3 : 1:800

DO NOT SCALE

Original Size
A1

Client
GPM

Title
DETAIL SURVEY OF
MUNMORAH COAL STACKS AREA
MUNMORAH POWER STATION

CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No.
14 /19

Revision
4

REFER SHEET 13

REFER SHEET 16

REFER SHEET 18

MGA

0 8 16 24 32 40m

REDUCTION RATIO – 1:400 (A1)
REDUCTION RATIO – 1:800 (A3)

REVISIONS						
4	ADDITIONAL SURVEY DATA ADDED	BJ	JS	BJB	01/02/23
3	UPDATED SURVEY OVER ALL OF SITE	LM	MAK	SB	18/01/23
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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

@A1 : 1:400 @A3 : 1:800	Original Size
DO NOT SCALE	A1

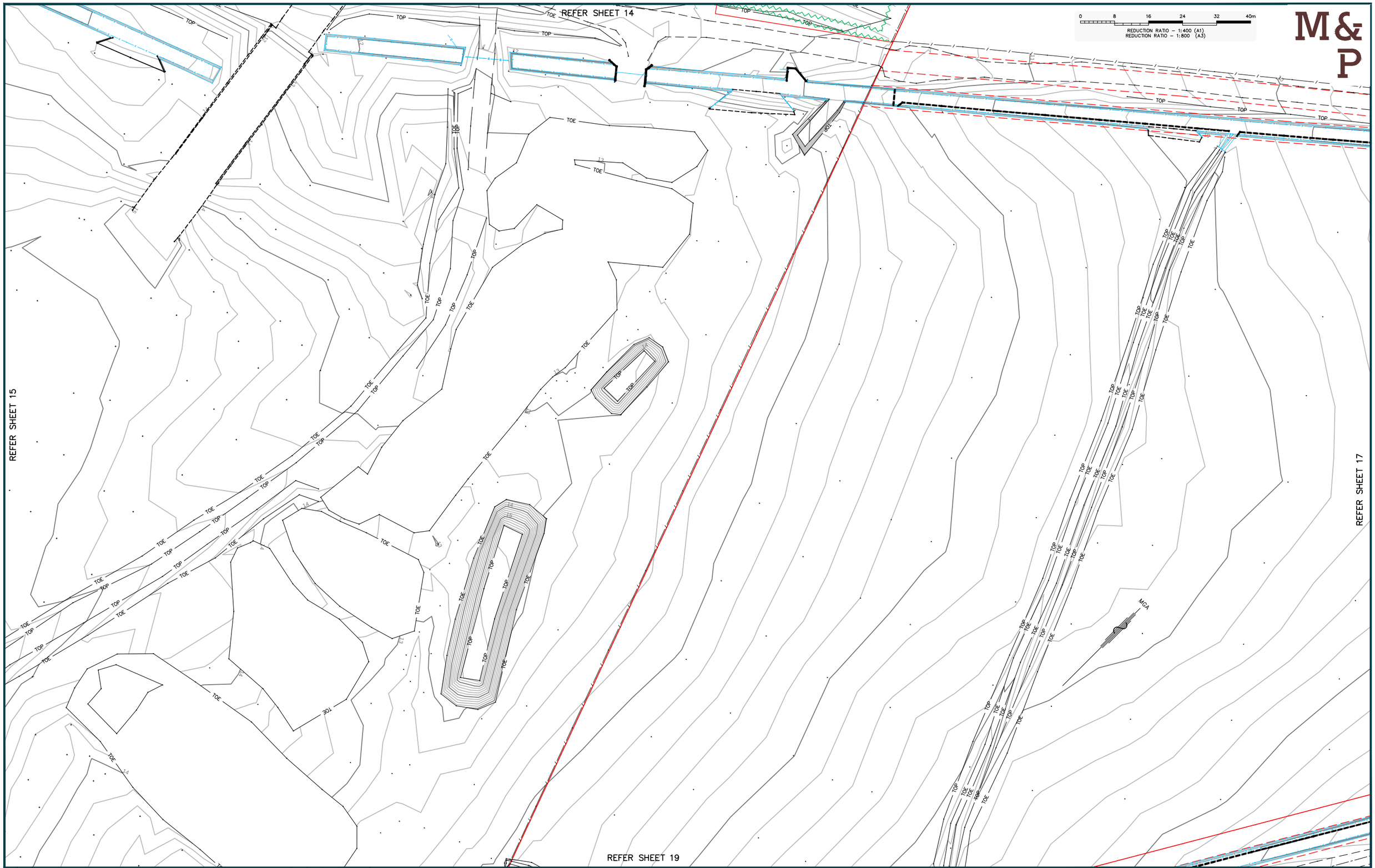
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Title: DETAIL SURVEY OF MUNMORAH COAL STACKS AREA MUNMORAH POWER STATION

CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 15 / 19

Revision 4



REVISIONS						
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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

@A1 : 1:400 @A3 : 1:800	Original Size
DO NOT SCALE	A1

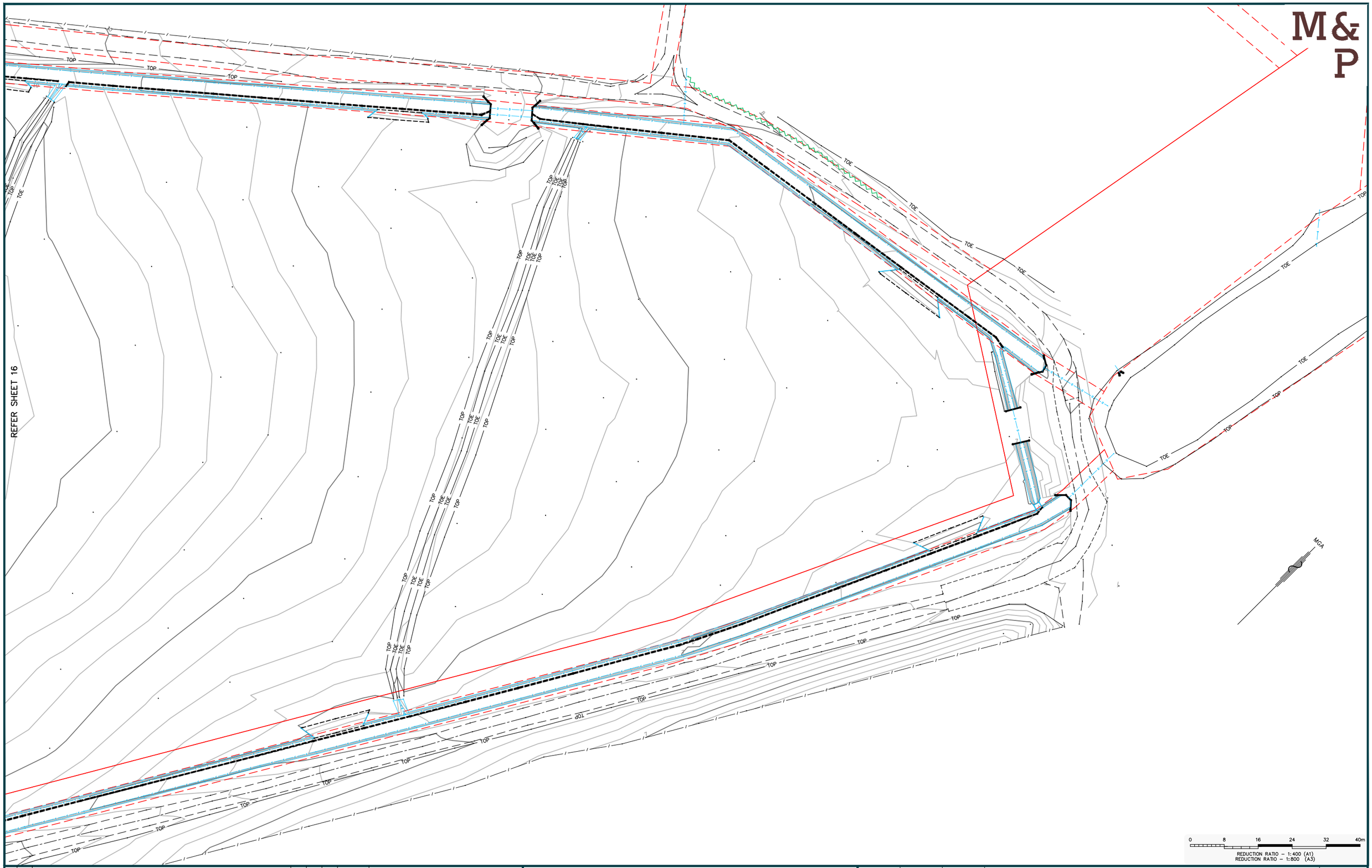
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Title: DETAIL SURVEY OF MUNMORAH COAL STACKS AREA MUNMORAH POWER STATION

CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 16 /19

Revision 4



REVISIONS						
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3	UPDATED SURVEY OVER ALL OF SITE	LM	MAK	SB	18/01/23	
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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

@A1 : 1:400 @A3 : 1:800	Original Size
DO NOT SCALE	A1

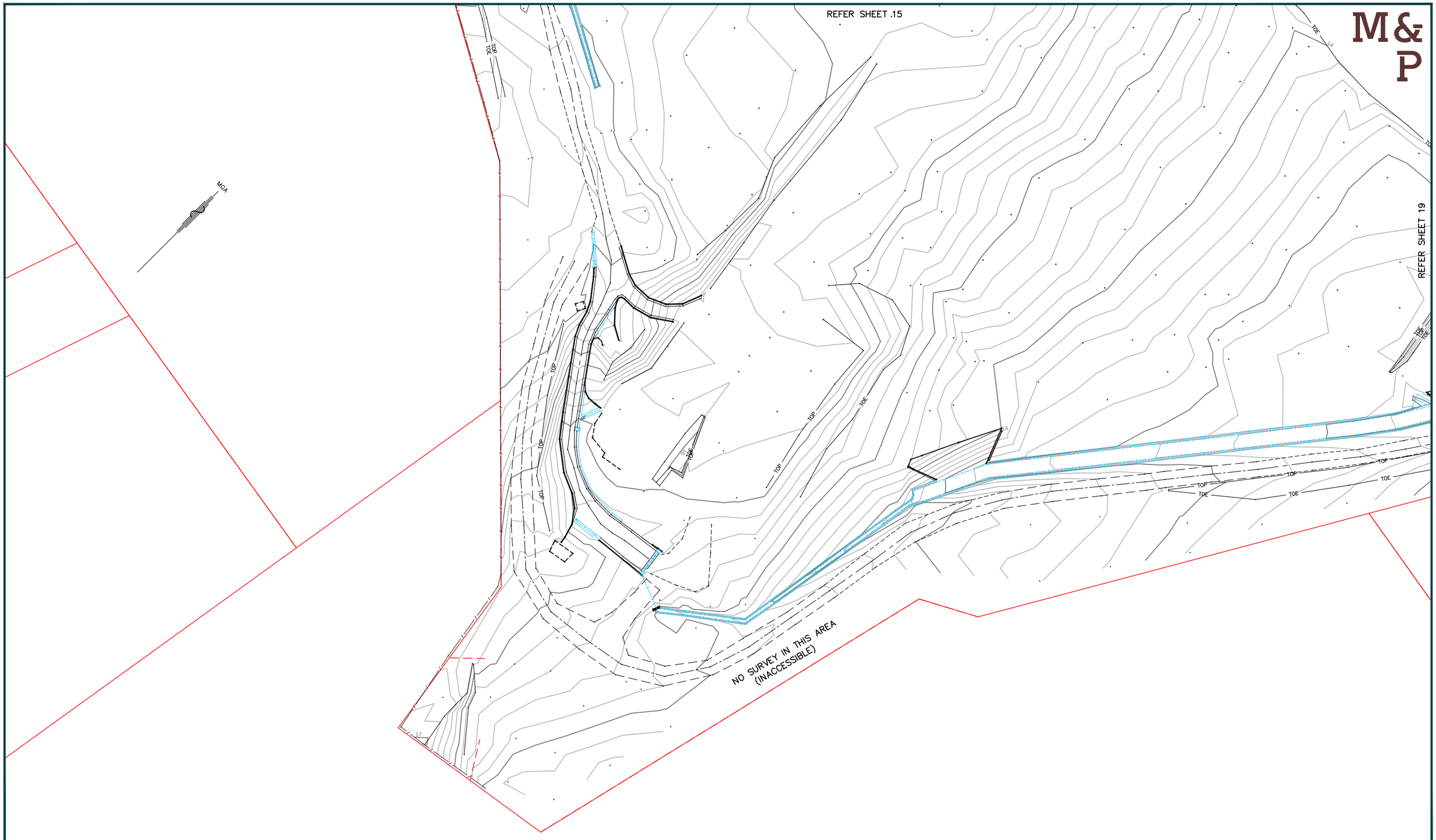
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CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 17 /19

Revision 4



REVISIONS

No	REVISION				
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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

@A1 : 1:400
@A3 : 1:800

DO NOT SCALE

Original Size: A1

Client: GPM

Title: DETAIL SURVEY OF MUNMORAH COAL STACKS AREA MUNMORAH POWER STATION

CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No. 18 /19

Revision 4

REFER SHEET 16

REFER SHEET 18

NO SURVEY IN THIS AREA
(INACCESSIBLE)

TOE

TOP

MGA

0 8 16 24 32 40m

REDUCTION RATIO – 1:400 (A1)
REDUCTION RATIO – 1:800 (A3)

REVISIONS

No	REVISION	SVY	DFT	CHK	DATE
4	ADDITIONAL SURVEY DATA ADDED	BJ	JS	BJB	01/02/23
3	UPDATED SURVEY OVER ALL OF SITE	LM	MAK	SB	18/01/23
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Surveyed	Drafted	Checked
PW	MAK	BJB

REGISTERED SURVEYOR

@A1 : 1:400
@A3 : 1:800

DO NOT SCALE

Original Size
A1

Client
GPM

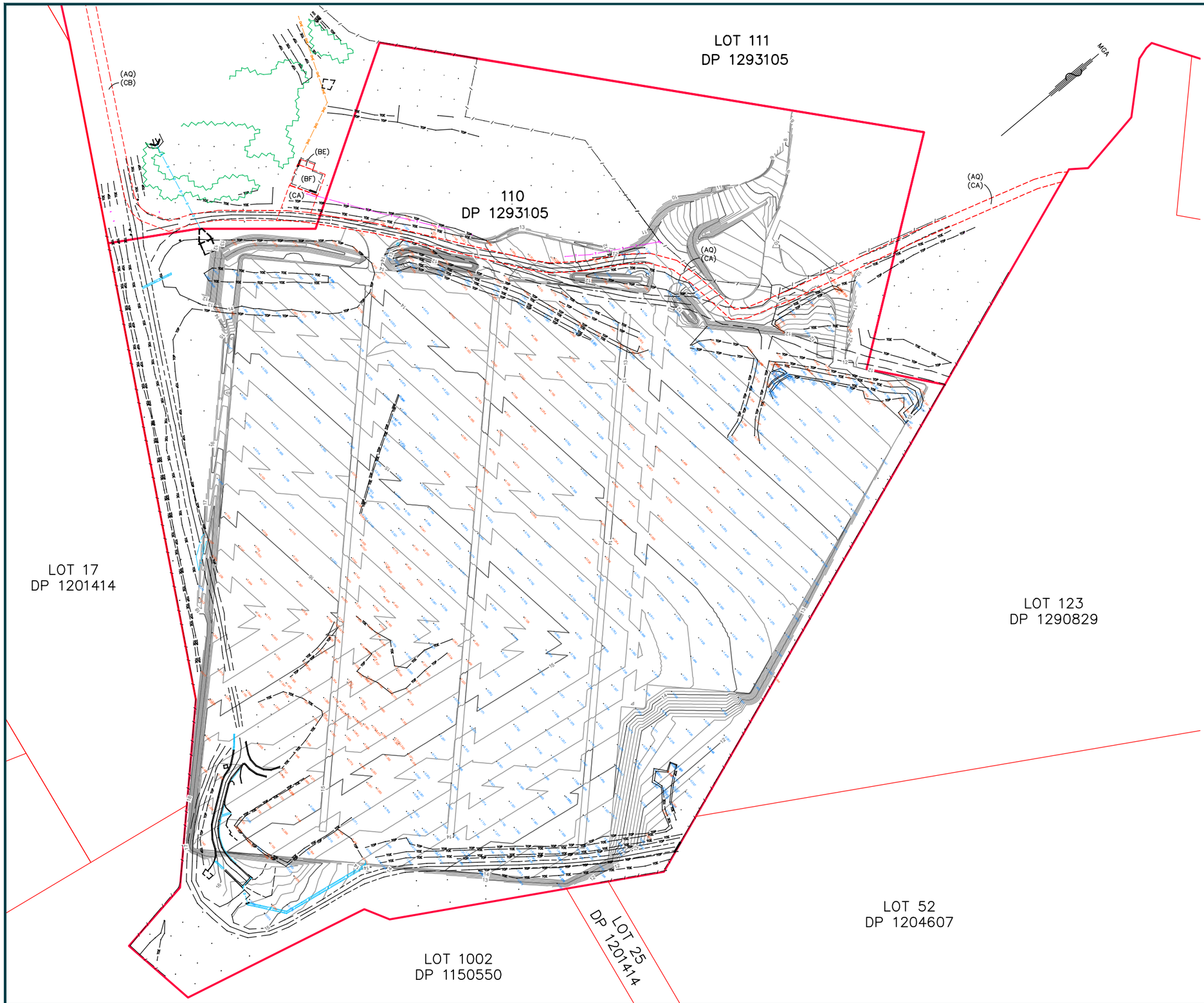
Title
DETAIL SURVEY OF
MUNMORAH COAL STACKS AREA
MUNMORAH POWER STATION

CAD File: 220523A_04 | Ref No: 22/0523 | Date: 16/11/2022

Sheet No.
19 /19

Revision
4

Appendix C



LINE TYPES

- DRAIN PIPE
- DISH DRAIN
- OVERHEAD ELECTRICITY CABLE
- TELECOMMUNICATIONS CABLE
- FIBRE OPTIC CABLE
- FENCING
- EDGE OF CONCRETE
- TOP OF BANK
- TOE OF BANK
- CENTRELINE OF BITUMEN
- CENTRELINE OF GRAVEL
- EDGE OF BITUMEN
- EDGE OF GRAVEL

NOTE

CONSTRUCTION WAS TAKING PLACE AT THE TIME OF SURVEY. SOME DIFFERENCES MAY BE PRESENT ON SITE.

CONFORMANCE DEPTHS WERE CALCULATED USING THE NATURAL SURFACE BY MONTEATH & POWYS DATED JAN 2023 & THE BULK EARTHWORKS SURFACE "3D BEWORKS SURFACE.DWG" AS SUPPLIED BY GPM DATED MAY 2023.

LEGEND

X.XXX DENOTES HEIGHT ABOVE THE BULK EARTHWORKS SURFACE
-X.XXX DENOTES HEIGHT BELOW THE BULK EARTHWORKS SURFACE

(AQ) – RIGHT OF ACCESS (5 WIDE) (DP 1198575)
(BE) – LEASE VIDE (8901541) (AH116862) (DP 1195040)
(BF) – LEASE VIDE (3461716) (7213454) (3643903) (8153333)(8153334) (3461717) (7213455) (7643904) (DP 1195040)
(CA) – EASEMENT FOR ACCESS 5, 10 & 15 WIDE & VARIABLE (DP 1203848)
(CB) – RIGHT OF ACCESS 5 & 10 WIDE & VARIABLE WIDTH

SURVEY INFORMATION

1. THE SURVEY IS ON MAP GRID OF AUSTRALIA (MGA) CO-ORDINATES (GDA 94) ZONE 56.
   - THE ORIGIN OF CO-ORDINATES IS PM 32013
     E 363000.540 N 6324283.745
   - SOURCE OF CO-ORDINATES: SCIMS
   - DATE 17/04/2020
2. ALL REDUCED LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (A.H.D)
   - ORIGIN OF LEVELS PM 32013. RL29.269
   - SOURCE OF REDUCED LEVELS: SCIMS
   - DATE OF REDUCED LEVELS 17/04/2020
3. CONTOUR INTERVAL IS 0.2m.
4. MGA AND ISG CO-ORDINATE SYSTEMS ARE BASED ON A MATHEMATICAL EARTH MODEL AND SUBJECT TO VARIABLE SCALE FACTORS. DISTANCES CALCULATED FROM CO-ORDINATES MAY VARY SIGNIFICANTLY FROM GROUND MEASUREMENTS. IF FURTHER CLARIFICATION IS REQUIRED CONTACT MONTEATH AND POWYS.

IMPORTANT NOTES

1. ONLY VISIBLE SERVICES HAVE BEEN LOCATED BY SURVEY.
2. INDEPENDENT INQUIRIES FOR UP TO DATE SERVICE LOCATIONS THROUGH THE RELEVANT AUTHORITIES MUST BE UNDERTAKEN PRIOR TO COMMENCEMENT OF ANY WORKS/EXCAVATION. EXACT SERVICE POSITIONS SHOULD BE ESTABLISHED BY APPROPRIATE MEANS. WE RECOMMEND PROFESSIONAL SERVICE LOCATORS.
3. THE BOUNDARIES SHOWN ON THIS PLAN ARE BASED ON OUR FIELD SURVEY. TO FORMALISE THESE DIMENSIONS, WE WOULD RECOMMEND THE PREPARATION OF A REDEFINITION PLAN, SUITABLE FOR LODGEMENT AND REGISTRATION WITH NSW LAND REGISTRY SERVICES.
4. CRITICAL LEVELS (EG FLOOR LEVELS) AND CRITICAL LOCATIONS (EG STRUCTURES) MUST BE VERIFIED BY FURTHER SURVEY PRIOR TO FINAL DESIGN.
5. CONTOURS SHOWN DEPICT THE TOPOGRAPHY. CONTOURS DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT, EXCEPT AT SPOT LEVELS SHOWN.
6. THIS PLAN MUST REMAIN UNALTERED AS ISSUED BY MONTEATH AND POWYS. ALTERING ANY PART OF THIS PLAN DESTROYS THE INTEGRITY OF THE PLAN. ANY REVISIONS REQUESTED MUST BE ISSUED BY MONTEATH AND POWYS.
7. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN. REPRODUCTION OF THIS PLAN OR OF ANY PART OF THIS PLAN WITHOUT THESE NOTES BEING INCLUDED IN FULL WILL RENDER THE INFORMATION SHOWN ON SUCH REPRODUCTION INVALID AND NOT SUITABLE FOR USE.

BEFORE YOU DIG www.byda.com.au

0 20 40 60 80 100m
REDUCTION RATIO – 1:1000 (A1)
REDUCTION RATIO – 1:2000 (A3)

REVISIONS

No	REVISION	SVY	DFT	CHK	DATE
1	ISSUE TO CLIENT	LM	MAK	BJB	11/05/23

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Surveyed	Drafted	Checked
LM	MAK	BJB

REGISTERED SURVEYOR

@A1 : 1:1000 @A3 : 1:2000	Original Size
DO NOT SCALE	A1

Client: GPM

Title: CONFORMANCE SURVEY BETWEEN SURVEYED NATURAL SURFACE & BULK EARTHWORK SURFACE
OLD MUNMORAH POWER STATION, MUNMORAH

CAD File: 170050P_01 | Ref No: 17/0050 | Date: 11/05/2023

Sheet No. 1/1

Revision 1

Appendix D

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

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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.

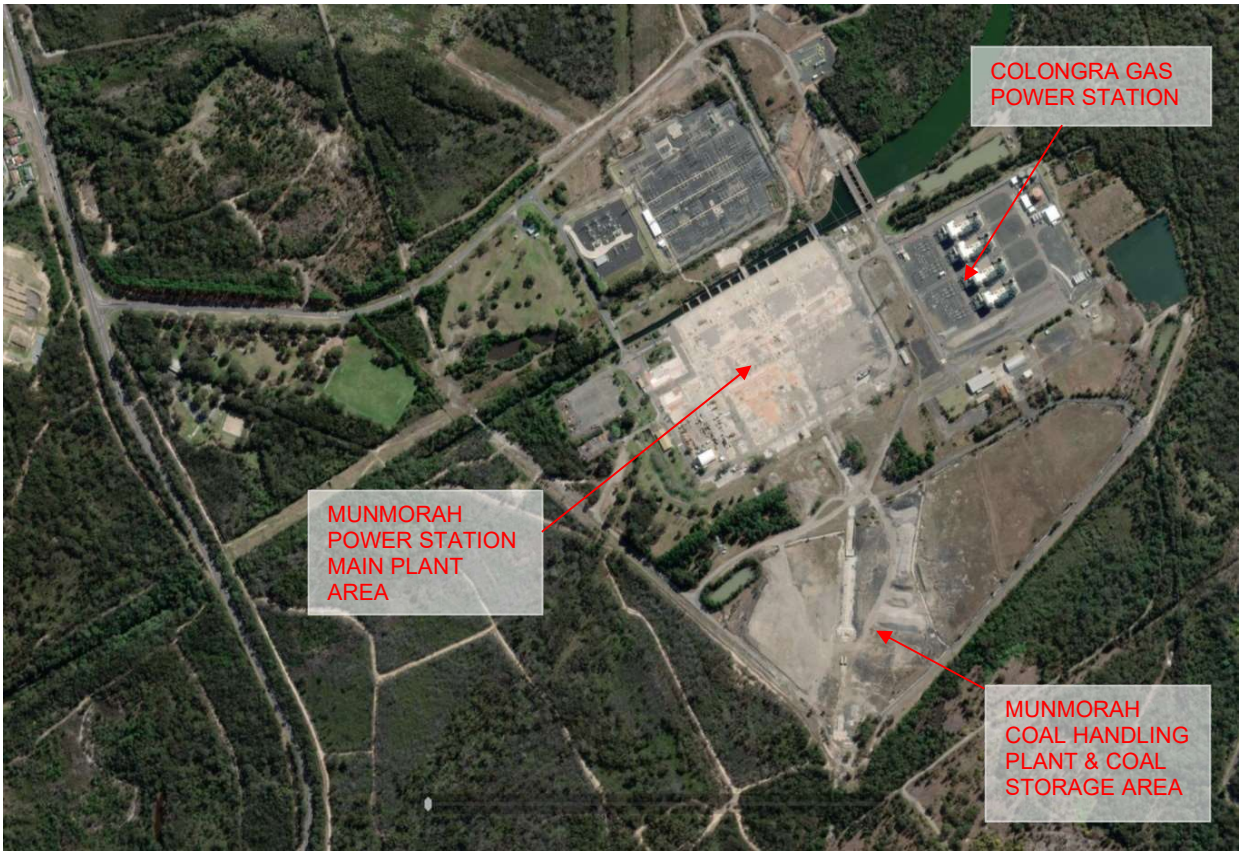


Figure 1: Site location



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.

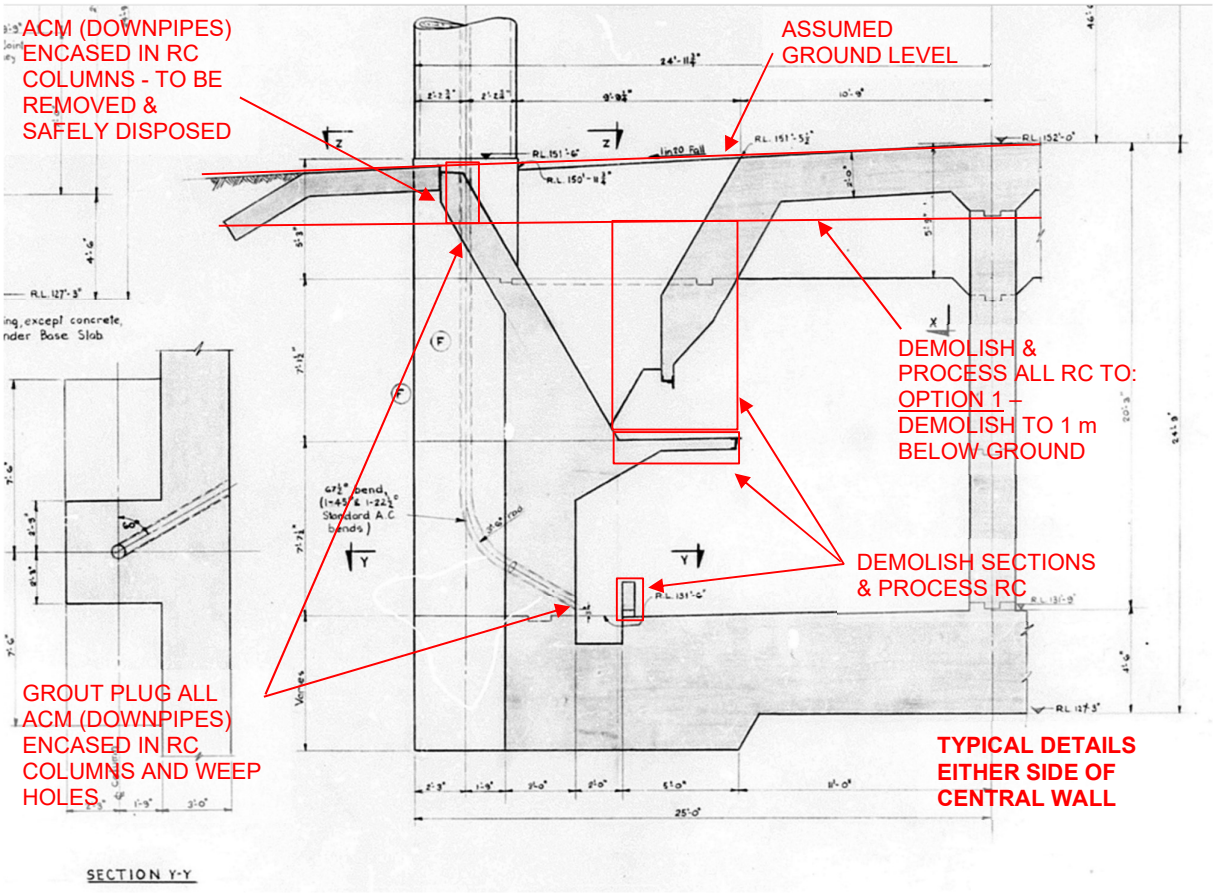


Figure 3: Live Storage Hopper Extent of Demolition Option 1 - Drawing MM213304K

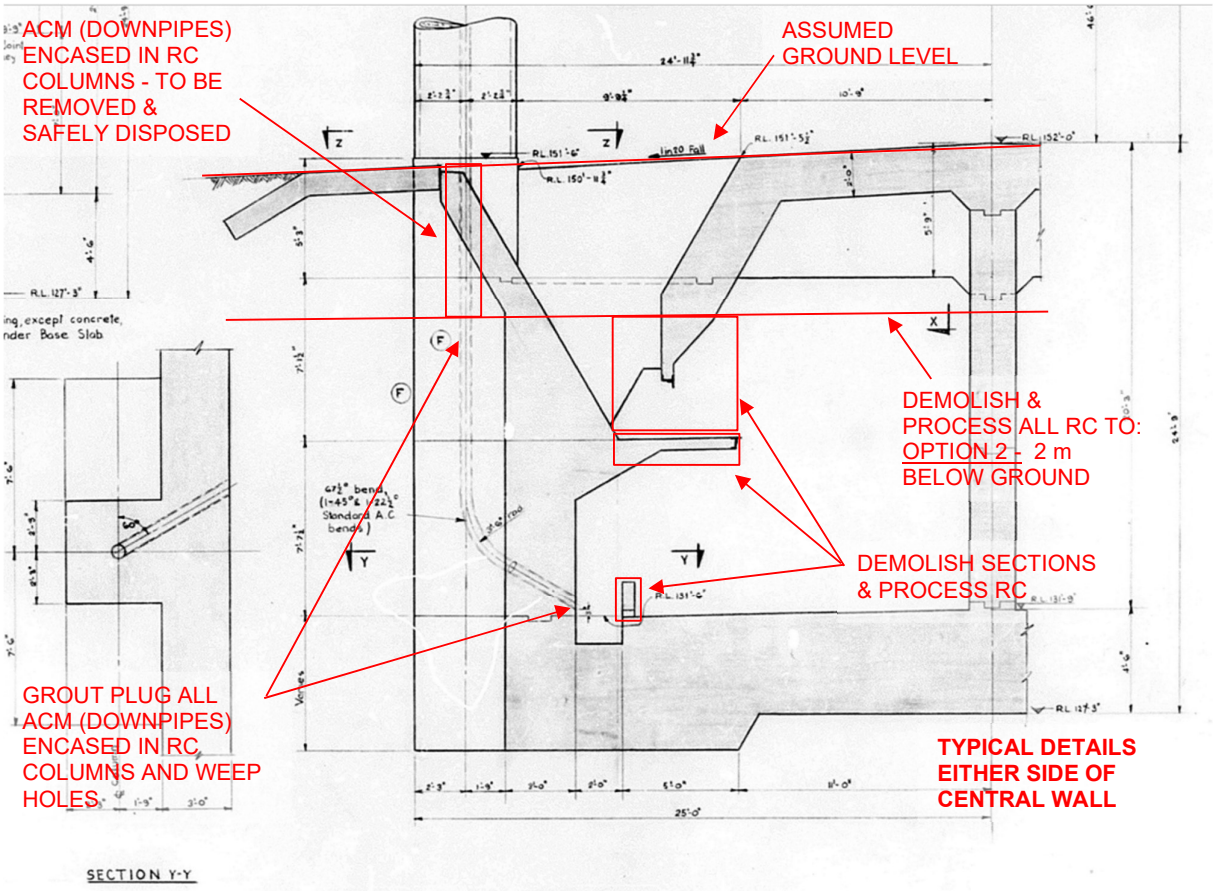


Figure 4: Live Storage Hopper Extent of Demolition Option 2 - Drawing MM213304K

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.

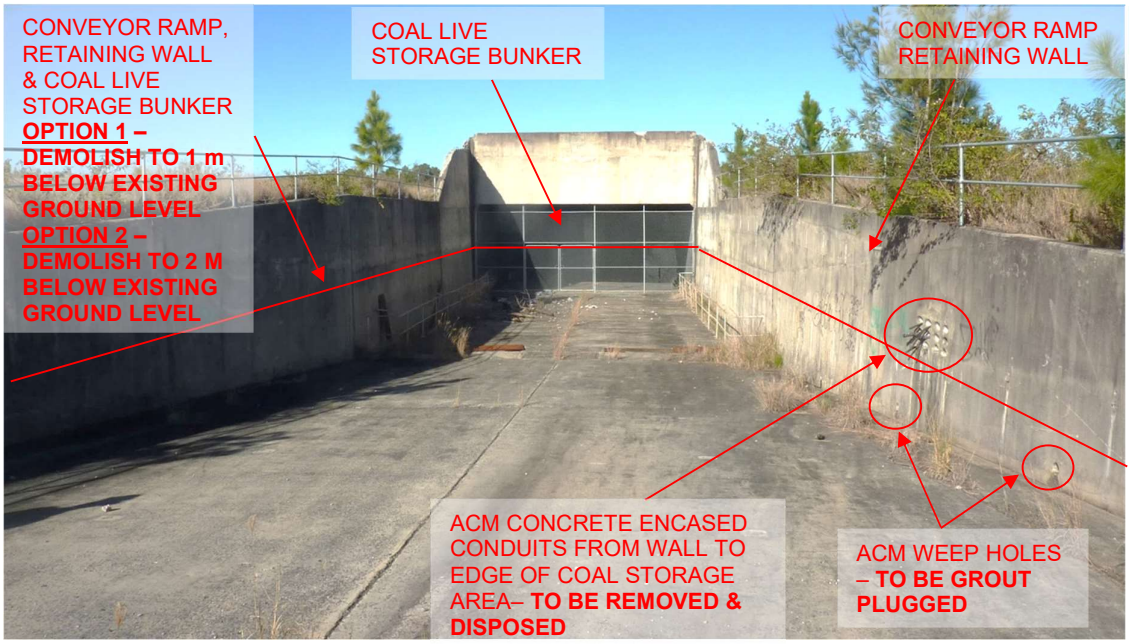


Figure 5: Entrance to Coal Live Storage Bunker (facing South)

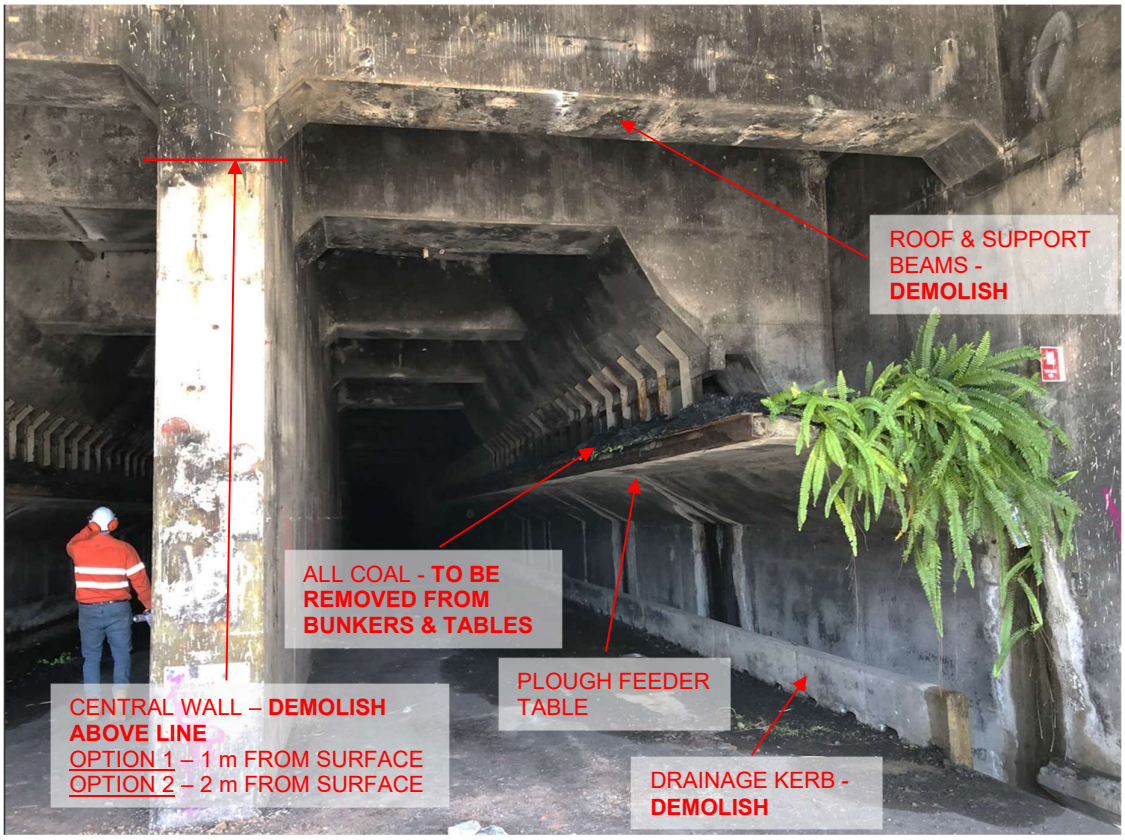


Figure 6: Coal Live Storage Bunker Plough Feeder Table and Hopper (facing South)

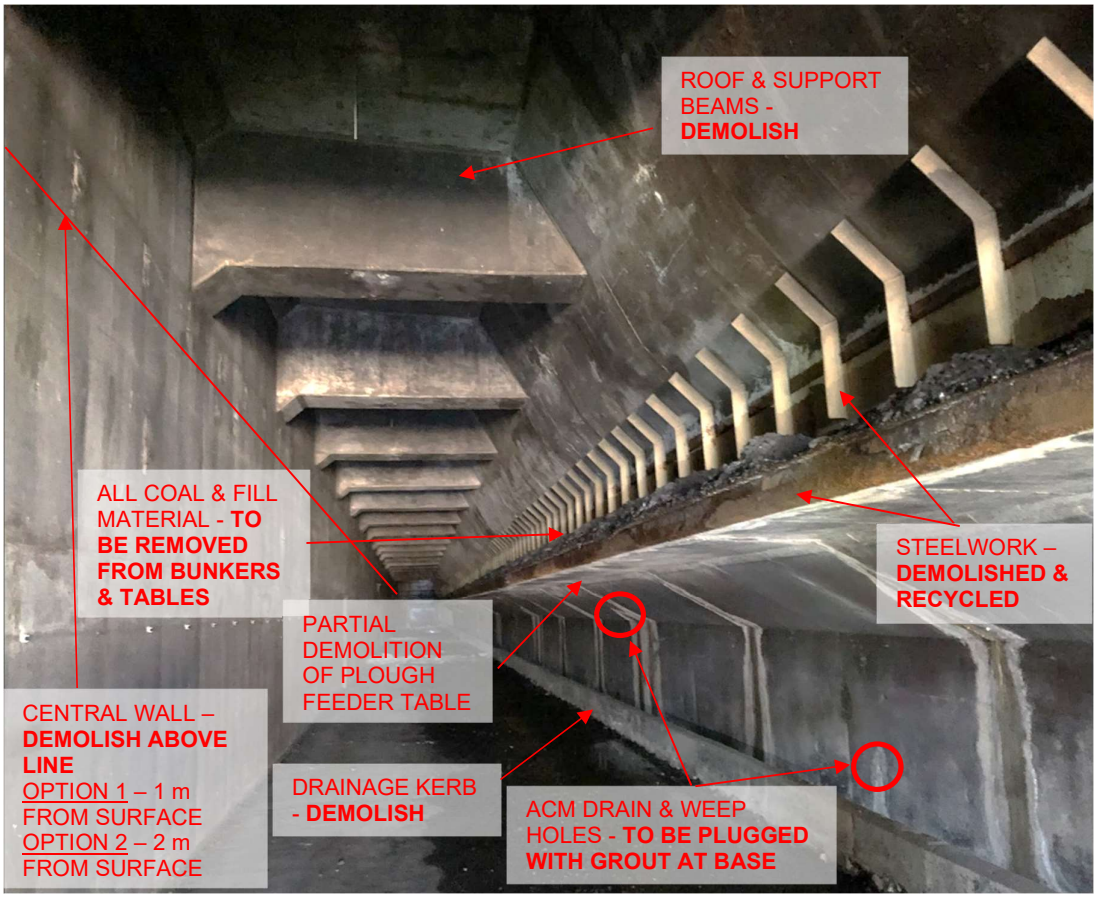


Figure 7: Inside Coal Live Storage Right Hand Bunker (facing South)



Figure 8: Inclined Conveyor Tunnel entrance to Coal Live Storage Bunker (facing South)

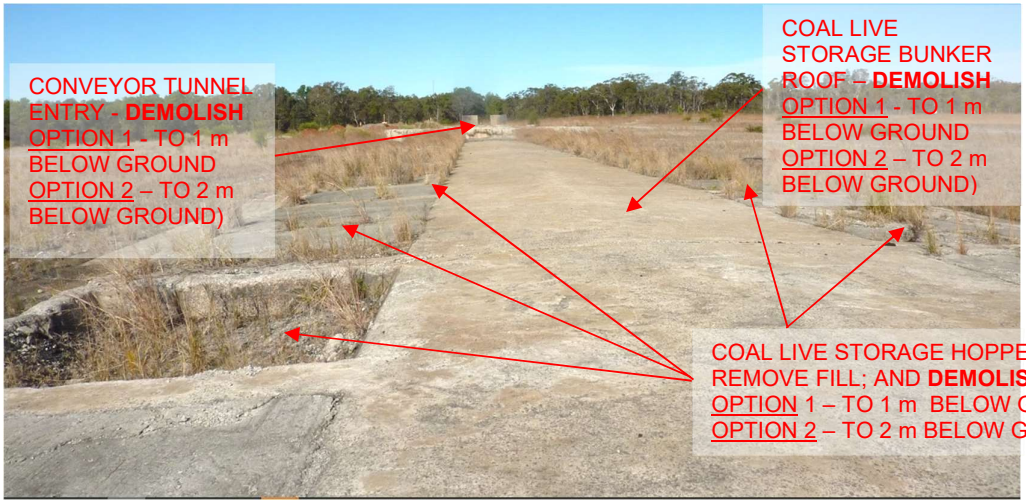


Figure 9: Coal Live Storage Bunker surface level with capped and backfilled hoppers (facing South)

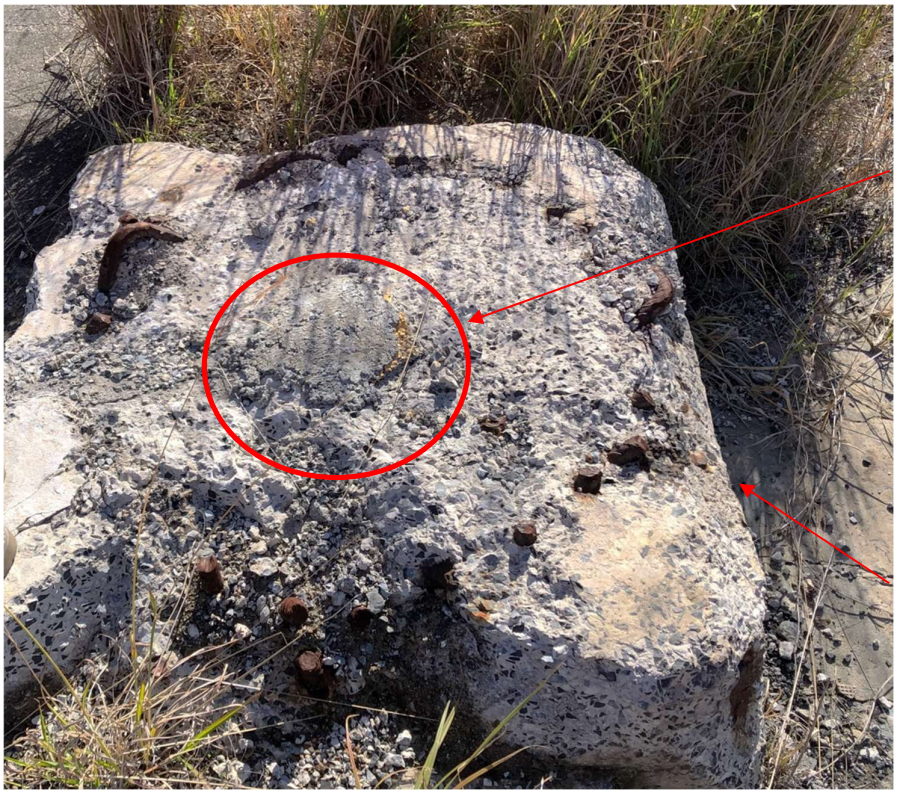


Figure 10: Coal Live Storage Bunker column with capped asbestos cement downpipe



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

Appendix A
Munmorah Coal Handling Plant Area Drawings

Appendix B
Tender Schedules

Appendix C
Table of Key Dates

Appendix D
Additional Site Photos

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Appendix E

Material Tracking Summary (Dec 22 - April 23)												
	Woodchip	Surface Coal	Stockpile 1	Stockpile 2	Stockpile 3	Stockpile 4	Stockpile 5	Stockpile 6 (New Tip)	Stockpile 7	Wetern settling basin	ACM	Backfill Material	Fire Trails
Totals loads	10	1581			635	35	56	370	101	418	105	561	2
Volume (m3)	169	26718.9			10731.5	591.5	946.4	6253	1706.9	7064.2	1774.5	9480.9	33.8

December 2022 Material Take Off Summary

	Surface Coal	Wetern settling basin	ACM	Stockpile 6 (New Tip)	Woodchip	Stockpile 4	Fire Trails
TOTAL	**787**	**0**	**0**	**0**	**0**	**0**	**0**
1-Dec							
2-Dec							
3-Dec							
4-Dec							
5-Dec							
6-Dec	21						
7-Dec	40						
8-Dec	74						
9-Dec	70						
10-Dec							
11-Dec							
12-Dec	91						
13-Dec	87						
14-Dec	87						
15-Dec	73						
16-Dec	37						
17-Dec							
18-Dec							
19-Dec	73						
20-Dec	97						
21-Dec	37						
22-Dec							
23-Dec							
24-Dec							
25-Dec							
26-Dec							
27-Dec							
28-Dec							
29-Dec							
30-Dec							
31-Dec							

January 2023 Material Take Off Summary

	Surface Coal	Wetern settling basin	ACM	Stockpile 6 (New Tip)	Woodchip	Stockpile 4	Fire Trails
TOTAL	**550**	**0**	**0**	**4**	**10**	**0**	**0**
1-Jan							
2-Jan							
3-Jan							
4-Jan							
5-Jan							
6-Jan							
7-Jan							
8-Jan							
9-Jan							
10-Jan	108						
11-Jan	71						
12-Jan	82						
13-Jan	46						
14-Jan							
15-Jan							
16-Jan	80				7		
17-Jan	86						
18-Jan	47			4	3		
19-Jan	3						
20-Jan							
21-Jan							
22-Jan							
23-Jan							
24-Jan	27						
25-Jan							
26-Jan							
27-Jan							
28-Jan							
29-Jan							
30-Jan							
31-Jan							

February 2023 Material Take Off Summary

	Surface Coal	Wetern settling basin	bestos Containing Mater	Stockpile 6 (New Tip)	Stockpile 5	Stockpile 4	Fire Trails
TOTAL	**43**	**0**	**0**	**366**	**56**	**35**	**2**
1-Feb	33						
2-Feb							
3-Feb							
4-Feb							
5-Feb							
6-Feb							
7-Feb							
8-Feb							
9-Feb							
10-Feb							
11-Feb				26			
12-Feb							
13-Feb				64			
14-Feb				37			
15-Feb							
16-Feb				58			
17-Feb	1				45		
18-Feb							
19-Feb							
20-Feb	3			41	11		
21-Feb				29		31	
22-Feb							
23-Feb							
24-Feb							
25-Feb							
26-Feb							
27-Feb				65			
28-Feb	6			46		4	2

March 2023 Material Take Off Summary

	Surface Coal	Wetern settling basin	ACM
TOTAL	**223**	**413**	**105**
1-Mar			2
2-Mar		22	
3-Mar			
4-Mar			
5-Mar			
6-Mar			24
7-Mar			37
8-Mar		14	16
9-Mar		40	20
10-Mar		45	
11-Mar		5	
12-Mar			
13-Mar		8	
14-Mar	9	5	
15-Mar			
16-Mar	10	16	
17-Mar	6	11	
18-Mar		35	
19-Mar			
20-Mar	40	7	
21-Mar	11	57	
22-Mar		36	
23-Mar	13	6	6
24-Mar	50		
25-Mar		1	
26-Mar			
27-Mar	6		
28-Mar		21	
29-Mar			
30-Mar		80	
31-Mar	78	4	

April 2023 Material Take Off Summary

	Surface Coal	Wetern settling basin	ACM	Backfill material	Stockpile 7	Stockpile 6	Stockpile 5	Stockpile 4	Stockpile 3
TOTAL	**-22**	**5**	**0**	**561**	**101**	**0**	**0**	**0**	**635**
1-Apr		5							68
2-Apr									
3-Apr	22				48				115
4-Apr				46					165
5-Apr				62					65
6-Apr									
7-Apr									
8-Apr									
9-Apr									
10-Apr									
11-Apr									
12-Apr				60					50
13-Apr				63	4				16
14-Apr				4	10				62
15-Apr				48					
16-Apr									
17-Apr				100					37
18-Apr				103	32				57
19-Apr				75	7				
20-Apr									
21-Apr									
22-Apr									
23-Apr									
24-Apr									
25-Apr									
26-Apr									
27-Apr									
28-Apr									
29-Apr									
30-Apr									
Adjustment	-44	0	0	0	0	0	0	0	0

Material Tracking Register

Day (Circle):	M T W T F S	Drivers Name		
Date:		Plant Name / Unit ID		
Load Count	Time	Loaded From	Loaded To	Material Type
1 *	9:31	Work Area	Tip head	Spoil
2 *	9:46	"	"	"
3 *	10:04	"	"	"
4 *	10:19	"	"	"
5 *	11:35	"	"	"
6 *	12:15	"	"	"
7 *	12:41	"	"	"
8 *	1:02	"	"	"
9				
10				
11				
12	finish hours for			
13				
14	513			
15				
16				
17	8479			
18				
19				
20				
21				
22				
23				
24	finish hours for			
25				
26	512			
27				
28				
29				
30	9612			
31				
32				
33				
34				
35				
36	Start up for 512			
37				
38				
39				
40				
41				
42	9611			
43				
44				
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Material Tracking Register

contracting

Day (Circle):	M T (W) T F S	Drivers Name	ROBERT BANFIELD.	
Date:	21-12-22	Plant Name / Unit ID	CAT 730	HRS: 3353.8 - 3357.4
Load Count	Time	Loaded From	Loaded To	Material Type
1 21.0T	7:05	WORK AREA	TIP HEAD	SPOILS
2 19.0T	7:20	"	"	"
3 18.5T	7:34	"	"	"
4 18.8T	7:47	"	"	"
5 19.1T	8:00	"	"	"
6 19.5T	8:11	"	"	"
7 18.3T	8:24	"	"	"
8 17.2T	8:37	"	"	"
9 17.5T	8:50	"	"	"
10 15.0T	9:11	"	"	"
11 16.0T	9:23	"	"	"
12 17.0T	9:35	"	"	"
13 18.9T	9:46	"	"	"
14 18.0T	10:37	"	"	"
15 17.2T	10:52	"	"	"
16				
17				
18				
19				
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Material Tracking Register

contracting

Day (Circle):	M T (W) T F S	Drivers Name	Paul M'Grady
Date:	21.12.22	Plant Name / Unit ID	513
Load Count	Time	Loaded From	Loaded To	Material Type
1 *	7.09	work Area	Tip head	Spoil
2 *	7:23	"	"	"
3 *	7:35	"	"	"
4 *	7:48	"	"	"
5 *	8:02	"	"	"
6 *	8:20	"	"	"
7 *	8:33	"	"	"
8 *	8:48	"	"	"
9 *	9:09	"	"	"
10 *	9:25	"	"	"
11 *	9:37	"	"	"
12 *	9:51	"	"	"
13 *	10:51	"	"	"
14 *	11:04	"	"	"
15				
16				
17				
18				
19				
20				
21				
22				
23				
24 Start	hours	8994		
25				
26				
27				
28 finish	hours	8998		
29				
30				
31				
32				
33				
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Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	ROGER RANFIELD	
Date:	20-12-22	Plant Name / Unit ID	CAT 730 002	HRS: 3345.9-3353.7.
Load Count	Time	Loaded From	Loaded To	Material Type
1 20.8T	7:17.	WORK AREA	TIP HEAD	SPOILS.
2 16.9T	7:34	"	"	"
3 20.5T	7:49.	"	"	"
4 18.5T	8:06	"	"	"
5 23.4T	8:22	"	"	"
6 26.1T	8:40	"	"	"
7 22.4T	8:52.	"	"	"
8 19.8T	9:06.	"	"	"
9 19.6T	9:24	"	"	"
10 20.0T	10:40	"	"	"
11 17.4T	10:54	"	"	"
12 21.0T	11:08	"	"	"
13 17.0T	11:22	"	"	"
14 20.0T	11:34	"	"	"
15 20.0T	11:51	"	"	"
16 21.0T	12:08	"	"	"
17 19.3T	12:23	"	"	"
18 21.0T	12:43.	"	"	"
19 19.8T	12:57	"	"	"
20 16.8T	13:13.	"	"	"
21 20.2T	14:28	"	"	"
22 19.2T	14:42.	"	"	"
23 18.1T	14:59	"	"	"
24 20.9T	15:15	"	"	"
25 22.0T	15:30	"	"	"
26 19.5T	15:46.	"	"	"
27 18.9T	16:00	"	"	"
28 18.2T	16:15	"	"	"
29				
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Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	20-12-22	3453-3461
Date:	Aden Perry	Plant Name / Unit ID	CAT 730 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1 20	0716	Stock Pile	Tip head	Spoil
2 17	0736			
3 19	0752			
4 19	0814			
5 20	0830			
6 22	0850			
7 17	0903			
8 19	0920			
9 16	0940			
10 19	1052			
11 17	1115			
12 16	1135			
13 17	1149			
14 17	1208			
15 16	1225			
16 17	1238			
17 17	1259			
18 17	1309			
19 17	1430			
20 15	1449			
21 16	1500			
22 12	1527			
23 17	1545			
24 15	1600			
25 17	1620			
26 16	1634			
27				
28				
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Material Tracking Register

A DELTA GROUP COMPANY
contracting

Day (Circle):	M T W T F S	Drivers Name		
Date: 20.12.22	Paul McCurdy	Plant Name / Unit ID	513 Terex	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:23	work Area	Tip head	Spoil
2	7:41	"	"	"
3	8:00	"	"	"
4	8:17	"	"	"
5	8:35	"	"	"
6	8:50	"	"	"
7	9:04	"	"	"
8	9:18	"	"	"
9	9:36	"	"	"
10	10:48	"	"	"
11	11:02	"	"	"
12	11:16	"	"	"
13	11:32	"	"	"
14	11:47	"	"	"
15	12:02	"	"	"
16	12:15	"	"	"
17	12:32	"	"	"
18	12:47	"	"	"
19	1:03	"	"	"
20	1:17	"	"	"
21	2:32	"	"	"
22	2:47	"	"	"
23	3:04	"	"	"
24	3:18	"	"	"
25	3:34	"	"	"
26	3:48	"	"	"
27	4:02	"	"	"
28	4:17	"	"	"
29	4:30	"	"	"
30				
31				
32				
33				
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Start hours
8986

finish hours
8994

Material Tracking Register

contracting

F/H 9616

Day (Circle):	M T W T F S	Drivers Name	Mark
Date:		Plant Name / Unit ID	512

Load Count	Time	Loaded From	Loaded To	Material Type
1		Worcs	Tip Head	Unidentified
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
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Material Tracking Register

GLEN | A DELTA GROUP COMPANY contracting

Day (Circle):	(M) T W T F S	Drivers Name	ROBERT BANFIELD.	
Date:	19-12-22.	Plant Name / Unit ID	CAT 730 002.	HRS: 33382 - 3345.9
Load Count	Time	Loaded From	Loaded To	Material Type
1 18.8T	7:20	WORK AREA	TIP HEAD	SPOILS
2 19.0T	7:36	"	"	"
3 18.5T	7:52	"	"	"
4 19.1T	8:09	"	"	"
5 18.7T	8:27	"	"	"
6 20.8T	8:42	"	"	"
7 18.1T	8:58	"	"	"
8 19.8T	9:15.	"	"	"
9 20.6T	9:31	"	"	"
10 17.2T	10:35	"	"	"
11 19.6T	10:51	"	"	"
12 20.2T	11:07	"	"	"
13 19.1T	11:26	"	"	"
14 21.8T	11:42.	"	"	"
15 20.3T	11:57	"	"	"
16 20.8T	12:15.	"	"	"
17 20.1T	13:54	"	"	"
18 20.2T	14:13.	"	"	"
19 17.7T	14:29	"	"	"
20 18.6T	14:46.	"	"	"
21 21.6T	15:09	"	"	"
22 20.8T	15:25.	"	"	"
23 20.5T	15:46.	"	"	"
24 21.8T	16:04	"	"	"
25 21.8T	16:18	"	"	"
26				
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Material Tracking Register

CATL A DELTA GROUP COMPANY contracting

Day (Circle):	(M) T W T F S	Drivers Name	Aden Perry 001	
Date:	19/12/22	Plant Name / Unit ID	CAT 730 3445 – 3453	
Load Count	Time	Loaded From	Loaded To	Material Type
1 18	0713	Stock Pile	Tip head	Spoil
2 18	0731			
3 18	0741			
4 23	0804			
5 17	0820			
6 17	0836			
7 13	0853			
8 17	0912			
9 16	0930			
10 16	1037			
11 17	1057			
12 18	1113			
13 18	1131			
14 19	1150			
15 19	1310			
16 18	1404			
17 16	1420			
18 17	1442			
19 17	1500			
20 20	1516			
21 20	1530			
22 20	1550			
23 20	1610			
24 22	1625			
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Material Tracking Register

contracting

SM/8973 FH/8986

Day (Circle):	(M) T W T F S	Drivers Name	Mick MANSell	
Date:	19.12.22	Plant Name / Unit ID	J13	
Load Count	Time	Loaded From	Loaded To	Material Type
1		Work area	tip Head	unsuitable
2				
3				
4				
5				
6				
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11				
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Material Tracking Register

A DELTA GROUP COMPANY
contracting

Day (Circle):	M T W T F S	Drivers Name	ROBERT BANFIELD.	
Date:	16-12-22.	Plant Name / Unit ID	CAT 730 002.	HRS: 3333.3 - 3338.2.
Load Count	Time	Loaded From	Loaded To	Material Type
1 15.8T	7:30	WORK AREA.	TIP HEAD	SPOILS.
2 17.2T.	7:47	"	"	"
3 18.0T.	8:04	"	"	"
4 18.2T.	8:22.	"	"	"
5 19.2T.	8:40	"	"	"
6 18.3T.	8:54	"	"	"
7 17.8T.	9:09	"	"	"
8 19.0T.	9:24	"	"	"
9 18.3T.	9:39	"	"	"
10 17.6T.	9:53.	"	"	"
11 18.9T.	10:09.	"	"	"
12 17.3T.	10:25.	"	"	"
13 18.0T.	11:28	"	"	"
14 18.0T.	11:45.	"	"	"
15 16.9T.	12:45.	"	"	"
16 17.8T.	13:05	"	"	"
17 18.4T.	13:22.	"	"	"
18 304.7	17.9 AVG			
19				
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Material Tracking Register

GHD | A DELTA GROUP COMPANY contracting

Day (Circle):	M T W T (F) S	Drivers Name	Aden Perry	
Date:	16/12/22	Plant Name / Unit ID	CAT 730 001	3440 –
Load Count	Time	Loaded From	Loaded To	Material Type
1 (9)	0739	Stock pile	Tip head	Spoil
2 9	0754			
3 12	0816			
4 10	0831			
5 15	0849			
6 17	0904			
Mid 7 15	0920			
8	942			
9 19.2	959			
10 17.2	10.16			
11 20.1	10.34			
12 17.0	1143			
13 17.2	12.03			
14 195.3	15 AVG			
15				
16				
17				
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Material Tracking Register

contracting

Day (Circle):	M T W T (F) S	Drivers Name Mick MANUAL	Hours S/8973 F/
Date:	16-12-22	Plant Name / Unit ID JT3	

Load Count	Time	Loaded From	Loaded To	Material Type
1		Work area	HP Head	Unidentified
2	"			
3	"			
4	"			
5	"			
6	"			
7	"			
8				
9				
10				
11				
12				
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3345.5 F/H 001

Material Tracking Register

GHD | A DELTA GROUP COMPANY
contracting

Day (Circle):	M T W (T) F S	Drivers Name	Aden Perry	
Date:	15-12-22	Plant Name / Unit ID	CAT 730 001 3432-3440	
Load Count	Time	Loaded From	Loaded To	Material Type
1 17	0726	Stock Pile	Tip head	Spoil
2 17	0743			
3 17	0801			
4 17	0824			
5 17	0843			
6 20	0900			
7 20	0925			
8 17	1028			
9 18	1044			
10 19	1110			
11 17	1134			
12 17	1154			
13 19	1209			
14 17	1221			
15 18	1249			
16 18	1306			
17 16	1320			
18 17	1437			
19 18	1454			
20 17	1508			
21 18	1528			
22 19	1543			
23 12	1600			
24 16	1620			
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Material Tracking Register

CMC A DELTA GROUP COMPANY contracting

Day (Circle):	M T W (T) F S	Drivers Name	Paul Mgrady
Date: 15-12-22		Plant Name / Unit ID	S12

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:34	work Area	Tip Road	Spoil
2	7:49	"	"	"
3	8:06	"	"	"
4	8:27	"	"	"
5	8:47	"	"	"
6	9:06	"	"	"
7	9:30	"	"	"
8	10:25	"	"	"
9	10:41	"	"	"
10	11:00	"	"	"
11	11:30	"	"	"
12	11:46	"	"	"
13	12:01	"	"	"
14	12:16	"	"	"
15	12:46	"	"	"
16	1:02	"	"	"
17	1:16	"	"	"
18	2:40	"	"	"
19	2:55	"	"	"
20	3:12	"	"	"
21	3:27	"	"	"
22	3:42	"	"	"
23	3:59	"	"	"
24	4:16	"	"	"
25				
26				
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	ROBERT BANFIELD,	
Date:	15-12-22	Plant Name / Unit ID	CAT 730	HRS: 3325.2 - 3333.3
Load Count	Time	Loaded From	Loaded To	Material Type
1 20.8T	7:28	WORK AREA	TIP HEAD	SPOILS
2 21.2T	7:46	"	"	"
3 20.0T	8:04	"	"	"
4 24.5T	8:22	"	"	"
5 23.5T	8:38	"	"	"
6 23.8T	8:55.	"	"	"
7 12.2T	9:12	"	"	"
8 17.8T	9:32	"	"	"
9 18.5T	10:21	"	"	"
10 19.0T	10:36	"	"	"
11 20.2T	10:50	"	"	"
12 18.0T	11:11	"	"	"
13 20.2T	11:36	"	"	"
14 19.8T	11:55.	"	"	"
15 20.8T	12:12	"	"	"
16 21.8T	12:26	"	"	"
17 17.3T	12:52	"	"	"
18 18.8T	13:23.	"	"	"
19 19.8T	14:32.	"	"	"
20 15.5T	14:49.	"	"	"
21 15.7T	15:02.	"	"	"
22 18.0T	15:16.	"	"	"
23 18.8T	15:32.	"	"	"
24 18.9T	16:05.	"	"	"
25 20.1T	16:19	"	"	"
26				
27				
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Material Tracking Register

contracting

Day (Circle):	M T W (T) F S	Drivers Name	Chook
Date:	15-12-22	Plant Name / Unit ID	CMA MRJ

Load Count	Time	Loaded From	Loaded To	Material Type
1				water
2				
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16	423 →		431 →	
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Material Tracking Register

contracting

Day (Circle):	M T (W) T F S	Drivers Name	Aden Perry	3424 – 3432
Date:	14/12/22	Plant Name / Unit ID	CAT 730 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1 20	0718	Stock Pile	Tip head	Spoil
2 18	0755			
3 18	0815			
4 19	0834			
5 19	0850			
6 14	0917			
7 16	0938			
8 20	1002			
9 19	1026			
10 16	1226			
11 19	1253			
12 18	1316			
13 18	1333			
14 18	1344			
15 19	1400			
16 15	1414			
17 15	1434			
18 16	1504			
19 16	1526			
20 16	1549			
21 16	1610			
22 16	1620			
23				
24 ~~405 T~~	~~18~~ 4 AVG.			
25				
26				
27 386 t	17.5 t/load			
28				
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Material Tracking Register

A DELTA GROUP COMPANY
contracting

Day (Circle):	M T (W) T F S	Drivers Name	ROBERT BANFIELD	
Date:	14-12-22.	Plant Name / Unit ID	CAT 730	HRS: 3317.3 - 3325.2
Load Count	Time	Loaded From	Loaded To	Material Type
1 19.0T	7:32	WORK AREA	TIP HEAD	SPOILS
2 22.5T	7:58	〃	〃	〃
3 22.1T	8:17	〃	〃	〃
4 22.8T	8:35	〃	〃	〃
5 21.4T	8:53	〃	〃	〃
6 27.2T	9:20	〃	〃	〃
7 24.0T	9:43	〃	〃	〃
8 23.2T	10:04	〃	〃	〃
9 20.6T	10:30	〃	〃	〃
10 21.2T	12:30	〃	〃	〃
11 20.1T	12:56	〃	〃	〃
12 21.3T	13:15	〃	〃	〃
13 21.2T	13:31	〃	〃	〃
14 20.0T	13:49	〃	〃	〃
15 18.3T	14:03	〃	〃	〃
16 21.2T	14:19	〃	〃	〃
17 22.0T	14:36	〃	〃	〃
18 22.4T	14:50	〃	〃	〃
19 19.8T	15:07	〃	〃	〃
20 19.6T	15:22	〃	〃	〃
21 21.8T	15:38	〃	〃	〃
22 21.0T	15:55	〃	〃	〃
23 22.0T	16:13	〃	〃	〃
24				
25 ~~493.5~~	20.5 AVG.			
26				
27				
28 =494,7 t	21,5 t/load			
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Material Tracking Register

A DELTA GROUP COMPANY contracting

Day (Circle):	M T (W) T F S	Drivers Name	Paul M'Grady
Date: 14.12.22		Plant Name / Unit ID	512
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:36	WORK AREA	TIP POINT	Spoil
2	8:01	"	"	"
3	8:20	"	"	"
4	8:39	"	"	"
5	8:59	"	"	"
6	9:23	"	"	"
7	9:44	"	"	"
8	10:07	"	"	"
9	10:33	"	"	"
10	12:23	"	"	"
11	12:44	"	"	"
12	1:05	"	"	"
13	1:20	"	"	"
14	1:35	"	"	"
15	1:52	"	"	"
16	2:07	"	"	"
17	2:24	"	"	"
18	2:41	"	"	"
19	2:55	"	"	"
20	3:10	"	"	"
21	3:33	"	"	"
22	3:51	"	"	"
23	4:09	"	"	"
24	4:25	"	"	"
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Material Tracking Register

contracting

SH 417.0
DR458 FH 422.0

Day (Circle):	M T (W) T F S	Drivers Name		
Date:	14.12.22	Plant Name / Unit ID		
Load Count	Time	Loaded From	Loaded To	Material Type
1				water
2				
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13				
14				
15				
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Material Tracking Register

Day (Circle):	M T (W) T F S	Drivers Name	Sumit
Date:	14-12-22	Plant Name / Unit ID	E 513

Load Count	Time	Loaded From	Loaded To	Material Type
~~1~~				
~~2~~		NORTH AREA	TIP HEAD	UNSUITABLE
~~3~~				
~~4~~				
~~5~~				
~~6~~				
~~7~~				
~~8~~				
~~9~~				
~~10~~				
~~11~~				
~~12~~				
~~13~~				
~~14~~				
~~15~~				
~~16~~				
~~17~~				
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Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	Paul M'Grady
Date:	13.12.22	Plant Name / Unit ID	512

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:37	Work Area	Tip head	Spoil
2	7:55	"	"	"
3	8:12	"	"	"
4	8:30	"	"	"
5	8:50	"	"	"
6	9:09	"	"	"
7	10:49	"	"	"
8	11:07	"	"	"
9	11:23	"	"	"
10	11:40	"	"	"
11	11:57	"	"	"
12	12:16	"	"	"
13	12:31	"	"	"
14	12:51	"	"	"
15	2:00	"	"	"
16	2:24	"	"	"
17	2:43	"	"	"
18	3:02	"	"	"
19	3:20	"	"	"
20	3:41	"	"	"
21	3:58	"	"	"
22	4:16	"	"	"
23	4:34	"	"	"
24				
25				
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Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	Aden Perry	3416-
Date:	13-12-22	Plant Name / Unit ID	CAT 730 001	

	Load Count	Time	Loaded From	Loaded To	Material Type
1	18	0730	Stock Pile	Tip head	Spoil
2	20	0748			
3	19	0806			
4	19	0827			
5	21	0848			
6	20	0908			
7	19	0928			
8	18	1045			
9	18	1107			
10	19	1126			
11	20	1159			
12	19	1220			
13	19	1240			
14	18	1300			
15	18	1420			
16	20	1455			
17	20	1515			
18	19	1533			
19	20	1549			
20	20	1609			
21	20	1622			
22	18	1633			
23					
24					
25	422 T	(19.18	AVG)		
26					
27					
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Material Tracking Register

contracting

SH 408.7
FH 4470

Day (Circle):	M (T) W T F S	Drivers Name	Mick MAWSON	
Date:	13.12.22	Plant Name / Unit ID	DR458	
Load Count	Time	Loaded From	Loaded To	Material Type
1				water
2				
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Material Tracking Register

A DELTA GROUP COMPANY contracting

Day (Circle):	M (T) W T F S	Drivers Name	ROBERT BANFIELD	
Date:	3-12-22	Plant Name / Unit ID	CAT 730	HRS 3309.6-3317.3
Load Count	Time	Loaded From	Loaded To	Material Type
1 20.7T	7:30	WORK AREA	TIP HEAD	SOILS
2 21.3T	7:50	"	"	"
3 17.2T	8:08	"	"	"
4 19.6T	8:27	"	"	"
5 22.1T	8:43	"	"	"
6 19.3T	9:01	"	"	"
7 19.8T	9:19	"	"	"
8 17.1T	10:43	"	"	"
9 20.2T	11:01	"	"	"
10 20.3T	11:19	"	"	"
11 25.0T	11:36	"	"	"
12 20.3T	11:54	"	"	"
13 19.6T	12:09	"	"	"
14 23.5T	12:25	"	"	"
15 22.2T	12:40	"	"	"
16 19.6T	14:02	"	"	"
17 20.6T	14:21	"	"	"
18 18.0T	14:40	"	"	"
19 19.0T	14:58	"	"	"
20 17.5T	15:17	"	"	"
21 17.0T	15:36	"	"	"
22 18.0T	15:53	"	"	"
23 19.0T	16:10	"	"	"
24 19.4T	16:27	"	"	"
25				
26 477.3T	(19.8 AVG)			
27				
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30 476,3t				
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Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	Sam
Date:	13-12-22	Plant Name / Unit ID	313

Load Count	Time	Loaded From	Loaded To	Material Type
~~1~~		WORK AREA	TIP SITE	UNSUITABLE
~~2~~				
~~3~~				
~~4~~				
~~5~~				
~~6~~				
~~7~~				
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24	14 LOADS			
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Material Tracking Register

contracting

START HRS 8955 * 8963

Day (Circle):	M T W T F S	Drivers Name	Sammy	
Date:	12-12-22	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	8.20	WORK	T.P	T.P
2	8.40			
3	9.00			
4	9.20	AREA	HEAD	FACE
5	9.40			
6	10.30			UNSUITABLE
7	10.50			
8	11.10			
9	11.30			
10	11.50			
11	12.10			
12	12.35			
13	104			
14	120			
15	135			
16	247			
17	304			
18	320			
19	338			
20	4.00			
21	4.20			
22				
23				
24				
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30	START	HRS	8955	
31				
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34	FINISH	HRS	8963.	
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Material Tracking Register

Day (Circle): (M) T W T F S | Drivers Name: Aden Perry | 3408-3416-6
Date: 12/12/22 | Plant Name / Unit ID: CAT 730 001

Load Count	Time	Loaded From	Loaded To	Material Type
1 23	0730	STOCK PILE	TIP HEAD	SPOIL
2 16	0753			
3 19	0815			
4 19	0835			
5 19	0900			
6 21	0920			
7 22	0939			
8 20	1038			
9 18	1102			
10 20	1124			
11 18	1141			
12 20	1159			
13 21	1219			
14 22	1231			
15 19	1250			
16 22	1309			
17 20	1329			
18 20	1440			
19 19	1455			
20 20	1515			
21 19	1530			
22 18	1548			
23 21	1609			
24 20	1427			
25 476T				
26	19.8T AVG			
27				
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29 476 ton				
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Material Tracking Register

Day (Circle):	(M) T W T F S	Drivers Name	ROBERT BANFIELD	
Date:	12-12-22	Plant Name / Unit ID	CAT 730	HRS: 3301.7 - 3309.6
Load Count	Time	Loaded From	Loaded To	Material Type
1 19.5T	7:23	WORK AREA	TIP HEAD	SPOILS
2 20.0T	7:48	"	"	"
3 21.9T	8:10	"	"	"
4 21.7T	8:30	"	"	"
5 22.1T	8:53	"	"	"
6 22.4T	9:10	"	"	"
7 22.2T	9:27	"	"	"
8 21.0T	10:27	"	"	"
9 21.8T	10:42	"	"	"
10 21.2T	11:05	"	"	"
11 22.1T	11:26	"	"	"
12 19.1T	11:48	"	"	"
13 20.1T	11:58	"	"	"
14 19.8T	12:16	"	"	"
15 20.4T	12:34	"	"	"
16 19.8T	12:57	"	"	"
17 20.8T	13:14	"	"	"
18 18.2T	13:34	"	"	"
19 19.5T	14:49	"	"	"
20 22.4T	15:06	"	"	"
21 21.6T	15:25	"	"	"
22 20.0T	15:43	"	"	"
23 21.2T	16:01	"	"	"
24 20.8T	16:20	"	"	"
25 ~~477.9T~~				
26	AV 19.9T			
27				
28 1,99,6	20,817T			
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Material Tracking Register

Day (Circle):	(M) T W T F S	Drivers Name	P. McGRADY	
Date:		Plant Name / Unit ID	ROB 512	
Load Count	Time	Loaded From	Loaded To	Material Type
1 *	7:45	Work Area	TIP HEAD	Spoil
2 *	8:07			
3 *	8:28			
4 *	8:51			
5 *	9:07			
6 *	9:25			
7 *	10:33			
8 *	10:50			
9 *	11:12			
10 *	11:31			
11 *	11:49			
12 *	12:07			
13 *	12:27			
14 *	12:46			
15 *	1:04			
16 *	1:23			
17 *	2:41			
18 *	2:58			
19 *	3:17			
20 *	3:37			
21 *	3:57			
22 *	4:17			
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Material Tracking Register

Day (Circle):	M T W T F S	Drivers Name Mick MANSel		
Date:	12.12.22	Plant Name / Unit ID DR458		
Load Count	Time 6.53.	Loaded From	Loaded To	Material Type
1		Hydrant	Water cart	water
2				
3				
4				
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S/H 403.8
F/H 408.7

Material Tracking Register

CEC | A DELTA GROUP COMPANY contracting

Day (Circle):	M T W T F S	Drivers Name	PAUL McGRADY.
Date:		Plant Name / Unit ID	MAXM S12

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:48	Stock Pile	Tip head	unscrubble
2	8:10	〃	〃	〃
3	8:34	〃	〃	〃
4	8:57	〃	〃	〃
5	9:~~10~~	〃	〃	〃
6	9:~~30~~	〃	〃	〃
7	10:~~20~~	〃	〃	〃
8	10:42	〃	〃	〃
9	~~10:50~~ 10:59	〃	〃	〃
10	11:16	〃	〃	〃
11	11:35	〃	〃	〃
12	11:55	〃	〃	〃
13	12:17	〃	〃	〃
14	12:38	〃	〃	〃
15	1:03	〃	〃	〃
16	2:33	〃	〃	〃
17	2:56	〃	〃	〃
18	3:37	〃	〃	〃
19				
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10:59

Material Tracking Register

A DELTA GROUP COMPANY contracting

Day (Circle):	M T W T (F) S	Drivers Name	ROBERT BANFIELD	
Date:	9-12-22.	Plant Name / Unit ID	CAT 730 002.	HRS: 3294.3 – 3301.4
Load Count	Time	Loaded From	Loaded To	Material Type
1 19.0T	7:45	WORK AREA	TIP HEAD	SPOIL.
2 20.1T	8:07	"	"	"
3 21.0T	8:31	"	"	"
4 20.2T	8:53.	"	"	"
5 20.5T	9:15.	"	"	"
6 21.8T	9:35.	"	"	"
7 21.9T	10:15	"	"	"
8 22.8T	10:45	"	"	"
9 22.7T	11:02	"	"	"
10 20.7T	11:20	"	"	"
11 21.0T	11:40	"	"	"
12 22.5T	11:58	"	"	"
13 21.8T	12:14	"	"	"
14 21.3T	12:32	"	"	"
15 20.4T	12:53.	"	"	"
16 19.2T	14:30	"	"	"
17 20.4T	14:52	"	"	"
18 21.3T	15:23.	"	"	"
19				
20				
21 379.6T				
22				
23				
24				
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Material Tracking Register

CMA | A DELTA GROUP COMPANY contracting

Day (Circle):	M T W T (F) S	Drivers Name	Aden Perry	
Date:	9-12	Plant Name / Unit ID	CAT001	340103 – 340807
Load Count	Time	Loaded From	Loaded To	Material Type
1 19	743	Stock pile	Tip head	Spoil
2 16	804			
3 19	830			
4 19	850			
5 21	911			
6 19	934			
7 19	1025			
8 21	1051			
9 19	1106			
10 20	1128			
11 20	1149			
12 21	1206			
13 22	1228			
14 21	1300			
15 20	1415			
16 22	1443			
17 18	1516			
18 20	1543			
19				
20 356T				
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Material Tracking Register

A DELTA GROUP COMPANY contracting

Day (Circle):	M T W T (F) S	Drivers Name	Mick Manson
Date:		Plant Name / Unit ID	513

Load Count	Time	Loaded From	Loaded To	Material Type
1	8:00 Work area		Tip Head	Soil / contaminated
2	"		"	
3	"		"	
4	"		"	
5	"		"	
6	"		"	
7	"		"	
8	"		"	
9	"		"	
10	"		"	
11	"		"	
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Material Tracking Register

A DELTA GROUP COMPANY contracting

Day (Circle):	M T W T F S	Drivers Name	ROBERT BANFIELD
Date:	08-12-22	Plant Name / Unit ID	CAT 002. 3286.9 HRS - 3294.3
Load Count	Time	Loaded From	Loaded To	Material Type
1 19.0T	7:35	LOAD AREA.	TIP HEAD	SPOIL.
2 22.5T	7:56	"	"	"
3 20.5T	8:19	"	"	"
4 21.4T	8:38	"	"	"
5 20.9T	9:00	"	"	"
6 21.6T	9:21	"	"	"
7 22.2T	10:20	"	"	"
8 20.2T	10:55	"	"	"
9 20.5T	11:27	"	"	"
10 21.1T	11:55	"	"	"
11 19.8T	12:21	"	"	"
12 18.5T	12:41	"	"	"
13 19.9T	13:00	"	"	"
14 18.5T	13:21	"	"	"
15 19.6T	14:42.	"	"	"
16 18.0T	15:03.	"	"	"
17 20.0T	15:24	"	"	"
18 19.9T	15:44	"	"	"
19 19.5T	16:05.	"	"	"
20 382.7T				
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Material Tracking Register

Gilbert contracting — A DELTA GROUP COMPANY

Day (Circle):	M T W (T) F S	Drivers Name	P. McGrady
Date:	6-12-22	Plant Name / Unit ID	512

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:44	Stock Pile	Tip head	Spoil
2	8:08	"	"	"
3	8:30	"	"	"
4	8:56	"	"	"
5	9:19	"	"	"
6	9:37	"	"	"
7	10:49	"	"	"
8	11:20	"	"	"
9	12:14	"	"	"
10	12:35	"	"	"
11	12:54	"	"	"
12	1:15	"	"	"
13	1:30	"	"	"
14	3:00	"	"	"
15	3:19	"	"	"
16	3:42	"	"	"
17	4:01	"	"	"
18	4:20	"	"	"
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Material Tracking Register

CMA | A DELTA GROUP COMPANY contracting

Day (Circle):	M T W (T) F S	Drivers Name	Aden Perry		
Date:	8/12	Plant Name / Unit ID	CAT 730	3393.9 –	3401.2
Load Count	Time	Loaded From	Loaded To	Material Type	
1 19	0730	Stock Pile	Tip head	Spoil	
2 22	0802				
3 22	0829				
4 20	0852				
5 19	0914				
6 19	0936				
7 22	1039				
8 20	1117				
9 21	1144				
10 19	1212				
11 16	1239				
12 17	1257				
13 19	1320				
14 19	1436				
15 18	1505				
16 19	1535				
17 21	1600				
18 15	1623				
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Material Tracking Register

CMC | A DELTA GROUP COMPANY contracting

Day (Circle):	M T (W) T F S	Drivers Name	Aden Perry
Date: 07/		Plant Name / Unit ID	CAT 001
Load Count	Time	Loaded From	Loaded To	Material Type
1 16		Stock Pile	Tip head	Spoil
2 19		〃	〃	〃
3 18		〃	〃	〃
4 18		〃	〃	〃
5 19		〃	〃	〃
6 17		〃	〃	〃
7 17		〃	〃	〃
8 18		〃	〃	〃
9 19		〃	〃	〃
10 19		〃	〃	〃
11 18		〃	〃	〃
12 17		〃	〃	〃
13 20		〃	〃	〃
14 19		〃	〃	〃
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Material Tracking Register

CMC | A DELTA GROUP COMPANY contracting

Day (Circle):	M T (W) T F S	Drivers Name	MICK MAWSON	
Date:	7-12-22	Plant Name / Unit ID	ROB 513 .	
Load Count	Time	Loaded From	Loaded To	Material Type
1		STOCKPILE	TIP HEAD	UNSUITABLE
2		↓	↓	↓
3		↓	↓	↓
4		↓	↓	↓
5		↓	↓	↓
6	TRUCK BREAK	DOWN.		
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Material Tracking Register

Day (Circle):	M T W T F S	Drivers Name	P. M'Grady		
Date:	8.12.22	Plant Name / Unit ID	S12		
Load Count	Time	Loaded From	Loaded To	Material Type	
1		Stock Pile	Tip head	Spoil	
2		〃	〃	〃	
3		〃	〃	〃	
4		〃	〃	〃	
5		〃	〃	〃	
6		〃	〃	〃	
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Material Tracking Register

CMS | A DELTA GROUP COMPANY contracting

Day (Circle):	M T (W) T F S	Drivers Name	ROBERT BANFIELD
Date:	7-12-22.	Plant Name / Unit ID	CAT 002.
Load Count	Time	Loaded From	Loaded To	Material Type
1 19.1T		STOCK PILE	TIP HEAD	SPOIL
2 19.0T		"	"	"
3 20.2T		"	"	"
4 20.5T		"	"	"
5 20.0T		"	"	"
6 20.5T		"	"	"
7 17.1T		"	"	"
8 20.9T		"	"	"
9 21.6T		"	"	"
10 20.6T		"	"	"
11 21.4T		"	"	"
12 18.6T		"	"	"
13 20.8T		"	"	"
14 21.0T		"	"	"
15 19.8T		"	"	"
16 21.8T		"	"	"
17 19.3T		"	"	"
18 18.6T		"	"	"
19 18.3T		"	"	"
20 20.5T		"	"	"
21 19.3T		"	"	"
22 18.3T		"	"	"
23 19.2T		"	"	"
24 456.4				
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Material Tracking Register

CMA | A DELTA GROUP COMPANY contracting

Day (Circle):	M (T) W T F S	Drivers Name	ROBERT BANFIELD
Date:	6-12-22	Plant Name / Unit ID	002
Load Count	Time	Loaded From	Loaded To	Material Type
1 17.1T		STOCK PILE	TIP HEAD	SPOIL
2 17.2T		"	"	"
3 17.7T		"	"	"
4 19.5T		"	"	"
5 20.0T		"	"	"
6 21.0T		"	"	"
7 18.3T		"	"	"
8 20.6T		"	"	"
9 20.7T		"	"	"
10 21.6T		"	"	"
11 21.2T		"	"	"
12 ~~214.9T~~		"	"	"
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Material Tracking Register

Day (Circle):	M (T) W T F S	Drivers Name	MICK MAWSON.
Date:	6-12-22	Plant Name / Unit ID	ROB 512.
Load Count	Time	Loaded From	Loaded To	Material Type
1		STOCKPILE	TIP HEAD	UNSUITABLE
2				
3				
4				
5				
6				
7				
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Material Tracking Register

EMS | A DELTA GROUP COMPANY contracting

Day (Circle):	M (T) W T F S	Drivers Name	Aden Perry	
Date: 6/12		Plant Name / Unit ID	CAT 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1 18		Stock Pile	Tip head.	Spoil
2 16		"	"	"
3 16		"	"	"
4 16		"	"	"
5 17		"	"	"
6 14		"	"	"
7 17		"	"	"
8 18		"	"	"
9 17		"	"	"
10 20		"	"	"
11 169T		"	"	"
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Material Tracking Register

Day (Circle):	M T W T F S	Drivers Name	Tim Fullerton	
Date:	27-2-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:58	Stock p 6	513	S6 (STOCKPILE 6)
2	8:26	Stock-p 6	513	
3	8:50	Stock-p 6	513	
4	9:10	Stock-p	513	
5	10:11	Stock-p	513	
6	10:39	Stock-p	513	
7	10:59	Stock-p	513	
8	11:20	Stock-p	513	
9	11.55	"	513	
10	12:25	"	Tip head.	
11	12:45	"	"	
12	1.50	"	"	
13	2.15	"	"	
14	2.30	"	"	
15	2:45	"	"	
16	3:10	"	"	
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S 9762 F 9769

Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	Paul McGrady	
Date:	24-2-23	Plant Name / Unit ID	TEREX S12	
Load Count	Time	Loaded From	Loaded To	Material Type
1 *	7:24	Work Area	Tip Head	Scoal
2 *	7:43	"	"	"
X 3 *	8:08	"	work Area	concrete stockpile
4 *	8:22	"	Tip Head	Scoal
5 *	8 50	"	"	"
6 *	10:23	"	"	"
7 *	11:13	"	fire trail	Sift Concrete
8 *	11:52	"	fire trail	"
9 *	12:00	"	"	"
10 *	12:20	"	"	"
11 *	12:51	"	"	"
12 *	2:16	"	"	"
13 *	2:32	"	"	"
14 *	3:19	"	Tip Head	CONCRETE STOCKPILES
15 *	3:43	"	"	"
16 *	4:13	"	"	"
17				
18				
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Material Tracking Register

Day (Circle):	M (T) W T F S	Drivers Name	Aden Perr	3556 - 3563 H
Date:	28-2-23	Plant Name / Unit ID	CAT 730 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0717	Stock Pile 4	Tip head	Stock Pile 4
2	0736	↓	"	"
X 3	0755	Concrete	Concrete stockpile	Concrete
X 4	0809	↓		
5	0830	Stock Pile 4	Tip head	Stock pile 4
6	0846			"
7	1017	Stock Pile 6	Tip head	Stock pile 6
8	1036			"
9	1055			"
10	1200			"
11	1221			"
12	1242			"
13	1402			"
14	1436			"
15	1500			"
16	1523			"
17	1552			"
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Material Tracking Register

Day (Circle):	M T W T F S	Drivers Name	ROBERT BANFIELD	
Date:	28-2-23	Plant Name / Unit ID	CAT 730 002 HRS 3464.0 - 3471.7	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:21	WORK AREA	OLD DUMP	STOCKPILE SLAG & COAL
2 21.8T	8:01	"	CONCRETE STOCKPILE	CONCRETE
3	8:20	"	"	"
4	8:34	"	OLD DUMP	STOCKPILES
5	8:54	"	"	"
6 19.9T	10:21	"	NEW DUMP	"
7	10:52	"	"	"
8 21.5T	11:15	"	"	"
9 23.5T	11:35	"	"	"
10 22.3T	11:52	"	"	"
11 22.7T	12:10	"	"	"
12 22.4T	12:50	"	"	"
13 21.3T	13:50	"	"	"
14 22.8T	14:19	"	"	"
15	14:55	"	"	"
16	15:22	"	"	"
17 21.9T	15:48	"	"	"
18 20.6T	16:19	"	"	"
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Material Tracking Register

Day (Circle):	M T W T F S	Drivers Name	T.M Fullerton	
Date:	28-2-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:22	Stockpile 6	513 NEW DUMP	STOCKPILE 6
2	7:41	Stockpile 6	513	"
3	8:03	Stockpile 6	513	"
4	8:19	Stockpile 6	513	"
5	8:39	Stockpile 6	513	"
6	9:24	Stockpile 6	513	"
7	10:35	Stockpile 6	513	"
8	11:00	Stockpile 6	513	"
9	11:37	Stockpile 6	513	"
10	12:11	Stockpile 6	513	"
11	12:40	Stockpile	513	
12	1:55	Stockpile	513	
13	2:27	Stockpile	513	
14	2:40	Stockpile	513	
15	3:16	Stockpile 6	513	"
16	3:38	Stockpile 6	513	"
17	4:06	Stockpile 6	513	"
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S 9755 F 9762

Material Tracking Register

contracting

Day (Circle):	(M) T W T F S	Drivers Name	Paul McGrath
Date:	27.2.23	Plant Name / Unit ID	512 TEREX

Load Count	Time	Loaded From	Loaded To	Material Type
1	8:00	Work Area	Tip Head (NOW)	Concrete STOCK PILE 6
2	8:29	"	"	"
3	8:55	"	"	"
4	9:15	"	"	"
5	10:14	"	"	"
6	10:42	"	"	"
7	11:04	"	TIP HEAD "	"
8	11:26	"	"	"
9	11:46	"	"	"
10	12:21	"	"	"
11	12:37	"	"	"
12	1:50	"	"	"
13	2:08	"	"	"
14	2:27	"	"	"
15	2:45	"	"	"
16	3:07	"	"	"
17	3:26	"	FROM WORK AREA TO TIP	"
18	3:32	"	"	"
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Material Tracking Register

contracting

Day (Circle):	(M) T W T F S	Drivers Name	R BANFIELD	
Date:	27-02-23.	Plant Name / Unit ID	CAT 730 002 HRS: 3456.2 - 3464.0	
Load Count	Time	Loaded From	Loaded To	Material Type
1 25.4T	7:55.	WORK AREA	TIP HEAD.	STOCKPILE 6.
2	8:21	"	"	"
3	8:44	"	"	"
4 24.7T	9:04	"	"	"
5 25.8T	10:06	"	"	"
6	10:25	"	"	"
7	10:46	"	"	"
8 29.2 T	11:08	"	"	"
9	11:29.	"	"	"
10 25.2T	11:56	"	"	"
11	12:25	"	"	"
12	12:43.	"	"	"
13	13:47	"	"	"
14	14:03.	"	"	"
15	14:22.	"	"	"
16	14:40	"	"	"
17	15:02.	"	"	"
18 24.4T	15:25.	"	CONCRETE STOCKPILE	CONCRETE.
19	15:31	"	"	"
20	15:41	"	"	"
21	15:53	"	"	"
22	15:58	"	"	"
23 24.1T	16:03.	"	"	"
24	16:08	"	"	"
25 20.5T	16:16	"	"	"
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Material Tracking Register

contracting

Day (Circle):	(M) T W T F S	Drivers Name	Aden Perry	
Date:	27-02-28	Plant Name / Unit ID	CAT 730 001	3548 – 3556 H

Load Count	Time	Loaded From	Loaded To	Material Type
1	0751	Stock Pile 6	Tip head	Stock Pile 6
2	0838			
3	0858			
4	1010			
5	1031			
6	1050			
7	1114			
8	1134			
9	1202			
10	1227			
11	1358			
12	1416			
13	1436			
14	1450			
15	1505			
16	1518			
17	1538	Crushed concrete	Concrete Pile	Crushed concrete
18	1543			
19	1548			
20	1554			
21	1600			
22	1605			
23	1610			
24	1615			
25	1620			
26	1625			
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Material Tracking Register

contracting

3540 - 3548 hours

Day (Circle):	M T W T F S	Drivers Name	Aden Penn	
Date:	21-2[illegible]-23	Plant Name / Unit ID	CAT 730 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0730	Stock Pile 6	Tip head	Stock Pile 6
2	0747			
3	0807			
4	0828			
5	0849			
6	0912			
7	1042			
8	1103			
9	1124			
10	1149			
11	1230	Stock Pile 4	Tip head	Stock Pile 4
12	1249			
13	1411			
14	1430			
15	1450			
16	1508			
17	1524			
18	1549			
19	1609			
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Material Tracking Register

Gallet contracting — A DELTA GROUP COMPANY

Day (Circle): M (T) W T F S	Drivers Name	R BANFIELD
Date: 21-2-23	Plant Name / Unit ID	CAT 730 002 HRS 3448.9 - 3456.2

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:30	WORK AREA	TIP HEAD	STOCKPILE 6
2	7:52	"	"	"
3 27.5T	8:15	"	"	"
4 27.4T	8:34	"	"	"
5	8:56	"	"	"
6	9:19	"	"	"
7 25.7T	10:29	"	"	"
8	10:47	"	"	"
9 23.7T	11:07	"	"	"
10 22.8T	11:30	"	"	"
11 25.2T	11:52	"	"	"
12	12:34	"	"	STOCKPILE 4
13 T	14:01	"	"	"
14 21.8T	14:18	"	"	"
15 21.0T	14:35	"	"	"
16 19.7T	14:54	"	"	"
17	15:11	"	"	"
18	15:30	"	"	"
19 15.2T	15:45	"	"	"
20 19.0T	16:02	"	"	"
21 22.8T	16:18	"	"	"
22				
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9741 start | 9750 finish

Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	Paul McGrady
Date:	21.2.23	Plant Name / Unit ID	TEREX 512

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:31	Work Area	Work Area	Concrete STOCKPILE 6
2	7:40	"	"	"
3	7:50	"	"	"
4	8:03	"	Tip Head	STOCKPILE 5
5	8:24	"	"	"
6	8:44	"	"	"
7	9:06	"	"	"
8	10:38	"	"	"
9	11:00	"	"	"
10	11:21	"	"	"
11	11:44	"	"	"
12	12:28	"	"	coal STOCKPILE 4
13	12:47	"	"	"
14	2:00	"	"	"
15	2:14	"	"	"
16	2:33	"	"	"
17	2:52	"	"	"
18	3:07	"	"	"
19	3:23	"	"	"
20	3:40	"	"	"
21	3:56	"	"	"
22	4:12	"	"	"
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Stock Pile 6

Stock Pile 4

Material Tracking Register

A DELTA GROUP COMPANY
contracting

Day (Circle):	M T W T F S	Drivers Name	ROBERT BANFIELD.	
Date:	20-2-23.	Plant Name / Unit ID	CAT 730 002. HRS 3441.5 - 3448.7	
Load Count	Time	Loaded From	Loaded To	Material Type
1	8:02.	WORK AREA.	TIP HEAD.	~~STO~~ STOCKPILE 5.
2	8:23.	"	"	"
3 19.8T	8:37	"	"	"
4	8:54	"	"	"
5 21.6T	9:17	"	"	"
6 22.5T	10:21	"	"	STOCK PILE 6.
7 22.5T	*10:52.	"	"	STOCKPILE 6
8 25.2T	11:15.	"	"	"
9	11:45.	"	"	"
10 26.5T	12:07	"	"	"
11 26.6T	12:35.	"	"	"
12 26.5T	12:55.	"	"	"
13 23.7T	14:18	"	"	"
14	14:40	"	"	"
15 19.9T	15:04	"	"	"
16 21.2T	15:27	"	"	"
17 24.5T	15:52.	"	"	"
18 21.8T	16:12.	"	"	"
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Material Tracking Register

A DELTA GROUP COMPANY
contracting

3533-3540 hours

Day (Circle):	(M) T W T F S	Drivers Name	Ader Perez	
Date:	20-2-23	Plant Name / Unit ID	CAT 730 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0803	Stock Pile 5	Tip head.	Stock Pile 5
2	0824			"
3	0841			"
4	0905			"
5	1013	Stock Pile 6	Tip head	Stock Pile 6
6	1031			"
7	1050			"
8	1114			"
9	1142			"
10	1200			"
11	1235			"
12	1405			"
13	1420			"
14	1442			"
15	1505			"
16	1525			"
17	1553			"
18	1614			"
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Material Tracking Register

A DELTA GROUP COMPANY
contracting

9078

Day (Circle):	M T W T F S	Drivers Name	Tim	
Date:	20-2-23	Plant Name / Unit ID	Terex S13	
Load Count	Time	Loaded From	Loaded To	Material Type
1	8:51	Stockp. 5	S13 NEW TIP	Stockp 5
2	9:26	Stockp 5	S13 NEW TIP	Stockp 5
3	10:25	Stockp 6	S13 "	Stockp 6
4	10:50	Stockp 6	S13 "	Stockp 6
5	11:11	Stockp 6	S13 "	"
6		Stockp 6	"	"
7	11:50	"	"	"
8	12:35	"	"	"
9	12:52	"	"	"
10	2:12	"	"	"
11	2:34	"	"	"
12	3:00	"	"	"
13	2:22	"	"	"
14	3:46	"	"	"
15	4:08	"	"	"
16	4:28	"	"	"
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Start 9734

Finish 9742

Material Tracking Register

Day (Circle):	(M) T W T F S	Drivers Name	Paul M'Grady
Date:	20.2.23	Plant Name / Unit ID	TEREX 512

Load Count	Time	Loaded From	Loaded To	Material Type
1	8:05	Work Area	Tip Head	Spoil SURFACE COAL
2	8:25	"	"	"
3	8:43	"	"	"
4	8:59	"	Work Area	Concrete S6
5	10:24	"	"	" STOCKPILE 6
6	10:30	"	"	"
7	10:38	"	"	"
8	10:46	"	"	"
9	11:00	"	"	"
10	11:07	"	"	"
11	11:14	"	"	"
12	11:23	"	"	"
13	11:30	"	"	"
14	11:40	"	"	"
15	11:48	"	"	"
16	12:00	"	"	"
17	12:08	"	"	"
18	12:26	"	"	"
19	12:35	"	"	"
20	12:50	"	"	"
21	12:58	"	"	"
22	1:11	"	"	"
23	2:22	"	"	"
24	2:36	"	"	"
25	2:46	"	"	"
26	2:56	"	"	"
27	3:07	"	"	"
28	3:16	"	"	"
29	3:27	"	"	"
30	3:38	"	"	"
31	3:46	"	"	"
32	3:57	"	"	"
33	4:08	"	"	"
34	4:17	"	"	"
35	4:27	"	"	"
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stock pile 6

Start 9730 finish 9734

Material Tracking Register

CMC | A DELTA GROUP COMPANY contracting

Day (Circle):	M T W T F S	Drivers Name	Paul McGrady	
Date:	14.2.23	Plant Name / Unit ID	512	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:43	Work Area	~~Work Area~~ WORK AREA	concrete SAND
2	8:00	"	"	"
3	8:08	"	"	" ~~SAND~~
4	8:17	"	"	"
5	8:26	"	"	"
6	8:36	"	"	"
7	8:48	"	"	"
8	8:57	"	"	"
9	9:05	"	"	"
10	9:13	"	"	"
11	9:19	"	"	"
12	9:25	"	"	"
13	9:35	"	"	"
14	11:04	"	"	"
15	11:14	"	"	"
16	11:23	"	"	"
17	11:33	"	"	"
18	11:59	"	"	"
19	12:07	"	"	"
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Material Tracking Register

A DELTA GROUP COMPANY
contracting
3528 – hours

Day (Circle):	M T W T F (S)	Drivers Name	Aden Perry	
Date:	18.02.23	Plant Name / Unit ID	CAT 730 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0748	Spoil out of Tunnel	Work area	Spoil out of Tunnel
2	0800			
3	0806			
4	0816			
5	0826			
6	0838			
7	0848			
8	0857			
9	0904			
10	0910			
11	0917			
12	0923			
13	1100			
14	1105			
15	1117			
16	1124			
17	1132			
18	1148			
19	1159			
20	1208			
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Start 9724 finish 9729

Material Tracking Register

Gale contracting — A DELTA GROUP COMPANY

Day (Circle):	M T W T (F) S	Drivers Name	Paul McGrady
Date:	17.2.23	Plant Name / Unit ID	512

Load Count	Time	Loaded From	Loaded To	Material Type SS
1 *	8:07	Work Area	Tip Head	~~Concrete~~ Coal SCRAPE
2 *	8:25	"	"	Stockpile S
3 *	8:43	"	"	"
4 *	8:56	"	"	"
5 *	9:12	"	"	"
6 *	9:27	"	"	"
7 *	9:40	"	"	"
8 *	11:11	"	"	"
9 *	11:32	"	"	"
10 *	11:47	"	"	"
11 *	12:04	"	"	"
12 *	12:20	"	"	"
13 *	12:34	"	"	"
14 *	12:52	"	"	"
15 *	1:07	"	"	"
16 *	1:47	"	"	"
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Stock Pile S coal

Material Tracking Register

CEMEX | A CEMEX GROUP COMPANY
contracting

3523 – 3528 hours

Day (Circle):	M T W T (F) S	Drivers Name	Aden Perry	
Date:	17-2-23	Plant Name / Unit ID	CAT 730 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0755	Stock Pile 5	Tip head.	Stock Pile 5
2	0810		"	"
3	0823		"	"
4	0839		"	"
5	0859		"	"
6	0913		"	"
7	0930		"	"
8	0942		"	"
9	1124		"	"
10	1140		"	"
11	1155		"	"
12	1212		"	"
13	1249		"	"
14	1306		"	"
15	1330		"	"
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Material Tracking Register

contracting

Day (Circle):	M T W T (F) S	Drivers Name	ROBERT BANFIELD.	
Date:	17-2-23	Plant Name / Unit ID	CAT 730 002	HRS 3436.0-3441.4
Load Count	Time	Loaded From	Loaded To	Material Type
1 19.0T	8:02	WORK AREA	TIP HEAD (ORIGINAL)	STOCKPILE 5
2 18.6T	8:21	"	"	"
3	8:34	"	"	"
4 19.2T	8:50	"	"	"
5 19.4T	9:06	"	"	"
6 19.0T	9:21	"	"	"
7 16.0T	9:36	"	"	"
8	9:50	"	"	"
9 16.0T	11:25	"	"	"
10	11:40	"	"	"
11	11:55	"	"	"
12 17.0T	12:14	"	"	"
13	12:56	"	"	"
14 18.2T	13:12	"	"	"
15	13:51	"	"	"
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Material Tracking Register

contracting

S/H 9076
F/H 9078

Day (Circle):	M T W T F S	Drivers Name	Mick		
Date:	16-2-23	Plant Name / Unit ID			
Load Count	Time	Loaded From		Loaded To	Material Type
1	9:48	Work area		Work area	concrete / reclaimed
2					
3					
4					
5					
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10					
11					
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Material Tracking Register

A DELTA GROUP COMPANY
contracting

3515 - 3523

Day (Circle):	M T W (T) F S	Drivers Name	Aden Perry	
Date:	16-2-23	Plant Name / Unit ID	CAT 730 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0730	Stock Pile 6	Tip head.	Stock Pile 6
2	0759		"	"
3	0821		"	"
4	0835		"	"
5	0854		"	"
6	1000		"	"
7	1028		"	"
8	1050		"	"
9	1110		"	"
10	1129		"	"
11	1149		"	"
12	1209		"	"
13	1224		"	"
14	1434		"	"
15	1459		"	"
16	1521		"	"
17	1540		"	"
18	1600		"	"
19				
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Material Tracking Register

contracting

Day (Circle):	M T W (T) F S	Drivers Name	R BANFIELD	
Date:	16-2-23	Plant Name / Unit ID	CAT 730 002 HRS 3428.4-3436.0	
Load Count	Time	Loaded From	Loaded To	Material Type
1 22.5T	7:42	WORK AREA	TIP HEAD	STOCKPILE 6
2 22.1T	7:59	"	"	"
3 19.4T	8:18	"	"	"
4	8:34	"	"	"
5 22.1T	8:54	"	"	"
6 22.2T	9:12	"	"	"
7 22.8T	9:56	"	"	"
8 20.7T	10:24	"	"	"
9 21.2T	10:42	"	"	"
10 20.4T	10:59	"	"	"
11 21.0T	11:20	"	"	"
12 23.8T	11:38	"	"	"
13 23.8T	11:58	"	"	"
14 23.2T	12:14	"	"	"
15 22.8T	12:33	"	"	"
16 18.8T	14:32	"	"	"
17 20.1T	14:47	"	"	"
18	15:04	"	"	"
19	15:20	"	"	"
20 18.5T	15:39	"	"	"
21 25.4T	15:56	"	"	"
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start 9715 finish 9724

Material Tracking Register

A DELTA GROUP COMPANY contracting

Day (Circle):	M T W (T) F S	Drivers Name	Paul McGrady
Date:	16.2.23	Plant Name / Unit ID	512

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:47	Work Area	Tip Head	Concrete S6
2	8:12	"	"	"
3	8:30	"	"	"
4	8:50	"	"	"
5	9:08	"	"	"
6	10:00	"	"	"
7	10:29	"	"	"
8	10:47	"	"	"
9	11:00	"	"	"
10	11:25	"	"	"
11	11:46	"	"	"
12	12:04	"	"	"
13	12:22	"	"	"
14	12:39	"	"	"
15	2:28	"	"	"
16	2:54	"	"	"
17	3:11	"	"	"
18	3:30	"	"	"
19	3:52	"	"	"
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Material Tracking Register

CMC | A DELTA GROUP COMPANY contracting

Day (Circle):	M (T) W T F S	Drivers Name	Clelson	START	54472.4
Date:	14-02-23	Plant Name / Unit ID	513	FINISH	54520.0

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:34 AM	Stockpile 6	New Dump	Stock 6
2	8:00 "	"	"	"
3	8:22 "	"	"	"
4	8:42 "	"	"	"
5	9:03 "	"	"	"
6	9:25 "	"	"	"
7	10:22 "	"	"	"
8	10:42 "	"	"	"
9	11:02 "	"	"	"
10	11:28 "	"	"	"
11	11:48 "	"	"	"
12	12:10 "	"	"	"
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Material Tracking Register

contracting

3424 – 3428 hours

Day (Circle):	M (T) W T F S	Drivers Name	Aden Perry	
Date:	14-2-23	Plant Name / Unit ID	CAT 730 002	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0730	Stock Pile 6	Tip head	Stock Pile 6
2	0853	"	"	"
3	0811	"	"	"
4	0830	"	"	"
5	0853	"	"	"
6	0911	"	"	"
7	1005	"	"	"
8	1024	"	"	"
9	1044	"	"	"
10	1114	"	"	"
11	1135	"	"	"
12	1159	"	"	"
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Start 9:12 | finish

Material Tracking Register

A DELTA GROUP COMPANY contracting

Day (Circle):	M (T) W T F S	Drivers Name	Paul McGrady
Date:	14-2-23	Plant Name / Unit ID	612

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:30	Work Area	Tip head	concrete 56
2	7:47	"	"	"
3	8:07	"	"	"
4	8:27	"	"	"
5	8:47	"	"	"
6	9:08	"	"	"
7	10:12	"	"	"
8	10:32	"	"	"
9	10:50	"	"	"
10	11:20	"	"	"
11	11:41	"	"	"
12	12:00	"	"	"
13	12:22	"	"	"
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Material Tracking Register

contracting

Day (Circle):	(M) T W T F S	Drivers Name	ROBERT BANFIELD	
Date:	13-02-23	Plant Name / Unit ID	CAT 730 002 HRS 3416.2-3423.7	
Load Count	Time	Loaded From	Loaded To	Material Type
1 20.0T	8:00	WORK AREA	TIP HEAD (NEW)	STOCK PILE 6.
2 24.0T	8:20	WORK AREA	BRIDGE REBUILD	SPOILS.
3 22.0T	8:29	"	"	"
4 21.0T	8:33	"	"	"
5	8:43.	"	TIP HEAD (NEW)	STOCKPILE 6.
6 24.0T	9:08	"	"	"
7	10:22	"	"	"
8	10:45	"	"	"
9	11:00	"	"	"
10	11:18	"	"	"
11	11:31	"	"	"
12	11:49	"	"	"
13 25.0T	12:15	"	"	"
14	12:35.	"	"	"
15	13:04	"	"	"
16	14:25	"	"	"
17	14:42.	"	"	"
18 19.5T	15:01	"	"	"
19 21.0T	15:22.	"	"	"
20	15:41	"	"	"
21 26.9T	16:00	"	"	"
22	16:20	"	"	"
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Material Tracking Register

contracting

3507-3515 Hours

Day (Circle):	M T W T F S	Drivers Name	Aden Perry	
Date:	13-2-23	Plant Name / Unit ID	CAT 730 CC1	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0800	Stock Pile	Tip head	STOCK PILE 6
2	0842	"	"	"
3	0934	"	"	"
4	1030	"	"	"
5	1104	"	"	"
6	1122	"	"	"
7	1144	"	"	"
8	1205	"	"	"
9	1235	"	"	"
10	1253	"	"	"
11	1410	"	"	"
12	1432	"	"	"
13	1453	"	"	"
14	1515	"	"	"
15	1536	"	"	"
16	1555	"	"	"
17	1618	"	"	"
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Material Tracking Register

CMS | A DELTA GROUP COMPANY contracting

SH 54416.0
FH 54424

Day (Circle):	(M) T W T F S	Drivers Name Clelson		
Date: 13/02	13.2.24	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	9:36 AM	work area	Tip Head (new)	stock 6
2	10:35 AM	"	"	"
3	11:00 AM	"	"	"
4	11:21 AM	"	"	"
5	11:41 AM	"	"	"
6	12:00 PM	"	"	"
7	12:23 "	"	"	"
8	12:42 "	"	"	"
9	02:24 "	"	"	"
10	02:46 "	"	"	"
11	03:07 "	"	"	"
12	03:27 "	"	"	"
13	03:46 "	"	"	"
14	04:07 "	"	"	"
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Start 9705 | Finish 9712

Material Tracking Register

A DELTA GROUP COMPANY contracting

Day (Circle):	M T W T F S	Drivers Name	Paul McGrady	
Date:	13.2.23	Plant Name / Unit ID	512	
Load Count	Time	Loaded From	Loaded To	Material Type
1	8:35	Work Area	Work Area	Spoil
2	8:50	"	New Dump	Concrete S6
3	9:20	"	"	"
4	10:30	"	"	"
5	10:56	"	"	"
6	11:17	"	"	"
7	11:35	"	"	"
8	12:27	"	"	"
9	12:55	"	"	"
10	2:33	"	"	"
11	2:53	"	"	"
12	3:14	"	"	"
13	3:33	"	"	"
14	3:51	"	"	"
15	4:10	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	ROBERT BANFIELD.	
Date: ~~15-09-23~~	10-2-23	Plant Name / Unit ID	CAT 730 002. HRS 3410.5-3416.1	
Load Count	Time	Loaded From	Loaded To	Material Type
1 20.0	8:52	~~SPOILS~~ WORK AREA	NEW DUMP.	SPOILS. SG
2 20.0	9:29.	"	"	"
3 20.0	9:58	"	"	"
4 18.0	11:25	"	"	"
5 18.8	11:47.	"	"	"
6 19.0	12:31	"	"	"
7 19.2	12:53	"	"	"
8 21.0	13:12.	"	"	"
9 22.8	13:33.	"	"	"
10 23.1	14:06	"	"	"
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Material Tracking Register

A DELTA GROUP COMPANY
contracting

Day (Circle):	M T W T (F) S	Drivers Name	Neil Whitehorn
Date:	10.2.23	Plant Name / Unit ID	S13

Load Count	Time	Loaded From	Loaded To	Material Type
1	9:20	Work Zone.	NEW Dump	Concrete Rubble SS
2	9:50	"	"	"
3	11:25	"	"	"
4	11:50	"	"	"
5	12:33	"	"	"
6	1:00	"	"	"
7	1:25	"	"	"
8	1:55	"	"	"
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start 9699

Material Tracking Register

CMS | A DELTA GROUP COMPANY contracting

finish 9705

Day (Circle):	M T W T (F) S	Drivers Name	Paul McGrady	
Date:	10-2-22	Plant Name / Unit ID	512	
Load Count	Time	Loaded From	Loaded To	Material Type
1 *	9:17	Work Area	New Dump	Concrete 56
2 *	9:50	"	"	"
3 *	10:14	"	"	"
4 *	11:33	"	"	"
5 *	12:00	"	"	"
6 *	12:37	"	"	"
7 *	1:02	"	"	"
8 *	1:27	"	"	"
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Material Tracking Register

contracting

Start 9695 | finish 9699

Day (Circle):	M T W (T) F S	Drivers Name	Paul Mc	
Date:	2-2-23	Plant Name / Unit ID	512	
Load Count	Time	Loaded From	Loaded To	Material Type
1 *	8:15	Work Area	Work Area	Spoil SURFACE COAL
2 *	8:28	"	"	"
3 *	8:38	"	"	"
4				
5				
6				
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S 9777 f 9784

Material Tracking Register

COMPANY contracting

Day (Circle):	M T W (T) F S	Drivers Name	Paul McGrady
Date:	2.2.23	Plant Name / Unit ID	TEREX 512

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:39	Work Area	Work Area	Concrete
2	7:49	"	"	"
3	8:02	"	"	"
4	8:16	"	"	"
5	8:29	"	"	"
6	8:51	"	"	"
7	9:03	"	"	"
8	9:14	"	"	"
9	9:45	"	"	"
10	10:30	"	"	"
11	10:50	"	"	"
12	11:03	"	"	"
13	11:17	"	"	"
14	11:30	"	"	"
15	11:43	"	"	"
16	12:25	"	"	"
17	2:02	"	"	Spoil
18	2:50	"	"	Concrete
19	3:19	"	"	"
20	3:39	"	"	"
21	4:14	"	"	"
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Start 9770 finish 9776

Material Tracking Register

Day (Circle):	M T (W) T F S	Drivers Name	Paul M'Grady	
Date:	1 . 2 . 23	Plant Name / Unit ID	TEREX 512	
Load Count	Time	Loaded From	Loaded To	Material Type
1 *	8:24	Work Area	Tip Head	Spoil
2 *	8:45	"	"	"
3 *	9:20	"	Work Area	Concrete
4 *	10:28	"	"	"
5 *	11:01	"	"	"
6 *	11:20	"	"	"
7 *	12:02	"	"	"
8 *	12:32	"	"	"
9 *	1:52	"	"	"
10 *	2:11	"	"	"
11 *	2:26	"	"	"
12 *	2:44	"	"	"
13 *	3:08	"	"	"
14 *	3:22	"	"	"
15 *	3:34	"	"	"
16 *	4:00	"	"	"
17 *	4:25	"	"	"
18 *	4:36	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	
Date:	1.2.25	Plant Name / Unit ID	
Load Count	Time	Loaded From	Loaded To	Material Type
1 X		~~tip~~ ~~Head~~ Wash	tip Head	UW clean 1-cal
2 X		Bag	"	SURFACE COAL.
3 X			"	"
4 X			"	"
5 X			"	"
6 X			"	"
7 X			"	"
8 X			"	"
9 X			"	"
10 X			"	"
11 X			"	"
12 X			"	"
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MAULL
513
SH 9058
F/H 9061

Material Tracking Register

contracting

Start | Finish
9692 | 9698

Day (Circle):	M T (W) T F S	Drivers Name	Paul M'Grady	
Date:	1 . 2 . 23	Plant Name / Unit ID	512	
Load Count	Time	Loaded From	Loaded To	Material Type
1	8:25	Work Area	Tip Head	SURFACE COAL
2	8:45	"	"	"
3	9:04	"	"	"
4	9:23	"	"	"
5	10:15	"	"	"
6	10:36	"	"	"
7	10:57	"	"	"
8	11:15	"	"	"
9	11:33	"	"	"
10	11:52	"	"	"
11	12:15	"	"	"
12	12:34	"	"	"
13	1:50	"	"	"
14	2:09	"	"	"
15	2:27	"	"	"
16	2:44	"	"	"
17	3:01	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name Mick MANN	SH 9058
Date:	1.3.23	Plant Name / Unit ID 513	F/H 9061

Load Count	Time	Loaded From	Loaded To	Material Type
1 X		~~top~~ ~~Head~~ WOSH	tip Head	UNdeinkd load
2 X		bkg		
3 X				
4 X				
5 X				
6 X				
7 X				
8 X				
9 X				
10 X				
11 X				
12 X				
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Material Tracking Register

contracting

Day (Circle):	M T (W) T F S	Drivers Name	Paul M'Grady	Start / Finish
Date:	1 . 2 . 23	Plant Name / Unit ID	512	9692 / 9698

Load Count	Time	Loaded From	Loaded To	Material Type
1	8:25	Work Area	Tip Head	
2	8:45	"	"	"
3	9:04	"	"	"
4	9:23	"	"	"
5	10:15	"	"	"
6	10:36	"	"	"
7	10:57	"	"	"
8	11:15	"	"	"
9	11:33	"	"	"
10	11:52	"	"	"
11	12:15	"	"	"
12	12:34	"	"	"
13	1:50	"	"	"
14	2:09	"	"	"
15	2:27	"	"	"
16	2:44	"	"	"
17	3:01	"	"	"
18				
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Material Tracking Register

contracting

Start 9043 | Finish 9058

Day (Circle):	M T (W) T F S	Drivers Name	Paul Mc	
Date:	25 · 1 · 23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1 *	7:34	Work Area	Work Area	Concrete
2 *	7:48	Work Area	Work Area	Concrete
3 *	8:04	"	"	"
4 *	8:19	"	"	"
5 *	8:30	"	"	"
6 *	8:45	"	"	"
7 *	9:19	"	"	"
8 *	10:35	"	"	"
9 *	10:45	"	"	"
10 *	11:35	"	"	Steel
11 *	11:39	"	"	Steel
12 *	11:47	"	"	Steel
13 *	11:52	"	"	"
14 *	12:14	"	"	"
15				
16				
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Material Tracking Register

contracting

SH 9043
FH 9051

Day (Circle):	M (T) W T F S	Drivers Name		
Date:	24-1-23	Plant Name / Unit ID		
Load Count	Time	Loaded From	Loaded To	Material Type
1		Work area	Work area	Steel
2		"	"	Steel
3		Work area	Tip head	Widen fwd
4		"	"	"
5		"	"	"
6		"	"	"
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18	3:24	"	"	"
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start 9681 | finish 9685

Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	Paul Mc
Date: 24.1.23		Plant Name / Unit ID	512

Load Count	Time	Loaded From	Loaded To	Material Type
1 *	9:06	Work Area	Tip Head	Spoil
2 *	8:25	"	"	"
3 *	8:42	"	"	"
4 *	9:00	"	"	"
5 *	9:19	"	"	"
6 *	10:16	"	"	"
7 *	10:35	"	"	"
8 *	10:52	"	"	"
9 *	11:12	"	"	"
10 *	11:37	"	"	"
11 *	11:53	"	"	"
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Start 9672 | finish 9673.

Material Tracking Register

contracting

Day (Circle):	M Ⓣ W T F S	Drivers Name	Paul M°
Date:	19.1.23	Plant Name / Unit ID	S12

Load Count	Time	Loaded From	Loaded To	Material Type
1 *	7:31	Work Area	Tip head	Spoil
2 *	7:54	Work Area	"	"
3 *	8:17	"	"	"
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Material Tracking Register

contracting

SH 9036
FH 9043

Day (Circle):	M T (W) T F S	Drivers Name	Mick Marsden
Date:	18.1.23	Plant Name / Unit ID	513

Load Count	Time	Loaded From	Loaded To	Material Type
1	7.00	work area	tip head	Unidentified
2		Work area	asbestos Laydown	contaminated
3		Work area	tip head	Unidied material
4		"	"	" "
5		Work area	tip Head	Mulch
6		Work area West	work area east	soil
7		"	"	
8		Work area	T.P Head	Unidentified
9		"	"	"
10		"	"	"
11		"	"	"
12		Work area	Asbestos Laydown	Concrete / contaminated
13		"	"	Contaminated soil
14		"	"	Contaminated soil
15		Work area	T.P Head	Unidentified soil
16		Work area	T.P Head	Unidentified
17		Work area	tip Head	"
18		"	" "	"
19		"	" "	"
20		"	"	
21				
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Material Tracking Register

CMS | A DELTA GROUP COMPANY
contracting

Day (Circle):	M T (W) T F S	Drivers Name	Aden Perry	3499–
Date:	18-1-23	Plant Name / Unit ID	CAT 730 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0730	Stock Pile	Tip head	Spoil
2	0810			〃
3	0832			Wood chip
4	0850			Concrete
5	0900			~~Wood~~ 〃
6	0915			Spoil
7	1012			
8	1038			
9	1135			
10	1230			
11	1440			
12	1444			
13	1515			
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Material Tracking Register

CMS | A DELTA GROUP COMPANY contracting

Day (Circle):	M T (W) T F S	Drivers Name	ROBERT BANFIELD.	
Date:	18-1-23	Plant Name / Unit ID	CAT 730 002 HBS: 3403.0-34104	
Load Count	Time	Loaded From	Loaded To	Material Type
1 17.5T	7:30	Work Area	TIP HEAD.	SPOILS.
2 20.8T	7:56	"	"	"
3 21.3T	8:17	"	"	"
4 9.0T	8:37	"	"	MULCH
5 17.4T	8:59	"	"	CONCRETE.
6 11.2T	9:09	"	"	"
7 18.3T	9:21	"	"	SPOILS.
8 15.3T	10:20	"	"	"
9 19.2T	11:00	"	"	"
10 21.5T	12:05	"	"	"
11 20.1T	12:36	"	"	"
12 13.0T	14:50	"	"	"
13 14.0T	15:12	"	"	"
14 18.8T	15:38	"	"	"
15 17.0T	16:00	"	"	"
16 16.8T	16:20	"	"	"
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Start | finish 9671

Material Tracking Register

contracting

Day (Circle):	M T (W) T F S	Drivers Name	Paul McGrady
Date:	18 · 1 · 23	Plant Name / Unit ID	SI2

Load Count	Time	Loaded From	Loaded To	Material Type
1 *	7:46	Work Area	Tip Head	Spoil
2 *	8:03	"	"	"
3 *	10:26	"	"	"
4 *	11:16	"	"	"
5 *	12:21	"	"	"
6 *	2:23	"	"	"
7 *	2:41	"	"	"
8 *	3:06	"	"	"
9 *	3:33	"	"	"
10 *	3:51	"	"	"
11 *	4:15	"	"	"
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Material Tracking Register

contracting

Start 9626 | Finish 9632

Day (Circle):	M T (W) T F S	Drivers Name	Paul Mc
Date: 11.1.23		Plant Name / Unit ID	512

Load Count	Time	Loaded From	Loaded To	Material Type
1	9:29	Work Area	Tip Head	SPOIL
2	9:46	"	"	"
3	10:00	"	"	"
4	10:21	"	"	"
5	10:42	"	"	"
6	11:27	"	"	"
7	11:45	"	"	"
8	1:04	"	"	"
9	1:22	"	"	"
10	1:39	"	"	"
11	1:58	"	"	"
12	2:14	"	"	"
13	2:30	"	"	"
14	3:03	"	"	"
15	3:19	"	"	"
16	3:35	"	"	"
17	3:50	"	"	"
18	4:06	"	"	"
19	4:25	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T (W) T F S	Drivers Name	SH 9006 FH 9011	
Date:	11.1.23	Plant Name / Unit ID		
Load Count	Time	Loaded From	Loaded To	Material Type
1	9.00	Work area	tip Head	Undefined
2				
3				
4				
5				
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11				
12				
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Material Tracking Register

3470h - 3476

contracting

Day (Circle):	M T (W) T F S	Drivers Name	Aden Perry	
Date:	11-1-23	Plant Name / Unit ID	CAT 730 C001	
Load Count	Time	Loaded From	Loaded To	Material Type
1 17	0932	Stock Pile	Tip head	Spoil
2 18	0949			
3 17	1015			
4 17	1034			
5 17	1119			
6 18	1138			
7 16	1300			
8 17	1317			
9 18	1339			
10 20	1402			
11 19	1422			
12 18	1440			
13 17	1507			
14 19	1533			
15 20	1544			
16 19	1600			
17 16	1620			
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Material Tracking Register

contracting

Start 9620 final 9626

Day (Circle):	M T W T F S	Drivers Name Paul	
Date:	10-1-23	Plant Name / Unit ID	512

Load Count	Time	Loaded From	Loaded To	Material Type
1	8:21	Work Area	Top Head	Soil
2	8:35	"	"	"
3	8:50	"	"	"
4	9:03	"	"	"
5	9:15	"	"	"
6	9:30	"	"	"
7	10:23	"	"	"
8	10:36	"	"	"
9	10:54	"	"	"
10	11:08	"	"	"
11	11:23	"	"	"
12	11:38	"	"	"
13	11:55	"	"	"
14	12:11	"	"	"
15	12:25	"	"	"
16	1:43	"	"	"
17	2:20	"	"	"
18	2:45	"	"	"
19	3:03	"	"	"
20	3:20	"	"	"
21	3:39	"	"	"
22	3:57	"	"	"
23	4:13	"	"	"
24	4:30	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	Aden Percy 3461	
Date:	10/1/23	Plant Name / Unit ID	CAT 730 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1 16	0710	Stock Pile	Tip head	Spoil
2 17	0728			
3 18	0739			
4 16	0756			
5 16	0816			
6 16	0827			
7 17	0839			
8 16	0859			
9 16	0913			
10 16	0929			
11 16	0942			
12 16	1020			
13 18	1036			
14 17	1049			
15 16	1103			
16 17	1120			
17 17	1140			
18 18	1159			
19 16	1328			
20 17	1349			
21 17	1414			
22 17	1440			
23 16	1457			
24 18	1515			
25 16	1534			
26 18	1604			
27 17	1626			
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	Mitch M S/M 8999
Date:	10.1.23	Plant Name / Unit ID	513 F/M 9006

Load Count	Time	Loaded From	Loaded To	Material Type
1	6:45	Norlaea	tip Head	unbatched
2	〃			
3	〃			
4	〃			
5	〃			
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Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	ROBERT BANFIELD	
Date: 10-1-23		Plant Name / Unit ID	002 CAT 730 HRS 3357.7 - 3365.5.	
Load Count	Time	Loaded From	Loaded To	Material Type
1 16.5T	7.07	WORK AREA	TIP HEAD	SPOILS.
2 17.0T	7 22.	"	"	"
3 18.6T	7:36	"	"	"
4 19.8T	7:49.	"	"	"
5 19.0T	8:02	"	"	"
6 19.3T	8:15.	"	"	"
7 18.9T	8:29.	"	"	"
8 20.5T	8:42.	"	"	"
9 18.0T	8:56	"	"	"
10 19.0T	9:10	"	"	"
11 19.3T	9:25.	"	"	"
12 19.0T	10:21	"	"	"
13 19.8T	10:33.	"	"	"
14 18.5T	10:49.	"	"	"
15 18.7T	11:05.	"	"	"
16 19.3T	11:18	"	"	"
17 18.4T	11:34	"	"	"
18 20.1T	11:52.	"	"	"
19 20.2T	12:06	"	"	"
20 19.8T	12:20	"	"	"
21 19.0T	12:34	"	"	"
22 18.8T	13:53.	"	"	"
23 18.3T	14:07	"	"	"
24 19.3T	14:37	"	"	"
25 20.0T	14:54	"	"	"
26 18.3T	15:11.	"	"	"
27 21.3T	15:29.	"	"	"
28 22.0T	15:45.	"	"	"
29 20.5T	15:59.	"	"	"
30 19.3T	16:15.	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T W (T) F S	Drivers Name	ROBERT BANFIELD	
Date:	12-1-23	Plant Name / Unit ID	CAT 730 002	HRS 3372.0-3379.8
Load Count	Time	Loaded From	Loaded To	Material Type
1 19.0T	7:20	WORK AREA	TIP HEAD	SPOILS
2 18.0T	7:46	"	"	"
3 20.9T	8:03	"	"	"
4 21.0T	8:21	"	"	"
5 24.7T	8:39	"	"	"
6 21.9T	8:57	"	"	"
7 18.7T	9:55	"	"	"
8 19.2T	10:12	"	"	"
9 20.1T	10:35	"	"	"
10 21.0T	10:48	"	"	"
11 20.8T	11:22	"	"	"
12 19.0T	11:17	"	"	"
13 19.5T	11:32	"	"	"
14 20.8T	11:52	"	"	"
15 19.8T	12:05	"	"	"
16 21.2T	12:18	"	"	"
17 21.9T	12:34	"	"	"
18 20.8T	12:49	"	"	"
19 20.2T	14:10	"	"	"
20 22.3T	14:23	"	"	"
21 21.9T	14:39	"	"	"
22 23.4T	14:52	"	"	"
23 20.1T	15:12	"	"	"
24 24.3T	15:24	"	"	"
25 23.1T	15:51	"	"	"
26 15.6T	16:06	"	"	"
27 17.8T	16:20	"	"	"
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Material Tracking Register

contracting

start 9633 finish 9641

Day (Circle):	M T W (T) F S	Drivers Name	Paul M'	
Date:	12 · 1 · 23	Plant Name / Unit ID	512	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:25	Work Area	Tip Head	Spoil
2	7:40	"	"	"
3	7:59	"	"	"
4	8:14	"	"	"
5	8:31	"	"	"
6	8:48	"	"	"
7	9:05	"	"	"
8	9:57	"	"	"
9	10:23	"	"	"
10	10:37	"	"	"
11	10:50	"	"	"
12	11:05	"	"	"
13	11:20	"	"	"
14	11:36	"	"	"
15	11:52	"	"	"
16	12:09	"	"	"
17	12:28	"	"	"
18	12:43	"	"	"
19	12:58	"	"	"
20	2:12	"	"	"
21	2:26	"	"	"
22	2:40	"	"	"
23	2:55	"	"	"
24	3:25	"	"	"
25	3:43	"	"	"
26	3:56	"	"	"
27	4:12	"	"	"
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Material Tracking Register

contracting

Start Hours 9011
Finish hours 9019

Day (Circle):	M T W (T) F S	Drivers Name Mick m		
Date:		Plant Name / Unit ID 513		
Load Count	Time	Loaded From	Loaded To	Material Type
1	645	Wall area	tip head	Undefined
2				
3				
4				
5				
6				
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11				
12				
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Material Tracking Register

contracting

Day (Circle):	M T (W) T F S	Drivers Name	ROBERT BANFIELD	
Date: 11-1-23		Plant Name / Unit ID	CAT 730 002	HRS 3365.6 - 3371.9
Load Count	Time	Loaded From	Loaded To	Material Type
1 18.7T	9:31	WORK AREA	TIP HEAD	SPOILS
2 17.5T	9:47	"	"	"
3 22.8T	10:10	"	"	"
4 21.5T	10:30	"	"	"
5 24.4T	11:08	"	"	"
6 20.5T	11:29	"	"	"
7 21.3T	11:47	"	"	"
8 21.3T	12:57	"	"	"
9 22.6T	13:16	"	"	"
10 20.1T	13:33	"	"	"
11 21.0T	13:49	"	"	"
12 22.3T	14:06	"	"	"
13 14.0T	14:24	"	"	"
14 19.3T	14:57	"	"	"
15 21.5T	15:13	"	"	"
16 21.5T	15:27	"	"	"
17 20.9T	15:45	"	"	"
18 17.2T	16:04	"	"	"
19 21.6T	16:22	"	"	"
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Material Tracking Register

contracting

3476 -

Day (Circle):	M T W (T) F S	Drivers Name	Aden Perry	
Date:	12-1-23	Plant Name / Unit ID	CAT 730 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1	720	WORK AREA	TIP HEAD	SPOIL
2	742			
3	809			
4	824			
5	835			
6	856			
7				
8				
9				
10				
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Material Tracking Register

contracting

Day (Circle):	M T W T (F) S	Drivers Name	Mick MANSell	SH 9019
Date:	13-1-23	Plant Name / Unit ID	513	FH

Load Count	Time	Loaded From	Loaded To	Material Type
1 ∧		Work area	T.P Head	widened
2 ∧				
3 ∧				
4 TRUCK	001 cat	SH 3478.8 F/H		
5 * 17+				
6 * 16.8				
7 * 20.1				
8 * 20.0				
9 X 20.0				
10 X 20.2				
11 X 20.3				
12 X 19				
13 X 18.4				
14 X 19.0				
15 20.1				
16 18.4				
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Material Tracking Register

contracting

3379 - 3387

Day (Circle):	M T W T (F) S	Drivers Name	Aden Perry	
Date:	13-01-23	Plant Name / Unit ID	CAT 730 002	
Load Count	Time	Loaded From	Loaded To	Material Type
1 14	0649	W A	TIP Head	SPOIL
2 16	0730			
3 16	0803			
4 17	0833			
5 18	0900			
6 18	1020			
7 14	1103			
8 17	1133			
9 15	1200			
10 18	1224			
11 16	1250			
12 18	1400			
13 17	1430			
14 17	1513			
15 17	1540			
16				
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Material Tracking Register

contracting

Day (Circle):	M T W T (F) S	Drivers Name	Paul M'	Start	Finish
Date:	13 . 1 . 23	Plant Name / Unit ID	512	9620	9647

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:16	Work Area	Tip Head	Spoil
2	8:47	"	"	"
3	9:08	"	"	"
4	10:10	"	"	"
5	10:36	"	"	"
6	10:55	"	"	"
7	11:14	"	"	"
8	11:45	"	"	"
9	11:59	"	"	"
10	2:00	"	"	"
11	2:18	"	"	"
12	2:34	"	"	"
13	2:50	"	"	"
14	3:08	"	"	"
15	3:21	"	"	"
16	3:36	"	"	"
17				
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Material Tracking Register

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Day (Circle):	M T W T F S	Drivers Name	Mark	MANSEL 513	SH 9028 FH 9036
Date:	17.1.23	Plant Name / Unit ID			
Load Count	Time	Loaded From		Loaded To	Material Type
1	7.00	Workarea		tip Head	UNidentified
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16	Tunnel East/Centre	>	Work area	Asbestos NonAcided	Cayland Coffomated SOIL
17					
18	"				
19	"				
20	"				
21	"				
22	→ Coal		Work area	TIP Head	UNidentified
23					
24					
25					
26	→	Tunnel east workarea		to Asbestos NonAcided Cayland Coffomated SOIL	
27					
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Material Tracking Register

cma | A DELTA GROUP COMPANY contracting

3491 - 3499

Day (Circle):	M (T) W T F S	Drivers Name	Aden Perry	
Date:	17-1-23	Plant Name / Unit ID	CAT001	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0717	Stock Pile	Tip head	Spoil
2	0738			
3	0757			
4	0815			
5	0835			
6	0855			
7	0910			
8	1022			
9	1045			
10	1100			
11	1120			
12	1137			
13	1200			
14	1222			
15	1240			
16	1400			
17	1420			
18	1438			
19	1500			
20	1520			
21	1548			
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Material Tracking Register

A DELTA GROUP COMPANY
contracting

Day (Circle):	M (T) W T F S	Drivers Name	ROBERT BANFIELD.	
Date:	17-1-2023	Plant Name / Unit ID	OT 730 002	HRS 3395.1 - 3402.9.

Load Count	Time	Loaded From	Loaded To	Material Type
1 16.2T	7:14.	WORK AREA	TIP HEAD	SPOILS.
2 19.2T	7:32.	"	"	"
3 19.8T	7:48	"	"	"
4 18.9T	8:06	"	"	"
5 19.5T	8:22.	"	"	"
6 18.8T	8:41	"	"	"
7 21.4T	8:57	"	"	"
8 20.5T	9:15	"	"	"
9 18.6T	10:23	"	"	"
10 19.6T	10:42.	"	"	"
11 21.0T	11:00	"	"	"
12 19.8T	11:15.	"	"	"
13 22.7T	11:32	"	"	"
14 18.8T	11:48	"	"	"
15 21.2T	12:06	"	"	"
16 20.8T	12:26.	"	"	"
17 18.4T	12:44	"	"	"
18 19.7T	13:59.	"	"	"
19 20.8T	14:18	"	"	"
20 21.4T	14:35	"	"	"
21 20.3T	14:57	"	"	"
22 20.8T	15:34	"	"	"
23	16:16	"	"	"
24				
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start | finish 9663

Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	Paul M'Grady	
Date:	17.1.23	Plant Name / Unit ID	512	
Load Count	Time	Loaded From	Loaded To	Material Type
1 *	7:12	Work Area	Tip Head	Spoil
2 *	7:30	"	"	"
3 *	7:50	"	"	"
4 *	8:07	"	"	"
5 *	8:25	"	"	"
6 *	8:43	"	"	"
7 *	8:59	"	"	"
8 *	9:16	"	"	"
9 *	10:08	"	"	"
10 *	10:31	"	"	"
11 *	10:48	"	"	"
12 *	11:06	"	"	"
13 *	11:28	"	"	"
14 *	11:49	"	"	"
15 *	12:11	"	"	"
16 *	12:34	"	"	"
17 *	12:50	"	"	"
18 *	2:09	"	"	"
19 *	2:26	"	"	"
20 *	2:44	"	"	"
21 *	3:07	"	"	"
22 *	3:47	"	"	"
23 *	4:13	"	"	"
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Start 9647 | Finish 9655

Material Tracking Register

CRL | A DELTA GROUP COMPANY contracting

Day (Circle):	(M) T W T F S	Drivers Name	Paul M'Grady	
Date:	16 · 1 · 23	Plant Name / Unit ID	512	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:18	Work Area	Tip Head	Spal
2	7:40	〃	〃	〃
3	8:00	〃	〃	〃
4	8:25	〃	〃	〃
5	8:54	〃	〃	〃
6	9:09	〃	〃	〃
7	10:06	〃	〃	〃
8	10:23	〃	〃	〃
9	10:46	〃	〃	〃
10	11:08	〃	〃	〃
11	12:56	〃	〃	〃
12	12:25	〃	〃	〃
13	1:42	〃	〃	〃
14	2:07	〃	〃	〃
15	2:17	〃	〃	〃
16	2:33	〃	〃	〃
17	2:50	〃	〃	〃
18	3:10	〃	〃	〃
19	3:33	〃	〃	〃
20	3:49	〃	〃	〃
21	4:03	〃	〃	〃
22	4:19	〃	〃	〃
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Material Tracking Register

contracting

Day (Circle):	(M) T W T F S	Drivers Name	ROBERT BANFIELD.	
Date:	16-1-23	Plant Name / Unit ID	CAT 730 002	HRS 3387.1-3395.1
Load Count	Time	Loaded From	Loaded To	Material Type
1 14.7T	7:21	WORK AREA	TIP HEAD	SPOILS
2 15.0T	7:39	"	"	"
3 14.8T	7:54	"	"	"
4 15.8T	8:12	"	"	"
5 16.8T	8:32	"	"	"
6 18.2T	8:49	"	"	"
7 18.7T	9:12	"	"	"
8 17.8T	10:04	"	"	"
9 18.0T	10:22	"	"	"
10 17.8T	10:39	"	"	"
11 18.8T	11:00	"	"	"
12 17.8T	11:20	"	"	"
13 8.5T	11:37	"	"	MULCH
14 22.8T	11:57	"	"	SPOILS
15 8.5T	13:45	"	"	MULCH
16 18.8T	14:38	"	"	SPOILS
17 21.6T	14:55	"	"	"
18 21.2T	15:14	"	"	"
19 8.2T	15:36	"	"	MULCH
20 8.5T	15:52	"	"	"
21 21.2T	16:13	"	"	SPOILS
22				
23				
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Material Tracking Register

A DELTA GROUP COMPANY
contracting

SH 9021
FH 9028

Day (Circle):	M T W T F S	Drivers Name	Mick Mansell	
Date:	16.1.23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7.00	work area	tip Head	Uncoated
2				
3				
4				
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20				
21				Woodchip
22				
23				
24		work area	to work area	Wood Chip Concrete
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Material Tracking Register

contracting

Day (Circle):	(M) T W T F S	Drivers Name	3483 – Aden Perry
Date:	16-1-23	Plant Name / Unit ID	CAT 730 001

Load Count	Time	Loaded From	Loaded To	Material Type
1	0713	Stock Pile	T.P Head	Spoil
2	0732			
3	0754			
4	0915			
5	0837			
6	0903			
7	1009			
8	1029			
9	1055			
10	1115			
11	1140			
12	1213			
13	1230			
14	1330			
15	1350			
16	1417			
17	1440			
18	1500			
19	1535			
20	1552			
21	1615			
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Material Tracking Register

contracting

Day (Circle):	M T (W) T F S	Drivers Name	ROBERT BANFIELD.	
Date:	1-3-23.	Plant Name / Unit ID	CAT 730 002 HRS 3471.8-3478.7	
Load Count	Time	Loaded From	Loaded To	Material Type
1 22.0T	8:20	WORK AREA	RED TIP HEAD	STOCK PILE 6.
2 16.4T	8:43	"	"	"
3	10:20	"	CONCRETE STOCKPILE	DRAINS CONCRETE.
4	10:40	"	"	"
5	10:10	"	"	"
6	11:35	"	"	"
7	12:00	"	"	"
8	12:30	"	"	"
9	13:00	"	"	"
10	13:52.	"	"	"
11 20.0T	14:05	"	"	TUNNEL CONCRETE.
12 18.8T	14:10	"	"	"
13 16.3T	14:16	"	"	"
14	14:24	"	"	"
15 23.9T	14:32	"	"	"
16	14:38	"	"	"
17 22.8T	14:45	"	"	"
18	14:51	"	"	"
19 24.4T	15:02.	"	"	"
20	15:09.	"	"	"
21	15:28	"	"	"
22	15:36.	"	"	"
23 17.5T	15:42	"	"	"
24	15:49.	"	"	"
25 17.6T	15:59	"	"	"
26 19.7T	16:08	"	"	"
27 25.7T	16:15.	"	"	"
28 18.4T	16:20	"	"	"
29 19.2T	16:30	"	"	"
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Material Tracking Register

Day (Circle):	M T W T F S	Drivers Name	Tim Fullerton	
Date:	2-3-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:55	WESTGRO BASIN	513 QD TIP	BASIN MATERIAL
2	8:09	"	513 "	"
3	8:23	"	513 "	"
4	8:42	"	513 "	"
5	8:59	"	513 "	"
6	9:08	"	513 "	"
7	9:18	"	513 "	"
8	9:27	"	513 "	"
9	10:07	"	513 "	"
10	10:13	"	513 "	"
11	10:25	"	513 "	"
12	10:42	"	513 "	"
13	10:57	"	513 "	"
14	11:12	"	513 "	"
15	11:22	"	513 "	"
16	12:19	"	513 "	"
17	12:30	"	513 "	"
18	2:04	"	513 "	"
19	2:42	"	513 "	"
20	3:11	"	513 "	"
21	3:32	"	513 "	"
22	4:09	"	513 "	"
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Material Tracking Register

contracting

Day (Circle):	(M) T W T F S	Drivers Name	Tim Fullerton	
Date:	6-3-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	10:40	Asbestos pile	Tip-it Asbestos N	Cement ACM
2	11:08	"	"	"
3	11:34	"	"	"
4	11:59	"	"	"
5	12:24	"	"	"
6	1:59	"	"	Cement / Dirt
7	2:26	"	"	"
8	2:50	"	"	"
9	3:15	"	"	"
10	3:37	"	"	"
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Material Tracking Register

COLLEY COMPANY contracting

Day (Circle):	(M) T W T F S	Drivers Name	Aden Perry	
Date:	06-03-23	Plant Name / Unit ID	CAT 730 002	3497-3505
Load Count	Time	Loaded From	Loaded To	Material Type
1	0743	Tunnel	Concrete/Rio Pile	Concrete/Rio
2	0758	"	"	"
3	0816	"	"	"
4	0841	"	"	"
5	0853	"	"	"
6	0907	"	"	"
7	0919	"	"	"
8	1000	"	"	"
9	1012	"	"	"
10	1039	"	"	"
11	1049	"	"	"
12	1105	"	"	"
13	1201	"	"	"
14	1239	"	"	"
15	1416	Asbestos stockpile	New tip head	Asbestos
16	1438	"	"	"
17	1502	"	"	"
18	1530	"	"	"
19	1600	Tunnel	Concrete/Rio Pile	Concrete/Rio
20	1616	"	"	"
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START 4791 FINISH 9796

Material Tracking Register

contracting

PAUL McGrady.

TEREX S12

Day (Circle):	(M) T W T F S	Drivers Name		
Date:	6.3.23	Plant Name / Unit ID		
Load Count	Time	Loaded From	Loaded To	Material Type
1 ✓	10:07	WORK AREA - ASBESTOS	NEW ASBESTOS ACM TIP	ASBESTOS
2 ✓	10:50	"	ACM TIP	ACM
3 ✓	11:18	"	"	"
4 ✓	11:44	"	"	"
5 ✓	12:10	"	"	"
6 ✓	12:34	"	"	"
7 ✓	2:08	"	"	"
8 ✓	2:33	"	"	"
9 ✓	2:57	"	"	"
10 ✓	3:23	"	"	"
11 ✓		WORK AREA	WORK AREA	CONCRETE
12 ✓		"	"	"
13 ✓				
14 ✓				
15 ✓				
16 ✓				
17 ✓				
18 ✓				
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Material Tracking Register

COMPANY contracting

Day (Circle):	M ⊘ W T F S	Drivers Name	Ryan fitzgerald	hours
Date:	07.03.23	Plant Name / Unit ID	CAT 730 001	3590
Load Count	Time	Loaded From	Loaded To	Material Type
1	07:30	ASBestos area	asbestos dump	ASBestos Spoil
2		"		
3		"		
4		"		
5		"		
6		"		
7		"		
8		"		
9		"		
10		"		
11		"		
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finish 9806

Material Tracking Register

contracting

Paul M'

TEREX 512

Day (Circle):	M (T) W T F S	Drivers Name		
Date:	7.2.23	Plant Name / Unit ID		
Load Count	Time	Loaded From	Loaded To	Material Type
1 ✓	7:24	Work Area	Work Area	Concrete
2 ✓	7:42	"	"	"
3 ✓	8:03	"	"	"
4 ✓	8:23	Work Area	Tip Head	Asbestos
5 ✓	8:42	"	"	"
6 ✓	9:02	"	"	"
7 ✓	10:15	"	"	"
8 ✓	11:28	"	Work Area	steel
9 ✓	11:44	"	Tip Head	Asbestos
10 ✓	12:07	"	"	"
11 ✓	12:38	"	"	"
12 ✓	1:45	"	"	"
13 ✓	2:08	"	"	"
14 ✓	2:29	"	"	"
15 ✓	2:52	"	"	"
16 ✓	3:13	"	"	"
17 ✓	3:37	"	"	"
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Material Tracking Register

Day (Circle):	M (T) W T F S	Drivers Name	Tim Fullerton	
Date:	7-3-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:32	Work Area Tunnel	Work Area Stock-p	Concrete + Reo
2	7:50	"	"	"
3	8:10	"	"	"
4	8:24	"	"	"
5	8:35	"	"	"
6				
7	8:46	Work Area Asbestos pile	Tip	Soil + concrete
8	9:15	"	"	"
9	10:45	"	"	"
10	11:16	"	"	"
11	11:39	"	"	"
12	12:03	"	"	"
13	12:35	"	"	"
14	1:58	"	"	"
15	2:21	"	"	"
16	2:42	"	"	"
17	3:07	"	"	"
18	3:31	"	"	"
19	3:52	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	Mick M	SA 55780
Date:	8.5.25	Plant Name / Unit ID	002	FH 5519.1
Load Count	Time	Loaded From	Loaded To	Material Type
1	2:00 pm	asbestos area	New TP Head/AS	asbestos
2		〃	〃	〃
3		〃 〃	〃 〃	〃 〃
4		〃 〃	〃 〃	〃 〃
5		〃 〃	〃 〃	〃 〃
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Start 9806 finish 9813

Material Tracking Register

COLLEY COMPANY contracting

Day (Circle):	M T (W) T F S	Drivers Name	Paul McGrady
Date:	8.3.23	Plant Name / Unit ID	TEREX S12
Load Count	Time	Loaded From	Loaded To	Material Type
1 ✓	8:43	Basin Dam	Old Tip Head	Basin Material
2 /	9:09	Basin Dam	"	"
3 /	11:51	"	"	"
4 /	12:12	"	"	"
5 /	12:31	"	"	"
6 /	2:08	Work Area	New Tip Head	"
7 /	2:36	"	"	"
8 /	3:10	"	"	"
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Material Tracking Register

[redacted] COMPANY contracting

Day (Circle):	M T (W) T F S	Drivers Name	Aden Perry	HOURS
Date:	08-03-23	Plant Name / Unit ID	CAT 730	3513 – 3519.1
Load Count	Time	Loaded From	Loaded To	Material Type
1		~~Basin Dam~~		Basin material
2	0854	Asbestos Area	Asbestos Dump	Asbestos
3	1024	"	"	"
4	1216	"	"	"
5	[redacted]	[redacted]	[redacted]	"
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7				
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Material Tracking Register

contracting

Day (Circle):	M T (W) T F S	Drivers Name	Tim Fullerton
Date:	8-3-23	Plant Name / Unit ID	513

Load Count	Time	Loaded From	Loaded To	Material Type
1	8:38	Basin Dam	OLD Tip Head	~~Dirt~~ "
2	9:03	"	"	Basin Material
3	11:46	"	"	"
4	12:03	"	"	"
5	12:19	"	"	"
6	12:38	"	"	"
7	2:03	Asbestos grass area	New Tip head	Soil
8	2:22	"	"	"
9	2:59	"	"	"
10	3:17	"	"	"
11	3:40	"	"	"
12	4:05	"	"	"
13	4:23	"	"	"
14				
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Material Tracking Register

contracting

Day (Circle):	M T W (T) F S	Drivers Name	Aden Perry	
Date:	9-3-23	Plant Name / Unit ID	CAT 730 002	3519
Load Count	Time	Loaded From	Loaded To	Material Type
1	0741	Asbestos Area	Asbestos Dump	Asbestos
2	0835	"	"	"
3	0902	"	"	"
4	1016	"	"	"
5	1100	Asbestos Concrete	Asbestos Dump	Asbestos Concrete
6	1120	"	"	"
7	1137	Asbestos IBC	Asbestos Dump	Asbestos IBC
8	1210	Asbestos Concrete	Asbestos Dump	Asbestos Concrete.
9	1230	"	"	"
10	1354	"	"	"
11	1406	"	"	"
12	1426	"	"	"
13	1443	"	"	"
14	1509	Dam area	Tip head	Dam Material
15	1529	"	"	"
16	1551	"	"	"
17	1611	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T W (T) F S	Drivers Name	Paul McGrady
Date:	9.3.23	Plant Name / Unit ID	TEREX S12
Load Count	Time	Loaded From	Loaded To	Material Type
1 ✓	7:45	Work Area	New Tip Head	Asbestos
2 ✓	8:06	"	"	"
3 ✓	8:29	"	"	"
4 ✓	8:51	"	"	"
5 ✓	9:11	"	"	"
6 ✓	10:04	"	"	"
Basin 7 ✓	10:57	Basin Dam	OLD TIP	SLOP
8 ✓	11:17	"	"	"
9 ✓	11:39	"	"	"
10 ✓	12:03	"	"	"
11 ✓	12:25	"	"	"
12 ✓	12:45	"	"	"
13 ✓	1:54	"	"	"
14 ✓	2:10	"	"	"
15 ✓	2:26	"	"	"
16 ✓	2:43	"	"	"
17 ✓	3:00	"	"	"
18 ✓	3:16	"	"	"
19 ✓	3:38	"	"	"
20 ✓	3:57	"	"	"
21 ✓	4:15	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T W (T) F S	Drivers Name	Tim Fullerton	
Date:	9-3-23	Plant Name / Unit ID	Moxy Terex 513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:59	Stock Pile Next To Bunker	Basin Stockpile	Soil
2	8:06	〃	〃	〃
3	8:16	〃	〃	〃
4	8:27	〃	〃	〃
5	8:35	〃	← OLD asbestos spot grass area (TIP)	〃 ACM
6	9:08	Basin - Dem	Basin Stockpile	Mud
7	9:20	〃	〃	〃
8	10:23	Basin Material	OLD Tip	grass and Soil
9	10:40	〃	〃	〃
10	10:59	〃	〃	〃
11	11:18	〃	〃	〃
12	11:35	〃	〃	〃
13	11:53	〃	〃	〃
14	12:10	〃	〃	〃
15	12:25	〃	〃	〃
16	12:39	〃	〃	〃
17	1:56	〃	〃	〃
18	2:12	〃	〃	〃
19	2:29	〃	〃	〃
20	2:46	〃	〃	〃
21	3:03	〃	〃	〃
22	3:19	〃	〃	〃
23	3:46	〃	〃	〃
24	4:05	〃	〃	〃
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	Tim Fullerton
Date:	10-3-23	Plant Name / Unit ID	513
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:28	Basin stock pile	OLD Tip	Basin material
2	7:47	"	"	"
3	8:03	"	"	"
4	8:23	"	"	"
5	8:44	Basin - Dam	Basin Stock pile	"
6	8:51	"	"	"
7	8:58	"	"	"
8	9:05	"	"	"
9	9:12	Basin Stock pile	OLD Tip	"
10	9:38	Basin - Dam	Basin Stock pile	"
11	10:00	"	"	"
12	11:03	"	"	"
13	11:09	"	"	"
14	11:24	Basin Stock pile	OLD - Tip	"
15	11:40	"	"	"
16	11:59	Basin - Dam	Basin Stock pile	"
17	12:09	Basin Stock pile	OLD - Tip	"
18	12:29	Basin - Dam	Basin Stock pile	"
19	12:34	"	"	"
20	12:47	"	"	"
21	12:52	Basin Stock pile	OLD Tip	"
22	1:13	"	"	"
23	1:34	Basin - Dam	Basin Stock pile	"
24	1:40	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T W T (F) S	Drivers Name	Adam Perry	Hours
Date:	10-3-23	Plant Name / Unit ID	CAT 730 002	3527-3533
Load Count	Time	Loaded From	Loaded To	Material Type
1	0720	Dam area.	Tip head.	Dam Material.
2	0740	"	"	"
3	0803	"	"	"
4	0830	"	"	"
5	0923	Tunnel.	Concrete Pile Work area.	Concrete.
6	0948	"	"	"
7	1110	"	"	"
8	1140	"	"	"
9	1204	"	"	"
10	1230	"	"	"
11	1247	"	"	"
12	1306	"	"	"
13	1327	"	"	"
14				
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Material Tracking Register

contracting

Day (Circle):	M T W T (F) S	Drivers Name	Paul M'Grady	
Date:	10.3.23	Plant Name / Unit ID	TEREX FH 2	
Load Count	Time	Loaded From	Loaded To	Material Type
1 ✓	7:25	Basin Dam	Old Tip Head	Basin Material
2 ✓	7:43	"	"	"
3 ✓	8:00	"	"	"
4 ✓	8:20	"	"	"
5 ✓	8:41	Basin Dam	Basin Pit	"
6 ✓	8:48	"	"	"
7 ✓	8:55	"	"	"
8 ✓	9:02	"	"	"
9 ✓	9:11	"	"	"
10 ✓	9:27	"	"	"
11 ✓	9:32	"	"	"
12 ✓	1:23	"	old tip Head	"
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Material Tracking Register

contracting

~~Bryce Fitzgerald~~ Paul M'Grady

Day (Circle):	M T W ~~T~~ F S	Drivers Name		
Date:	10/3/23	Plant Name / Unit ID	001	
Load Count	Time	Loaded From	Loaded To	Material Type
1	8:20	waste DAM	Old TIP head	DAM waste
2	8:44			
3	9:10			
4	10:04			
5	10:24			
6	10:41			
7	10:57			
8	11:20		~~Waste DAM~~ Tip Head	
9	11:40		waste Dam	
10	11:46			
11	11:56			
12	12:01			
13	12:07			
14	12:14			
15	12:28			
16	12:35			
17	12:42			
18	1:45			
19	1:56			
20	2:15			
21	2:20			
22	2:28			
23	2:39			
24	2:45			
25	2:52			
26	2:57			
27	3:30	work Area	work Area	Steel
28	4:08			
29	4:30			
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Material Tracking Register

contracting

Day (Circle):	M T W T F (S)	Drivers Name	Tim Fullerton	
Date:	11-3-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:17	Basin area	Basin area	Clean Soil
2	7:24	Basin - Dam	Basin Stockpile	Mud
3	7:29	"	"	"
4	7:34	"	"	"
5	8:04	"	"	"
6	11:11	"	"	"
7	11:18	"	"	"
8	11:26	"	"	"
9	11:30	"	"	"
10	11:42	"	"	"
11	11:46	"	"	"
12	11:51	"	"	"
13	12:00	"	"	"
14	12:04	"	"	"
15	12:12	"	"	"
16	12:22			
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24	8:36	Basin Stockpile	OID - Tip	Basin Material
25	9:00	"	"	"
26	9:16	"	"	"
27	9:38	"	"	"
28	10:53	"	"	"
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Material Tracking Register

contracting

Day (Circle):	(M) T W T F S	Drivers Name	Tim Fullerton	
Date:	13-3-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:48	Basin stock pile	OLD TIP	Basin material
2	8:10	〃	〃	〃
3	8:29	〃	〃	〃
4	9:57	〃	〃	〃
5	10:15	〃	〃	〃
6	10:35	〃	〃	〃
7	10:54	〃	〃	〃
8	11:10	〃	〃	〃
9		~~Basin - Dam~~	~~Basin Stockpile~~	~~Basin Material~~
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20	8:49	Basin - Dam	Basin Stock pile	Basin material
21	8:53	〃	〃	〃
22	9:00	〃	〃	〃
23	11:27	〃	〃	〃
24	11:36	〃	〃	〃
25	11:42	〃	〃	〃
26	11:48	〃	〃	〃
27	11:58	〃	〃	〃
28	12:04	〃	〃	〃
29	12:10	〃	〃	〃
30	12:17	〃	〃	〃
31	12:23	〃	〃	〃
32	12:31	〃	〃	〃
33	12:38	〃	〃	〃
34	1:41	〃	〃	〃
35	1:50	〃	〃	〃
36	1:58	〃	〃	〃
37	2:06	〃	〃	〃
38	2:12	〃	〃	〃
39	2:16	〃	〃	〃
40	2:23	〃	〃	〃
41	2:36	〃	〃	〃
42	2:42	〃	〃	〃
43	2:49	〃	〃	〃
44	2:54	〃	〃	〃
45	3:00	〃	〃	〃
46	3:07	〃	〃	〃
47	3:12	〃	〃	〃
48	3:22	〃	〃	〃
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	ALEX	
Date:	4.3.23	Plant Name / Unit ID	001	
Load Count	Time	Loaded From	Loaded To	Material Type
1 ✓	7.20	dam	old tip head	slop BASIN
2 ✓	7.31	dam	old tip head	slop
3 ✓	7.44	dam	old tip head	slop
4 ✓	7.59	dam	old tip head	slop
5 ✓	11.00	dam	old tip head	slop
6 ✓	11.10	Coal stock Piles	old tip head	Coal / SURFACE
7 ✓	11.23	coal stock Piles	old tip head	coal
8 ✓	11.39	Coal stock Piles	old tip head	coal
9 ✓	11.50	Coal stock Piles	old tip head	coal
10 ✓	12.40	coal stock Pile	old tip head	Coal
11 ✓	1.20	Coal stock Pile	old tip head	Coal
12 ✓	1.30	Coal stock Pile	old tip head	Coal
13 ✓	2.00	Coal stock Pile	"	"
14 ✓	2.10	"	"	"
15				
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Material Tracking Register

contracting

Day (Circle):	M T W (T) F S	Drivers Name	Tim Fullerton	
Date:	16-3-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:46	Basin Stock pile	OLD - Tip	Basin Material
2	8:14	"	"	"
3	8:32	"	"	"
4	8:52	Basin - Dam	Basin Stockpile	"
5	9:07	"	"	"
6	11:21	"	"	"
7	11:35	"	"	"
8	12:23	Basin ~~Marketing~~ Dam	OLD Tip	"
9	12:40	"	"	"
10	1:45	"	"	"
11	1:59	"	"	"
12	2:13	"	"	"
13	2:28	"	"	"
14	2:44	"	"	"
15	2:58	"	"	"
16	3:13	"	"	"
17	3:33	"	"	"
18	3:48	"	"	"
19	4:03	"	"	"
20	4:18	"	"	"
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Material Tracking Register

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Day (Circle):	M T W T F S	Drivers Name	Paul M	
Date:	16.3.23	Plant Name / Unit ID	CAT 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:55	Basin dam	Basin dam	Basin Material
2	8:12	"	"	"
3	8:29	"	"	"
4	8:48	"	"	"
5	9:02	"	"	"
6	10:37	"	"	"
7	10~~45~~	"	"	"
8	11:13	"	"	"
9	12:27	Work Area	Tip Head	Coal SURFACE
10	1:45	"	"	"
11	2:00	"	"	"
12	2:30	"	"	"
13	2:45	"	"	"
14	3:00	"	"	"
15	3:16	"	"	"
16	3:47	"	"	"
17	4:00	"	"	"
18	4:19	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T W T (F) S	Drivers Name	Tim Fullerton	
Date:	17-3-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:20	Basin - Dam	OD - Tip	Soil / Mud BASIN
2	7:36	〃	〃	〃
3	7:54	〃	〃	〃
4	8:14	〃	〃	〃
5	8:38	〃	〃	〃
6	8:57	〃	〃	〃
7	9:18	〃	〃	〃
8	9:40	〃	〃	〃
9				
10	11:21	Coal Stockpile	OD Tip	Soil + Coal / SURFACE C
11	11:35	〃	〃	〃
12	11:50	〃	〃	〃
13				
14	12:08	Basin - Dam	OD - Tip	Soil - Mud BASIN
15	12:25	〃	〃	〃
16	12:43	〃	〃	〃
17	[illegible]			
18	1:15	Coal Stockpile	OD - Tip	Soil + Coal SURFACE
19	1:30	〃	〃	〃
20	1:52	〃	〃	〃
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	Tim Fullerton	
Date:	18-3-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:10	Basin Stock pile	OLD-Tip	Basin Material
2	7:28	〃	〃	〃
3	7:43	〃	〃	〃
4	8:01	〃	〃	〃
5	8:15	〃	〃	〃
6	8:30	〃	〃	〃
7	8:44	〃	〃	〃
8	8:58	〃	〃	〃
9	9:12	〃	〃	〃
10	9:28	〃	〃	〃
11	9:43	〃	〃	〃
12	11:11	〃	〃	〃
13	11:25	〃	〃	〃
14	11:38	〃	〃	〃
15	11:51	〃	〃	〃
16	12:04	〃	〃	〃
17	12:18	〃	〃	〃
18	12:32	〃	〃	〃
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	Paul McGrady	
Date:	18.3.23	Plant Name / Unit ID	CAT 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1 ✓	7:20	Basin dam	old Tip Head	Basin material
2 ✓	7:37	"	"	"
3 ✓	7:52	"	"	"
4 ✓	8:04	"	"	"
5 ✓	8:18	"	"	"
6 ✓	8:33	"	"	"
7 ✓	8:47	"	"	"
8 ✓	9:00	"	"	"
9 ✓	9:15	"	"	"
10 ✓	9:31	"	"	"
11 ✓	9:47	"	"	"
12 ✓	10:09	"	"	"
13 ✓	11:22	"	"	"
14 ✓	11:35	"	"	"
15 ✓	11:48	"	"	"
16 ✓	12:00	"	"	"
17 ✓	12:21	"	"	"
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Material Tracking Register

contracting

Day (Circle):	(M) T W T F S	Drivers Name	Tim Fullerton
Date:	20-3-23	Plant Name / Unit ID	513
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:52		OLD Tip head	Soil SURFACE CUT
2	8:09	"	"	"
3	8:23	"	"	"
4	8:36	"	"	"
5	8:50	"	"	"
6	9:04	"	"	"
7	9:22	"	"	"
8	10:16	"	"	"
9	10:31	"	"	"
10	10:45	"	"	"
11	10:58	"	"	"
12	11:11	"	"	"
13	11:25	"	"	"
14	11:40	"	"	"
15	11:54	"	"	"
16	12:11	"	"	"
17	12:25	"	"	"
18	2:00	"	"	"
19				
20	2:17	Basin Stock pile	OLD Tip head	Basin Material
21	2:33	"	"	"
22	2:48	"	"	"
23	3:04	"	"	"
24	3:19	"	"	"
25	3:35	"	"	"
26	3:52	"	"	"
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36445 | 36502 Material Tracking Register contracting

Day (Circle):	(M) T W T F S	Drivers Name	Paul M'Grady
Date:	20.3.23	Plant Name / Unit ID	CAT 001
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:58	Work Area	old Tip Head	Coal SURFACE
2	8:14	"	"	"
3	8:27	"	"	"
4	8:41	"	"	"
5	8:55	"	"	"
6	9:09	"	"	"
7	10:20	"	"	"
8	10:35	"	"	"
9	10:48	"	"	"
10	11:06	"	"	"
11	11:17	"	"	"
12	11:30	"	"	"
13	11:49	"	"	"
14	12:14	"	"	"
15	12:30	"	"	"
16	2:14	"	"	"
17	2:30	"	"	"
18	2:46	"	"	"
19	3:00	"	"	"
20	3:17	"	"	"
21	3:33	"	"	"
22	3:50	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	Imad / Alex
Date:	21/03/23	Plant Name / Unit ID	001

Load Count	Time	Loaded From	Loaded To	Material Type
1 JARRAD ✓	7.12	dam slop	old Tip head	slop
2 ✓	7.30	dam slop	old tip head	slop
3 ✓	7.40	dam slop	old tip head	slop
4 ✓	8.00	dam slop	old tip head	slop
5 ✓	8.13	dam slop	old tip head	slop
6 ✓	8.26	dam slop	old tip head	slop
7 ✓	8.30	dam slop	old tip head	slop
8 ✓		dam slop	old tip head	slop
9 ✓	8:45	" "	" "	"
10 ✓	8.59	" "	" "	"
11 ✓	9.12	" "	" "	"
12 ✓	10.11	" "	" "	"
13 ✓	10.22	" "	" "	"
14 ✓	10.37	" "	" "	"
15	11.55	" "	" "	"
16	12.22	" "	" "	"
17	12.37	" "	" "	"
18	12.45	" "	" "	"
19	2.05	" "	" "	"
20	2:59	"	"	"
21 ALEX	15:18	Coal	"	Coal
22	15:31	Coal	"	Coal
23	15:47	Coal	"	Coal
24				
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Material Tracking Register

contracting

Hours 3558

Day (Circle):	M (T) W T F S	Drivers Name	Aden Perry	
Date:	21-3-23	Plant Name / Unit ID	CAT 730 002	
Load Count	Time	Loaded From	Loaded To	Material Type
1	710	Dam	Tip head	Dam material BASIN
2	725	"	"	"
3	740	"	"	"
4	755	"	"	"
5	810	"	"	"
6	824	"	"	"
7	840	"	"	"
8	855	"	"	"
9	910	"	"	"
10	1000	"	"	"
11	1019	"	"	"
12	1035	"	"	"
13	1050	"	"	"
14	1105	"	"	"
15	1126	"	"	"
16	1148	"	"	"
17	1204	"	"	"
18	1246	"	"	"
19	1350	"	"	"
20	1409	"	"	"
21	1424	"	"	"
22	1439	"	"	"
23	1455	"	"	"
24	1512	Coal	Tip head	Coal SURFACE
25	1528	"	"	"
26	1544	"	"	"
27	1600	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	Tim Fullerton
Date:	21-3-23	Plant Name / Unit ID	513
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:15	Basin Stock pile	OID Tip head	Basin Material
2	7:31	〃	〃	〃
3				
4	7:50	Southern End Tunnel	Concrete Stock pile	Concrete + Reo
5	7:57	〃	〃	〃
6	8:05	〃	〃	〃
7	8:12	〃	〃	〃
8	8:18	〃	〃	〃
9	8:26	〃	〃	〃
10	8:33	〃	〃	〃
11	8:40	〃	〃	〃
12	8:46	〃	〃	〃
13	8:53	〃	〃	〃
14	8:59	〃	〃	〃
15	9:07	〃	〃	〃
16	9:13	〃	〃	〃
17	9:19	〃	〃	〃
18	10:02	〃	〃	〃
19	10:13			
20				
21	10:26	Basin Stock pile	OID Tip head	Basin Material
22	10:43	〃	〃	〃
23	10:57	〃	〃	〃
24	11:14	〃	〃	〃
25	11:37	〃	〃	〃
26	11:53	〃	〃	〃
27	12:08	〃	〃	〃
28	12:38	〃	〃	〃
29	1:46	〃	〃	〃
30	2:04	〃	〃	〃
31	2:21	〃	〃	〃
32	2:36	〃	〃	〃
33	2:52	〃	〃	〃
34				
35	3:14	Coal pile	OID Tip head	Coal Material
36	3:29	〃	〃	〃
37	3:45	〃	〃	〃
38	4:02	〃	〃	〃
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Material Tracking Register

contracting

Day (Circle):	M T (W) T F S	Drivers Name	Tim Fullerton	
Date:	22-3-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	12:16	Basin stock pile	OLD Tip head	Basin Material
2	12:30	"	"	"
3	12:48	"	"	"
4	2:09	"	"	"
5	2:24	"	"	"
6	2:39	"	"	"
7	2:57	"	"	"
8	3:11	"	"	"
9	3:27	"	"	"
10	3:46	"	"	"
11	4:02	"	"	"
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Material Tracking Register

contracting
3567-

Day (Circle):	M T W T F S	Drivers Name	Aden Perry ~~Tyler Fitzgerald~~
Date: 22	23/3/23	Plant Name / Unit ID	002 CAT 730
Load Count	Time ~~7~~00	Loaded From	Loaded To	Material Type
1	732	Dam	Tip head	Dam material
2	750	"	"	"
3	810	"	"	"
4	826	"	"	"
5	840	"	"	"
6	852	"	"	"
7	1005	"	"	"
8	1021	"	"	"
9	1037	"	"	"
10	1055	"	"	"
11	1110	"	"	"
12	1131	"	"	"
13	1147	"	"	"
14	1203	"	"	"
15	1218	"	"	"
16	1233	"	"	"
17	1403	"	"	"
18	1419	"	"	"
19	1435	"	"	"
20	1452	"	"	"
21	1506	"	"	"
22	1525	"	"	"
23	1543	"	"	"
24	1600	"	"	"
25	1615	"	"	"
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Material Tracking Register

contracting

Paul Mrad

Day (Circle):	M T (W) T F S	Drivers Name	~~Lyle Fitzgerald~~
Date:	3.23.23	Plant Name / Unit ID	001

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:19	Basin dam	old Typ Head	Basin material
2	7:35	"	"	"
3	7:50	"	"	"
4	5:08	"	"	"
5	8:21	"	"	"
6	8:41	"	"	"
7	9:05	"	Basin " dam	"
8	9:09	"	"	"
9	9:14	"	"	"
10	9:20	"	"	"
11	10:11	"	"	"
12	10:18	"	"	"
13	10:22	"	"	"
14	10:26	"	"	"
15	10:30	"	"	"
16	10:35	"	"	"
17	10:37	"	"	"
18	10:46	"	"	"
19	10:50	"	"	"
20	10:55	"	"	"
21	10:58	"	"	"
22	11:06	"	"	"
23	11:12	"	"	"
24	11:16	"	"	"
25	11:20	"	"	"
26	11:23	"	"	"
27	11:28	"	"	"
28	11:31	"	"	"
29	11:35	"	"	"
30	11:41	"	"	"
31	11:47	"	"	"
32	12:23	"	"	"
33	12:29	"	"	"
34	12:38	"	"	"
35	12:45	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T W (T) F S	Drivers Name	Tim Fullerton	
Date:	23-3-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:08	Basin Stock pile	OLD Tip head	Basin Material
2	7:32	"	"	"
3	7:48	"	"	"
4	8:02	"	"	"
5	8:19	"	"	"
6	8:39	"	"	"
7	9:04	Coal Stockpile	OLD Tip head	Coal Surface
8	10:12	"	"	"
9	10:27	"	"	"
10	10:40	"	"	"
11	10:53	"	"	"
12	11:07	"	"	"
13	11:20	"	"	"
14	11:37	"	"	"
15	11:52	"	"	"
16	12:05	"	"	"
17	12:18	"	"	"
18	12:32	"	"	"
19	12:45	"	"	"
20	2:14	Asbestos Square	Stock pile (4)	Soil/ Azzy
21	2:26	"	"	"
22	2:38	"	"	"
23	2:46	"	"	"
24	2:57	"	"	"
25	3:14	"	"	"
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Material Tracking Register

contracting

3578 -

Day (Circle):	M T W T (F) S	Drivers Name	Aden Perry	
Date:	24-3-23	Plant Name / Unit ID	CAT 730 002	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0741	Coal	Tip Feed	Coal SURFACE
2	0758	"	"	"
3	0813	"	"	"
4	0829	"	"	"
5	0852	"	"	"
6	0908	"	"	"
7	0950	"	"	"
8	1100	"	"	"
9	1117	"	"	"
10	1134	"	"	"
11	1200	"	"	"
12	1216	"	"	"
13	1230	"	"	"
14	1248	"	"	"
15	1308	"	"	"
16	1320	"	"	"
17	1338	"	"	"
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11170 | 11171

Material Tracking Register

contracting

Day (Circle):	M T W T (F) S	Drivers Name	Paul McGrady	
Date:	24-3-23	Plant Name / Unit ID	TEREX 511	
Load Count	Time	Loaded From	Loaded To	Material Type
1 ✓	12:41	Work Area	old Tip Head	coal SURFACE
2 ✓	12:55	"	"	"
3 ✓	1:10	"	"	"
4 ✓	1:26	"	"	"
5 ✓	1:45	"	"	"
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3668.8

Material Tracking Register

contracting

Day (Circle):	M T W T (F) S	Drivers Name	Paul McGrady	
Date:	24.3.23	Plant Name / Unit ID	CAT 001	
Load Count	Time	Loaded From	Loaded To	Material Type
1 ~~7:44~~	~~7:44~~	Work Area	Old Tip Head	Coal SURFACE
2	8:02	"	"	"
3	8:16	"	"	"
4	8:32	"	"	"
5	8:50	"	"	"
6	9:06	"	"	"
7	9:52	"	"	"
8	11:02	"	"	"
9	11:20	"	"	"
10	11:38	"	"	"
11	12:11	"	"	"
12	12:26	"	"	"
13	12:47	"	"	"
14	1:29	"	"	"
15	1:48			
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Material Tracking Register

contracting

Day (Circle):	M T W T (F) S	Drivers Name	Tim Fullerton
Date:	24-3-23	Plant Name / Unit ID	513
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:40	Basin concrete	concrete Stock pile	concrete + Reo
2	7:48	"	"	"
3	7:55	"	"	"
4	8:03	"	"	"
5	8:10	"	"	"
6	8:17	"	"	"
7	8:23	"	"	"
8	8:30	"	"	"
9	8:38	"	"	"
10	8:47	"	"	"
11	8:57	coal stock pile	OLD Tip head	Coal + Soil/SURFACE COAL
12	9:13	"	"	"
13	9:54	"	"	" 3
14	11:20	Tunnel	Scrap Steel pile	Reo
15	11:35	Coal stock pile	OLD Tip head	Coal + Soil
16	12:02	"	"	"
17	12:18	"	"	"
18	12:33	"	"	"
19	12:50	"	"	"
20	1:08	"	"	"
21	1:23	"	"	"
22	1:40	"	"	"
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11171

25/3/23

11176

Time	Loaded from ~~Area~~	Loaded to	material
7:21	work area	Concrete Pile	Concrete
7:32	〃	old tip head	Spoil Basin.
8:01	〃	steel pile	steel
9:23	〃	Bunker	crush material
9:34	〃	〃	〃
9:44	〃	〃	〃
9:54	〃	〃	〃
11:28	〃	〃	〃
11:36	〃	〃	〃
11:43	〃	〃	〃
11:50	〃	〃	〃
12:00	〃	〃	〃
12:08	〃	〃	〃
12:27	〃	〃	〃

Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	Tim Fullerton	
Date:	28-3-23	Plant Name / Unit ID	513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	8:09	concrete drain	concrete stockpile	concrete + Reo
2	8:20	"	"	"
3	8:50	Shaken Stock Pile	Work Site gate	Shaken Material
4	9:03	concrete Western face line	concrete stockpile	concrete
5	10:08	"	"	"
6	11:01	Basin Stockpile	OLD Tip head	Basin Material
7	11:21	"	"	"
8	11:40	"	"	"
9	11:59	"	"	"
10	12:16	"	"	"
11	12:35	"	"	"
12	12:52	"	"	"
13	2:20	"	"	"
14	2:36	"	"	"
15	2:53	"	"	"
16	3:10	"	"	"
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~~Start~~ 11177 | Finish 11180.

Material Tracking Register

contracting

Day (Circle):	M (T) W T F S	Drivers Name	Paul McGrady	
Date:	28.3.23	Plant Name / Unit ID	TEREX S11	
Load Count	Time	Loaded From	Loaded To	Material Type
1 ~~1~~ 6 ✓	11:06	Basin dam	Old tip Head	Basin Material
2 ✓	11:27	"	"	"
3 ✓	11:47	"	"	"
4 ✓	12:05	"	"	"
5 ✓	12:22	"	"	"
6 ✓	12:39	"	"	"
7 ✓	1:00	"	"	"
8 ✓	2:33	"	"	"
9 ✓	2:50	"	"	"
10 ✓	3:08	"	"	"
11				
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Material Tracking Register

A DELTA GROUP COMPANY
contracting

Day (Circle):	M T W (Th) F S	Drivers Name	Ryver fitzgerald
Date:	30/3/23	Plant Name / Unit ID	CAT 30T 001

Load Count	Time	Loaded From	Loaded To	Material Type
1	7:29	work area	~~New~~ Tip head	basin meterial
2	7 47	〃	〃	〃
3	8 05	〃	〃	〃
4	8 24	〃	〃	〃
5	9 11	〃	〃	〃
6	9 30	〃	〃	〃
7	10:30	〃	〃	〃
8	10-49	〃	〃	〃
9	11:07	〃	〃	〃
10	11:24	〃	〃	〃
11	11:41	〃	〃	〃
12	12:19	〃	〃	〃
13	12:33	〃	〃	〃
14	12:51	〃	〃	〃
15	2:00	〃	〃	〃
16	2:20	〃	〃	〃
17	2:38	〃	〃	〃
18	2:55	〃	〃	〃
19	3:12	〃	〃	〃
20	3:28	〃	〃	〃
21	3:50	〃	〃	〃
22	4:14	〃	〃	〃
23	4:29	〃	〃	〃
24	4:46	〃	〃	〃
25	5:04	〃	〃	〃
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Material Tracking Register

contracting

Day (Circle):	M T W (T) F S	Drivers Name	Tim Fullerton	
Date:	30-3-23	Plant Name / Unit ID	Moxy 513	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:32	Basin Stockpile	Old Tip head	Basin material
2	7:51	"	"	"
3	8:11	"	"	"
4	8:33	"	"	"
5	8:53	"	"	"
6	9:13	"	"	"
7	9:33	"	"	"
8	10:33	"	"	"
9	10:51	"	"	"
10	11:11	"	"	"
11	11:28	"	"	"
12	11:45	"	"	"
13	12:12	"	"	"
14	12:29	"	"	"
15	12:47	"	"	"
16	2:05	"	"	"
17	2:24	"	"	"
18	2:40	"	"	"
19	2:57	"	"	"
20	3:15	"	"	"
21	3:31	"	"	"
22	3:49	"	"	"
23	4:06	"	"	"
24	4:22	"	"	"
25	4:38	"	"	"
26	4:55	"	"	"
27	5:15	"	"	"
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Material Tracking Register

contracting

35849 - 3594

Day (Circle):	M T W (T) F S	Drivers Name	Aden Perry
Date:	30/03/23	Plant Name / Unit ID	CAT 730 002
Load Count	Time	Loaded From	Loaded To	Material Type
1	0729	Coal	Tip head	Coal BASIN
2	0750	"	"	"
3	0809	"	"	"
4	0829	"	"	"
5	0847	"	"	"
6	0859	"	"	"
7	0929	"	"	"
8	1037	"	"	"
9	1058	"	"	"
10	1118	"	"	"
11	1139	"	"	"
12	1207	"	"	"
13	1237	"	"	"
14	1254	"	"	"
15	1400	"	"	"
16	1427	"	"	"
17	1445	"	"	"
18	1504	"	"	"
19	1523	"	"	"
20	1543	"	"	"
21	1603	"	"	"
22	1625	"	"	"
23	1643	"	"	"
24	1659	"	"	"
25	1718	"	"	"
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11181 / 11189.

Material Tracking Register

contracting

Day (Circle):	M T W (T) F S	Drivers Name	Paul McGrady
Date:	30.3.23	Plant Name / Unit ID	TEREX 511

Load Count	Time	Loaded From	Loaded To	Material Type
1 /	7:35	Basin dam	old Tip Head	Basin material
2 /	7:59	"	"	"
3 /	8:05	"	"	"
4				
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Material Tracking Register

contracting

Day (Circle):	M T W T ⊘ S	Drivers Name	Ryver Fitzgerald
Date:	31/3/23	Plant Name / Unit ID	CAT 30T
Load Count	Time	Loaded From	Loaded To Old Tip head / ~~New Tip head~~	Material Type
~~1~~	7:25	work area	coal
~~2~~	7:45	〃	〃	〃
~~3~~	8:07	〃	〃	〃
~~4~~	8:24	〃	〃	〃
~~5~~	8:48	〃	〃	〃
~~6~~	9:04	〃	〃	〃
~~7~~	9:57	〃	〃	〃
~~8~~	10:16	〃	〃	〃
~~9~~	10:31	〃	〃	〃
~~10~~	10:46	〃	〃	〃
~~11~~	11:04	〃	〃	〃
~~12~~	11:23	〃	〃	〃
~~13~~	11:40	〃	〃	〃
~~14~~	11:55	〃	〃	〃
~~15~~	12:10	〃	〃	〃
~~16~~	12:25	〃	〃	〃
~~17~~	12:46	〃	〃	〃
~~18~~	1:58	〃	〃	〃
~~19~~	2:11	〃	〃	〃
~~20~~	2:39	〃	〃	〃
~~21~~	2:57	〃	〃	〃
~~22~~	3:15	〃	〃	〃
~~23~~	3:38	〃	〃	〃
~~24~~	3:55	〃	〃	〃
~~25~~	4:10	〃	〃	〃
~~26~~	4:29	〃	〃	〃
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11

Material Tracking Register

22

contracting

Day (Circle):	M T W T (F) S	Drivers Name Alex.H		
Date:	31.3.23	Plant Name / Unit ID		
Load Count	Time	Loaded From	Loaded To	Material Type
1	10:04	COAL STOCK NE	Old Tip Head	Coal
2	10 26	COAL STOCK NE	Old Tip Head	Coal
3	10:45	"	"	"
4	11:01	"	"	"
5	11:24	"	"	"
6	11:41	"	"	"
7	11:59	"	"	"
8	12:18	"	"	"
9	12:34	"	"	"
10	13:54	"	"	"
11	14:15	"	"	"
12	14:30	"	"	"
13	14:50	"	"	"
14 *	15 07	"	"	"
15	15:25	"	"	"
16	15:57	"	"	"
17	16:15	"	"	"
18	16:30	"	"	"
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Material Tracking Register

contracting

3594 – 3602.6

Day (Circle):	M T W T F S	Drivers Name	Aden Perry	
Date:	31-3-23	Plant Name / Unit ID	CAT 730 002	
Load Count	Time	Loaded From	Loaded To	Material Type
1	0723	Coal Pile's	Tip head	Coal
2	0749	"	"	"
3	0820	"	"	"
4	0838	"	"	"
5	0859	"	"	"
6	0914	"	"	"
7	0958	"	"	"
8	1018	"	"	"
9	1032	"	"	"
10	1051	"	"	"
11	1107	"	"	"
12	1130	"	"	"
13	1145	"	"	"
14	1203	"	"	"
15	1219	"	"	"
16	1236	"	"	"
17	1354	"	"	"
18	1408	"	"	"
19	1423	"	"	"
20	1437	"	"	"
21	1455	"	"	"
22	1512	"	"	"
23	1535	"	"	"
24	1552	"	"	"
25	1609	"	"	"
26	1627	"	"	"
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11189 | 11197.

Material Tracking Register

COLEBY COMPANY contracting

Day (Circle):	M T W T (F) S	Drivers Name	Paul McGrady	
Date:	31.3.23	Plant Name / Unit ID	TEREX 511	
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:26	Work Area	old Tip Head	Coal Surface
2	7:30	"	"	Surface Coal
3	7:55	"	"	"
4	8:14	"	"	"
5	8:49	Basin dam	"	Basin Material
6				
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	Tim Fullerton
Date:	31-3-23	Plant Name / Unit ID	513
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:24	Coal Stock pile	OID Tip head	~~Coal~~ Soil Surface coal
2	8:08	Crushed concrete pile	Tunnel	Concrete
3	8:17	"	haul Road	"
4	8:34	"	Tunnel	"
5	8:42	"	"	"
6	8:51	"	"	"
7	8:58	"	"	"
8	10:08	"	"	"
9	10:17	"	"	"
10	10:25	"	"	"
11	10:34	"	"	"
12	10:42	"	"	"
13	10:53	"	"	"
14	11:04	"	"	"
15	11:10	"	"	"
16	11:18	"	"	"
17	11:26	"	"	"
18	11:36	"	"	"
19	11:48	"	"	"
20	11:55	"	"	"
21	12:02	"	"	"
22	12:09	"	"	"
23	12:15	"	"	"
24	12:21	"	"	"
25	12:27	"	"	"
26	12:36	"	"	"
27	12:43	"	"	"
28	1:59	"	"	"
29	2:07	"	"	"
30	2:14	"	"	"
31	2:30	"	"	"
32	3:09	coal stock pile	OID Tip head	~~Coal~~ Surface coal
33	3:27	"	"	"
34	3:43	"	"	"
35	3:39	Basin-Dam	OID Tip head	Basin Material
36	4:17	"	"	"
37	4:35	"	"	"
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Material Tracking Register

contracting

Day (Circle):	M T W T F S	Drivers Name	Tim Fullerton
Date:	27-3-23	Plant Name / Unit ID	513
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:58	Coal Stock pile	OLD Tip head	Coal + Soil (SURFACE GRADE)
2	8:17	"	"	"
3	8:46	Concrete drain	concrete Stock pile	concrete + REO
4				
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Material Tracking Register

contracting

3583-3584-9

Day (Circle):	(M) T W T F S	Drivers Name	Adam Perry CAT 730 002	
Date:	27-3-23	Plant Name / Unit ID		
Load Count	Time	Loaded From	Loaded To	Material Type
1	0757	Coal	Tip head	Coal ~~BASIN~~ SURFACE
2	0813	"	"	"
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
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11176 / 11174

Material Tracking Register

contracting

Day (Circle):	(M) T W T F S	Drivers Name	Paul Mihrady
Date:	27.3.23	Plant Name / Unit ID	TEREX S11
Load Count	Time	Loaded From	Loaded To	Material Type
1	7:50	Work Area	Old Tip Head	Coal Surface
2	8:19	"	"	"
3				
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C0249 Munmorha PS Crushed Concrete Summary		
Date	Weight Sub-Total	Total
22/03/2023	20.6	
23/03/2023	416.1	
23/03/2023	219.3	656 t
24/03/2023	67.7	
24/03/2023	15.05	
24/03/2023	79.5	162.25 t
27/03/2023	54.2	
27/03/2023	45.35	
27/03/2023	22.2	
27/03/2023	123	244.75 t
28/03/2023	50.45	
28/03/2023	20.25	
28/03/2023	81.65	152.35 t
29/03/2023	221.8	
29/03/2023	371.3	593.1 t
30/03/2023	477.15	
30/03/2023	522.6	
30/03/2023	352.85	1352.6 t
31/03/2023	216	216 t
3/04/2023	88.85	
3/04/2023	614.85	703.7 t
4/04/2023	26.25	
4/04/2023	149.9	
4/04/2023	25.65	
4/04/2023	201.9	
4/04/2023	149.55	
4/04/2023	25.6	
4/04/2023	36.05	
4/04/2023	235.65	
4/04/2023	20.55	
4/04/2023	65.2	
4/04/2023	471.9	1408.2 t
5/04/2023	1477.25	1477.25 t
11/04/2023	513.25	
11/04/2023	395.3	908.55 t
12/04/2023	158.3	
12/04/2023	265.75	
12/04/2023	462.25	886.3 t
13/04/2023	703.05	703.05 t
14/04/2023	509.4	509.4 t
Grand total		**9973.5 t**

NSW QUARRIES
NCS 503
16:44:50 Wed 22 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	6.55	6.55
	8.00	14.55
	6.05	20.60
TOTAL		20.60 t

NSW QUARRIES
NCS 503
10:13:39 Thu 23 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	9.65	9.65
	7.85	17.50
	7.25	24.75
	8.55	33.30
	9.35	42.65
	9.75	52.40
	7.85	60.25
	9.15	69.40
	9.40	78.80
	8.80	87.60
	7.55	95.15
	5.75	100.90
	5.85	106.75
	7.95	114.70
	5.90	120.60
	7.10	127.70
	5.90	133.60
	7.35	140.95
	9.35	150.30
	8.95	159.25
40MM	9.55	168.80
20RB	8.90	177.70
	8.35	186.05
	9.55	195.60
	8.75	204.35
	10.35	214.70
	10.40	225.10
	9.40	234.50
	8.80	243.30
	8.50	251.80
	10.15	261.95
	8.55	270.50
	8.20	278.70
	8.60	287.30
	7.85	295.15
	7.60	302.75
	6.80	309.55
	5.95	315.50
40MM	7.50	323.00
	-7.50	315.50
20RB	7.45	322.95
	9.25	332.20
	8.55	340.75
	6.45	347.20
	9.05	356.25
	7.05	363.30
	5.05	368.35
	7.60	375.95
	7.30	383.25
	5.95	389.20
	7.90	397.10
	6.55	403.65
	5.55	409.20
	6.90	416.10
TOTAL		416.10 t

NSW QUARRIES
NCS 503

NSW QUARRIES
NCS 503
13:55:29 Thu 23 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	8.45	8.45
	9.95	18.40
	10.10	28.50
	8.90	37.40
	6.10	43.50
	6.90	50.40
	8.45	58.85
	9.45	68.30
	10.10	78.40
	5.70	84.10
	6.25	90.35
	10.00	100.35
	9.85	110.20
	7.55	117.75
	8.00	125.75
	6.65	132.40
	7.40	139.80
	8.20	148.00
	7.65	155.65
	7.00	162.65
	8.05	170.70
	6.60	177.30
	8.75	186.05
	7.05	193.10
	7.80	200.90
	6.65	207.55
	5.70	213.25
	6.05	219.30
TOTAL		219.30 t

NSW QUARRIES
NCS 503
15:46:18 Thu 23 Mar 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x 82	646.45 t
40MM	x 1	9.55 t
TOTAL		656.00 t

NSW QUARRIES
NCS 503
08:38:01 Fri 24 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.65	7.65
	6.65	14.30
	8.20	22.50
	6.60	29.10
	9.05	38.15
	8.05	46.20
	6.90	53.10
	6.90	60.00
	7.70	67.70
TOTAL		67.70 t

NSW QUARRIES
NCS 503
09:36:32 Fri 24 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.15	7.15
	7.90	15.05

NSW QUARRIES
NCS 503
09:59:46 Fri 24 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	8.40	8.40
	7.85	16.25
	7.20	23.45
	6.60	30.05
	6.65	36.70
	6.20	42.90
	6.70	49.60
	6.50	56.10
	7.60	63.70
	7.80	71.50
	8.00	79.50
TOTAL		79.50 t

NSW QUARRIES
NCS 503
11:11:12 Fri 24 Mar 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x 20	147.20 t
TOTAL		147.20 t

ADD 15.05

TOTAL 162.25

NSW QUARRIES
NCS 503
13:17:40 Mon 27 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.25	7.25
	6.20	13.45
	6.55	20.00
	4.80	24.80
	5.05	29.85
	5.05	34.90
	6.65	41.55
	5.80	47.35
	6.85	54.20
TOTAL		54.20 t

NSW QUARRIES
NCS 503
14:22:55 Mon 27 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	9.15	9.15
	8.05	17.20
	8.65	25.85
	7.20	33.05
	7.20	40.25
	5.10	45.35
TOTAL		45.35 t

NSW QUARRIES
NCS 503
16:07:22 Mon 27 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	8.95	8.95
	7.55	16.50
	5.70	22.20
TOTAL		22.20 t

NSW QUARRIES
NCS 503
16:56:13 Mon 27 Mar 2023
CATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.85	7.85
	9.20	17.05
	6.40	23.45
	7.05	30.50
	8.15	38.65
	7.60	46.25
	7.25	53.50
	6.65	60.15
	5.60	65.75
	5.05	70.80
	7.20	78.00
	5.70	83.70
	6.70	90.40
	7.15	97.55
	7.10	104.65
	6.85	111.50
	6.80	118.30
	4.70	123.00
TOTAL		123.00 t

NSW QUARRIES
NCS 503
17:51:42 Mon 27 Mar 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x 36	244.75 t
TOTAL		244.75 t

NSW QUARRIES
NCS 503
08:05:52 Tue 28 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.95	7.95
	7.40	15.35
	6.55	21.90
	7.70	29.60
	7.25	36.85
	8.30	45.15
	5.30	50.45
TOTAL		50.45 t

NSW QUARRIES
NCS 503
10:42:37 Tue 28 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.10	7.10
	6.65	13.75
	6.50	20.25
TOTAL		20.25 t

NSW QUARRIES
NCS 503
11:07:31 Tue 28 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.80	7.80
	7.70	15.50
	9.00	24.50
	8.55	33.05
	8.70	41.75
	7.90	49.65
	5.30	54.95
	5.95	60.90
	7.00	67.90
	7.40	75.30
	6.35	81.65
TOTAL		81.65

NSW QUARRIES
NCS 503
12:57:36 Tue 28 Mar 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x 10	70.70 t
TOTAL		70.70 t

81.65

152.35

NSW QUARRIES
NCS 503
12:23:00 Wed 29 Mar 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x 10	70.70 t
TOTAL		70.70 t

81.65

TOTAL = 152.35

NSW QUARRIES
NCS 503
12:26:29 Wed 29 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.95	7.95
	7.95	15.90
	6.85	22.75
	9.30	32.05
	8.30	40.35
	9.45	49.80
	10.90	60.70
	12.15	72.85
	10.40	83.25
	6.75	90.00
	9.85	99.85
	9.80	109.65
	10.50	120.15
	7.20	127.35
	11.70	139.05
	9.35	148.40
	5.80	154.20
	9.90	164.10
	7.75	171.85
	8.25	180.10
	10.20	190.30
	6.70	197.00
	5.90	202.90
	9.35	212.25
	9.55	221.80
TOTAL		221.80 t

NSW QUARRIES
NCS 503
15:21:55 Wed 29 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	9.95	9.95
	7.95	17.90
	7.65	25.55
	8.30	33.85
	8.25	42.10
	6.55	48.65
	6.00	54.65
	4.45	59.10
	6.10	65.20
	7.95	73.15
	7.20	80.35
	7.95	88.30
	7.60	95.90
	7.00	102.90
	7.95	110.85
	7.60	118.45
	7.60	126.05
	8.35	134.40
	8.15	142.55
	7.55	150.10
	8.25	158.35
	8.80	167.15
	7.50	174.65
	8.05	182.70
	6.75	189.45
	7.30	196.75
	5.85	202.60
	7.35	209.95
	9.05	219.00
	8.05	227.05
	7.45	234.50
	7.35	241.85
	8.70	250.55
	7.00	257.55
	9.35	266.90
	8.50	275.40
	7.40	282.80
	6.65	289.45
	7.55	297.00
	7.85	304.85
	7.70	312.55
	6.45	319.00
	7.35	326.35
	7.20	333.55
	7.05	340.60
	7.75	348.35
	7.30	355.65
	7.55	363.20
	8.10	371.30
TOTAL		371.30 t

NSW QUARRIES
NCS 503
17:33:18 Wed 29 Mar 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x 74	593.10 t
TOTAL		593.10 t

NSW QUARRIES
NCS 503
07:42:04 Thu 30 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	8.70	8.70
	9.45	18.15
	8.55	26.70
	9.00	35.70
	8.60	44.30
	8.40	52.70
	7.95	60.65
	7.05	67.70
	5.70	73.40
	8.20	81.60
	9.35	90.95
	7.90	98.85
	7.00	105.85
	9.30	115.15
	6.85	122.00
	6.80	128.80
	8.85	137.65
	8.80	146.45
	8.45	154.90
	7.65	162.55
	7.45	170.00
	8.10	178.10
	7.45	185.55
	7.40	192.95
	5.50	198.45
	6.65	205.10
	8.20	213.30
	8.70	222.00
	8.85	230.85
	7.20	238.05
	6.85	244.90
	7.50	252.40
	7.75	260.15
	8.55	268.70
	8.70	277.40
	7.20	284.60
	5.85	290.45
	8.00	298.45
	5.90	304.35
	7.10	311.45
	7.75	319.20
	6.90	326.10
	6.10	332.20
	8.70	340.90
	8.20	349.10
	9.15	358.25
	8.35	366.60
	8.75	375.35
	8.30	383.65
	7.85	391.50
	7.85	399.35
	8.45	407.80
	9.80	417.60
	9.30	426.90
	9.10	436.00
	9.30	445.30
	8.90	454.20
	7.85	462.05
	8.95	471.00
	6.15	477.15
TOTAL		477.15 t

NSW QUARRIES
NCS 503
12:42:32 Thu 30 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	9.80	9.80
	9.10	18.90
	9.95	28.85
	8.65	37.50
	8.50	46.00
	7.20	53.20
	7.65	60.85
	7.10	67.95
	6.85	74.80
	7.15	81.95
	8.00	89.95
	8.75	98.70
	9.80	108.50
	9.50	118.00
	8.90	126.90
	8.45	135.35
	7.90	143.25
	6.40	149.65
	5.85	155.50
	7.80	163.30
	8.35	171.65
	7.15	178.80
	8.70	187.50
	10.00	197.50
	9.70	207.20
	8.00	215.20
	7.10	222.30
	8.10	230.40
	8.60	239.00
	7.35	246.35
	8.10	254.45
	7.75	262.20
	8.10	270.30
	7.15	277.45
	6.70	284.15
	7.00	291.15
	6.60	297.75
	6.95	304.70
	8.25	312.95
	8.95	321.90
	8.95	330.85
	7.75	338.60
	7.55	346.15
	9.00	355.15
	9.85	365.00
	9.80	374.80
	9.30	384.10
	8.80	392.90
	8.10	401.00
	7.10	408.10
	6.55	414.65
	7.00	421.65
	5.25	426.90
	7.55	434.45
	7.20	441.65
	8.10	449.75
	7.10	456.85
	7.50	464.35
	6.15	470.50
	7.15	477.65
	9.15	486.80
	7.80	494.60
	8.20	502.80
	7.45	510.25
	6.10	516.35
	6.25	522.60
TOTAL		522.60 t

NSW QUARRIES
NCS 503
15:39:28 Thu 30 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.75	7.75
	8.50	16.25
	7.70	23.95
	7.40	31.35
	7.15	38.50
	8.15	46.65
	7.55	54.20
	7.05	61.25
	7.30	68.55
	6.55	75.10
	7.10	82.20
	7.60	89.80
	7.75	97.55
	6.35	103.90
	9.35	113.25
	7.85	121.10
	6.20	127.30
	6.05	133.35
	5.85	139.20
	7.05	146.25
	9.60	155.85
	9.80	165.65
	9.55	175.20
	7.80	183.00
	8.35	191.35
	7.60	198.95
	7.25	206.20
	9.60	215.80
	9.45	225.25
	8.00	233.25
	7.95	241.20
	7.45	248.65
	7.75	256.40
	8.30	264.70
	9.60	274.30
	8.85	283.15
	8.60	291.75
	7.45	299.20
	7.90	307.10
	8.20	315.30
	8.10	323.40
	8.25	331.65
	8.70	340.35
	7.30	347.65
	5.20	352.85
TOTAL		352.85 t

NSW QUARRIES
NCS 503
17:25:05 Thu 30 Mar 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x171	1352.60 t
TOTAL		1352.60 t

NSW QUARRIES
NCS 503
08:20:21 Tue 4 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	6.95	6.95
	6.80	13.75
	6.45	20.20
	6.05	26.25
TOTAL		26.25 t

NSW QUARRIES
NCS 503
08:25:45 Tue 4 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	8.65	8.65
	8.65	17.30
	8.20	25.50
	6.55	32.05
	7.50	39.55
	8.05	47.60
	8.75	56.35
	8.00	64.35
	8.30	72.65
	7.20	79.85
	7.30	87.15
	6.80	93.95
	7.15	101.10
	8.60	109.70
	9.15	118.85
	9.85	128.70
	9.05	137.75
	6.60	144.35
	5.55	149.90
TOTAL		149.90 t

NSW QUARRIES
NCS 503
09:08:00 Tue 4 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	5.15	5.15
	5.90	11.05
	3.80	14.85
	5.40	20.25
	5.40	25.65
TOTAL		25.65 t

NSW QUARRIES
NCS 503
09:14:44 Tue 4 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	8.35	8.35
	9.05	17.40
	8.40	25.80
	9.00	34.80
	7.40	42.20
	6.65	48.85
	7.80	56.65
	7.20	63.85
	5.65	69.50
	7.70	77.20
	6.95	84.15
	6.30	90.45
	6.00	96.45
	4.85	101.30
	4.55	105.85
	6.00	111.85
	8.60	120.45
	8.50	128.95
	7.75	136.70
	6.10	142.80
	7.40	150.20
	5.50	155.70
	8.00	163.70
	6.60	170.30
	7.95	178.25
	5.40	183.65
	5.20	188.85
	6.85	195.70
	6.20	201.90
TOTAL		201.90 t

NSW QUARRIES
NCS 503
11:06:38 Tue 4 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	9.65	9.65
	10.55	20.20
	10.55	30.75
	9.30	40.05
	8.15	48.20
	6.60	54.80
	6.65	61.45
	8.80	70.25
	8.50	78.75
	8.05	86.80
	7.20	94.00
	11.20	105.20
	9.90	115.10
	9.75	124.85
	9.20	134.05
	8.40	142.45
	7.10	149.55
TOTAL		149.55 t

NSW QUARRIES
NCS 503
11:54:00 Tue 4 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.05	7.05
	5.65	12.70
	6.85	19.55
	6.05	25.60
TOTAL		25.60 t

NSW QUARRIES
NCS 503
12:00:30 Tue 4 Apr 2023
BATCH :
TRUCK :

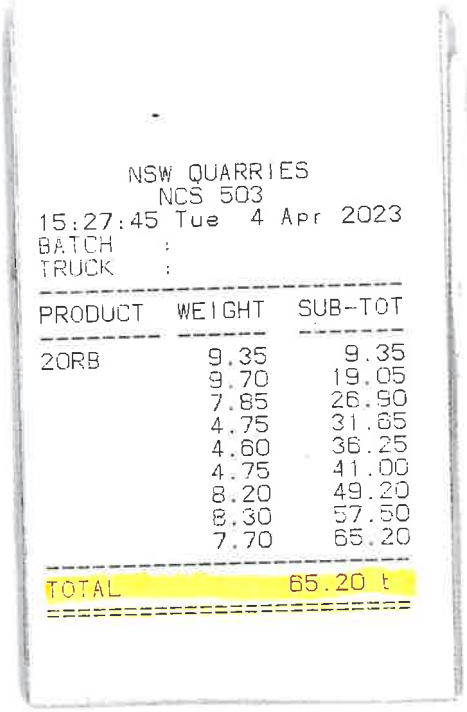
PRODUCT	WEIGHT	SUB-TOT
20RB	9.30	9.30
	9.70	19.00
	8.70	27.70
	8.35	36.05
TOTAL		36.05

NSW QUARRIES
NCS 503
12:17:04 Tue 4 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	10.30	10.30
	10.55	20.85
	10.65	31.50
	10.45	41.95
	9.50	51.45
	9.85	61.30
	7.70	69.00
	8.70	77.70
	8.45	86.15
	7.20	93.35
	6.15	99.50
	8.95	108.45
	7.45	115.90
	8.60	124.50
	9.25	133.75
	7.45	141.20
	9.25	150.45
	8.50	158.95
	6.70	165.65
	8.80	174.45
	7.50	181.95
	6.35	188.30
	9.15	197.45
	7.15	204.60
	8.45	213.05
	8.35	221.40
	8.20	229.60
	6.05	235.65
TOTAL		235.65 t

NSW QUARRIES
NCS 503
14:55:22 Tue 4 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	5.25	5.25
	5.45	10.70
	4.45	15.15
	5.40	20.55
TOTAL		20.55 t



NSW QUARRIES
NCS 503
15:27:45 Tue 4 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	9.35	9.35
	9.70	19.05
	7.85	26.90
	4.75	31.65
	4.60	36.25
	4.75	41.00
	8.20	49.20
	8.30	57.50
	7.70	65.20
TOTAL		65.20 t

NSW QUARRIES
NCS 503
16:18:01 Tue 4 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	9.60	9.60
	10.45	20.05
	9.65	29.70
	8.70	38.40
	8.65	47.05
	10.30	57.35
	9.25	66.60
	9.55	76.15
	9.75	85.90
	10.65	96.55
	10.15	106.70
	9.60	116.30
	9.90	126.20
	5.90	132.10
	9.40	141.50
	10.50	152.00
	10.75	162.75
	9.75	172.50
	9.35	181.85
	9.45	191.30
	9.05	200.35
	9.00	209.35
	8.25	217.60
	8.55	226.15
	10.25	236.40
	9.70	246.10
	7.00	253.10
	7.25	260.35
	6.70	267.05
	7.40	274.45
	6.70	281.15
	9.60	290.75
	9.25	300.00
	10.05	310.05
	10.00	320.05
	10.55	330.60
	11.40	342.00
	9.75	351.75
	9.80	361.55
	9.05	370.60
	8.25	378.85
	8.40	387.25
	10.15	397.40
	10.95	408.35
	9.45	417.80
	10.25	428.05
	10.00	438.05
	9.55	447.60
	7.15	454.75
	8.95	463.70
	8.20	471.90
TOTAL		471.90 t

NSW QUARRIES
NCS 503
18:34:44 Tue 4 Apr 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x170	1372.15 t
TOTAL		1372.15 t

+ 36.05 t

= TOTAL : 1408.2 t

NSW QUARRIES
NCS 503
18:35:10 Tue 4 Apr 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x170	1372.15 t
TOTAL		1372.15 t

+ 36.05 t

TOTAL : 1408.2 t


10:18
4G
Lake Munmorah
5 April 4:56 pm
Edit
NSW QUARRIES
NCS 503
17:58:25 Wed 5 Apr 2023
SUMMARY REPORT
PRODUCT
WEIGHT
20RB
x171 1477.25 t
TOTAL
1477.25 t

NSW QUARRIES
NCS 503
09:12:54 Fri 31 Mar 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.25	7.25
	6.90	14.15
	8.80	22.95
	9.65	32.60
	9.15	41.75
	9.80	51.55
	9.40	60.95
	9.65	70.60
	7.15	77.75
	7.50	85.25
	3.95	89.20
	4.05	93.25
	5.20	98.45
	3.30	101.75
	8.10	109.85
	8.65	118.50
	8.85	127.35
	8.90	136.25
	6.50	142.75
	6.40	149.15
	7.60	156.75
	7.55	164.30
	7.55	171.85
	9.70	181.55
	8.25	189.80
	8.65	198.45
	6.90	205.35
	4.55	209.90
	6.10	216.00

TOTAL 216.00

NSW QUARRIES
NCS 503
09:02:27 Mon 3 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	4.65	4.65
	7.20	11.85
	6.65	18.50
	6.30	24.80
	8.15	32.95
	6.50	39.45
	6.60	46.05
	7.15	53.20
	5.50	58.70
	6.15	64.85
	6.20	71.05
	5.70	76.75
	3.40	80.15
	4.55	84.70
	4.15	88.85
TOTAL		88.85 t

NSW QUARRIES
NCS 503
00:00:41 Tue ~~30 Nov 1999~~ 03/04/23
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	9.10	9.10
	9.90	19.00
	9.60	28.60
	9.90	38.50
	8.95	47.45
	7.30	54.75
	7.45	62.20
	6.65	68.85
	5.50	74.35
	6.40	80.75
	8.75	89.50
	7.50	97.00
	6.75	103.75
	6.55	110.30
	8.85	119.15
	9.65	128.80
	9.50	138.30
	8.60	146.90
	8.60	155.50
	6.95	162.45
	8.25	170.70
	8.00	178.70
	7.80	186.50
	6.75	193.25
	7.40	200.65
	7.55	208.20
	11.15	219.35
	8.30	227.65
	9.50	237.15
	9.60	246.75
	7.05	253.80
	9.30	263.10
	9.45	272.55
	9.00	281.55
	7.00	288.55
	7.50	296.05
	8.45	304.50
	9.55	314.05
	8.65	322.70
	9.10	331.80
	8.65	340.45
	9.25	349.70
	8.45	358.15
	8.85	367.00
	10.05	377.05
	8.50	385.55
	8.80	394.35
	7.65	402.00
	8.90	410.90
	7.55	418.45
	7.05	425.50
	8.30	433.80
	10.00	443.80
	9.30	453.10
	7.30	460.40
	8.30	468.70
	9.70	478.40
	9.80	488.20
	8.30	496.50
	8.55	505.05
	9.95	515.00
	9.30	524.30
	8.25	532.55
	9.40	541.95
	7.00	548.95
	8.35	557.30
	7.60	564.90
	7.75	572.65
	8.90	581.55
	9.10	590.65
	9.10	599.75
40MM	7.65	607.40
	-7.65	599.75
20RB	8.30	608.05
	6.80	614.85
TOTAL		614.85 t

NSW QUARRIES
NCS 503
00:01:49 Tue 30 Nov 1999
03/04/23

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x 88	703.70 t
TOTAL		703.70 t

NSW QUARRIES
NCS 503
00:00:05 Tue 30 Nov 1999

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x 88	703.70 t
TOTAL		703.70 t

NSW QUARRIES
NCS 503
09:22:27 Tue 11 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.35	7.35
	7.35	14.70
	8.75	23.45
	10.00	33.45
	8.25	41.70
	6.70	48.40
	7.95	56.35
	9.50	65.85
	8.30	74.15
	8.00	82.15
	8.65	90.80
	7.15	97.95
	7.10	105.05
	5.50	110.55
	8.55	119.10
	9.25	128.35
	8.75	137.10
	10.10	147.20
	9.80	157.00
	10.00	167.00
	10.55	177.55
	10.25	187.80
	9.50	197.30
	10.10	207.40
	10.70	218.10
	10.65	228.75
	10.00	238.75
	9.55	248.30
	10.15	258.45
	10.25	268.70
	9.35	278.05
	9.95	288.00
	7.50	295.50
	7.55	303.05
	8.85	311.90
	9.65	321.55
	8.60	330.15
	8.35	338.50
	8.50	347.00
	7.30	354.30
	7.35	361.65
	9.40	371.05
	9.35	380.40
	9.05	389.45
	8.40	397.85
	7.85	405.70
	9.15	414.85
	8.35	423.20
	8.75	431.95
	9.15	441.10
	10.10	451.20
	8.35	459.55
	9.10	468.65
	8.10	476.75
	8.20	484.95
	8.35	493.30
	6.85	500.15
	6.40	506.55
	6.70	513.25
TOTAL		513.25 t

NSW QUARRIES
NCS 503
15:21:39 Tue 11 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	7.55	7.55
	9.85	17.40
	9.75	27.15
	10.25	37.40
	9.75	47.15
	8.95	56.10
	8.90	65.00
	9.45	74.45
	8.45	82.90
	8.50	91.40
	9.20	100.60
	5.75	106.35
	6.85	113.20
	8.05	121.25
	8.00	129.25
	6.20	135.45
	7.55	143.00
	6.15	149.15
	7.85	157.00
	9.50	166.50
	10.30	176.80
	9.80	186.60
	8.60	195.20
	9.05	204.25
	7.85	212.10
	8.80	220.90
	9.10	230.00
	9.20	239.20
	6.60	245.80
	9.00	254.80
	9.55	264.35
	7.70	272.05
	9.35	281.40
	8.45	289.85
	7.75	297.60
	6.45	304.05
	9.00	313.05
	9.70	322.75
	7.10	329.85
	7.90	337.75
	10.45	348.20
	8.70	356.90
	8.95	365.85
	9.65	375.50
	8.60	384.10
	11.20	395.30
TOTAL		395.30 t

NSW QUARRIES
NCS 503
18:42:35 Tue 11 Apr 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x105	908.55 t
TOTAL		908.55 t

NSW QUARRIES
NCS 503
09:34:25 Wed 12 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	9.75	9.75
	9.80	19.55
	8.15	27.70
	9.35	37.05
	10.55	47.60
	10.85	58.45
	9.25	67.70
	7.40	75.10
	5.90	81.00
	6.90	87.90
	10.25	98.15
	11.35	109.50
	10.00	119.50
	11.75	131.25
	11.80	143.05
	6.55	149.60
	8.70	158.30
TOTAL		158.30 t

NSW QUARRIES
NCS 503
11:58:59 Wed 12 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	9.70	9.70
	10.95	20.65
	9.65	30.30
	7.75	38.05
	9.35	47.40
	10.80	58.20
	10.80	69.00
	9.30	78.30
	8.65	86.95
	8.00	94.95
	8.85	103.80
	6.10	109.90
	7.55	117.45
	7.40	124.85
	8.45	133.30
	8.50	141.80
	8.40	150.20
	8.55	158.75
	8.20	166.95
	8.15	175.10
	8.60	183.70
	8.65	192.35
	7.00	199.35
	8.80	208.15
	8.35	216.50
	8.55	225.05
	7.60	232.65
	8.15	240.80
	8.35	249.15
	8.90	258.05
	7.70	265.75
TOTAL		265.75 t

NSW QUARRIES
NCS 503
15:26:03 Wed 12 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	8.90	8.90
	9.25	18.15
	7.75	25.90
	5.85	31.75
	8.40	40.15
	9.50	49.65
	9.00	58.65
	11.00	69.65
	10.45	80.10
	8.80	88.90
	8.70	97.60
	7.15	104.75
	9.35	114.10
	9.70	123.80
	6.10	129.90
	9.00	138.90
	10.50	149.40
	11.80	161.20
	11.15	172.35
	11.00	183.35
	11.45	194.80
	10.35	205.15
	11.60	216.75
	11.00	227.75
	13.05	240.80
	10.30	251.10
	10.85	261.95
	9.70	271.65
	9.95	281.60
	11.55	293.15
	10.05	303.20
	10.80	314.00
	11.00	325.00
	12.10	337.10
	11.20	348.30
	8.05	356.35
	9.05	365.40
	8.85	374.25
	8.90	383.15
	9.05	392.20
	9.05	401.25
	9.25	410.50
	9.25	419.75
	8.80	428.55
	9.45	438.00
	7.40	445.40
	8.75	454.15
	8.10	462.25
TOTAL		462.25 t

NSW QUARRIES
NCS 503
18:34:39 Wed 12 Apr 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x 96	886.30 t
TOTAL		886.30 t

NSW QUARRIES
NCS 503
12:23:25 Thu 13 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	9.90	9.90
	9.10	19.00
	10.30	29.30
	7.50	36.80
	9.60	46.40
	10.55	56.95
	10.30	67.25
	10.85	78.10
	10.30	88.40
	9.75	98.15
	11.95	110.10
	10.45	120.55
	9.60	130.15
	9.35	139.50
	9.75	149.25
	9.65	158.90
	8.75	167.65
	8.55	176.20
	7.85	184.05
	8.30	192.35
	10.20	202.55
	9.05	211.60
	9.90	221.50
	10.45	231.95
	8.65	240.60
	8.85	249.45
	10.00	259.45
	9.10	268.55
	10.05	278.60
	9.45	288.05
	9.80	297.85
	8.30	306.15
	9.30	315.45
	8.95	324.40
	8.20	332.60
	8.40	341.00
	7.35	348.35
	8.30	356.65
	5.30	361.95
	7.70	369.65
	8.30	377.95
	8.35	386.30
	9.55	395.85
	9.05	404.90
	8.05	412.95
	9.35	422.30
	9.90	432.20
	9.55	441.75
	10.75	452.50
	10.65	463.15
	10.05	473.20
	8.20	481.40
	9.10	490.50
	8.10	498.60
	9.10	507.70
	8.80	516.50
	10.50	527.00
	9.30	536.30
	8.15	544.45
	9.55	554.00
	9.25	563.25
	9.10	572.35
	7.10	579.45
	8.35	587.80
	6.55	594.35
	8.00	602.35
	8.20	610.55
	5.55	616.10
	7.30	623.40
	8.45	631.85
	6.05	637.90
	8.10	646.00
	7.05	653.05
	9.00	662.05
	6.20	668.25
	7.85	676.10
	7.95	684.05
	6.05	690.10
	6.65	696.75
	6.30	703.05
TOTAL		703.05 t

NSW QUARRIES
NCS 503
18:10:57 Thu 13 Apr 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x 80	703.05 t
TOTAL		703.05 t

NSW QUARRIES
NCS 503
08:49:08 Fri 14 Apr 2023
BATCH :
TRUCK :

PRODUCT	WEIGHT	SUB-TOT
20RB	8.60	8.60
	10.10	18.70
	9.05	27.75
	7.25	35.00
	8.80	43.80
	10.85	54.65
	9.20	63.85
	6.30	70.15
	6.90	77.05
	7.60	84.65
	8.55	93.20
	9.95	103.15
	8.40	111.55
	8.50	120.05
	5.40	125.45
	7.95	133.40
	9.00	142.40
	8.05	150.45
	8.20	158.65
	6.35	165.00
	7.25	172.25
	7.00	179.25
	7.00	186.25
	7.80	194.05
	5.90	199.95
	6.70	206.65
	7.60	214.25
	7.90	222.15
	6.75	228.90
	8.70	237.60
	7.15	244.75
	8.90	253.65
	9.60	263.25
	8.50	271.75
	7.15	278.90
	5.75	284.65
	5.70	290.35
	7.80	298.15
	7.50	305.65
	8.25	313.90
	7.50	321.40
	7.75	329.15
	9.05	338.20
	8.30	346.50
	5.85	352.35
	7.05	359.40
	9.85	369.25
	7.15	376.40
	9.50	385.90
	7.20	393.10
	7.45	400.55
	8.60	409.15
	8.05	417.20
	6.20	423.40
	7.95	431.35
	7.85	439.20
	6.05	445.25
	6.30	451.55
	7.05	458.60
	7.00	465.60
	5.50	471.10
	4.90	476.00
	7.25	483.25
	6.75	490.00
	7.55	497.55
	4.85	502.40
	7.00	509.40
TOTAL		509.40 t

NSW QUARRIES
NCS 503
13:21:51 Fri 14 Apr 2023

SUMMARY REPORT

PRODUCT		WEIGHT
20RB	x 67	509.40 t
TOTAL		509.40 t

Appendix F

Photographic Log

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

Date:	Plate No:
10/03/23	**Plate 1**

Description:
AEC4 Concrete Slab

Direction Photo Taken:
North



Photographic Log

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

Date:	Plate No:
10/03/23	**Plate 2**

Description:
Typical concrete validation sample (AEC4-CC-V3)

Direction Photo Taken:
N/A



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
10/03/23	**Plate 3**

Description:
H13 Area

Direction Photo Taken:
Northwest



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
10/03/23	**Plate 4**

Description:
10 L sample (H13-V1B) 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-EA

Date:	Plate No:
	Plate 5

Description:
Typical clayey sand at H13

Direction Photo Taken:
N/A



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
10/03/23	**Plate 6**

Description:
F9 Area

Direction Photo Taken:
Northwest



Photographic Log

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

Date:	Plate No:
10/03/23	**Plate 7**

Description:
10 L sample (F9-V1B) over contrasting material.

Direction Photo Taken:
N/A



Photographic Log

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

Date:	Plate No:
10/03/23	**Plate 8**

Description:
CS108 area

Direction Photo Taken:
Northwest



Photographic Log

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

Date:	Plate No:
10/03/23	**Plate 9**

Description:
10 L sample (CS108-V1B) over contrasting material.

Direction Photo Taken:
N/A



Photographic Log

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

Date:	Plate No:
10/03/23	**Plate 10**

Description:
Typical clayey sand at CS108

Direction Photo Taken:
N/A



Photographic Log

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

Date:	Plate No:
10/03/23	**Plate 11**

Description:
Western Settling Basin During Sediment Excavation

Direction Photo Taken:
Northeast



Photographic Log

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

Date:	Plate No:
18/04/23	**Plate 12**

Description:
Stockpiled material on the northeast of the site

Direction Photo Taken:
Northeast



Photographic Log

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

Date:	Plate No:
18/04/23	**Plate 13**

Description:
Ongoing remediation works on the northeast of the site

Direction Photo Taken:
East



Photographic Log

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

Date:	Plate No:
18/04/23	**Plate 14**

Description:
Northeast of the site

Direction Photo Taken:
Northwest



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
18/04/23	**Plate 15**

Description:
Western Site Surface

Direction Photo Taken:
West



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
18/04/23	**Plate 16**

Description:
Western Site Surface

Direction Photo Taken:
Northwest



Photographic Log

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

Date:	Plate No:
18/04/23	**Plate 17**

Description:
Typical Soil Profile in Western Site Surface

Direction Photo Taken:
N/A



Photographic Log

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

Date:	Plate No:
18/04/23	**Plate 18**

Description:
Concrete stockpile in AEC4

Direction Photo Taken:
North



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
18/04/23	**Plate 19**



Description:
Perimeter Channel panoramic view on the north end of the site

Direction Photo Taken:
North

CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
18/04/23	**Plate 20**



Description:
Eastern Site Surface

Direction Photo Taken:
East

Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 21**

Description:
Site Surface on the south-eastern side of the site

Direction Photo Taken:
East



Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 22**

Description:
Eastern Site Surface

Direction Photo Taken:
West



Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 23**

Description:
Eastern Site Surface

Direction Photo Taken:
North



Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 24**

Description:
Northern Site Surface

Direction Photo Taken:
North-west



Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 25**

Description:
Typical Soil Surface on the northern side of the site

Direction Photo Taken:
N/A



Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 26**

Description:
Perimeter Channel after removal of concrete base panoramic view.

Direction Photo Taken:
East



Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 27**

Description:
Perimeter Channel after removal of concrete base.

Direction Photo Taken:
Northeast



Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 28**

Description:
Coal fragments observed on the eastern boundary surface – example of localised pockets.

Direction Photo Taken:
East



Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 29**

Description:
PFAS contaminated materials management/storage area

Direction Photo Taken:
Northeast



Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 30**

Description:
Access to PFAS Management Area

Direction Photo Taken:
East



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 31**

Description:
Bunded PFAS contaminated material/storage area

Direction Photo Taken:
South



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 32**

Description:
"Red Tip"

Direction Photo Taken:
South



Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 33**

Description:
Spill response kit on GPM Landholding Storage Area

Direction Photo Taken:
N/A



Photographic Log

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

Date:	Plate No:
21/04/23	**Plate 34**

Description:
"Orange Tip"

Direction Photo Taken:
West



Photographic Log

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

Date:	Plate No:
27/04/23	**Plate 35**

Description:
Perimeter Channel along the northern side after removal of concrete base.

Direction Photo Taken:
North



Photographic Log

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

Date:	Plate No:
27/04/23	**Plate 36**

Description:
Northern site surface

Direction Photo Taken:
East



Photographic Log

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

Date:	Plate No:
27/04/23	**Plate 37**

Description:
Panoramic view northern section of the site

Direction Photo Taken:
West



Photographic Log

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

Date:	Plate No:
27/04/23	**Plate 38**

Description:
10 L sample (SP7-V2) over contrasting material.

Direction Photo Taken:
N/A



Photographic Log

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

Date:	Plate No:
27/04/23	**Plate 39**

Description:
Stockpile SP7 footprint

Direction Photo Taken:
East



Photographic Log

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

Date:	Plate No:
27/04/23	**Plate 40**

Description:
Stockpile SP5 footprint

Direction Photo Taken:
East



Photographic Log

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

Date:	Plate No:
27/04/23	**Plate 41**

Description:
Stockpile SP3 footprint

Direction Photo Taken:
East



Photographic Log

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

Date:	Plate No:
27/04/23	**Plate 42**

Description:
Stockpile SP6 footprint

Direction Photo Taken:
South



Photographic Log

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

Date:	Plate No:
27/04/23	**Plate 43**

Description:
Commencement of AEC4 Remediation Excavations. Concrete pipe/storm drain observed and removed.

Direction Photo Taken:
South



Photographic Log

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

Date:	Plate No:
28/04/23	**Plate 44**

Description:
Unexpected finding. UST found on the northern wall of the AEC4 excavations. No impacted soils were observed. Strong diesel odour was perceived.

Direction Photo Taken:
East



Photographic Log

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

Date:	Plate No:
28/04/23	**Plate 45**

Description:
UST was observed to be filled with a grout and no fuel/diesel observed or spills observed.

Direction Photo Taken:
East



Photographic Log

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

Date:	Plate No:
28/04/23	**Plate 46**

Description:
Pull out tank operations

Direction Photo Taken:
West



Photographic Log

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

Date:	Plate No:
28/04/23	**Plate 47**

Description:
UST after removal from AEC4 area. UST is filled with a grout and heavily damaged on the side. UST approximate dimensions: Diameter 2m and length 3.8 m

Direction Photo Taken:
West



Photographic Log

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

Date:	Plate No:
28/04/23	**Plate 48**

Description:
UST base observed with minimal damage

Direction Photo Taken:
North



Photographic Log

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

Date:	Plate No:
28/04/23	**Plate 49**

Description:
UST remediation excavations. Approximately 72 m^2 and 2.9 m depth

Direction Photo Taken:
North



Photographic Log

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

Date:	Plate No:
28/04/23	**Plate 50**

Description:
AEC4 Remediation Excavations

Direction Photo Taken:
North



Photographic Log

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

Date:	Plate No:
03/05/23	**Plate 51**

Description:
Western Settling Basin

Direction Photo Taken:
Northeast



Photographic Log

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

Date:	Plate No:
03/05/23	**Plate 52**

Description:
Additional remediation excavations Stockpile SP5 footprint (SP5-V5-2)

Direction Photo Taken:
North



Photographic Log

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

Date:	Plate No:
03/05/23	**Plate 53**

Description:
10 L sample (SP5-V5-2) over contrasting material

Direction Photo Taken:
N/A



Photographic Log

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

Date:	Plate No:
03/05/23	**Plate 54**

Description:
Additional remediation excavations on the southeast (SS-V3-2)

Direction Photo Taken:
Southeast



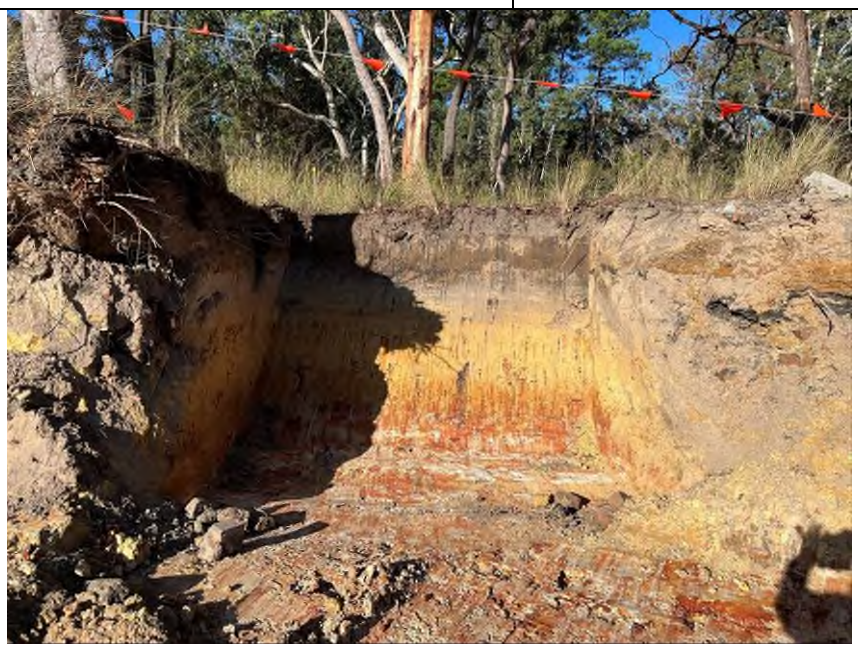
Photographic Log

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

Date:	Plate No:
03/05/23	**Plate 55**

Description:
Additional AEC4 remediation excavations on the east wall (AEC4-V10W-2)

Direction Photo Taken:
East



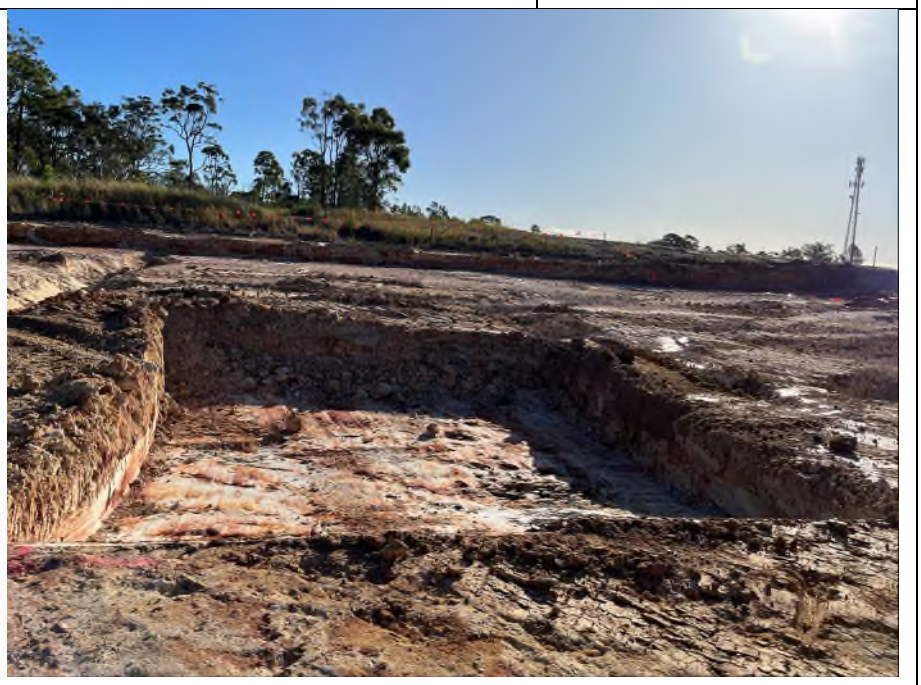
Photographic Log

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

Date:	Plate No:
03/05/23	**Plate 56**

Description:
Additional AEC4 remediation excavations on the base (AEC4-V6B-2B)

Direction Photo Taken:
East



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
01/05/23	**Plate 57**

Description:
Direct buried electrical cables

Direction Photo Taken:
North



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
01/05/23	**Plate 58**

Description:
Western Site Surface

Direction Photo Taken:
North east



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
01/05/23	**Plate 59**

Description:
Western Site Surface

Direction Photo Taken:
North east



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
01/05/23	**Plate 60**

Description:
Western Site Surface

Direction Photo Taken:
North west



CONSULTING EARTH SCIENTISTS

Photographic Log

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

Date:	Plate No:
01/05/23	**Plate 61**

Description:
Western Settling Basin Spillway

Direction Photo Taken:
South



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Photographic Log

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

Date:	Plate No:
04/05/23	**Plate 62**

Description:
Perimeter Channel residual channel and bunding

Direction Photo Taken:
East



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Photographic Log

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

Date:	Plate No:
04/05/23	**Plate 63**

Description:
Destroyed UST



Direction Photo Taken:
Unknown

CONSULTING EARTH SCIENTISTS

Photographic Log

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

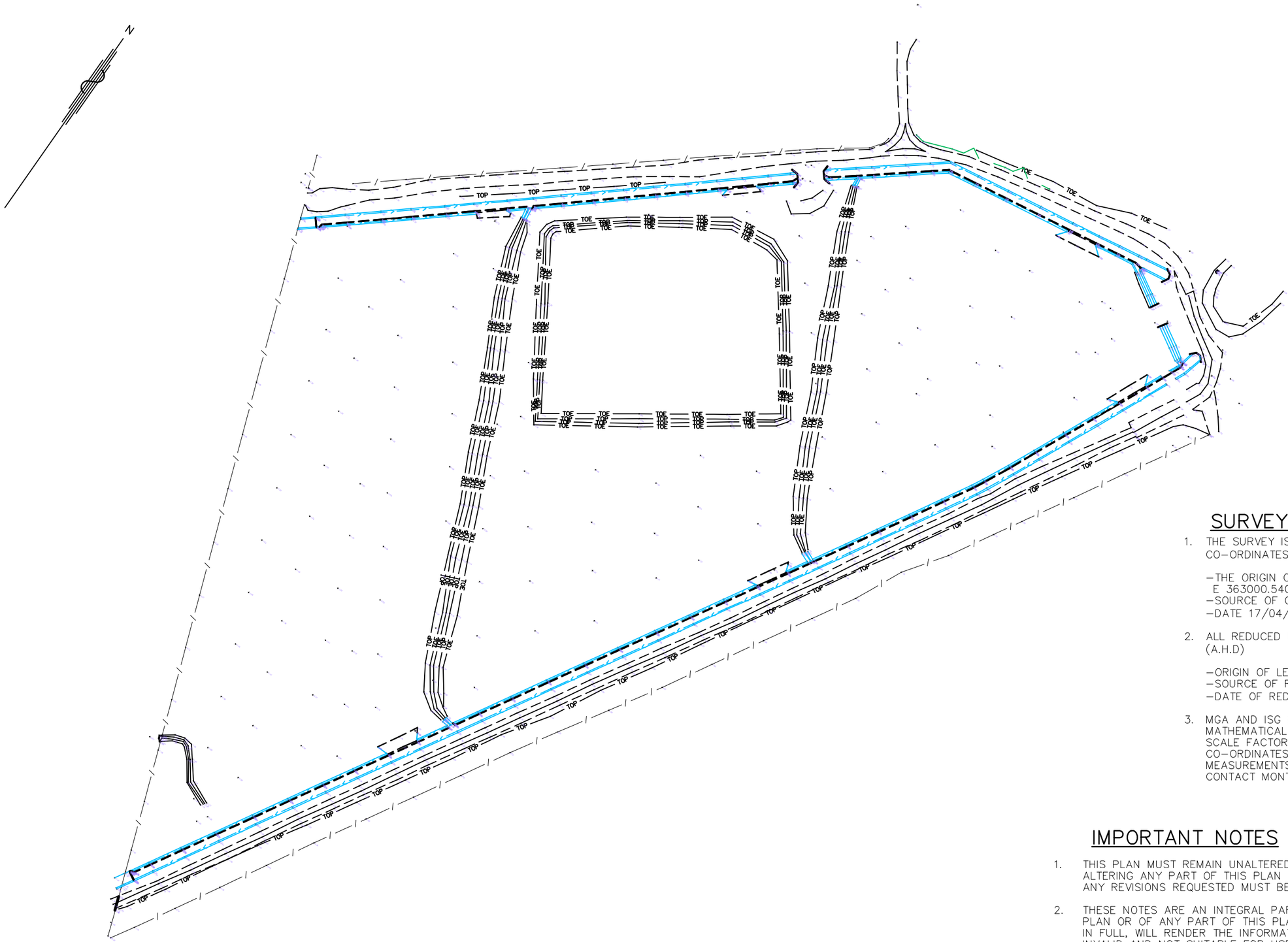
Date:	Plate No:
24/05/23	**Plate 64**

Description:
PFAS Impacted Materials Temporary Storage Area



Direction Photo Taken:
South west

Appendix G



SURVEY INFORMATION

1. THE SURVEY IS ON MAP GRID OF AUSTRALIA (MGA) CO-ORDINATES (GDA 94) ZONE 56.

   -THE ORIGIN OF CO-ORDINATES IS PM 32013
   E 363000.540 N 6324283.745
   -SOURCE OF CO-ORDINATES: SCIMS
   -DATE 17/04/2020

2. ALL REDUCED LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (A.H.D)

   -ORIGIN OF LEVELS PM 32013. RL29.269
   -SOURCE OF REDUCED LEVELS: SCIMS
   -DATE OF REDUCED LEVELS 17/04/2020

3. MGA AND ISG CO-ORDINATE SYSTEMS ARE BASED ON A MATHEMATICAL EARTH MODEL AND SUBJECT TO VARIABLE SCALE FACTORS. DISTANCES CALCULATED FROM CO-ORDINATES MAY VARY SIGNIFICANTLY FROM GROUND MEASUREMENTS. IF FURTHER CLARIFICATION IS REQUIRED CONTACT MONTEATH AND POWYS.

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REVISIONS

No	REVISION	SVY	DFT	CHK	DATE
2	SPOT LEVELS ADDED TO PLAN	LM	MAK	BJB	10/05/23
1	ISSUE TO CLIENT	LM	MAK	BJB	05/05/23

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P (02) 4926 1388
NEWCASTLE SYDNEY GUNNEDAH MUSWELLBROOK

Surveyed	Drafted	Checked
LM	MAK	BJB

REGISTERED SURVEYOR

@A3 : 1:1500 | Original Size A3

DO NOT SCALE

Client: GPM

Title: PLAN OF CONTAMINATED STOCKPILE AREA
MUNMORAH POWER STATION
MUNMORAH

CAD File: 170050o_02 | Ref No: 17/0050 | Date: 11/04/2023

Sheet No. 1/1

Revision 2

Material Test Report

Douglas Partners
Geotechnics / Environment / Groundwater
Douglas Partners Pty Ltd
Central Coast Laboratory
Unit 5/3 Teamster Close Tuggerah NSW 2259
Phone: (02) 4351 1422
Email: aden.greentree@douglaspartners.com.au

Report Number:	**217307.03-3**
Issue Number:	1
Date Issued:	10/05/2023
Client:	Generator Property Management Pty Ltd 301 Scenic Drive, Doyalson NSW 2262
Contact:	Dougal Mulvey
Project Number:	217307.03
Project Name:	Munmorah Power Station Backfilling of Coal Bunker
Project Location:	Munmorah Power Station, COLONGRA NSW
Work Request:	7087
Date Sampled:	31/03/2023 9:00
Dates Tested:	31/03/2023 - 05/04/2023
Sampling Method:	AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Preparation Method:	AS 1289.1.1 - Sampling and preparation of soils
Location:	coal bunker colonial power station
Material:	Clay

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aden Greentree
Laboratory Manager
Laboratory Accreditation Number: 828

Compaction Control AS 1289 5.1.1 & 5.4.1 & 5.8.1 & 2.1.1					
Sample Number	CC-7087A	CC-7087B	CC-7087C	CC-7087D	CC-7087E
Date Tested	31/03/2023	31/03/2023	31/03/2023	31/03/2023	31/03/2023
Time Tested	13:40	13:50	14:00	14:15	14:30
Test Request #/Location	Clay capped stockpile storage area	Clay capped stockpile storage area	Clay capped stockpile storage area	Clay capped stockpile storage area	Clay capped stockpile storage area
Chainage (m)	**	**	**	**	**
Location Offset (m)	**	**	**	**	**
Layer / Reduced Level	clay capping	clay capping	clay capping	clay capping	clay capping
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	Clay	Clay	Clay	Clay	Clay
Test Depth (mm)	300	300	300	300	300
Fraction Tested (mm)	19.0	19.0	19.0	19.0	19.0
Oversize (wet basis) %	0	0	0	0	0
Oversize (dry basis) %	0	0	0	0	0
Curing Hours	2.8	27.0	3.0	16.9	23.0
Method used to Determine Plasticity	Visual Assessment	Visual Assessment	Visual Assessment	Visual Assessment	Visual Assessment
Field Wet Density t/m^3	2.02	1.91	2.20	1.70	1.56
Field Moisture Content %	16.0	11.3	8.0	8.7	10.3
Field Dry Density t/m^3	1.75	1.71	2.04	1.57	1.41
Maximum Dry Density t/m^3	1.90	1.77	2.01	1.57	1.59
Adjusted Maximum Dry Density t/m^3	**	**	**	**	**
Optimum Moisture Content (OMC) %	9.5	13.0	10.0	11.0	11.0
Adjusted Optimum Moisture Content (OMC) %	**	**	**	**	**
Moisture Variation %	-6.5	1.5	2.0	2.0	1.0
Moisture Ratio %	167.0	87.0	78.0	79.5	92.0
Density Ratio %	**92.0**	**96.5**	**101.5**	**100.0**	**88.5**
Compaction Method	**Standard**	**Standard**	**Standard**	**Standard**	**Standard**

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

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Results relate only to the items tested/sampled.

Material Test Report

Douglas Partners
Geotechnics / Environment / Groundwater
Douglas Partners Pty Ltd
Central Coast Laboratory
Unit 5/3 Teamster Close Tuggerah NSW 2259
Phone: (02) 4351 1422
Email: aden.greentree@douglaspartners.com.au

Report Number:	**217307.03-11**
Issue Number:	1
Date Issued:	16/05/2023
Client:	Generator Property Management Pty Ltd 301 Scenic Drive, Doyalson NSW 2262
Contact:	Dougal Mulvey
Project Number:	217307.03
Project Name:	Munmorah Power Station Backfilling of Coal Bunker
Project Location:	Munmorah Power Station, COLONGRA NSW
Work Request:	7175
Date Sampled:	03/05/2023 8:00
Dates Tested:	03/05/2023 - 03/05/2023
Sampling Method:	AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Preparation Method:	AS 1289.1.1 - Sampling and preparation of soils
Material:	sandy clay

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aden Greentree
Laboratory Manager
Laboratory Accreditation Number: 828

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	CC-7175H		
Date Tested	03/05/2023		
Time Tested	15:16		
Test Request #/Location	ash clay capped stockpile area		
Chainage (m)	**		
Location Offset (m)	**		
Layer / Reduced Level	clay capping layer		
Thickness of Layer (mm)	300		
Soil Description	Clay		
Test Depth (mm)	300		
Sieve used to determine oversize (mm)	19.0		
Percentage of Wet Oversize (%)	0		
Field Wet Density (FWD) t/m^3	2.21		
Field Moisture Content %	10.2		
Field Dry Density (FDD) t/m^3	2.01		
Peak Converted Wet Density t/m^3	2.17		
Adjusted Peak Converted Wet Density t/m^3	**		
Moisture Variation (Wv) %	2.5		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	**101.5**		
Compaction Method	**Standard**		
Report Remarks	**		

Moisture Variation Note:
Positive values = test is dry of OMC
Negative values = test is wet of OMC

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Results relate only to the items tested/sampled.

Appendix H

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Tuggerah NSW 2259
Phone (02) 4351 1422

Summary of Geotechnical Inspections and Testing

Client	Generator Property Management Pty Ltd	**Project No.**	217307.03
Attention	Dougal Mulvey	**Date**	12 May 2023
Subject	Geotechnical Inspections	**Doc No.**	R.001.Rev0
Project	Munmorah Power Station Backfilling of Coal Bunker		
Address	Munmorah Power Station, Colongra		

1. Introduction

Douglas Partners Pty Ltd (DP) has recently carried out geotechnical inspections and testing under 'Level 1' conditions as defined in AS 3798 (2007) during backfilling of a coal bunker in connection with the redevelopment of the site for the proposed Waratah Super Battery (WSB) at the former Munmorah Power Station, Colongra. The work was commissioned by Generator Property Management Pty Ltd (GPM).

This report summarises the Level 1 inspections and testing carried out as part of the earthworks and site preparation for backfilling of the coal bunker. The earthworks were carried out with reference to a methodology/specification prepared by DP (DP, 2023).

The purpose of the Level 1 operation was to classify the backfilled areas within and adjacent to the coal bunker as 'controlled' fill, allowing for footings for the proposed WSB to be supported within the fill. It is noted that other earthworks will be required for the WSB project across a larger area, but that the coal bunker is a feature of the former Munmorah Power Station located within the WSB site which required targeted backfilling prior to site handover by GPM.

2. Background

The coal bunker was a reinforced concrete tunnel structure that was approximately 140 m long by 14 m wide and up to approximately 6 m deep. The following is a summary of the works undertaken by GPM in relation to backfilling of the coal bunker:

- The coal bunker was partially demolished, with the roof and side walls removed to a depth of approximately 2 m below design finished surface levels;
- To allow for the partial demolition of the coal bunker, the area adjacent to the side walls was excavated and benched to provide support for the excavation and access for machinery;
- The bottom portion of the side walls and base of the tunnel remained in place, with drainage along the inside edges of the walls;
- Crushed concrete was used to fill to a height of approximately 3 m above the base of the bunker. The crushed concrete was placed in 10 layers that were approximately 300 mm thick, with the final layer (Layer 11) approximately 50 mm thick. The crushed concrete material was sourced from the crushing/screening of concrete from the partial demolition of the bunker; and

- Site won 'general fill' material was then used to backfill over the crushed concrete fill over the coal bunker and the over excavated benches adjacent to the coal bunker. This was carried out to reinstate the bunker area to match existing surface levels of the surrounding area. Approximately 1.8 m of 'general fill' material was placed in six layers that were each approximately 300 mm thick.

3. Specification for Works

The following earthworks methodology/specification was recommended in DP (2023):

"It is recommended that backfilling of the coal bunker be undertaken in general accordance with the following methodology:

- *Following completion of demolition, and prior to backfilling operations commencing, a geotechnical representative from DP shall inspect the surface to receive fill - **HOLD POINT**;*
- *Place and compact crushed concrete material in uniform, near horizontal layers with a maximum loose thickness of 300 mm. Each layer to be compacted to a dry density ratio of at least 98% Standard compaction (AS1289.5.1.1:2017). The material shall be placed with a moisture ratio of between 60% and 100% of its optimum moisture content for Standard compaction;*
- *The crushed concrete material shall be placed and tested under 'Level 1' conditions as described in Section 8.2 of AS 3798 (2007), with the minimum frequency of field density testing as per Table 1 - **TEST POINT**;*
- *Proof roll the surface of each layer of crushed concrete fill following compaction with a smooth drum/pad foot roller having a static weight of at least 12 tonnes or a fully loaded pneumatic tyred water cart or dump truck. The proof roll shall be undertaken in the presence of a geotechnical representative from DP to check for any soft or compressible zones which may require over-excavation and replacement or reconditioning - **WITNESS POINT**;*
- *Prior to placement of site won 'general fill' material over the crushed recycled concrete, a geotechnical representative from DP shall inspect the surface to receive fill to assess whether a geotextile separation layer is required.- **HOLD POINT**;*
- *Prior to placement of site won 'general fill' material over the excavated benches adjacent to the coal bunker, a geotechnical representative from DP shall inspect/test the surface to receive fill – **HOLD POINT**;*
- *Proof roll the surface of the excavated benches adjacent to the bunker with a smooth drum roller having a static weight of at least 12 tonnes or a fully loaded pneumatic tyred water cart or tipper truck. The proof roll shall be undertaken in the presence of a geotechnical representative from DP to check for any soft or compressible zones which may require over-excavation and replacement or reconditioning - **HOLD POINT**;*
- *Place and compact general fill in uniform horizontal layers with a maximum loose thickness of 300 mm. Each layer to be compacted to a dry density ratio of at least 98% Standard compaction (AS1289.5.1.1:2017), for material at least 1 m below design subgrade levels, and at least 100% Standard compaction for any material placed within 1 m of design subgrade levels. The material shall be placed with moisture variation in the range of -3% to +1% of the optimum moisture content for Standard compaction – **TEST POINT**;*
- *Progressively bench the sides of the excavation areas with successive benches not more than 0.5 m high, and with a near horizontal surface at least 1 m wide (to result in an approximately 2H:1V tie-in of the fill); and*

- *The general fill shall be placed and tested under 'Level 1' conditions as described in Section 8.1 of AS 3798 (2007), with the minimum frequency of field density testing as per Table 1-* ***WITNESS POINT****.*

Further, it is noted that at the level where the bunker has been demolished to, an overhanging portion of concrete extends laterally (up to approximately 1 m) inside the bunker and will prevent compaction using rollers, refer Table 1. Once rollers are unable to be used directly adjacent to the walls, the crushed concrete material should be pushed in laterally to fill any voids beneath the overhanging portion of concrete. The material should then be compacted by tamping with an excavator bucket. Once levels have reached the top of the bunker walls, then extra attention should also be given to rolling/compacting the crushed concrete material adjacent to the overhanging portion of the bunker walls."

3.1 Compaction Requirements and Earthworks Supervision/Testing

The material quality, compaction requirements and level of earthworks supervision/testing are presented in Table 1, which is reproduced from DP (2023).

Table 1: Compaction Requirements and Earthworks Supervision/Testing

Layer	Material Quality	Compaction	Moisture Requirement	Level of Supervision / Testing and Minimum Frequency of Field Density Tests (1)
Crushed Concrete	Crushed concrete from demolition of bunker, with: • Deleterious material (e.g. reinforcing steel, vegetation, roots, coal reject) removed; and • Maximum particle size of 75 mm.	Minimum 98% Standard compaction	Moisture ratio within 60% to 100% of OMC	Level 1, 1 test per 50 l/m, and with a test within 5 m of each end of the layer
General Fill (below bunker walls)	Site won material, with: • Deleterious material (e.g. vegetation, roots, coal reject) removed; and • Maximum particle size of 100 mm. • Minimum 4 day soaked CBR value of 4% in top 150 mm below design subgrade level.	Minimum 98% Standard compaction	Moisture content within -3% to +1% of OMC	Level 1, 1 test per 50 l/m, and with a test within 5 m of each end of the layer
General Fill (above bunker walls)		Minimum 98% Standard Compaction for material >1 m below design subgrade levels. Minimum 100% Standard Compaction for the upper 1 m, where encroached	Moisture content within -3% to +1% of OMC	Level 1, 1 test per 2,000m^2, or 1 test per 400m^3, or at least 3 tests per layer/day (whichever requires the most tests)

Notes to table:

(1) - In accordance with AS 3798 (2007).

Whilst a minimum compaction target and range for moisture content was given for the crushed concrete, it was acknowledged that this was unlikely to be achieved due to the oversized fraction which was outside of that covered by the test method. Accordingly, greater emphasis was to be given to the performance of the material, and hence the requirement to proof roll each layer of crushed concrete fill.

4. Site Inspections

4.1 Base of Coal Bunker Prior to Receiving Fill

Prior to any fill being placed, a geotechnical engineer and geotechnician from DP inspected the surface of the coal bunker to receive fill on 24 March 2023. This was to determine the suitability of the surface to receive fill as per the hold point in DP (2023).

The surface to receive fill comprised the concrete base slab of the coal bunker. The surface was observed to be clean and free of debris, with the exception of a pile of reinforcing steel that was yet to be removed. The surface was deemed suitable for the placement of crushed concrete fill material.

A photograph of the base of the coal bunker is presented in Figure 1.



Figure 1: Photograph of the base of the coal bunker prior to placement of crushed concrete fill material, taken 24 March 2023.

4.2 Crushed Concrete Material

4.2.1 Material Quality

Based on a visual inspection and tactile assessment, the crushed/screened concrete had a maximum particle size of approximately 75 mm, with approximately 50% of the material having a particle size less than 20 mm and between approximately 20% to 30% of the material having a particle size of greater than 40 mm.

The crushed concrete fill was placed in a total of 11 layers. The first 10 layers were generally about 300 mm thick, and the final layer (Layer 11) was a correction layer and approximately 50 mm thick. The material was compacted using a 12 tonne pad foot roller. The overall thickness of the crushed concrete fill was approximately 3 m.

A photograph showing placement of the crushed concrete material is shown in Figure 2.



Figure 2: Photograph showing placement of the crushed concrete material, taken 4 April 2023.

The crushed concrete material was considered suitable for use as fill, however, due to the percentage of oversize material, density testing was generally outside of the Australian Standard test method. Accordingly, the results of the tests have inherent inaccuracies, and these tests were not to be relied upon as the sole measure of compaction and suitability of the material.

4.2.2 Compaction Testing

Crushed concrete fill was placed and compacted in layers during the period 27 March and 28 April 2023. The fill was placed during the full-time presence of an earthworks technician from DP. Density testing was carried out on eight of the 11 layers of fill at the frequency specified in DP (2023). The density testing results are attached. It is noted that the first layer (Layer 1) of crushed concrete fill was not tested as it was deemed to be a bridging/correction layer over the bunker base slab. Layer 10 was not tested having been placed without DP being present, and testing of Layer 11 was considered unnecessary due to this being only approximately 50 mm thick.

A total of 39 tests were carried out on the crushed concrete fill material placed at the site, with the following results recorded:

- Compaction 84% to 108.5% Standard density ratio
- Moisture variation 4% Dry to 3.5% Wet of OMC

The compaction results were highly variable, and typically did not achieve the target density ratio of 98% Standard compaction. This was considered to be due to the oversized fraction being greater than that allowed for in the test method rather than a lack of compactive effort. Therefore, the density results were not solely relied upon to give an indication of the compaction of each layer, with greater emphasis given to the performance of each layer during proof rolling.

4.2.3 Proof Rolling

Proof rolling of each layer of crushed concrete material was carried out in the presence of a geotechnical engineer or geotechnician from DP. The proof rolling was carried out using a fully loaded articulated dump truck with pneumatic tyres.

Minimal to no perceptible deflections were observed due to the passage of the dump truck at the surface of each layer. Based on the performance of the crushed concrete during proof rolling, the material was deemed to be suitably compacted.

4.3 Site Won Material

4.3.1 Inspection of Surface to Receive Fill

Inspections of the surface of the top layer of crushed concrete fill within the coal bunker and also the excavated benches adjacent to the coal bunker were undertaken on 25 and 27 April 2023 by a geotechnical engineer or geotechnician from DP. An inspection be a senior geotechnical engineer was carried out on 26 April 2023 to:

- Determine the suitability of the crushed concrete backfill within the coal bunker for placement of general fill, and the need for a geotextile separation layer as per the hold point in DP (2023);
- Inspect the excavated benches adjacent to the coal bunker to check suitability for placement of general fill as per the hold point in DP (2023); and
- Check the suitability of the general fill material for continuation of the fill operation.

Based on the observations made during the inspections, the following advice was provided in an email dated 27 April 2023:

"The crushed concrete backfill was observed to perform well under the passage of construction machinery including a 12 tonne pad foot roller, a D10 Dozer and an articulated dump truck. The surface was relatively 'tight' with small depressions holding water (indicating that there was an appreciable content of fines). Based on the conditions observed and the performance of this material, it was considered that the crushed concrete was suitable for the placement of general fill and that a geotextile separation layer was not necessary.

Inspection of the benches was carried out, and it was observed that the bench along the western side of the coal bunker was excessively wet as a result of rain that fell the previous weekend. A proof roll was carried out over part of the western bench, and this was observed to perform relatively poorly. Consequently, it was recommended that the western bench be stripped of wet material to expose more competent material. This was generally expected to be about 200mm deep alongside the bunker, and reducing to a depth of about 100mm approximately 5-8m away from the bunker. Pockets of locally deeper compressible material were observed immediately adjacent to the bunker and these were discussed with site personnel and noted for deeper removal. This area was stripped as discussed, and was inspected by a geotechnician from DP this morning, at which time it was assessed to be suitable for placement of general fill. The geotechnician had also observed the stripping and preparation works carried out along the eastern side of the bunker, and this was also considered to be suitable for placement of general fill."

Photographs of the surface of the top layer of crushed concrete fill within the coal bunker and the excavated benches adjacent to the coal bunker prior to receiving 'general fill' are presented in Figure 3 and Figure 4.



Figure 3: Photograph showing typical conditions of excavated surface adjacent to bunker, taken 12 April 2023.



Figure 4: Photograph showing the top layer of crushed concrete fill and surface of excavated benches adjacent to the coal bunker prior to the placement of 'general fill', taken 26 April 2023.

4.3.2 Material Quality

The site won 'general fill' material typically comprised an orange/brown/grey sandy clay fill material that had been excavated from adjacent to the coal bunker or from other cut areas at the site.

The site won 'general fill' material was placed in six layers generally about 300 mm thick and was compacted using a 12 tonne pad foot roller. The overall thickness of the 'general fill' material was approximately 1.8 m.

A photograph showing placement of the site won 'general fill' material is shown in Figure 5.



Figure 5: Photograph showing placement of the site won 'general fill' material, taken 1 May 2023.

4.3.3 Compaction Testing

Clay soil used as 'general fill' was placed and compacted in layers during the period 27 April and 5 May 2023. The fill was placed during the full-time presence of an earthworks technician from DP. Density testing was carried out on five of the six layers of fill at the frequency specified in DP (2023). The density testing results are attached. It is noted that the second layer (Layer 2) of 'general fill' material was not tested because DP was present on site and had not been notified by the earthworks contractor that this layer was placed prior to placement of overlying layers, and .

A total of 30 tests were carried out on the site won 'general fill' material placed at the site, with the following results recorded:

- Compaction 96.5% to 106.0% Standard density ratio
- Moisture variation 0.5% Dry to 3% Wet of OMC

Typically, compaction achieved at least 100% Standard density ratio, with 27 of the 30 samples tested being over 100% Standard compaction. The lower compaction results were recorded in a subgrade replacement layer and in Layer 1 of the clay fill, however, the moisture content for these tests were very close to the optimum value, and all other tests for the layers above achieved 100% Standard compaction. As such, these slight departures from the specified compaction target are not considered to be consequential.

5. Conclusion

The inspections and earthworks testing were in general accordance with a 'Level 1' standard as defined in AS 3798 (2007).

On the basis of the above, it is considered that the placement and compaction of the backfill has been in general accordance with the requirements of DP (2023) and is, therefore, considered to be 'controlled' engineered fill.

It is noted that DP does not guarantee the work of the earthworks contractor nor relieve them of their responsibility to produce a completed product conforming to the requirements of the specifications.

For filled areas, consideration should be given to the following:

- Possible disturbance of the compacted fill by the installation of services;
- Additional fill that may have been placed after the last date of field density test (5 April 2023);
- Layers of fill that were not tested (e.g. Layer 2 of the clay fill);
- Adequate containment of the filled areas (e.g. appropriate batter slopes and/or retaining walls);
- Variation in fill depth; and
- Variation in the types of fill placed.

6. References

AS 3798. (2007). *Guidelines on Earthworks for Commercial and Residential Developments.* Standards Australia.
DP. (2023). *Earthworks Methodology, Backfilling of Coal Bunker, Munmorah Power Station, Colongra.* ref. 217307.02.R.001.Rev2, dated 13 April 2023: Douglas Partners Pty Ltd.

7. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for this project at Munmorah Power Station, Colongra in accordance with DP's email proposal dated 24 March 2023 and acceptance received from Generator Property Management Pty Ltd (GPM). The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Generator Property Management Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in this report indicate that satisfactory compaction has been achieved at the specific testing locations, and to the depths tested. Subsurface conditions can change due to variable material type and compactive effort, but inspections by the on-site technician indicate that the materials were relatively uniform and a similar compactive effort was applied to all of the fill materials placed.

DP's advice is based upon the conditions encountered during the field testing. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between the testing locations. The advice also assumes that no additional fill was placed on the site after our testing was completed and that the area has not since been disturbed.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Please contact the undersigned if you have any questions on this matter.

Yours faithfully
Douglas Partners Pty Ltd

Reviewed by





James Rayner
Associate Geotechnical Engineer

Darryl Carson
Principal

Attachments: About this Inspection Report
Project Summary Report - Level 1 Compaction Testing

About this Inspection Report

November 2020

Introduction

These notes are provided to amplify DP's inspection report in regard to the limitations of carrying out inspection work. Not all notes are necessarily relevant to this report.

Standards

This inspection report has been prepared by qualified personnel to current engineering standards of interpretation and analysis.

Copyright and Limits of Use

This inspection report is the property of DP and is provided for the exclusive use of the client for the specific project and purpose as described in the report. It should not be used by a third party for any purpose other than to confirm that the construction works addressed in the report have been inspected as described. Use of the inspection report is limited in accordance with the Conditions of Engagement for the commission.

DP does not undertake to guarantee the works of the contractors or relieve them of their responsibility to produce a completed product conforming to the design.

Reports

This inspection report may include advice or opinion that is based on engineering and/or geological interpretation, information provided by the client or the client's agent, and information gained from:

- an investigation report for the project (if available to DP);
- inspection of the work, exposed ground conditions, excavation spoil and performance of excavating equipment while DP was on site;
- investigation and testing that was carried out during the site inspection;
- anecdotal information provided by authoritative site personnel; and
- DP's experience and knowledge of local geology.

Such information may be limited by the frequency of any inspection or testing that was able to be practically carried out, including possible site or cost constraints imposed by the client/ contractor(s). For these reasons, the reliability of this inspection report is limited by the scope of information on which it relies.

Every care is taken with the inspection report as it relates to interpretation of subsurface conditions and any recommendations or suggestions for construction or design. However, DP cannot anticipate or assume responsibility for:

- unexpected variations in subsurface conditions that are not evident from the inspection; and
- the actions of contractors responding to commercial pressures.

Should these issues occur, then additional advice should be sought from DP and, if required, amendments made.

This inspection report must be read in conjunction with any attached information. This inspection report should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions from review by others of this inspection report or test data, which are not otherwise supported by an expressed statement, interpretation, outcome or conclusion stated in this inspection report.

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Project Summary Report

Douglas Partners
Geotechnics / Environment / Groundwater
Douglas Partners Pty Ltd
Central Coast Laboratory
Unit 5/3 Teamster Close Tuggerah NSW 2259
Phone: (02) 4351 1422
Email: dan.byrnes@douglaspartners.com.au

Report Date: 12/05/2023
Client: Generator Property Management Pty Ltd
301 Scenic Drive, Doyalson NSW 2262
Contact: Dougal Mulvey
Project Number: 217307.03
Project Name: Munmorah Power Station Backfilling of Coal Bunker
Project Location: Munmorah Power Station, COLONGRA NSW
Specification:
Test Methods: AS 1289 5.1.1 STD & 5.4.1 & 5.8.1 & 2.1.1

Lot #	Sample #	Date Sampled	Location	Chainage (m)	Location Offset (m)	Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	CC-7072A	28/03/2023	Coal Bunker	5	+2.5 from CL	**	Crushed concrete layer 2	98.5	-2.0	10.0	2.24
**	CC-7072B	28/03/2023	Coal Bunker	45	-2.5 from CL	**	Crushed concrete layer 2	87.5	-3.5	12.6	2.08
**	CC-7072C	28/03/2023	Coal Bunker	85	+10.5 from CL	**	Crushed concrete layer 2	90.5	-1.0	10.3	2.09
**	CC-7072D	28/03/2023	Coal Bunker	110	-10.5 from CL	**	Crushed concrete layer 2	94.5	-2.0	11.6	2.17
**	CC-7072E	28/03/2023	Coal Bunker	135	+5.5 from CL	**	Crushed concrete layer 2	97.5	-2.0	12.6	2.21
**	CC-7092A	03/04/2023	Coal Bunker	5	+0.5 from CL	**	Crushed concrete layer 3	96.0	3.0	6.9	2.12
**	CC-7092B	03/04/2023	Coal Bunker	43	-1.5 from CL	**	Crushed concrete layer 3	97.5	2.0	8.7	2.24
**	CC-7092C	03/04/2023	Coal Bunker	70	+6.5 from CL	**	Crushed concrete layer 3	92.0	1.5	7.9	2.10
**	CC-7092D	03/04/2023	Coal Bunker	105	-9.5 from CL	**	Crushed concrete layer 3	85.5	1.5	6.9	2.10
**	CC-7092E	03/04/2023	Coal Bunker	132	+12.0 from CL	**	Crushed concrete layer 3	84.0	2.5	7.9	2.04
**	CC-7101A	05/04/2023	Coal Bunker	6	+1.0 from CL	**	Crushed concrete layer 4	95.5	3.5	7.8	2.08
**	CC-7101B	05/04/2023	Coal Bunker	43	-2.5 from CL	**	Crushed concrete layer 4	90.0	3.0	8.4	2.12
**	CC-7101C	05/04/2023	Coal Bunker	82	+6.5 from CL	**	Crushed concrete layer 4	91.0	3.5	9.1	2.08
**	CC-7101D	05/04/2023	Coal Bunker	105	-7.0 from CL	**	Crushed concrete layer 4	92.5	2.0	9.7	2.06
**	CC-7101E	05/04/2023	Coal Bunker	135	+10.5 from CL	**	Crushed concrete layer 4	94.0	2.5	8.1	2.08
**	CC-7122A	12/04/2023	Coal Bunker	5	+1.5 from CL	**	Crushed concrete layer 5	93.0	-0.5	10.4	2.11
**	CC-7122B	12/04/2023	Coal Bunker	40	-3.5 from CL	**	Crushed concrete layer 5	108.5	2.0	7.2	2.27
**	CC-7122C	12/04/2023	Coal Bunker	80	+6.0 from CL	**	Crushed concrete layer 5	96.5	2.5	8.4	2.15
**	CC-7122D	12/04/2023	Coal Bunker	125	-10.0 from CL	**	Crushed concrete layer 5	98.0	2.0	8.2	2.18
**	CC-7127A	13/04/2023	Coal Bunker	5	+2.0 from CL	**	Crushed concrete layer 6	95.0	3.0	7.5	2.13
**	CC-7127B	13/04/2023	Coal Bunker	45	-2.5 from CL	**	Crushed concrete layer 6	93.0	2.5	6.1	2.07
**	CC-7127C	13/04/2023	Coal Bunker	75	+6.0 from CL	**	Crushed concrete layer 6	91.0	2.5	7.5	2.05
**	CC-7127D	13/04/2023	Coal Bunker	105	-9.0 from CL	**	Crushed concrete layer 6	94.0	1.5	4.2	2.11
**	CC-7127E	13/04/2023	Coal Bunker	135	+10.5 from CL	**	Crushed concrete layer 6	95.5	3.0	6.5	2.10
**	CC-7129A	14/04/2023	Coal Bunker	5	+2.5 from CL	**	Crushed concrete layer 7	92.5	-2.0	12.5	2.12
**	CC-7129B	14/04/2023	Coal Bunker	45	-2.0 from CL	**	Crushed concrete layer 7	91.5	-1.5	11.5	2.19
**	CC-7129C	14/04/2023	Coal Bunker	85	+8.5 from CL	**	Crushed concrete layer 7	89.5	1.5	8.3	2.12
**	CC-7129D	14/04/2023	Coal Bunker	100	-8.0 from CL	**	Crushed concrete layer 7	98.0	0.0	9.0	2.22
**	CC-7129E	14/04/2023	Coal Bunker	135	+9.0 from CL	**	Crushed concrete layer 7	85.5	1.0	9.4	1.98
**	CC-7130A	15/04/2023	Coal Bunker	5	+2.5	**	Crushed concrete layer 8	93.5	3.5	6.2	2.15
**	CC-7130B	15/04/2023	Coal Bunker	35	-6.0	**	Crushed concrete layer 8	94.5	1.5	9.0	2.20
**	CC-7130C	15/04/2023	Coal Bunker	75	+5.5	**	Crushed concrete layer 8	100.5	3.0	8.9	2.16
**	CC-7130D	15/04/2023	Coal Bunker	105	-9.0	**	Crushed concrete layer 8	95.0	3.0	10.3	2.18
**	CC-7130E	15/04/2023	Coal Bunker	135	+10.5	**	Crushed concrete layer 8	97.5	4.0	9.7	2.22
**	CC-7145A	19/04/2023	Coal Bunker	5	+6.5 from CL	**	Crushed concrete layer 9	93.0	3.5	9.1	2.10
**	CC-7145B	19/04/2023	Coal Bunker	45	-2.0 from CL	**	Crushed concrete layer 9	92.0	3.5	9.7	2.09
**	CC-7145C	19/04/2023	Coal Bunker	80	+3.5 from CL	**	Crushed concrete layer 9	93.0	4.0	9.9	2.11

Lot #	Sample #	Date Sampled	Location	Chainage (m)	Location Offset (m)	Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	CC-7145D	19/04/2023	Coal Bunker	105	-9.0 from CL	**	Crushed concrete layer 9	92.0	3.5	9.1	2.10
**	CC-7145E	19/04/2023	Coal Bunker	135	+10.5 from CL	**	Crushed concrete layer 9	93.5	3.5	10.0	2.11
**	CC-7161A	27/04/2023	Coal Bunker	SW Side Bunker	**	**	Subgrade Replacement	98.5	0.5	**	1.99
**	CC-7165A	28/04/2023	Coal Bunker	10	0 from CL	**	Clay layer 1	100.5	-0.5	**	1.97
**	CC-7165B	28/04/2023	Coal Bunker	45	-12 from CL	**	Clay layer 1	101.5	-0.5	**	2.12
**	CC-7165C	28/04/2023	Coal Bunker	80	13 from CL	**	Clay layer 1	96.5	0.5	**	2.02
**	CC-7165D	28/04/2023	Coal Bunker	115	2 from CL	**	Clay layer 1	100.5	0.0	**	2.02
**	CC-7165E	28/04/2023	Coal Bunker	140	-11 from CL	**	Clay layer 1	101.5	0.0	**	2.24
**	CC-7165F	28/04/2023	Coal Bunker	175	10 from CL	**	Clay layer 1	97.0	0.0	**	2.04
**	CC-7170A	01/05/2023	Coal Bunker	10	-1.5 from CL	**	Clay layer 3	102.0	-1.0	**	2.22
**	CC-7170B	01/05/2023	Coal Bunker	50	+3.5 from CL	**	Clay layer 3	104.5	-0.5	**	2.22
**	CC-7170C	01/05/2023	Coal Bunker	100	-10.5 from CL	**	Clay layer 3	100.5	-3.0	**	2.18
**	CC-7170D	01/05/2023	Coal Bunker	130	+12.0 from CL	**	Clay layer 3	104.5	-0.5	**	2.22
**	CC-7173A	02/05/2023	Coal Bunker	5	2 from CL	**	Clay layer 4	101.5	0.0	**	2.12
**	CC-7173B	02/05/2023	Coal Bunker	45	12 from CL	**	Clay layer 4	101.5	0.0	**	2.12
**	CC-7173C	02/05/2023	Coal Bunker	85	-10 from CL	**	Clay layer 4	101.5	0.0	**	2.11
**	CC-7173D	02/05/2023	Coal Bunker	120	-1 from CL	**	Clay layer 4	101.0	-0.5	**	2.03
**	CC-7173E	02/05/2023	Coal Bunker	160	16 from CL	**	Clay layer 4	101.5	0.0	**	2.08
**	CC-7173F	02/05/2023	Coal Bunker	175	-14 from CL	**	Clay layer 4	101.5	0.5	**	2.00
**	CC-7175A	03/05/2023	1 Coal Bunker	10	-2 from CL	**	Clay layer 5	98.5	0.0	**	1.94
**	CC-7175B	03/05/2023	2 Coal Bunker	45	13 from CL	**	Clay layer 5	102.5	0.0	**	2.12
**	CC-7175C	03/05/2023	3 Coal Bunker	85	-9 from CL	**	Clay layer 5	103.5	-0.5	**	2.16
**	CC-7175D	03/05/2023	1 Coal Bunker	10	1 from CL	**	Clay layer 5	100.0	-0.5	**	2.07
**	CC-7175E	03/05/2023	4 Coal Bunker	120	0 from CL	**	Clay layer 5	103.0	-0.5	**	2.16
**	CC-7175F	03/05/2023	5 Coal Bunker	155	16 from CL	**	Clay layer 5	103.0	0.0	**	2.14
**	CC-7175G	03/05/2023	6 Coal Bunker	175	-12 from CL	**	Clay layer 5	101.0	-0.5	**	2.08
**	CC-7175H	03/05/2023	ash clay capped stockpile area	**	**	**	clay capping layer	101.5	2.5	**	2.21
**	CC-7181A	04/05/2023	Coal Bunker	170	14 from CL	**	Clay layer 6	101.5	-0.5	**	2.12
**	CC-7181B	04/05/2023	Coal Bunker	135	2 from CL	**	Clay layer 6	100.0	0.0	**	2.08
**	CC-7181C	04/05/2023	Coal Bunker	100	-11 from CL	**	Clay layer 6	100.5	-0.5	**	2.08
**	CC-7185A	05/05/2023	Coal Bunker	10	4	**	Clay layer 6	106.0	0.0	**	2.25
**	CC-7185B	05/05/2023	Coal Bunker	45	13	**	Clay layer 6	104.5	-0.5	**	2.18
**	CC-7185C	05/05/2023	Coal Bunker	85	-11	**	Clay layer 6	104.5	-0.5	**	2.21

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Appendix I

JM Environments
0427 893 668
37 Tooke St
COOKS HILL NSW 2300
ABN 67 166 341 288

24 November 2022

Dougal Mulvey
Generator Property Management Pty Ltd
301 Scenic Drive
DOYALSON NSW 2262

Dear Dougal,

RE: JME18051 – ASBESTOS CLEARANCE WALKOVER
FORMER MUNMORAH POWERSTATION

1 INTRODUCTION

Generator Property Management Pty Ltd (GPM) engaged JM Environments to undertake an asbestos clearance walkover of the coal stockpiling area (the site) of the former Munmorah Power Station. The site was identified as a portion of Lot 10 DP1201414 and was approximately 25,000m^2, as shown in Figure 1.



Figure 1: Site Location Plan

The site was used as a deconstruction area during the demolition of the former power station. The site was covered with concrete rubble generated from the demolition. It was understood that an "emu pick" of the site was undertaken by a licenced asbestos removalist followed by a GPM employee who was experienced in the identification of asbestos containing materials.

2 SCOPE OF WORK

2.1 Objective

The objective of this assessment was to clear the site surface for the presence of asbestos.

2.2 Scope of Work

The scope of work was to conduct a visual inspection, collect observed ACM and provide this clearance letter.

3 SITE WALKOVER

The site walkover was undertaken by a JME Licenced Asbestos Assessor on 22 November 2022. The site was covered with concrete rubble with some metal, fibreglass fragments, ceramic tiles and plastic with trace amounts of electrical cables, machinery parts and electrical components.



Photograph 1: View of the Site from the south corner looking north

Due to the abundance of concrete rubble and sparse vegetation it was not practical the rake the surface of site. The site surface was observed by slowly walking across the site in lines approximately 3m a part while scanning the site surface. Four pieces of ACM were collected from the site surface during the walkover.

4 CONCLUSION AND RECCOMMENDATIONS

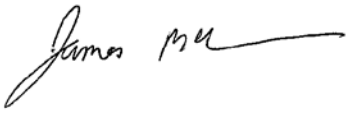
Based on the site walkover, it is considered that the site surface does not pose a significant risk to human health with respect to exposure to airborne asbestos. There remains a potential that visible asbestos and asbestos that is not observable to the naked eye may be present in and on the site surface. Where practicable it is recommended that the site surface is made damp by the use of water prior to any earthworks.

5 LIMITATIONS

This report does not implicitly or explicitly state that the site is free of asbestos. The observation of all ACM was not possible use to the abundance of anthropogenic material and vegetation on the sites surface. Any persons relying on this report do so at their own risk.

For and on behalf of JM Environments

For and on behalf of JM Environments



James McMahon

Principal Environmental Scientist
Licenced Asbestos Assessor LAA001286
Certified Environmental Practitioner CEnvP 1235
Site Contamination Specialist SC41110

Property Risk Australia Pty Ltd
ABN: 65 611 579 223
PO Box 95, Mascot NSW 1460
www.propertyrisk.com.au

Asbestos Materials Clearance Inspection Report	**PRA Reference:**	PRJ001239-ACM001
Client:	CMA Contracting Pty Ltd	
Site Address:	Munmorah Power Station, Station Road, Munmorah Power Station, Colongra NSW	
Removal Dates:	9 January 2023 to 19 January 2023	
Removed Items:	Removal of moulded asbestos-containing conduits through concrete walls and footing within the following location: o External, sub-ground level, Munmorah Power Station Tunnel.	
Removal and Sealing Process:	The asbestos removal and encapsulation works were carried out by Aztech Services Australia Pty Ltd, a Class A (Friable) asbestos removal contractor (License Number: 2313682). The removal area was setup with task specific signage and fencing, to prevent unauthorised access. The asbestos-containing materials (ACM) were removed under controlled conditions by coring around conduit penetrations with a coring head on a drill rig. Once removed the core was then wrapped in 200µm thick plastic in preparation for off-site disposal. Subsequent to completion of the coring and removal work, associated debris was removed from exposed ground surfaces using the 'emu picking' technique. Handheld water hoses were used for dust suppression during the removal works. Conduit remaining in-situ is encased in concrete, exposed edges/surfaces were sealed using spray glue and paint. Materials that had entered the Tunnel during demolition works were removed under controlled conditions using hand tools. Associated dust and debris were removed from all hard surfaces using wet wiping techniques. Asbestos waste was double bagged in labelled asbestos waste bags or wrapped in 200µm thick plastic in preparation for off-site disposal to a licensed waste facility.	
Clearance Inspection and Asbestos Fibre Air Monitoring		
Inspection:	**Inspection Date**: 19 January 2023 between 06:45 hrs and 08:25 hrs A visual clearance inspection of the exposed ground surface was undertaken by Gary Mace of Property Risk Australia (PRA) following completion of the removal and sealing works. The removal works are deemed to have been completed to a satisfactory standard in accordance with the *Code of Practice, How to Safely Remove Asbestos* (SafeWork NSW, 2019), specifically: o The asbestos removal work area (east and west of the Tunnel) has been completed to a depth of 2m below current ground level (approx.) o The conduit penetrating the concrete retaining wall on the western side of the ramp to the tunnel and the southern area below demolished substation has been removed (all asbestos within the scope of the removal works has been removed). o The removal work area, the immediate vicinity and access is free from any visible asbestos; and o The transit and waste routes between the asbestos removal work area and waste loading areas are free from any visible asbestos resulting from the asbestos removal work. Photographs are provided in **Table 1**. The clearance area is mapped in **Figure 1**.	

Limitations	The clearance inspection report applies only to the above removal dates, removed items and removal process. Site conditions may change over time, therefore no guarantee can be made on the area after the date of this report. Note that Conduit Area 6 (refer to **Figure 1**) was inspected from ground level surface due to unsafe access in weather conditions at the time of inspection. Only exposed ground surfaces were inspected, sub-surface investigations were not undertaken. ACM may remain in-situ. Asbestos-containing conduits remain in-situ encased in concrete (refer to **photos 2 - 10**). All items detailed within the PRJ001239_ASR001_Munmorah_Power_Station_Tunnel_2022_12_06_V1 prepared by PRA, were visually inspected by PRA following asbestos removal works.

Inspected By	Approved By
Gary Mace 	Emma Harland 
Licensed Asbestos Assessor No. LAA001301	Licensed Asbestos Assessor No. LAA001362

Table 1: Photographs

	
Photo 1: Ramp Area, concrete wall spoil, following removal of ACM conduit pipework penetrations.	**Photo 2**: Conduit Area 1, following removal of conduit to depth of 2m below ground. ACM conduit remaining in-situ with exposed edges sealed.
	
Photo 3: Conduit Area 3, following removal of conduit to depth of 2m below ground. ACM conduit remaining in-situ with exposed edges sealed.	**Photo 4**: Conduit Area 5, following removal of conduit to depth of 2m below ground. ACM conduit remaining in-situ with exposed edges sealed.



Photo 5 Conduit Area 7, following removal of conduit to depth of 2m below ground. ACM conduit remaining in-situ with exposed edges sealed.



Photo 6: Conduit Area 8, following removal of conduit to depth of 2m below ground. ACM conduit remaining in-situ with exposed edges sealed.



Photo 7: Conduit Area 6, following removal of conduit to depth of 2m below ground. ACM conduit remaining in-situ with exposed edges sealed.



Photo 8: Conduit Area 4, following removal of conduit to depth of 2m below ground. ACM conduit remaining in-situ with exposed edges sealed.



Photo 9: Conduit Area 2, following removal of conduit to depth of 2m below ground. ACM conduit remaining in-situ with exposed edges sealed.



Photo 10: Substation Area, following removal of conduit to depth of 2m below ground. ACM conduit remaining in-situ with exposed edges sealed.



Photo 11: Tunnel area following demolition and prior to removal of materials.



Photo 12: Tunnel area following the removal of materials, and cleaning



Source: Nearmaps, accessed 9 December 2022

Figure 1: Clearance Area

Property Risk Australia Pty Ltd
ABN: 65 611 579 223
PO Box 95, Mascot NSW 1460
www.propertyrisk.com.au

Asbestos Materials Clearance Inspection Report	**PRA Reference:**	PRJ001239-ACM002
Client:	CMA Contracting Pty Ltd	
Site Address:	Munmorah Power Station, Station Road, Colongra NSW 2262	
Removal Dates:	6 March 2023 to 9 March 2023	
Removed Items:	Excavation, loading and transportation of asbestos impacted soil to the onsite EPA asbestos licensed waste facility from client specified nominated work areas within the following locations: ○ Southern end of Asbestos Coal Bunker, Asbestos Lay Down Area; ○ Southern end of Asbestos Coal Bunker, Grassy Area adjacent Asbestos Lay Down Area; ○ Western end of Asbestos Coal Bunker, 2 x nominated work areas; and ○ Northern end of Asbestos Coal Bunker, asbestos impacted concrete stockpile. Removal works in relation to asbestos-containing moulded fibre cement conduits (~15 lm) to the concrete pit within the Asbestos Lay Down Area.	
Removal Process:	The asbestos removal works were carried out by CMA Contracting Pty Ltd (CMA Contracting) under the supervision of Pure Contracting Pty Ltd (Pure) a Class A (Friable) Licensed Asbestos Removal Contractor (Licence Number: AD210803). The removal work area was setup with a dry decontamination facility, task specific warning signage, rope flagging and star pickets, to prevent unauthorised access. The asbestos impacted soil was excavated under controlled conditions using one (1) 49 tonne excavator to the client specified depth of approximately 300mm to 1 metre. The asbestos-containing moulded fibre cement conduits (~15 lm) were removed intact with the concrete pit under controlled removal conditions. The asbestos impacted soil along with the asbestos-containing conduits within the concrete pit were loaded into a Moxy Truck for onsite disposal at the EPA asbestos licensed waste facility. A water truck was used as dust suppression during the excavation and loading out works. Following completion of the removal works and the visual clearance inspection, the ground surface was backfilled with soil onsite within the client specified nominated work areas. All plant used within the removal work areas were transported to a 'demarcated' dirty zone and external surfaces were decontaminated using the water truck hose and internal surfaces were decontaminated with wet wiping techniques. All asbestos waste was loaded into Moxy trucks under controlled conditions for disposal at the approved onsite EPA asbestos licensed waste facility.	
Clearance Inspection and Asbestos Fibre Air Monitoring		
Inspection:	**Inspection Date**: 7 March 2023, 8 March 2023 and 9 March 2023 **Inspection Time:** 10:40 hrs, 12:00 hrs, 15:10 hrs, 10:30 hrs, 15:00 hrs, Visual clearance inspections were undertaken by Liam Naughton of PRA following the removal works. The removal works are deemed to have been completed to a satisfactory standard in accordance with the *Code of Practice, How to Safely Remove Asbestos* (SafeWork NSW, 2022), specifically: ○ The asbestos removal work area and immediate vicinity of the area is free from any visible asbestos;	

Inspection (Continued):	○ The transit and waste routes between the asbestos removal work area and waste loading areas are free from any visible asbestos resulting from the asbestos removal work; and ○ All asbestos in the scope of the removal work has been removed. Photographs are provided in **Table 1**. The clearance area is mapped in **Figure 1**.
Air Monitoring:	**Air Monitoring Report Reference**: PRJ001239-AM004 to AM007. Asbestos fibre air monitoring and analysis was conducted in accordance with the *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres, 2nd Edition* [NOHSC: 3003 (2005)]. All results were <0.01 fibres/mL (reporting limit).
Limitations	It should be noted that this clearance certificate refers to the exposed ground surface only within the client specified nominated areas. A subsurface investigation was not undertaken, asbestos-containing materials may remain in-situ within the client specified nominated work areas. The clearance inspection report applies only the above removal dates, removed items and removal process. Site conditions may change over time, therefore no guarantee can be made on the area after the date of this report.

Inspected By	Approved By
	
Liam Naughton	Derrick Scott
Licensed Asbestos Assessor No. LAA001403	Licensed Asbestos Assessor No. 2317095 (QLD)

Table 1: Photographs

	
Photo 1: External, Asbestos Lay Down Area, south of Asbestos Coal Bunker, moulded fibre cement conduits, prior to asbestos removal works.	**Photo 2**: External, Asbestos Lay Down Area, south of Asbestos Coal Bunker, asbestos fibre cement fragment, prior to asbestos removal works.
	
Photo 3: External, Asbestos Lay Down Area, south of Asbestos Coal Bunker, during asbestos excavation and removal works.	**Photo 4**: External, Asbestos Lay Down Area, south of Asbestos Coal Bunker, during asbestos excavation and removal works.
	
Photo 5: External, Asbestos Lay Down Area, south of Asbestos Coal Bunker, following asbestos excavation, removal works and visual inspection.	**Photo 6**: External, Asbestos Lay Down Area, south of Asbestos Coal Bunker, following asbestos excavation, removal works and visual inspection.



Photo 7: External, Asbestos Lay Down Area, south of Asbestos Coal Bunker, following asbestos excavation, removal works and visual inspection.



Photo 8: External, Asbestos Lay Down Area, south of Asbestos Coal Bunker, following asbestos excavation, removal works and visual inspection.



Photo 9: External, Asbestos Lay Down Area, south of Asbestos Coal Bunker, following asbestos excavation, removal works and visual inspection.



Photo 10: External, Asbestos Lay Down Area, south of Asbestos Coal Bunker, following asbestos excavation, removal works and visual inspection.



Photo 11: External, Grassy Area adjacent Asbestos Lay Down Area, south of Asbestos Coal Bunker, following excavation works and visual inspection.



Photo 12: External, Grassy Area adjacent Asbestos Lay Down Area, south of Asbestos Coal Bunker, following excavation works and visual inspection.



Photo 13: External, Grassy Area adjacent Asbestos Lay Down Area, south of Asbestos Coal Bunker, PVC pipework and concrete slab.



Photo 14: External, Grassy Area adjacent Asbestos Lay Down Area, south of Asbestos Coal Bunker, PVC pipework and concrete slab.



Photo 15: External, client specified nominated work area, western end of Asbestos Coal Bunker, following asbestos removal and excavation works.



Photo 16: External, client specified nominated work area, western end of Asbestos Coal Bunker, following asbestos removal and excavation works.



Photo 17: External, client specified nominated work area, western end of Asbestos Coal Bunker, following asbestos removal and excavation works.



Photo 18: External, client specified nominated work area, western end of Asbestos Coal Bunker, following asbestos removal and excavation works.



Photo 19: External, client specified nominated work area, western end of Asbestos Coal Bunker, following asbestos removal and excavation works.



Photo 20: External, client specified nominated work area, western end of Asbestos Coal Bunker, following asbestos removal and excavation works.



Photo 21: External, client specified nominated work area, western end of Asbestos Coal Bunker, following asbestos removal and excavation works.



Photo 22: External, client specified nominated work area, western end of Asbestos Coal Bunker, following asbestos removal and excavation works.



Photo 23: External, client specified nominated work area, western end of Asbestos Coal Bunker, following asbestos removal and excavation works.



Photo 24: External, client specified nominated work area, western end of Asbestos Coal Bunker, following asbestos removal and excavation works.



Photo 25: External, concrete asbestos contaminated stockpile, northern end of Asbestos Coal Bunker, prior to asbestos removal works.



Photo 26: External, concrete asbestos contaminated stockpile, northern end of Asbestos Coal Bunker, prior to asbestos removal works.



Photo 27: External, concrete asbestos contaminated stockpile, northern end of Asbestos Coal Bunker, prior to asbestos removal works.



Photo 28: External, concrete asbestos contaminated stockpile, northern end of Asbestos Coal Bunker, prior to asbestos removal works.



Photo 29: External, concrete asbestos contaminated stockpile, northern end of Asbestos Coal Bunker, following asbestos removal works.



Photo 30: External, concrete asbestos contaminated stockpile, northern end of Asbestos Coal Bunker, following asbestos removal works.



Extent of Clearance Area – Asbestos Lay Down Area	

Source: Nearmap, accessed 6 March 2023

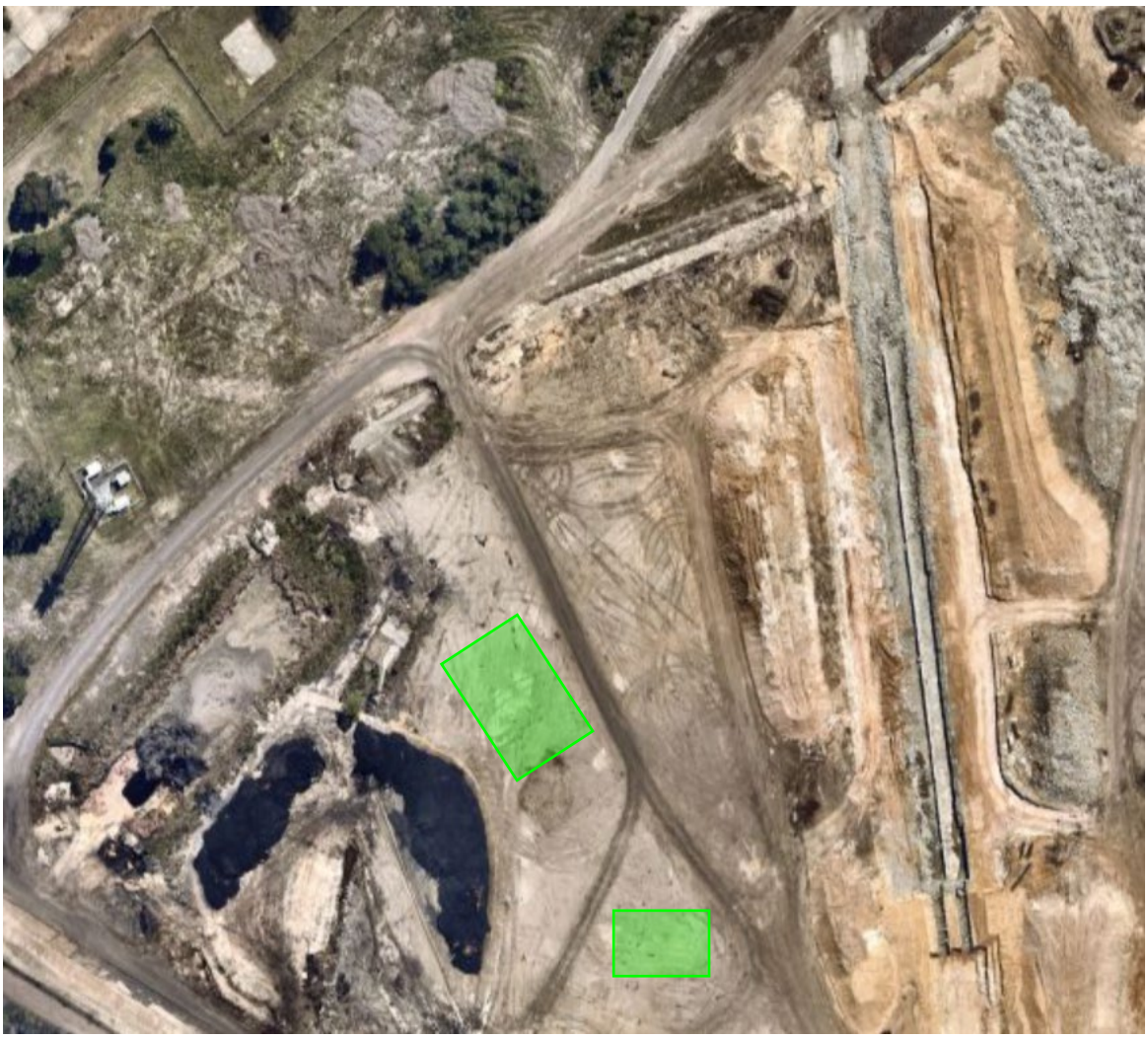
Figure 1: Clearance Area



Extent of Clearance Area – Grassy Area	

Source: Nearmap, accessed 6 March 2023

Figure 2: Clearance Area



Extent of Clearance Area – Western end of Asbestos Coal Bunker	

Source: Nearmap, accessed 6 March 2023

Figure 3: Clearance Area



Extent of Clearance Area – Northern end of Asbestos Coal Bunker	

Source: Nearmap, accessed 6 March 2023

Figure 4: Clearance Area

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ASBESTOS FIBRE AIR MONITORING REPORT

PRA Ref.: PRJ001239-AM001-V1 **Sampling Type:** Control Monitoring

Site Address: Munmorah Power Station, Colongra NSW 2262

Client Details: CMA Contracting Pty Ltd – 83 Bourke Road, Alexandria NSW 2015

Sampled by: Samples were collected by Liam Naughton (Licensed Asbestos Assessor No. LAA001403) on 7 December 2022.

Accreditation: Accredited for compliance with ISO/IEC 17025 – Testing
NATA Accreditation Number 20447
Corporate Site No. 24489

Work Activities*:
- Concrete coring works to the southern side of the Tunnel adjacent the Coal Stockpiling area at the former Munmorah Power Station.

Results					
Sample Location Shown in Figure 1	**Filter ID**	**Average Flow Rate (L/Min)**	**Sampling Period Start–Finish**	**Fibres/ Fields**	**Results Fibres/mL**
Field Blank	CY512767	-	-	0.0/100	-
External, south side of the tunnel, south-east location, adjacent work area – on temporary fence.	CY519827	1.50	0625 – 1628	1.0/100	< 0.01
External, south side of the tunnel, eastern location, adjacent coal stockpiles – on temporary fence.	CY519781	1.50	0627 – 1629	3.0/100	< 0.01
External, south side of the tunnel, south-west location, adjacent concrete hardstand – on temporary fence.	CY519778	1.50	0630 – 1631	1.0/100	< 0.01
External, south side of the tunnel, western location, adjacent work area – on temporary fence.	CY519811	1.50	0631 – 1633	0.0/100	< 0.01

Results The results for the static samples were <0.01 fibres/mL (reporting limit).

Comments/ Recommendations* Based on the above results, it is recommended that current controls are maintained.

Methodology	The sampling, analysis and reporting was conducted in accordance with *Guidance Note on the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres* (NOHSC:3003, April 2005) and PRA's *In-House Method for Airborne Asbestos and Synthetic Mineral Fibres* (ASB1). Note: a minimum of 10 fibres/100 graticule areas must be used to calculate airborne fibre concentration, even if less fibres were counted, per NOHSC 3003. Samples were analysed by Approved Counter Liam Naughton on 8 December 2022 at the PRA Base Laboratory at Unit 24, 34-36 Ralph Street, Alexandria, NSW, 2015.
Measurement of Uncertainty	The results may be influenced by variables in the environment, workplace and sampling strategy, for which uncertainty cannot be quantified.
Disclaimer	The results within this report relate only to the sampling locations specified and their analysis. This report shall not be reproduced, except in full. Sections of this report denoted with an asterix (*) are not covered by the NATA accreditation.

Technical Review By

Paul Ching
Approved Counter (Laboratory Manager)
Date: 8 December 2022

Approved By

Emma Harland
Approved Signatory (Senior Consultant/Licensed Asbestos Assessor LAA001362)
Date: 8 December 2022



Site Boundary	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 7 December 2022.

Figure 1: Asbestos Fibre Air Monitoring Locations

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ASBESTOS FIBRE AIR MONITORING REPORT

PRA Ref.: PRJ001239-AM002-V1 **Sampling Type:** Control Monitoring

Site Address: Munmorah Power Station, Colongra NSW 2262

Client Details: CMA Contracting Pty Ltd – 83 Bourke Road, Alexandria NSW 2015

Sampled by: Samples were collected by Liam Naughton (Licensed Asbestos Assessor No. LAA001403) on 8 December 2022.

Accreditation: Accredited for compliance with ISO/IEC 17025 – Testing
NATA Accreditation Number 20447
Corporate Site No. 24489

Work Activities*:
- Control monitoring during concrete coring works to the southern side of the Tunnel adjacent the Coal Stockpiling area at the former Munmorah Power Station.

Results					
Sample Location Shown in Figure 1	**Filter ID**	**Average Flow Rate (L/Min)**	**Sampling Period Start–Finish**	**Fibres/ Fields**	**Results Fibres/mL**
Field Blank	CY519888	-	-	0.0/100	-
External, south side of the tunnel, south-east location, adjacent work area – on temporary fence.	CY519786	1.50	0629 – 1601	2.0/100	< 0.01
External, south side of the tunnel, eastern location, adjacent coal stockpiles – on temporary fence.	CY519829	1.50	0631 – 1603	0.0/100	< 0.01
External, south side of the tunnel, south-west location, adjacent concrete hardstand – on temporary fence.	CY519807	1.50	0634 – 1607	0.0/100	< 0.01
External, south side of the tunnel, western location, adjacent work area – on temporary fence.	CY519817	1.50	0636 – 1608	1.0/100	< 0.01

Results The results for the static samples were <0.01 fibres/mL (reporting limit).

Comments/ Recommendations* Based on the above results, it is recommended that current controls are maintained.

Methodology	The sampling, analysis and reporting was conducted in accordance with *Guidance Note on the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres* (NOHSC:3003, April 2005) and PRA's *In-House Method for Airborne Asbestos and Synthetic Mineral Fibres* (ASB1). Note: a minimum of 10 fibres/100 graticule areas must be used to calculate airborne fibre concentration, even if less fibres were counted, per NOHSC 3003. Samples were analysed by Approved Counter Liam Naughton on 9 December 2022 at the PRA Base Laboratory at Unit 24, 34-36 Ralph Street, Alexandria, NSW, 2015.
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Technical Review By



Liam Naughton
Approved Counter (Consultant/Licensed Asbestos Assessor No. LAA001403)
Date: 9 December 2022

Approved By



Emma Harland
Approved Signatory (Senior Consultant/Licensed Asbestos Assessor No. LAA 001362)
Date: 9 December 2022



Site Boundary	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 7 December 2022.

Figure 1: Asbestos Fibre Air Monitoring Locations

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ASBESTOS FIBRE AIR MONITORING REPORT

PRA Ref.: PRJ001239-AM004-V1 **Sampling Type:** Control Monitoring

Site Address: Munmorah Power Station, Colongra NSW 2262

Client Details: CMA Contracting Pty Ltd – 83 Bourke Road, Alexandria NSW 2015

Sampled by: Samples were collected by Liam Naughton (Licensed Asbestos Assessor No. LAA001403) on 6 March 2023.

Accreditation: Accredited for compliance with ISO/IEC 17025 – Testing
NATA Accreditation Number 20447
Corporate Site No. 24489

Work Activities*:
- Control monitoring during excavation, loading out and transportation of asbestos impacted soil from the nominated asbestos lay down area to the onsite asbestos licensed waste facility at the former Munmorah Power Station.

Results					
Sample Location Shown in Figures 1-3	**Filter ID**	**Average Flow Rate (L/Min)**	**Sampling Period Start–Finish**	**Fibres/ Fields**	**Results Fibres/mL**
Field Blank	DG615280	-	-	0.0/100	-
External, southern end of asbestos coal bunker, asbestos lay down area, northern side of perimeter line – on star picket.	DG615282	1.50	0844 – 1431	0.0/100	< 0.01
External, southern end of asbestos coal bunker, asbestos lay down area, western side of perimeter line – on star picket.	DG615291	1.50	0846 – 1433	0.0/100	< 0.01
External, northern end, adjacent CMA Contracting site compound – on main entrance gate.	DG615278	2.00	1003 – 1437	0.0/100	< 0.01
External, northern end, asbestos licensed waste facility, adjacent stockpile – on star picket.	DG615290	2.00	1009 – 1444	0.0/100	< 0.01

Results The results for the static samples were <0.01 fibres/mL (reporting limit).

Comments/ Recommendations* Based on the above results, it is recommended that current controls are maintained.

Methodology	The sampling, analysis and reporting was conducted in accordance with *Guidance Note on the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres* (NOHSC:3003, April 2005) and PRA's *In-House Method for Airborne Asbestos and Synthetic Mineral Fibres* (ASB1). Note: a minimum of 10 fibres/100 graticule areas must be used to calculate airborne fibre concentration, even if less fibres were counted, per NOHSC 3003. Samples were analysed by Approved Counter Liam Naughton on 10 March 2023 at the PRA Base Laboratory at Unit 24, 34-36 Ralph Street, Alexandria, NSW, 2015.
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Technical Review By



Liam Naughton
Approved Counter (Consultant/Licensed Asbestos Assessor No. LAA001403)
Date: 10 March 2023

Approved By



Andrew Brabek
Approved Signatory (Managing Consultant/Licensed Asbestos Assessor No. LAA000139)
Date: 10 March 2023



Site Boundary – Asbestos Lay Down Area	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 1: Asbestos Fibre Air Monitoring Locations



Site Boundary – GPM Gate	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 2: Asbestos Fibre Air Monitoring Locations



Site Boundary – Asbestos EPA Licensed Waste Stockpile	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 3: Asbestos Fibre Air Monitoring Locations

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ASBESTOS FIBRE AIR MONITORING REPORT

PRA Ref.: PRJ001239-AM005-V1 **Sampling Type:** Control Monitoring

Site Address: Munmorah Power Station, Colongra NSW 2262

Client Details: CMA Contracting Pty Ltd – 83 Bourke Road, Alexandria NSW 2015

Sampled by: Samples were collected by Liam Naughton (Licensed Asbestos Assessor No. LAA001403) on 7 March 2023.

Accreditation: Accredited for compliance with ISO/IEC 17025 – Testing
NATA Accreditation Number 20447
Corporate Site No. 24489

Work Activities*:
- Control monitoring during excavation, loading out and transportation of asbestos impacted soil from the nominated asbestos lay down area to the onsite asbestos licensed waste facility at the former Munmorah Power Station.

Results					
Sample Location Shown in Figures 1-4	**Filter ID**	**Average Flow Rate (L/Min)**	**Sampling Period Start–Finish**	**Fibres/ Fields**	**Results Fibres/mL**
Field Blank	DG615294	-	-	0.0/100	-
External, southern end of asbestos coal bunker, asbestos lay down area, northern side of perimeter line – on decontamination unit fencing.	DG615286	1.50	0708 – 1615	0.0/100	< 0.01
External, southern end of asbestos coal bunker, asbestos lay down area, western side of perimeter line – on star picket.	DG615275	1.50	0711 – 1617	0.0/100	< 0.01
External, eastern side of asbestos coal bunker, northern end of work area, adjacent contaminated concrete stockpile – on star picket.	DG615298	1.50	0803 – 1619	0.0/100	< 0.01
External, eastern side of asbestos coal bunker, southern end of work area, adjacent contaminated concrete stockpile – on star picket.	DG615287	1.50	0804 – 1622	0.0/100	< 0.01
External, northern end, adjacent CMA Contracting site compound – on main entrance gate.	DG615288	1.50	0810 – 1625	0.0/100	< 0.01

Results					
Sample Location Shown in Figures 1-4	**Filter ID**	**Average Flow Rate (L/Min)**	**Sampling Period Start–Finish**	**Fibres/ Fields**	**Results Fibres/mL**
External, northern end, asbestos licensed waste facility, adjacent stockpile – on star picket.	DG615283	1.50	0816 – 1630	1.0/100	< 0.01

Results	The results for the static samples were <0.01 fibres/mL (reporting limit).
Comments/ Recommendations*	Based on the above results, it is recommended that current controls are maintained.
Methodology	The sampling, analysis and reporting was conducted in accordance with *Guidance Note on the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres* (NOHSC:3003, April 2005) and PRA's *In-House Method for Airborne Asbestos and Synthetic Mineral Fibres* (ASB1). Note: a minimum of 10 fibres/100 graticule areas must be used to calculate airborne fibre concentration, even if less fibres were counted, per NOHSC 3003. Samples were analysed by Approved Counter Liam Naughton on 10 March 2023 at the PRA Base Laboratory at Unit 24, 34-36 Ralph Street, Alexandria, NSW, 2015.
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Technical Review By

Liam Naughton
Approved Counter (Consultant/Licensed Asbestos Assessor No. LAA001403)
Date: 10 March 2023

Approved By

Andrea Brabek
Approved Signatory (Managing Consultant/Licensed Asbestos Assessor No. LAA000139)
Date: 10 March 2023



Site Boundary – Asbestos Lay Down Area	
Dry Decontamination Area	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 1: Asbestos Fibre Air Monitoring Locations



Site Boundary – GPM Gate	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 2: Asbestos Fibre Air Monitoring Locations



Site Boundary – Asbestos EPA Licensed Waste Stockpile	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 3: Asbestos Fibre Air Monitoring Locations



Site Boundary – Asbestos impacted concrete stockpile	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 4: Asbestos Fibre Air Monitoring Locations

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ASBESTOS FIBRE AIR MONITORING REPORT

PRA Ref.: PRJ001239-AM006-V1 **Sampling Type:** Control Monitoring

Site Address: Munmorah Power Station, Colongra NSW 2262

Client Details: CMA Contracting Pty Ltd – 83 Bourke Road, Alexandria NSW 2015

Sampled by: Samples were collected by Liam Naughton (Licensed Asbestos Assessor No. LAA001403) on 8 March 2023.

Accreditation: Accredited for compliance with ISO/IEC 17025 – Testing
NATA Accreditation Number 20447
Corporate Site No. 24489

Work Activities*:
- Control monitoring during excavation, loading out and transportation of asbestos impacted soil from the nominated asbestos lay down area to the onsite asbestos licensed waste facility at the former Munmorah Power Station.

Results					
Sample Location Shown in Figures 1-4	**Filter ID**	**Average Flow Rate (L/Min)**	**Sampling Period Start–Finish**	**Fibres/ Fields**	**Results Fibres/mL**
Field Blank	DG604240	-	-	0.0/100	-
External, southern end of asbestos coal bunker, asbestos lay down area, northern side of perimeter line – on decontamination unit fencing.	DG615258	1.50	0741 – 1518	0.0/100	< 0.01
External, southern end of asbestos coal bunker, asbestos lay down area, western side of perimeter line – on star picket.	DG615300	1.50	0744 – 1520	0.0/100	< 0.01
External, eastern side of asbestos coal bunker, northern end of work area, adjacent contaminated concrete stockpile – on star picket.	DG615268	1.50	0746– 1522	0.0/100	< 0.01
External, eastern side of asbestos coal bunker, southern end of work area, adjacent contaminated concrete stockpile – on star picket.	DG615285	1.50	0748– 1526	0.0/100	< 0.01
External, northern end, adjacent CMA Contracting site compound – on main entrance gate.	DG615295	1.50	0754 – 1530	0.0/100	< 0.01

Results					
Sample Location Shown in Figures 1-4	**Filter ID**	**Average Flow Rate (L/Min)**	**Sampling Period Start–Finish**	**Fibres/ Fields**	**Results Fibres/mL**
External, northern end, asbestos licensed waste facility, adjacent stockpile – on star picket.	DG615296	1.50	057 – 1534	0.0/100	< 0.01

Results	The results for the static samples were <0.01 fibres/mL (reporting limit).
Comments/ Recommendations*	Based on the above results, it is recommended that current controls are maintained.
Methodology	The sampling, analysis and reporting was conducted in accordance with *Guidance Note on the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres* (NOHSC:3003, April 2005) and PRA's *In-House Method for Airborne Asbestos and Synthetic Mineral Fibres* (ASB1). Note: a minimum of 10 fibres/100 graticule areas must be used to calculate airborne fibre concentration, even if less fibres were counted, per NOHSC 3003. Samples were analysed by Approved Counter Liam Naughton on 10 March 2023 at the PRA Base Laboratory at Unit 24, 34-36 Ralph Street, Alexandria, NSW, 2015.
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Technical Review By

Liam Naughton
Approved Counter (Consultant/Licensed Asbestos Assessor No. LAA001403)
Date: 10 March 2023

Approved By

Andrew Brabek
Approved Signatory (Managing Consultant/Licensed Asbestos Assessor No. LAA000139)
Date: 10 March 2023



Site Boundary – Asbestos Lay Down Area	
Dry Decontamination Area	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 1: Asbestos Fibre Air Monitoring Locations



Site Boundary – GPM Gate	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 2: Asbestos Fibre Air Monitoring Locations



Site Boundary – Asbestos EPA Licensed Waste Stockpile	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 3: Asbestos Fibre Air Monitoring Locations



Site Boundary – Asbestos impacted concrete stockpile	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 4: Asbestos Fibre Air Monitoring Locations

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ASBESTOS FIBRE AIR MONITORING REPORT

PRA Ref.: PRJ001239-AM007-V1 **Sampling Type:** Control Monitoring

Site Address: Munmorah Power Station, Colongra NSW 2262

Client Details: CMA Contracting Pty Ltd – 83 Bourke Road, Alexandria NSW 2015

Sampled by: Samples were collected by Liam Naughton (Licensed Asbestos Assessor No. LAA001403) on 9 March 2023.

Accreditation: Accredited for compliance with ISO/IEC 17025 – Testing
NATA Accreditation Number 20447
Corporate Site No. 24489

Work Activities*:
- Control monitoring during excavation and loading out of asbestos impacted soil from the nominated work areas to the onsite asbestos licensed waste facility at the former Munmorah Power Station.

Results					
Sample Location Shown in Figures 1-4	**Filter ID**	**Average Flow Rate (L/Min)**	**Sampling Period Start–Finish**	**Fibres/ Fields**	**Results Fibres/mL**
Field Blank	DG604228	-	-	0.0/100	-
External, western side of asbestos coal bunker, north-east corner of work area – on star picket.	DG604231	2.00	0746 – 1525	0.0/100	< 0.01
External, western side of asbestos coal bunker, south-east corner of work area – on star picket.	DG604188	2.00	0747 – 1537	0.0/100	< 0.01
External, western side of asbestos coal bunker, north-west corner of work area – on star picket.	DG604226	2.00	0749 – 1539	0.0/100	< 0.01
External, eastern side of asbestos coal bunker, southern end of work area, adjacent contaminated concrete stockpile – on star picket.	DG604232	2.00	0757 – 1544	1.0/100	< 0.01
External, northern end, adjacent CMA Contracting site compound – on main entrance gate.	DG604221	2.00	0801 – 1547	2.0/100	< 0.01

Results					
Sample Location Shown in Figures 1-4	**Filter ID**	**Average Flow Rate (L/Min)**	**Sampling Period Start–Finish**	**Fibres/ Fields**	**Results Fibres/mL**
External, northern end, asbestos licensed waste facility, adjacent stockpile – on star picket.	DG604245	2.00	0810 – 1550	1.0/100	< 0.01

Results	The results for the static samples were <0.01 fibres/mL (reporting limit).
Comments/ Recommendations*	Based on the above results, it is recommended that current controls are maintained.
Methodology	The sampling, analysis and reporting was conducted in accordance with *Guidance Note on the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres* (NOHSC:3003, April 2005) and PRA's *In-House Method for Airborne Asbestos and Synthetic Mineral Fibres* (ASB1). Note: a minimum of 10 fibres/100 graticule areas must be used to calculate airborne fibre concentration, even if less fibres were counted, per NOHSC 3003. Samples were analysed by Approved Counter Liam Naughton on 10 March 2023 at the PRA Base Laboratory at Unit 24, 34-36 Ralph Street, Alexandria, NSW, 2015.
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Technical Review By

Paul Ching
Approved Counter (Laboratory Manager)
Date: 10 March 2023

Approved By

Andrew Brabek
Approved Signatory (Managing Consultant/Licensed Asbestos Assessor No. LAA000139)
Date: 10 March 2023



Site Boundary – Western End of Coal Bunker Work Area	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 1: Asbestos Fibre Air Monitoring Locations



Site Boundary – GPM Gate	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 2: Asbestos Fibre Air Monitoring Locations



Site Boundary – Asbestos EPA Licensed Waste Stockpile (Red Tip)	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 3: Asbestos Fibre Air Monitoring Locations



Site Boundary – Asbestos impacted concrete stockpile	
Air Monitoring Locations (approximate)	

Source: Nearmap, accessed 6 March 2023.

Figure 4: Asbestos Fibre Air Monitoring Locations

Appendix J

SELL AND PARKER METAL MERCHANTS

Sell and Parker Pty Ltd • 98 000 101 315
Sell and Parker Holdings Pty Ltd
Precision Oxycut
Lorross Pty Ltd
Sell and Parker (International) Pty Ltd

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May 8, 2023

To Whom It May Concern

On May 8th, 2023 we received a de-commissioned 10,000 litre underground fuel tank from South of the coal bunker within Munmorah Power Station at 301 Scenic Drive Colongra. This tank was received from CMA Contracting PTY Ltd on behalf of Generator Property Management.

This tank has been destructed using our EPA approved Heavy Metal Shear with accordance requirements and will be used for metal reclamation only and rendered unusable for the original intended purpose.

Yours faithfully

Cameron Bennett
Sell and Parker Pty Ltd

BIR MEMBER

Appendix K

Table K1: 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.

Table K2: Soil/concrete QA/QC Tabulated Results

Sample ID:					H13-VW1	QAQC01	QAQC02	Blind Average	Blind RPD %	Split Average	Split RPD %
Sample Type					Primary Sample	Blind Replicate	Split Replicate				
Sample Date					10-Mar-23	10-Mar-23	10-Mar-23				
Laboratory Report No.					318570	318570	ES2308334				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**							
Asbestos ID in soil(AS4964) >0.1g/kg	-	-	-	-	NAD	NAD	NAD	N/A	N/A	N/A	N/A
Trace Analysis	-	-	-	-	NAD	NAD	NAD	N/A	N/A	N/A	N/A
Total Asbestos#1	g/kg	0.1	0.1	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A
Asbestos ID in soil <0.1g/kg	-	N/A	N/A	N/A	Chrysotile	Chrysotile	Chrysotile	N/A	N/A	N/A	N/A
ACM >7mm Estimation*	g	--	--	--	–	–	<0.0004	N/A	N/A	N/A	N/A
FA and AF Estimation*	g	--	--	--	0.0034	0.0004	0.0067	0.0	157.9%	0.0	65.3%
ACM >7mm Estimation*	%(w/w)	0.01	0.01	0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
FA and AF Estimation*#2	%(w/w)	0.001	0.001	0.001	<0.001	<0.001	<0.001	N/A	N/A	N/A	N/A
Perfluorobutanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-
Perfluoropentanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-
Perfluoroheptanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-
Perfluorodecanesulfonic acid	µg/kg	0.2	0.2	0.2	-	-	-	-	-	-	-
Perfluorobutanoic acid	µg/kg	0.2	0.2	1	-	-	-	-	-	-	-
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	0.2	-	-	-	-	-	-	-
Perfluorooctanoic acid PFOA	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-
Perfluorononanoic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-
Perfluorodecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-
Perfluoroundecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-
Perfluorododecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-
Perfluorotridecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-
Perfluorotetradecanoic acid	µg/kg	5	5	0.5	-	-	-	-	-	-	-
4:2 FTS	µg/kg	0.1	0.1	0.5	-	-	-	-	-	-	-
6:2 FTS	µg/kg	0.1	0.1	0.5	-	-	-	-	-	-	-
8:2 FTS	µg/kg	0.2	0.2	0.5	-	-	-	-	-	-	-
10:2 FTS	µg/kg	0.2	0.2	0.5	-	-	-	-	-	-	-
Perfluorooctane sulfonamide	µg/kg	1	1	0.2	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamide	µg/kg	1	1	0.5	-	-	-	-	-	-	-
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	1	0.5	-	-	-	-	-	-	-
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1	1	0.5	-	-	-	-	-	-	-
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5	5	0.5	-	-	-	-	-	-	-
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2	0.2	0.2	-	-	-	-	-	-	-
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2	0.2	0.2	-	-	-	-	-	-	-
Combustibility	%	0.1	0.1	-	-	-	-	-	-	-	-
Total Sulphur	%w/w	0.01	0.01		-	-	-	-	-	-	-
TRH C6 - C9	mg/kg	25	-	-	-	-	-	-	-	-	-
TRH C6 - C10	mg/kg	25	-	-	-	-	-	-	-	-	-
Fraction 1 - BTEX	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	-	-	-	-	-	-	-	-	-
Total +ve Xylenes	mg/kg	1	-	-	-	-	-	-	-	-	-
TRH C10 - C14	mg/kg	50	-	-	-	-	-	-	-	-	-
TRH C15 - C28	mg/kg	100	-	-	-	-	-	-	-	-	-
TRH C29 - C36	mg/kg	100	-	-	-	-	-	-	-	-	-
TRH >C10-C16	mg/kg	50	-	-	-	-	-	-	-	-	-
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	-	-	-	-	-	-	-	-	-
TRH >C16-C34	mg/kg	100	-	-	-	-	-	-	-	-	-
TRH >C34-C40	mg/kg	100	-	-	-	-	-	-	-	-	-
Total +ve TRH (>C10-C40)	mg/kg	50	-	-	-	-	-	-	-	-	-

Note: *Tested as ash content

Table K2: Soil/concrete QA/QC Tabulated Results

Sample ID:					F9-VW1	QAQC03	QAQC04					AEC4-CCV1	QAQC01	QAQC02				
Sample Type					Primary Sample	Blind Replicate	Split Replicate					Primary Sample	Blind Replicate	Split Replicate				
Sample Date					10-Mar-23	10-Mar-23	10-Mar-23	Blind Average	Blind RPD %	Split Average	Split RPD %	10-Mar-23	10-Mar-23	10-Mar-23	Blind Average	Blind RPD %	Split Average	Split RPD %
Laboratory Report No.					318570	318570	ES2308334					318571	318571	ES2308335				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**														
Asbestos ID in soil(AS4964) >0.1g/kg	-	-	-	-	NAD	NAD	NAD	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
Trace Analysis	-	-	-	-	NAD	NAD	NAD	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
Total Asbestos#1	g/kg	0.1	0.1	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
Asbestos ID in soil <0.1g/kg	-	N/A	N/A	N/A	Amosite	Chr; Am	-	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
ACM >7mm Estimation*	g	--	--	--	–	–	<0.0004	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
FA and AF Estimation*	g	--	--	--	0.0042	0.0007	<0.0004	0.0	142.9%	0.0	N/A	-	-	-	-	-	-	-
ACM >7mm Estimation*	%(w/w)	0.01	0.01	0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
FA and AF Estimation*#2	%(w/w)	0.001	0.001	0.001	<0.001	<0.001	<0.001	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	<0.1	<0.1	0.3	N/A	N/A	0.3	N/A
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	-	-	-	-	-	-	-	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
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	<0.2	<0.2	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluoroheptanoic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
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	0.1	N/A	0.1	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
Combustibility	%	0.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Sulphur	%w/w	0.01	0.01		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C9	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C10	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 - BTEX	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve Xylenes	mg/kg	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10 - C14	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C15 - C28	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C29 - C36	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve TRH (>C10-C40)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: *Tested as ash content

Table K2: Soil/concrete QA/QC Tabulated Results

Sample ID:					F9-VW3-2	QAQC01	QAQC02					WA-V1	QAQC01	QAQC02				
Sample Type					Primary Sample	Blind Replicate	Split Replicate					Primary Sample	Blind Replicate	Split Replicate				
Sample Date					29-Mar-23	29-Mar-23	29-Mar-23	Blind Average	Blind RPD %	Split Average	Split RPD %	18-Apr-23	18-Apr-23	18-Apr-23	Blind Average	Blind RPD %	Split Average	Split RPD %
Laboratory Report No.					318570	318570						321312	321312	ES2313243				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**														
Asbestos ID in soil(AS4964) >0.1g/kg	-	-	-	-	NAD	NAD	NAD	N/A	N/A	N/A	N/A	NAD	NAD	NAD	N/A	N/A	N/A	N/A
Trace Analysis	-	-	-	-	NAD	NAD	NAD	N/A	N/A	N/A	N/A	NAD	NAD	NAD	N/A	N/A	N/A	N/A
Total Asbestos#1	g/kg	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
Asbestos ID in soil <0.1g/kg	-	N/A	N/A	N/A	Chrysotile	Chrysotile	-	N/A	N/A	N/A	N/A	NVAD	NVAD	-	N/A	N/A	N/A	N/A
ACM >7mm Estimation*	g	--	--	--	–	–	<0.0004	N/A	N/A	N/A	N/A	–	–	<0.0004	N/A	N/A	N/A	N/A
FA and AF Estimation*	g	--	--	--	0.003	0.0842	<0.0004	0.04	186.2%	0.003	N/A	–	–	<0.0004	N/A	N/A	N/A	N/A
ACM >7mm Estimation*	%(w/w)	0.01	0.01	0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
FA and AF Estimation*#2	%(w/w)	0.001	0.001	0.001	<0.001	0.0099	<0.001	0.0	N/A	N/A	N/A	<0.001	<0.001	<0.001	N/A	N/A	N/A	N/A
Perfluorobutanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorodecanesulfonic acid	µg/kg	0.2	0.2	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorobutanoic acid	µg/kg	0.2	0.2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctanoic acid PFOA	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorononanoic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorodecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroundecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorododecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotridecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotetradecanoic acid	µg/kg	5	5	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:2 FTS	µg/kg	0.1	0.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2 FTS	µg/kg	0.1	0.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 FTS	µg/kg	0.2	0.2	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:2 FTS	µg/kg	0.2	0.2	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonamide	µg/kg	1	1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamide	µg/kg	1	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5	5	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2	0.2	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2	0.2	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Combustibility	%	0.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Sulphur	%w/w	0.01	0.01		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C9	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C10	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 - BTEX	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve Xylenes	mg/kg	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10 - C14	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C15 - C28	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C29 - C36	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve TRH (>C10-C40)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: *Tested as ash content

Table K2: Soil/concrete QA/QC Tabulated Results

Sample ID:					SS-V26	QAQC01	QAQC02	Blind Average	Blind RPD %	Split Average	Split RPD %	SS-V14	QAQC03	QAQC04	Blind Average	Blind RPD %	Split Average	Split RPD %
Sample Type					Primary Sample	Blind Replicate	Split Replicate					Primary Sample	Blind Replicate	Split Replicate				
Sample Date					18-Apr-23	18-Apr-23	18-Apr-23					18-Apr-23	18-Apr-23	18-Apr-23				
Laboratory Report No.					321311	321311	ES2313243					321311	321311	ES2313243				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**														
Asbestos ID in soil(AS4964) >0.1g/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
Trace Analysis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
Total Asbestos#1	g/kg	0.1	0.1	0.1	-	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
Asbestos ID in soil <0.1g/kg	-	N/A	N/A	N/A	-	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
ACM >7mm Estimation*	g	--	--	--	-	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
FA and AF Estimation*	g	--	--	--	-	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
ACM >7mm Estimation*	%(w/w)	0.01	0.01	0.01	-	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
FA and AF Estimation*#2	%(w/w)	0.001	0.001	0.001	-	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
Perfluorobutanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	<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	<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	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	0.1	0.1	<0.2	0.1	0.0%	0.1	N/A
Perfluoroheptanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	<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	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	0.2	<0.1	<0.2	0.2	N/A	0.2	N/A
Perfluorodecanesulfonic acid	µg/kg	0.2	0.2	0.2	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A	<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	<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	<0.2	<0.2	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluoroheptanoic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
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	0.2	0.2	0.2	0.2	0.0%	0.2	0.0%
Perfluorononanoic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	0.4	0.3	0.6	0.35	28.6%	0.5	40.0%
Perfluorodecanoic acid	µg/kg	0.5	0.5	0.2	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Combustibility	%	0.1	0.1	-	-	-	-	-	-	-	-	3.3	3	-	3.15	9.52%	3.3	N/A
Total Sulphur	%w/w	0.01	0.01		-	-	-	-	-	-	-	0.04	0.04	-	0.04	0.00%	0.04	N/A
TRH C6 - C9	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C10	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 - BTEX	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve Xylenes	mg/kg	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10 - C14	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C15 - C28	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C29 - C36	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve TRH (>C10-C40)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: *Tested as ash content

Table K2: Soil/concrete QA/QC Tabulated Results

Sample ID:					WSB-V1	QAQC1	QAQC2	Blind Average	Blind RPD %	Split Average	Split RPD %	SS-V1	QAQC01	QAQC02	Blind Average	Blind RPD %	Split Average	Split RPD %
Sample Type					Primary Sample	Blind Replicate	Split Replicate					Primary Sample	Blind Replicate	Split Replicate				
Sample Date					18-Apr-23	18-Apr-23	18-Apr-23					21-Apr-23	21-Apr-23	21-Apr-23				
Laboratory Report No.					321311	321311	ES2313243					321584	321584	ES2313443				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**														
Asbestos ID in soil(AS4964) >0.1g/kg	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
Trace Analysis	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
Total Asbestos#1	g/kg	0.1	0.1	0.1	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
Asbestos ID in soil <0.1g/kg	-	N/A	N/A	N/A	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
ACM >7mm Estimation*	g	--	--	--	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
FA and AF Estimation*	g	--	--	--	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
ACM >7mm Estimation*	%(w/w)	0.01	0.01	0.01	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
FA and AF Estimation*#2	%(w/w)	0.001	0.001	0.001	-	-	-	N/A	N/A	N/A	N/A	-	-	-	-	-	-	-
Perfluorobutanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluoropentanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<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	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluoroheptanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<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	-	-	-	N/A	N/A	N/A	N/A	0.3	0.3	0.3	0.3	0.0%	0.3	0.0%
Perfluorodecanesulfonic acid	µg/kg	0.2	0.2	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Perfluorobutanoic acid	µg/kg	0.2	0.2	1	-	-	-	N/A	N/A	N/A	N/A	<0.2	<0.2	<1	N/A	N/A	N/A	N/A
Perfluoropentanoic acid	µg/kg	0.2	0.2	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluoroheptanoic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluorooctanoic acid PFOA	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	0.2	N/A	N/A	0.2	N/A
Perfluorononanoic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	0.1	<0.1	0.6	0.1	N/A	0.35	142.9%
Perfluorodecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluoroundecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluorododecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluorotridecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluorotetradecanoic acid	µg/kg	5	5	0.5	-	-	-	N/A	N/A	N/A	N/A	<5	<5	<0.5	N/A	N/A	N/A	N/A
4:2 FTS	µg/kg	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
6:2 FTS	µg/kg	0.1	0.1	0.5	-	-	-	N/A	N/A	N/A	N/A	0.4	0.4	<0.5	0.4	0.0%	0.4	N/A
8:2 FTS	µg/kg	0.2	0.2	0.5	-	-	-	N/A	N/A	N/A	N/A	0.2	0.2	<0.5	0.2	0.0%	0.2	N/A
10:2 FTS	µg/kg	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
Perfluorooctane sulfonamide	µg/kg	1	1	0.2	-	-	-	N/A	N/A	N/A	N/A	<1	<1	<0.2	N/A	N/A	N/A	N/A
N-Methyl perfluorooctane sulfonamide	µg/kg	1	1	0.5	-	-	-	N/A	N/A	N/A	N/A	<1	<1	<0.5	N/A	N/A	N/A	N/A
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	1	0.5	-	-	-	N/A	N/A	N/A	N/A	<1	<1	<0.5	N/A	N/A	N/A	N/A
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1	1	0.5	-	-	-	N/A	N/A	N/A	N/A	<1	<1	<0.5	N/A	N/A	N/A	N/A
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5	5	0.5	-	-	-	N/A	N/A	N/A	N/A	<5	<5	<0.5	N/A	N/A	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2	0.2	0.2	-	-	-	N/A	N/A	N/A	N/A	<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	-	-	-	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Combustibility	%	0.1	0.1	-	60	48	*	54	22.22%	N/A	N/A	6.4	10	*	8.2	43.9%	N/A	N/A
Total Sulphur	%w/w	0.01	0.01		0.3	0.31	0.22	0.31	3.28%	0.26	30.77%	0.079	0.075	0.06	0.077	5.2%	0.07	27.3%
TRH C6 - C9	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C10	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 - BTEX	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve Xylenes	mg/kg	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10 - C14	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C15 - C28	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C29 - C36	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve TRH (>C10-C40)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: *Tested as ash content

Table K2: Soil/concrete QA/QC Tabulated Results

Sample ID:					F9-VW3-2	QAQC01	QAQC02					SP7-V1	QAQC01	QAQC02				
Sample Type					Primary Sample	Blind Replicate	Split Replicate					Primary Sample	Blind Replicate	Split Replicate				
Sample Date					23-Apr-23	23-Apr-23	23-Apr-23	Blind Average	Blind RPD %	Split Average	Split RPD %	27-Apr-23	27-Apr-23	27-Apr-23	Blind Average	Blind RPD %	Split Average	Split RPD %
Laboratory Report No.					319378	319378	ES2309832					321855	321855	ES2314037				
Parameter	Unit	Primary PQL	Blind PQL	Split PQL														
Asbestos ID in soil(AS4964) >0.1g/kg	-	-	-	-	NAD	NAD	NAD	N/A	N/A	N/A	N/A	NAD	NAD	NAD	N/A	N/A	N/A	N/A
Trace Analysis	-	-	-	-	NAD	NAD	NAD	N/A	N/A	N/A	N/A	NAD	NAD	NAD	N/A	N/A	N/A	N/A
Total Asbestos#1	g/kg	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
Asbestos ID in soil <0.1g/kg	-	N/A	N/A	N/A	Chrysotile	Chrysotile	Chrysotile	N/A	N/A	N/A	N/A	NVAD	NVAD	-	N/A	N/A	N/A	N/A
ACM >7mm Estimation*	g	--	--	--	–	–	-	N/A	N/A	N/A	N/A	–	–	<0.0004	N/A	N/A	N/A	N/A
FA and AF Estimation*	g	--	--	--	0.003	0.0842	-	0.04	186.2%	0.003	N/A	–	–	<0.0004	N/A	N/A	N/A	N/A
ACM >7mm Estimation*	%(w/w)	0.01	0.01	0.01	<0.01	<0.01	-	N/A	N/A	N/A	N/A	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
FA and AF Estimation*#2	%(w/w)	0.001	0.001	0.001	<0.001	0.0099	-	0.0	N/A	N/A	N/A	<0.001	<0.001	<0.001	N/A	N/A	N/A	N/A
Perfluorobutanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluoropentanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<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	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluoroheptanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<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	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	0.3	N/A	N/A	0.3	N/A
Perfluorodecanesulfonic acid	µg/kg	0.2	0.2	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Perfluorobutanoic acid	µg/kg	0.2	0.2	1	-	-	-	N/A	N/A	N/A	N/A	<0.2	<0.2	<1	N/A	N/A	N/A	N/A
Perfluoropentanoic acid	µg/kg	0.2	0.2	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluoroheptanoic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluorooctanoic acid PFOA	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluorononanoic acid	µg/kg	0.1	0.1	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluorodecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluoroundecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluorododecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluorotridecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	N/A	N/A	N/A	N/A	<0.5	<0.5	<0.2	N/A	N/A	N/A	N/A
Perfluorotetradecanoic acid	µg/kg	5	5	0.5	-	-	-	N/A	N/A	N/A	N/A	<5	<5	<0.5	N/A	N/A	N/A	N/A
4:2 FTS	µg/kg	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
6:2 FTS	µg/kg	0.1	0.1	0.5	-	-	-	N/A	N/A	N/A	N/A	0.1	<0.1	<0.5	0.1	N/A	0.1	N/A
8:2 FTS	µg/kg	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
10:2 FTS	µg/kg	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
Perfluorooctane sulfonamide	µg/kg	1	1	0.2	-	-	-	N/A	N/A	N/A	N/A	<1	<1	<0.2	N/A	N/A	N/A	N/A
N-Methyl perfluorooctane sulfonamide	µg/kg	1	1	0.5	-	-	-	N/A	N/A	N/A	N/A	<1	<1	<0.5	N/A	N/A	N/A	N/A
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	1	0.5	-	-	-	N/A	N/A	N/A	N/A	<1	<1	<0.5	N/A	N/A	N/A	N/A
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1	1	0.5	-	-	-	N/A	N/A	N/A	N/A	<1	<1	<0.5	N/A	N/A	N/A	N/A
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5	5	0.5	-	-	-	N/A	N/A	N/A	N/A	<5	<5	<0.5	N/A	N/A	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2	0.2	0.2	-	-	-	N/A	N/A	N/A	N/A	<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	-	-	-	N/A	N/A	N/A	N/A	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Combustibility	%	0.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Sulphur	%w/w	0.01	0.01		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C9	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C10	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 - BTEX	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve Xylenes	mg/kg	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10 - C14	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C15 - C28	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C29 - C36	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve TRH (>C10-C40)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: *Tested as ash content

Table K2: Soil/concrete QA/QC Tabulated Results

Sample ID:					SP3-V1	QAQC03	QAQC04	Blind Average	Blind RPD %	Split Average	Split RPD %	SS-V6	QAQCA A	Blind Average	Blind RPD %
Sample Type					Primary Sample	Blind Replicate	Split Replicate					Primary Sample	Blind Replicate		
Sample Date					27-Apr-23	27-Apr-23	27-Apr-23					27-Apr-23	27-Apr-23		
Laboratory Report No.					321855	321855	ES2314037					321855	321855		
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**											
Asbestos ID in soil(AS4964) >0.1g/kg	-	-	-	-	NAD	NAD	NAD	N/A	N/A	N/A	N/A	-	-	-	-
Trace Analysis	-	-	-	-	NAD	NAD	NAD	N/A	N/A	N/A	N/A	-	-	-	-
Total Asbestos#1	g/kg	0.1	0.1	0.1	<0.1	<0.1	<0.1	N/A	N/A	N/A	N/A	-	-	-	-
Asbestos ID in soil <0.1g/kg	-	N/A	N/A	N/A	NVAD	NVAD	-	N/A	N/A	N/A	N/A	-	-	-	-
ACM >7mm Estimation*	g	--	--	--	–	–	<0.0004	N/A	N/A	N/A	N/A	-	-	-	-
FA and AF Estimation*	g	--	--	--	–	–	<0.0004	N/A	N/A	N/A	N/A	-	-	-	-
ACM >7mm Estimation*	%(w/w)	0.01	0.01	0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A	-	-	-	-
FA and AF Estimation*#2	%(w/w)	0.001	0.001	0.001	<0.001	<0.001	<0.001	N/A	N/A	N/A	N/A	-	-	-	-
Perfluorobutanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	<0.1	<0.1	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	<0.1	<0.1	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	0.2	0.1	0.15	66.7%
Perfluoroheptanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	<0.1	<0.1	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	0.1	0.2	<0.1	<0.1	0.3	N/A	N/A	0.3	N/A	0.6	0.6	0.6	0.0%
Perfluorodecanesulfonic acid	µg/kg	0.2	0.2	0.2	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A	<0.2	<0.2	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	<0.2	<0.2	N/A	N/A
Perfluoropentanoic acid	µg/kg	0.2	0.2	0.2	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A	0.3	0.3	0.3	0.0%
Perfluorohexanoic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	0.2	0.2	0.2	0.0%
Perfluoroheptanoic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	0.1	<0.1	0.1	N/A
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	<0.1	<0.1	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	<0.1	0.2	0.2	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	<0.5	<0.5	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	<0.5	<0.5	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	<0.5	<0.5	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	<0.5	<0.5	N/A	N/A
Perfluorotetradecanoic acid	µg/kg	5	5	0.5	<5	<5	<0.5	N/A	N/A	N/A	N/A	<5	<5	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	<0.1	<0.1	N/A	N/A
6:2 FTS	µg/kg	0.1	0.1	0.5	0.1	<0.1	<0.5	0.1	N/A	0.1	N/A	<0.1	0.2	0.2	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	<0.2	<0.2	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	<0.2	<0.2	N/A	N/A
Perfluorooctane sulfonamide	µg/kg	1	1	0.2	<1	<1	<0.2	N/A	N/A	N/A	N/A	<1	<1	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	<1	<1	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	<1	<1	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	<1	<1	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	<5	<5	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	<0.2	<0.2	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	<0.2	<0.2	N/A	N/A
Combustibility	%	0.1	0.1	-	-	-	-	-	-	-	-	7.7	5.9	6.8	26.5%
Total Sulphur	%w/w	0.01	0.01		-	-	-	-	-	-	-	0.045	0.053	0.049	16.3%
TRH C6 - C9	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C10	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 - BTEX	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	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve Xylenes	mg/kg	1	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10 - C14	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C15 - C28	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C29 - C36	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve TRH (>C10-C40)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: *Tested as ash content

Table K2: Soil/concrete QA/QC Tabulated Results

Sample ID:					AEC4-V1B	QAQC5	QAQC6	Blind Average	Blind RPD %	Split Average	Split RPD %	AEC4-V1W	QAQC7	QAQC8	Blind Average	Blind RPD %	Split Average	Split RPD %
Sample Type					Primary Sample	Blind Replicate	Split Replicate					Primary Sample	Blind Replicate	Split Replicate				
Sample Date					28-Apr-23	28-Apr-23	28-Apr-23					28-Apr-23	28-Apr-23	28-Apr-23				
Laboratory Report No.					321970	321970	ES2314153					321970	321970	ES2314153				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**														
Asbestos ID in soil(AS4964) >0.1g/kg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trace Analysis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Asbestos#1	g/kg	0.1	0.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos ID in soil <0.1g/kg	-	N/A	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorobutanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	<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	<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	0.4	<0.1	<0.2	0.4	N/A	0.4	N/A	0.1	0.1	<0.2	0.1	0.0%	0.1	N/A
Perfluoroheptanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	<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	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A	0.3	0.3	0.3	0.3	0.0%	0.3	0.0%
Perfluorodecanesulfonic acid	µg/kg	0.2	0.2	0.2	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A	<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	<0.2	<0.2	<1	N/A	N/A	N/A	N/A
Perfluoropentanoic acid	µg/kg	0.2	0.2	0.2	0.3	<0.2	<0.2	0.3	N/A	0.3	N/A	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/kg	0.1	0.1	0.2	0.4	<0.1	<0.2	0.4	N/A	0.4	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
Perfluoroheptanoic acid	µg/kg	0.1	0.1	0.2	0.1	<0.1	<0.2	0.1	N/A	0.1	N/A	<0.1	<0.1	<0.2	N/A	N/A	N/A	N/A
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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<0.2	<0.2	<0.2	N/A	N/A	N/A	N/A
Combustibility	%	0.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Sulphur	%w/w	0.01	0.01		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C9	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C10	mg/kg	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 - BTEX	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve Xylenes	mg/kg	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C10 - C14	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C15 - C28	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH C29 - C36	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	mg/kg	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total +ve TRH (>C10-C40)	mg/kg	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: *Tested as ash content

Table K2: Soil/concrete QA/QC Tabulated Results

Sample ID:					T-V1B	QAQC9	Blind Average	Blind RPD %	SP5-V5-2	QAQC3	Blind Average	Blind RPD %	WSB-V1-2	QAQC1	QAQC2	Blind Average	Blind RPD %	Split Average	Split RPD %
Sample Type					Primary Sample	Blind Replicate			Primary Sample	Blind Replicate			Primary Sample	Blind Replicate	Split Replicate				
Sample Date					28-Apr-23	28-Apr-23			03-May-23	03-May-23			03-May-23	03-May-23	03-May-23				
Laboratory Report No.					321970	321970			322273	322273			322273	322273	TBC				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**															
Asbestos ID in soil(AS4964) >0.1g/kg	-	-	-	-	-	-	-	-	NAD	NAD	N/A	N/A	-	-	-	-	-	-	-
Trace Analysis	-	-	-	-	-	-	-	-	NAD	NAD	N/A	N/A	-	-	-	-	-	-	-
Total Asbestos#1	g/kg	0.1	0.1	0.1	-	-	-	-	<0.1	<0.1	N/A	N/A	-	-	-	-	-	-	-
Asbestos ID in soil <0.1g/kg	-	N/A	N/A	N/A	-	-	-	-	NVAD	NVAD	N/A	N/A	-	-	-	-	-	-	-
ACM >7mm Estimation*	g	--	--	--	-	-	-	-	–	–	N/A	N/A	-	-	-	-	-	-	-
FA and AF Estimation*	g	--	--	--	-	-	-	-	–	–	N/A	N/A	-	-	-	-	-	-	-
ACM >7mm Estimation*	%(w/w)	0.01	0.01	0.01	-	-	-	-	<0.01	<0.01	N/A	N/A	-	-	-	-	-	-	-
FA and AF Estimation*#2	%(w/w)	0.001	0.001	0.001	-	-	-	-	<0.001	<0.001	N/A	N/A	-	-	-	-	-	-	-
Perfluorobutanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroheptanesulfonic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorodecanesulfonic acid	µg/kg	0.2	0.2	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorobutanoic acid	µg/kg	0.2	0.2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctanoic acid PFOA	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorononanoic acid	µg/kg	0.1	0.1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorodecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluoroundecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorododecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotridecanoic acid	µg/kg	0.5	0.5	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorotetradecanoic acid	µg/kg	5	5	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:2 FTS	µg/kg	0.1	0.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6:2 FTS	µg/kg	0.1	0.1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8:2 FTS	µg/kg	0.2	0.2	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10:2 FTS	µg/kg	0.2	0.2	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonamide	µg/kg	1	1	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Methyl perfluorooctane sulfonamide	µg/kg	1	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1	1	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5	5	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2	0.2	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2	0.2	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Combustibility	%	0.1	0.1	-	-	-	-	-	-	-	-	-	4.1	2.8	TBC	3.45	37.7%	4.1	N/A
Total Sulphur	%w/w	0.01	0.01		-	-	-	-	-	-	-	-	0.05	0.04	TBC	0.045	22.2%	0.05	N/A
TRH C6 - C9	mg/kg	25	-	-	<25	<25	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
TRH C6 - C10	mg/kg	25	-	-	<25	<25	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
Fraction 1 - BTEX	mg/kg	25	-	-	<25	<25	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
Benzene	mg/kg	0.2	-	-	<0.2	<0.2	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	0.5	-	-	<0.5	<0.5	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	1	-	-	<1	<1	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
m+p-xylene	mg/kg	2	-	-	<2	<2	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	mg/kg	1	-	-	<1	<1	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
Total +ve Xylenes	mg/kg	1	-	-	<1	<1	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
TRH C10 - C14	mg/kg	50	-	-	58	62	60	6.7%	-	-	-	-	-	-	-	-	-	-	-
TRH C15 - C28	mg/kg	100	-	-	140	140	140	0.0%	-	-	-	-	-	-	-	-	-	-	-
TRH C29 - C36	mg/kg	100	-	-	<100	<100	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
TRH >C10-C16	mg/kg	50	-	-	110	200	155	58.1%	-	-	-	-	-	-	-	-	-	-	-
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	-	-	110	120	115	8.7%	-	-	-	-	-	-	-	-	-	-	-
TRH >C16-C34	mg/kg	100	-	-	<100	120	120	N/A	-	-	-	-	-	-	-	-	-	-	-
TRH >C34-C40	mg/kg	100	-	-	<100	<100	N/A	N/A	-	-	-	-	-	-	-	-	-	-	-
Total +ve TRH (>C10-C40)	mg/kg	50	-	-	110	120	115	8.7%	-	-	-	-	-	-	-	-	-	-	-

Note: *Tested as ash content

Table K2: Soil/concrete QA/QC Tabulated Results

Sample ID:					AEC4-V10W-2	QAQC4	Blind Average	Blind RPD %
Sample Type					Primary Sample	Blind Replicate		
Sample Date					03-May-23	03-May-23		
Laboratory Report No.					322273	322273		
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**				
Asbestos ID in soil(AS4964) >0.1g/kg	-	-	-	-	-	-	-	-
Trace Analysis	-	-	-	-	-	-	-	-
Total Asbestos#1	g/kg	0.1	0.1	0.1	-	-	-	-
Asbestos ID in soil <0.1g/kg	-	N/A	N/A	N/A	-	-	-	-
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	-	-	-	-
Perfluorobutanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	N/A	N/A
Perfluoropentanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	0.1	0.2	0.7	0.7	0.7	0.0%
Perfluoroheptanesulfonic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	0.1	0.2	2.4	2.5	2.45	4.1%
Perfluorodecanesulfonic acid	µg/kg	0.2	0.2	0.2	<0.2	<0.2	N/A	N/A
Perfluorobutanoic acid	µg/kg	0.2	0.2	1	<0.2	<0.2	N/A	N/A
Perfluoropentanoic acid	µg/kg	0.2	0.2	0.2	<0.2	<0.2	N/A	N/A
Perfluorohexanoic acid	µg/kg	0.1	0.1	0.2	0.1	0.1	0.1	0.0%
Perfluoroheptanoic acid	µg/kg	0.1	0.1	0.2	<0.1	0.1	0.1	N/A
Perfluorooctanoic acid PFOA	µg/kg	0.1	0.1	0.2	<0.1	<0.1	N/A	N/A
Perfluorononanoic acid	µg/kg	0.1	0.1	0.2	<0.1	<0.1	N/A	N/A
Perfluorodecanoic acid	µg/kg	0.5	0.5	0.2	<0.5	<0.5	N/A	N/A
Perfluoroundecanoic acid	µg/kg	0.5	0.5	0.2	<0.5	<0.5	N/A	N/A
Perfluorododecanoic acid	µg/kg	0.5	0.5	0.2	<0.5	<0.5	N/A	N/A
Perfluorotridecanoic acid	µg/kg	0.5	0.5	0.2	<0.5	<0.5	N/A	N/A
Perfluorotetradecanoic acid	µg/kg	5	5	0.5	<5	<5	N/A	N/A
4:2 FTS	µg/kg	0.1	0.1	0.5	<0.1	<0.1	N/A	N/A
6:2 FTS	µg/kg	0.1	0.1	0.5	<0.1	<0.1	N/A	N/A
8:2 FTS	µg/kg	0.2	0.2	0.5	<0.2	<0.2	N/A	N/A
10:2 FTS	µg/kg	0.2	0.2	0.5	<0.2	<0.2	N/A	N/A
Perfluorooctane sulfonamide	µg/kg	1	1	0.2	<1	<1	N/A	N/A
N-Methyl perfluorooctane sulfonamide	µg/kg	1	1	0.5	<1	<1	N/A	N/A
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	1	0.5	<1	<1	N/A	N/A
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1	1	0.5	<1	<1	N/A	N/A
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5	5	0.5	<5	<5	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2	0.2	0.2	<0.2	<0.2	N/A	N/A
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2	0.2	0.2	<0.2	<0.2	N/A	N/A
Combustibility	%	0.1	0.1	-	-	-	-	-
Total Sulphur	%w/w	0.01	0.01		-	-	-	-
TRH C6 - C9	mg/kg	25	-	-	<25	<25	N/A	N/A
TRH C6 - C10	mg/kg	25	-	-	<25	<25	N/A	N/A
Fraction 1 - BTEX	mg/kg	25	-	-	<25	<25	N/A	N/A
Benzene	mg/kg	0.2	-	-	<0.2	<0.2	N/A	N/A
Toluene	mg/kg	0.5	-	-	<0.5	<0.5	N/A	N/A
Ethylbenzene	mg/kg	1	-	-	<1	<1	N/A	N/A
m+p-xylene	mg/kg	2	-	-	<2	<2	N/A	N/A
o-Xylene	mg/kg	1	-	-	<1	<1	N/A	N/A
Total +ve Xylenes	mg/kg	1	-	-	<1	<1	N/A	N/A
TRH C10 - C14	mg/kg	50	-	-	58	62	60	6.7%
TRH C15 - C28	mg/kg	100	-	-	140	140	140	0.0%
TRH C29 - C36	mg/kg	100	-	-	<100	<100	N/A	N/A
TRH >C10-C16	mg/kg	50	-	-	110	200	155	58.1%
TRH >C10 - C16 - Naphthalene (F2)	mg/kg	50	-	-	110	120	115	8.7%
TRH >C16-C34	mg/kg	100	-	-	<100	120	120	N/A
TRH >C34-C40	mg/kg	100	-	-	<100	<100	N/A	N/A
Total +ve TRH (>C10-C40)	mg/kg	50	-	-	110	120	115	8.7%

Note: *Tested as ash content

Table K3: PFAS ASLP QA/QC Tabulated Results

				Sample ID:	AEC4-CCV1	QAQC01	QAQC02	**Blind Average**	**Blind RPD %**	**Split Average**	**Split RPD %**
				Sample Type	Primary Sample	Blind Replicate	Split Replicate				
				Date	10-Mar-23	10-Mar-23	10-Mar-23				
				Laboratory Report No.	318571	318571	ES2308335				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**							
Perfluorobutanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoropentanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluoroheptanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluorodecanesulfonic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorobutanoic acid	µg/L	0.02	0.02	0.002	<0.02	<0.02	<0.1	N/A	N/A	N/A	N/A
Perfluoropentanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoroheptanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluorononanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorodecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluoroundecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorododecanoic acid	µg/L	0.05	0.05	0.0005	<0.05	<0.05	<0.02	N/A	N/A	N/A	N/A
Perfluorotridecanoic acid	µg/L	0.1	0.1	0.0005	<0.1	<0.1	<0.02	N/A	N/A	N/A	N/A
Perfluorotetradecanoic acid	µg/L	0.5	0.5	0.0005	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
4:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
6:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
8:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
10:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
Perfluorooctane sulfonamide	µg/L	0.1	0.1	0.0005	<0.1	<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	<0.05	N/A	N/A	N/A	N/A
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	0.1	0.001	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	0.05	0.001	<0.05	<0.05	<0.05	N/A	N/A	N/A	N/A
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	0.5	0.001	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A

Table K3: PFAS ASLP QA/QC Tabulated Results

				Sample ID:	SS-V26	QAQC01	QAQC02	Blind Average	Blind RPD %	Split Average	Split RPD %
				Sample Type	Primary Sample	Blind Replicate	Split Replicate				
				Date	18-Apr-23	18-Apr-23	18-Apr-23				
				Laboratory Report No.	321311	321311	ES2313243				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**							
Perfluorobutanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoropentanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluoroheptanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluorodecanesulfonic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorobutanoic acid	µg/L	0.02	0.02	0.002	<0.02	<0.02	<0.1	N/A	N/A	N/A	N/A
Perfluoropentanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoroheptanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluorononanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorodecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluoroundecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorododecanoic acid	µg/L	0.05	0.05	0.0005	<0.05	<0.05	<0.02	N/A	N/A	N/A	N/A
Perfluorotridecanoic acid	µg/L	0.1	0.1	0.0005	<0.1	<0.1	<0.02	N/A	N/A	N/A	N/A
Perfluorotetradecanoic acid	µg/L	0.5	0.5	0.0005	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
4:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
6:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
8:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
10:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
Perfluorooctane sulfonamide	µg/L	0.1	0.1	0.0005	<0.1	<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	<0.05	N/A	N/A	N/A	N/A
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	0.1	0.001	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	0.05	0.001	<0.05	<0.05	<0.05	N/A	N/A	N/A	N/A
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	0.5	0.001	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A

Table K3: PFAS ASLP QA/QC Tabulated Results

				Sample ID:	SS-V14	QAQC03	QAQC04	**Blind Average**	**Blind RPD %**	**Split Average**	**Split RPD %**
				Sample Type	Primary Sample	Blind Replicate	Split Replicate				
				Date	18-Apr-23	18-Apr-23	18-Apr-23				
				Laboratory Report No.	321311	321311	ES2313243				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**							
Perfluorobutanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoropentanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluoroheptanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluorodecanesulfonic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorobutanoic acid	µg/L	0.02	0.02	0.002	<0.02	<0.02	<0.1	N/A	N/A	N/A	N/A
Perfluoropentanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoroheptanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	0.0005	<0.01	0.01	<0.01	0.0	1.0%	N/A	N/A
Perfluorononanoic acid	µg/L	0.01	0.01	0.0005	0.02	0.01	<0.02	0.0	1.0%	0.0	N/A
Perfluorodecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluoroundecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorododecanoic acid	µg/L	0.05	0.05	0.0005	<0.05	<0.05	<0.02	N/A	N/A	N/A	N/A
Perfluorotridecanoic acid	µg/L	0.1	0.1	0.0005	<0.1	<0.1	<0.02	N/A	N/A	N/A	N/A
Perfluorotetradecanoic acid	µg/L	0.5	0.5	0.0005	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
4:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
6:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
8:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
10:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
Perfluorooctane sulfonamide	µg/L	0.1	0.1	0.0005	<0.1	<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	<0.05	N/A	N/A	N/A	N/A
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	0.1	0.001	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	0.05	0.001	<0.05	<0.05	<0.05	N/A	N/A	N/A	N/A
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	0.5	0.001	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A

Table K3: PFAS ASLP QA/QC Tabulated Results

				Sample ID:	SS-V1	QAQC01	QAQC02	**Blind Average**	**Blind RPD %**	**Split Average**	**Split RPD %**
				Sample Type	Primary Sample	Blind Replicate	Split Replicate				
				Date	21-Apr-23	21-Apr-23	21-Apr-23				
				Laboratory Report No.	321584	321584	ES2313443				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**							
Perfluorobutanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoropentanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluoroheptanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluorodecanesulfonic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorobutanoic acid	µg/L	0.02	0.02	0.002	<0.02	<0.02	<0.1	N/A	N/A	N/A	N/A
Perfluoropentanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoroheptanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluorononanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorodecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluoroundecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorododecanoic acid	µg/L	0.05	0.05	0.0005	<0.05	<0.05	<0.02	N/A	N/A	N/A	N/A
Perfluorotridecanoic acid	µg/L	0.1	0.1	0.0005	<0.1	<0.1	<0.02	N/A	N/A	N/A	N/A
Perfluorotetradecanoic acid	µg/L	0.5	0.5	0.0005	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
4:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
6:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
8:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
10:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
Perfluorooctane sulfonamide	µg/L	0.1	0.1	0.0005	<0.1	<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	<0.05	N/A	N/A	N/A	N/A
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	0.1	0.001	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	0.05	0.001	<0.05	<0.05	<0.05	N/A	N/A	N/A	N/A
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	0.5	0.001	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A

Table K3: PFAS ASLP QA/QC Tabulated Results

				Sample ID:	SP7-V1	QAQC01	QAQC02	**Blind Average**	**Blind RPD %**	**Split Average**	**Split RPD %**
				Sample Type	Primary Sample	Blind Replicate	Split Replicate				
				Date	27-Apr-23	27-Apr-23	27-Apr-23				
				Laboratory Report No.	321855	321855	ES2314037				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**							
Perfluorobutanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoropentanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluoroheptanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluorodecanesulfonic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorobutanoic acid	µg/L	0.02	0.02	0.002	<0.02	<0.02	<0.1	N/A	N/A	N/A	N/A
Perfluoropentanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoroheptanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluorononanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorodecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluoroundecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorododecanoic acid	µg/L	0.05	0.05	0.0005	<0.05	<0.05	<0.02	N/A	N/A	N/A	N/A
Perfluorotridecanoic acid	µg/L	0.1	0.1	0.0005	<0.1	<0.1	<0.02	N/A	N/A	N/A	N/A
Perfluorotetradecanoic acid	µg/L	0.5	0.5	0.0005	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
4:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
6:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
8:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
10:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
Perfluorooctane sulfonamide	µg/L	0.1	0.1	0.0005	<0.1	<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	<0.05	N/A	N/A	N/A	N/A
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	0.1	0.001	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	0.05	0.001	<0.05	<0.05	<0.05	N/A	N/A	N/A	N/A
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	0.5	0.001	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A

Table K3: PFAS ASLP QA/QC Tabulated Results

				Sample ID:	SP3-V1	QAQC03	QAQC04	**Blind Average**	**Blind RPD %**	**Split Average**	**Split RPD %**
				Sample Type	Primary Sample	Blind Replicate	Split Replicate				
				Date	27-Apr-23	27-Apr-23	27-Apr-23				
				Laboratory Report No.	321855	321855	ES2314037				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**							
Perfluorobutanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoropentanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluoroheptanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluorodecanesulfonic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorobutanoic acid	µg/L	0.02	0.02	0.002	<0.02	<0.02	<0.1	N/A	N/A	N/A	N/A
Perfluoropentanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluoroheptanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.01	N/A	N/A	N/A	N/A
Perfluorononanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.02	N/A	N/A	N/A	N/A
Perfluorodecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluoroundecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
Perfluorododecanoic acid	µg/L	0.05	0.05	0.0005	<0.05	<0.05	<0.02	N/A	N/A	N/A	N/A
Perfluorotridecanoic acid	µg/L	0.1	0.1	0.0005	<0.1	<0.1	<0.02	N/A	N/A	N/A	N/A
Perfluorotetradecanoic acid	µg/L	0.5	0.5	0.0005	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
4:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
6:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	<0.05	N/A	N/A	N/A	N/A
8:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
10:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.05	N/A	N/A	N/A	N/A
Perfluorooctane sulfonamide	µg/L	0.1	0.1	0.0005	<0.1	<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	<0.05	N/A	N/A	N/A	N/A
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	0.1	0.001	<0.1	<0.1	<0.05	N/A	N/A	N/A	N/A
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	0.05	0.001	<0.05	<0.05	<0.05	N/A	N/A	N/A	N/A
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	0.5	0.001	<0.5	<0.5	<0.05	N/A	N/A	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	<0.02	N/A	N/A	N/A	N/A

Table K3: PFAS ASLP QA/QC Tabulated Results

				Sample ID:	SS-V6	QAQCA A	**Blind Average**	**Blind RPD %**
				Sample Type	Primary Sample	Blind Replicate		
				Date	27-Apr-23	27-Apr-23		
				Laboratory Report No.	321855	321855		
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**				
Perfluorobutanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluoropentanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluoroheptanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluorodecanesulfonic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
Perfluorobutanoic acid	µg/L	0.02	0.02	0.002	<0.02	<0.02	N/A	N/A
Perfluoropentanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
Perfluorohexanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluoroheptanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluorononanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluorodecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
Perfluoroundecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
Perfluorododecanoic acid	µg/L	0.05	0.05	0.0005	<0.05	<0.05	N/A	N/A
Perfluorotridecanoic acid	µg/L	0.1	0.1	0.0005	<0.1	<0.1	N/A	N/A
Perfluorotetradecanoic acid	µg/L	0.5	0.5	0.0005	<0.5	<0.5	N/A	N/A
4:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
6:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
8:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
10:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
Perfluorooctane sulfonamide	µg/L	0.1	0.1	0.0005	<0.1	<0.1	N/A	N/A
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	0.05	0.001	<0.05	<0.05	N/A	N/A
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	0.1	0.001	<0.1	<0.1	N/A	N/A
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	0.05	0.001	<0.05	<0.05	N/A	N/A
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	0.5	0.001	<0.5	<0.5	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A

Table K3: PFAS ASLP QA/QC Tabulated Results

				Sample ID:	AEC4-V1B	QAQC5	QAQC6	**Blind Average**	**Blind RPD %**	**Split Average**	**Split RPD %**
				Sample Type	Primary Sample	Blind Replicate	Split Replicate				
				Date	28-Apr-23	28-Apr-23	28-Apr-23				
				Laboratory Report No.	321970	321970	ES2314153				
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**							
Perfluorobutanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	-	N/A	N/A	N/A	N/A
Perfluoropentanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	-	N/A	N/A	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	-	N/A	N/A	N/A	N/A
Perfluoroheptanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	-	N/A	N/A	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	-	N/A	N/A	N/A	N/A
Perfluorodecanesulfonic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	-	N/A	N/A	N/A	N/A
Perfluorobutanoic acid	µg/L	0.02	0.02	0.002	<0.02	<0.02	-	N/A	N/A	N/A	N/A
Perfluoropentanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	-	N/A	N/A	N/A	N/A
Perfluorohexanoic acid	µg/L	0.01	0.01	0.0005	<0.01	0.01	-	0.0	1.0%	N/A	N/A
Perfluoroheptanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	-	N/A	N/A	N/A	N/A
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	0.0005	<0.01	<0.01	-	N/A	N/A	N/A	N/A
Perfluorononanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	-	N/A	N/A	N/A	N/A
Perfluorodecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	-	N/A	N/A	N/A	N/A
Perfluoroundecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	-	N/A	N/A	N/A	N/A
Perfluorododecanoic acid	µg/L	0.05	0.05	0.0005	<0.05	<0.05	-	N/A	N/A	N/A	N/A
Perfluorotridecanoic acid	µg/L	0.1	0.1	0.0005	<0.1	<0.1	-	N/A	N/A	N/A	N/A
Perfluorotetradecanoic acid	µg/L	0.5	0.5	0.0005	<0.5	<0.5	-	N/A	N/A	N/A	N/A
4:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	-	N/A	N/A	N/A	N/A
6:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	-	N/A	N/A	N/A	N/A
8:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	-	N/A	N/A	N/A	N/A
10:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	-	N/A	N/A	N/A	N/A
Perfluorooctane sulfonamide	µg/L	0.1	0.1	0.0005	<0.1	<0.1	-	N/A	N/A	N/A	N/A
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	0.05	0.001	<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	-	N/A	N/A	N/A	N/A
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	0.05	0.001	<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	-	N/A	N/A	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	-	N/A	N/A	N/A	N/A
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	-	N/A	N/A	N/A	N/A

Table K3: PFAS ASLP QA/QC Tabulated Results

				Sample ID:			**Blind Average**	**Blind RPD %**
				Sample Type	Primary Sample	Blind Replicate		
				Date	03-May-23	03-May-23		
				Laboratory Report No.	322273	322273		
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**				
Perfluorobutanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluoropentanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.01	0.0005	0.03	0.03	0.0	3.0%
Perfluoroheptanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.01	0.0005	0.07	0.08	0.1	8.0%
Perfluorodecanesulfonic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
Perfluorobutanoic acid	µg/L	0.02	0.02	0.002	<0.02	<0.02	N/A	N/A
Perfluoropentanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
Perfluorohexanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluoroheptanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluorononanoic acid	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
Perfluorodecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
Perfluoroundecanoic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
Perfluorododecanoic acid	µg/L	0.05	0.05	0.0005	<0.05	<0.05	N/A	N/A
Perfluorotridecanoic acid	µg/L	0.1	0.1	0.0005	<0.1	<0.1	N/A	N/A
Perfluorotetradecanoic acid	µg/L	0.5	0.5	0.0005	<0.5	<0.5	N/A	N/A
4:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
6:2 FTS	µg/L	0.01	0.01	0.0005	<0.01	<0.01	N/A	N/A
8:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
10:2 FTS	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
Perfluorooctane sulfonamide	µg/L	0.1	0.1	0.0005	<0.1	<0.1	N/A	N/A
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	0.05	0.001	<0.05	<0.05	N/A	N/A
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	0.1	0.001	<0.1	<0.1	N/A	N/A
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	0.05	0.001	<0.05	<0.05	N/A	N/A
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	0.5	0.001	<0.5	<0.5	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.02	<0.02	N/A	N/A

Table K4: Surface water QA/QC Tabulated Results

				Sample ID:	BD	QAQC01	QAQC02	**Blind Average**	**Blind RPD %**
				Sample Type	Primary Sample	Blind Replicate	Split Replicate		
				Date	10-Mar-23	10-Mar-23	10-Mar-23		
				Laboratory Report No.	318571	318571	ES2308335		
Parameter	**Unit**	**Primary PQL**	**Blind PQL**	**Split PQL**					
Perfluorobutanesulfonic acid	µg/L	0.01	0.01	0.0005	0.0078	0.0071	<0.02	0.7%	9.4%
Perfluoropentanesulfonic acid	µg/L	0.01	0.01	0.0005	0.009	0.009	<0.02	0.9%	0.0%
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	0.01	0.0005	0.036	0.034	<0.01	3.5%	5.7%
Perfluoroheptanesulfonic acid	µg/L	0.01	0.01	0.0005	<0.001	<0.001	<0.02	N/A	N/A
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.01	0.0005	0.0073	0.0042	<0.01	0.6%	53.9%
Perfluorodecanesulfonic acid	µg/L	0.02	0.02	0.0005	<0.002	<0.002	<0.02	N/A	N/A
Perfluorobutanoic acid	µg/L	0.02	0.02	0.002	0.041	0.04	<0.1	4.1%	2.5%
Perfluoropentanoic acid	µg/L	0.02	0.02	0.0005	0.098	0.098	<0.02	9.8%	0.0%
Perfluorohexanoic acid	µg/L	0.01	0.01	0.0005	0.082	0.082	<0.02	8.2%	0.0%
Perfluoroheptanoic acid	µg/L	0.01	0.01	0.0005	0.017	0.018	<0.02	1.8%	5.7%
Perfluorooctanoic acid PFOA	µg/L	0.01	0.01	0.0005	0.0078	0.0079	<0.01	0.8%	1.3%
Perfluorononanoic acid	µg/L	0.01	0.01	0.0005	0.003	0.002	<0.02	0.3%	40.0%
Perfluorodecanoic acid	µg/L	0.02	0.02	0.0005	<0.002	<0.002	<0.02	N/A	N/A
Perfluoroundecanoic acid	µg/L	0.02	0.02	0.0005	<0.002	<0.002	<0.02	N/A	N/A
Perfluorododecanoic acid	µg/L	0.05	0.05	0.0005	<0.005	<0.005	<0.02	N/A	N/A
Perfluorotridecanoic acid	µg/L	0.1	0.1	0.0005	<0.01	<0.01	<0.02	N/A	N/A
Perfluorotetradecanoic acid	µg/L	0.5	0.5	0.0005	<0.05	<0.05	<0.05	N/A	N/A
4:2 FTS	µg/L	0.01	0.01	0.0005	<0.001	<0.001	<0.05	N/A	N/A
6:2 FTS	µg/L	0.01	0.01	0.0005	<0.0004	<0.0004	<0.05	N/A	N/A
8:2 FTS	µg/L	0.02	0.02	0.0005	<0.0004	<0.0004	<0.05	N/A	N/A
10:2 FTS	µg/L	0.02	0.02	0.0005	<0.002	<0.002	<0.05	N/A	N/A
Perfluorooctane sulfonamide	µg/L	0.1	0.1	0.0005	<0.02	<0.02	<0.02	N/A	N/A
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	0.05	0.001	<0.05	<0.05	<0.05	N/A	N/A
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	0.1	0.001	<0.1	<0.1	<0.05	N/A	N/A
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	0.05	0.001	<0.05	<0.05	<0.05	N/A	N/A
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	0.5	0.001	<0.5	<0.5	<0.05	N/A	N/A
MePerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.002	<0.002	<0.02	N/A	N/A
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	0.02	0.0005	<0.002	<0.002	<0.02	N/A	N/A

Table K5: Soil TB/TS Tabulated Results

Sample ID:			TB	TB	TB	TB	TS
Sample Type			Soil	Soil	Soil	Soil	Soil
Sample Date			18/04/2023	21/04/2023	27/04/2023	28/04/2003	28/04/2003
Laboratory Report No.			321311	321584	321855	321970	321970
Parameter	**Unit**	**Primary PQL**					
Perfluorobutanesulfonic acid	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1	nt
Perfluoropentanesulfonic acid	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1	nt
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1	nt
Perfluoroheptanesulfonic acid	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1	nt
Perfluorooctanesulfonic acidPFOS	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1	nt
Perfluorodecanesulfonic acid	µg/kg	0.2	<0.2	<0.2	<0.2	<0.2	nt
Perfluorobutanoic acid	µg/kg	0.2	<0.2	<0.2	<0.2	<0.2	nt
Perfluoropentanoic acid	µg/kg	0.2	<0.2	<0.2	<0.2	<0.2	nt
Perfluorohexanoic acid	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1	nt
Perfluoroheptanoic acid	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1	nt
Perfluorooctanoic acid PFOA	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1	nt
Perfluorononanoic acid	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1	nt
Perfluorodecanoic acid	µg/kg	0.5	<0.5	<0.5	<0.5	<0.5	nt
Perfluoroundecanoic acid	µg/kg	0.5	<0.5	<0.5	<0.5	<0.5	nt
Perfluorododecanoic acid	µg/kg	0.5	<0.5	<0.5	<0.5	<0.5	nt
Perfluorotridecanoic acid	µg/kg	0.5	<0.5	<0.5	<0.5	<0.5	nt
Perfluorotetradecanoic acid	µg/kg	5	<5	<5	<5	<5	nt
4:2 FTS	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1	nt
6:2 FTS	µg/kg	0.1	<0.1	<0.1	<0.1	<0.1	nt
8:2 FTS	µg/kg	0.2	<0.2	<0.2	<0.2	<0.2	nt
10:2 FTS	µg/kg	0.2	<0.2	<0.2	<0.2	<0.2	nt
Perfluorooctane sulfonamide	µg/kg	1	<1	<1	<1	<1	nt
N-Methyl perfluorooctane sulfonamide	µg/kg	1	<1	<1	<1	<1	nt
N-Ethyl perfluorooctanesulfonamide	µg/kg	1	<1	<1	<1	<1	nt
N-Me perfluorooctanesulfonamidoethanol	µg/kg	1	<1	<1	<1	<1	nt
N-Et perfluorooctanesulfonamidoethanol	µg/kg	5	<5	<5	<5	<5	nt
MePerfluorooctanesulf-amid oacetic acid	µg/kg	0.2	<0.2	<0.2	<0.2	<0.2	nt
EtPerfluorooctanesulfamid oacetic acid	µg/kg	0.2	<0.2	<0.2	<0.2	<0.2	nt
TRH C6 - C9	mg/kg	-	-	-	-	<25	nt
TRH C6 - C10	mg/kg	-	-	-	-	<25	nt
vTPH C6 - C10 lessBTEX (F1)	mg/kg	-	-	-	-	<25	nt
Benzene	mg/kg	-	-	-	-	<0.2	100%
Toluene	mg/kg	-	-	-	-	<0.5	100%
Ethylbenzene	mg/kg	-	-	-	-	<1	100%
m+p-xylene	mg/kg	-	-	-	-	<2	101%
o-Xylene	mg/kg	-	-	-	-	<1	100%
naphthalene	mg/kg	-	-	-	-	<1	nt
Total +ve Xylenes	mg/kg	-	-	-	-	<1	nt

Appendix L

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CERTIFICATE OF ANALYSIS 318570

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	32 Soil
Date samples received	14/03/2023
Date completed instructions received	14/03/2023

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	21/03/2023
Date of Issue	21/03/2023

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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Nyovan Moonean, Stuart Chen
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Lucy Zhu, Asbestos Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

Asbestos ID - soils NEPM - ASB-001						
Our Reference		318570-1	318570-2	318570-3	318570-4	318570-5
Your Reference	UNITS	H13-VW1	QAQC1	H13-VW2	H13-VW3	H13-VW4
Depth		0.4	-	0.5	0.1	0.2
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	21/03/2023	21/03/2023	21/03/2023	21/03/2023	21/03/2023
Sample mass tested	g	865.75	977.4	771.65	783.79	777.11
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-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 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
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*	-	Chrysotile	Chrysotile	Chrysotile Amosite	No visible asbestos detected	Chrysotile
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	0.0034	0.0004	0.0092	–	0.0559
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	0.0012	<0.001	0.0072

Asbestos ID - soils NEPM - ASB-001						
Our Reference		318570-6	318570-7	318570-8	318570-9	318570-10
Your Reference	UNITS	H13-VW5	H13-VW6	H13-VW7	H13-VW8	H13-VW9
Depth		0.2	0.4	0.1	0.2	0.2
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	21/03/2023	21/03/2023	21/03/2023	21/03/2023	21/03/2023
Sample mass tested	g	694.95	754.38	750.23	834.4	849.9
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-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 Synthetic mineral 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	Chrysotile	No visible asbestos detected	No visible asbestos detected	Chrysotile
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	0.0010	–	–	0.0359
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	0.0042

Asbestos ID - soils NEPM - ASB-001						
Our Reference		318570-11	318570-12	318570-13	318570-14	318570-15
Your Reference	UNITS	H13-VW10	H13-VW11	H13-VW12	F9-VW1	QAQC3
Depth		0.4	0.2	0.1	0.3	-
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	21/03/2023	21/03/2023	21/03/2023	21/03/2023	21/03/2023
Sample mass tested	g	976.47	879.34	920.86	738.47	746.49
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
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	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	Chrysotile	Amosite	Chrysotile Amosite
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	0.0159	0.0042	0.0007
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	0.0017	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		318570-16	318570-17	318570-18	318570-19	318570-20
Your Reference	UNITS	F9-VW2	F9-VW3	F9-VW4	F9-VW5	F9-VW6
Depth		0.1	0.2	0.7	0.7	0.5
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	21/03/2023	21/03/2023	21/03/2023	21/03/2023	21/03/2023
Sample mass tested	g	763.44	747.21	791.35	849.34	871.36
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Red fine-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*	-	Crocidolite	Chrysotile	Chrysotile	Chrysotile	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	0.0005	0.0086	0.0006	0.0003	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	0.0012	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		318570-21	318570-22	318570-23	318570-24	318570-25
Your Reference	UNITS	F9-VW7	F9-VW8	F9-VW9	F9-VW10	F9-VW11
Depth		0.2	0.2	0.5	0.7	0.2
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	21/03/2023	21/03/2023	21/03/2023	21/03/2023	21/03/2023
Sample mass tested	g	711.97	858.43	824.65	764.99	869.88
Sample Description	-	Brown fine-grained soil & rocks	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Brown fine-grained soil & rocks
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	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*	-	Chrysotile	Chrysotile Crocidolite	Chrysotile	Chrysotile Amosite	Chrysotile
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	0.0118	0.0296	0.0038	0.0273	0.0100
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	0.0017	0.0034	<0.001	0.0036	0.0011

Asbestos ID - soils NEPM - ASB-001						
Our Reference		318570-26	318570-27	318570-28	318570-29	318570-30
Your Reference	UNITS	F9-VW12	F9-VW13	F9-VW14	CS108-VW1	CS108-VW2
Depth		0.3	0.1	0.5	0.4	0.3
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	21/03/2023	21/03/2023	21/03/2023	21/03/2023	21/03/2023
Sample mass tested	g	844.65	833.13	941.67	858.09	773.41
Sample Description	-	Grey coarse-grained soil & rocks	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks	Brown 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	Chrysotile	Chrysotile	Chrysotile Amosite Crocidolite	Chrysotile
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	0.0006	0.0019	0.0107	0.0005
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	0.0012	<0.001

Asbestos ID - soils NEPM - ASB-001			
Our Reference		318570-31	318570-32
Your Reference	UNITS	F9-V5B	F9-V8B
Depth		0.7	0.7
Date Sampled		10/03/2023	10/03/2023
Type of sample		Soil	Soil
Date analysed	-	21/03/2023	21/03/2023
Sample mass tested	g	759.62	655.61
Sample Description	-	Beige fine-grained soil & rocks	Grey fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	Chrysotile asbestos detected Amosite asbestos detected Crocidolite asbestos detected Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	0.3143
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	See Above
ACM >7mm Estimation*	g	–	0.2060
FA and AF Estimation*	g	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	0.0314
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001

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.

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

Report Comments

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 318570-1; Chrysotile asbestos identified in 0.0034g of fibrous matted material
Sample 318570-2; Chrysotile asbestos identified in 0.0004g of loose fibre bundles
Sample 318570-3; Chrysotile& Amosite asbestos identified in 0.0184g of fibre cement material <7mm & fibrous matted material
Sample 318570-5; Chrysotile asbestos identified in 0.0559g of loose fibre bundles
Sample 318570-7; Chrysotile asbestos identified in 0.0010g of loose fibre bundles
Sample 318570-10; Chrysotile asbestos identified in 0.0449g of fibrous matted material
Sample 318570-13; Chrysotile asbestos identified in 0.0199g of fibrous matted material
Sample 318570-14; Amosite asbestos identified in 0.0052g of fibrous matted material
Sample 318570-15; Chrysotile & Amosite asbestos identified in 0.0007g of loose fibre bundles
Sample 318570-16; Chrysotile asbestos identified in 0.0005g of loose fibre bundles
Sample 318570-17; Chrysotile asbestos identified in 0.0108g of fibrous matted material
Sample 318570-18; Chrysotile asbestos identified in 0.0008g of fibrous matted material
Sample 318570-19; Chrysotile asbestos identified in 0.0003g of loose fibre bundles
Sample 318570-21; Chrysotile asbestos identified in 0.0148g of fibrous matted material
Sample 318570-22; Chrysotile & Crocidolite asbestos identified in 0.0296g of loose fibre bundles
Sample 318570-23; Chrysotile asbestos identified in 0.0038g of loose fibre bundles
Sample 318570-24; Chrysotile & Amosite asbestos identified in 0.0303g of fibrous matted material
Sample 318570-25; Chrysotile asbestos identified in 0.0100g of loose fibre bundles
Sample 318570-27; Chrysotile asbestos identified in 0.0006g of loose fibre bundles
Sample 318570-28; Chrysotile asbestos identified in 0.0019g of loose fibre bundles
Sample 318570-29; Chrysotile, Amosite & Crocidolite asbestos identified in 0.0715g of fibre cement material <7mm
Sample 318570-30; Chrysotile asbestos identified in 0.0005g of loose fibre bundles
Sample 318570-32; Chrysotile, Amosite & Crocidolite asbestos identified in 1.3736g of fibre cement material >7mm

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08 8967 1201 | darwin@envirolab.com.au

Company:	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	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: 0439761637	Additional report format:	☐ Esdat ☐ Equis
Email Results to:	victor.arias@consultingearth.com.au tristan.goodbody@consultingearth.com.au	Lab Comments:	
Email Invoice to:	kay.lowe@consultingearth.com.au		

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Asbestos NEPM (AF/FA)	Comments
1	H13-VW1	0.4	10/03/23	Soil	X	
2	QAQC1	—			X	
1	QAQC2	—				PLEASE FORWARD TO ALS FOR ASBESTOS NEPM ANALYSIS
3	H13-VW2	0.5			X	
4	H13-VW3	0.1			X	
5	H13-VW4	0.2			X	
6	H13-VW5	0.2			X	
7	H13-VW6	0.4			X	
8	H13-VW7	0.1			X	
9	H13-VW8	0.2			X	318570
10	H13-VW9	0.2			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 GEOTECH KW
Print Name:	VICTOR ARIAS	Print Name:	
Date & Time:	13/03/23 8:45am	Date & Time:	14/3/23 11:00
Signature:		Signature:	

Lab Use Only

Job number: 318570	Cooling: Ice / (Ice pack) / None
Temperature: 14	Security seal: Intact / Broken / (None)
TAT Req - SAME day / 1 / 2 / 3 / 4 / (STD)	

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Melbourne Lab - Envirolab Services
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Unit 20/119 Reichardt Road, Winnellie, NT 0820
08 8967 1201 | darwin@envirolab.com.au

Company:	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	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: 0439761637	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	Asbestos NEPM (AF/FA)	Comments
11	H13-VW10	0.4	10/03/23	Soil	X	
12	H13-VW11	0.2			X	
13	H13-VW12	0.1			X	
14	F9-VW1	0.3			X	
15	QAQC3				X	
16	QAQC4				X	PLEASE FORWARD TO ALS FOR ASBESTOS NEPM ANALYSIS
17	F9-VW2	0.1			X	
18	F9-VW3	0.2			X	
19	F9-VW4	0.2			X	
20	F9-VW5	0.2			X	
	F9-VW6	0.5			X	318570

Sample Information | Tests Required | Comments

☐ *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: / Cooling: Ice / Ice pack / None
Date & Time:	13/03/23 8:45am	Date & Time:	Temperature: / Security seal: Intact / Broken / None
Signature:		Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD

Relinquished: D. White CES SYD 1330 14/3/23

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Company:	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	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: 0439761637	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	Asbestos NEPM (AF/FA)	Comments
21	EQ-VW7	0.2	10/03/22	Soil	X	
22	EQ-VW8	0.2	↓	↓	X	
23	EQ-VW9	0.5			X	
24	EQ-VW10	0.7			X	
25	EQ-VW11	0.2			X	
26	EQ-VW12	0.3			X	
27	EQ-VW13	0.1			X	
28	EQ-VW14	0.5			X	
29	CS108-VW1	0.4			X	
30	CS108-VW2	0.3	↓	↓	X	348570
31	EQ-VSB	0.7	↓	↓	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):	Lab Use Only
Print Name:	VICTOR ARIAS	Print Name:	Job number: / Cooling: Ice / Ice pack / None
Date & Time:	13/03/22 6:45am	Date & Time:	Temperature: / Security seal: Intact / Broken / None
Signature:		Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD

CHAIN OF CUSTODY FORM - Client

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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:	Mob: 0439761637	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	
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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	Asbestos NEPM (AF/FA)																Provide as much information about the sample as you can
32	F9-VBB	0.7	10/03/23	Soil	X																
																				31870	

☐ *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:	Cooling: Ice / Ice pack / None
Date & Time: 13/03/23 9:45am	Date & Time:	Temperature:	Security seal: Intact / Broken / None
Signature:	Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias

Sample Login Details

Your reference	CES170608-GPM
Envirolab Reference	318570
Date Sample Received	14/03/2023
Date Instructions Received	14/03/2023
Date Results Expected to be Reported	21/03/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	32 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	Asbestos ID - soils NEPM - ASB-001
H13-VW1-0.4	✓
QAQC1	✓
H13-VW2-0.5	✓
H13-VW3-0.1	✓
H13-VW4-0.2	✓
H13-VW5-0.2	✓
H13-VW6-0.4	✓
H13-VW7-0.1	✓
H13-VW8-0.2	✓
H13-VW9-0.2	✓
H13-VW10-0.4	✓
H13-VW11-0.2	✓
H13-VW12-0.1	✓
F9-VW1-0.3	✓
QAQC3	✓
F9-VW2-0.1	✓
F9-VW3-0.2	✓
F9-VW4-0.7	✓
F9-VW5-0.7	✓
F9-VW6-0.5	✓
F9-VW7-0.2	✓
F9-VW8-0.2	✓
F9-VW9-0.5	✓
F9-VW10-0.7	✓
F9-VW11-0.2	✓
F9-VW12-0.3	✓
F9-VW13-0.1	✓
F9-VW14-0.5	✓
CS108-VW1-0.4	✓
CS108-VW2-0.3	✓
F9-V5B-0.7	✓
F9-V8B-0.7	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

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Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 318571

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	9 Concrete
Date samples received	14/03/2023
Date completed instructions received	14/03/2023

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.

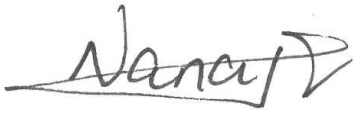
Report Details

Date results requested by	22/03/2023
Date of Issue	23/03/2023
Reissue Details	This report replaces R00 created on 22/03/2023 due to: sample matrix error

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Results Approved By
Ashley Miller, Development Chemist
Greta Petzold, Assistant Operation Manager

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in Soils Extended						
Our Reference		318571-1	318571-2	318571-3	318571-4	318571-5
Your Reference	UNITS	AEC4-CCV1	QAQC1	AEC4-CCV2	AEC4-CCV3	AEC4-CCV4
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
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	0.2
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	<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	<0.2	<0.2
6:2 FTS	µg/kg	0.1	<0.1	<0.1	<0.2	<0.2
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	100	101	100	96
Surrogate $^{13}C_2$ *PFOA*	%	102	102	104	104	98
Extracted ISTD $^{13}C_3$ *PFBS*	%	77	76	96	71	77
Extracted ISTD $^{18}O_2$ *PFHxS*	%	85	82	99	71	79
Extracted ISTD $^{13}C_4$ *PFOS*	%	94	90	108	74	86
Extracted ISTD $^{13}C_4$ *PFBA*	%	70	66	95	57	62

PFAS in Soils Extended						
Our Reference		318571-1	318571-2	318571-3	318571-4	318571-5
Your Reference	UNITS	AEC4-CCV1	QAQC1	AEC4-CCV2	AEC4-CCV3	AEC4-CCV4
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Extracted ISTD $^{13}C_3$ *PFPeA*	%	72	67	96	56	62
Extracted ISTD $^{13}C_2$ *PFHxA*	%	76	66	95	55	61
Extracted ISTD $^{13}C_4$ *PFHpA*	%	78	72	100	58	65
Extracted ISTD $^{13}C_4$ *PFOA*	%	85	78	104	63	71
Extracted ISTD $^{13}C_5$ *PFNA*	%	86	80	112	60	70
Extracted ISTD $^{13}C_2$ *PFDA*	%	103	91	126	71	79
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	123	102	140	78	89
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	138	119	166	87	96
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	151	136	178	100	104
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	62	56	96	38	43
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	80	70	105	42	46
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	98	89	144	57	56
Extracted ISTD $^{13}C_8$ *FOSA*	%	96	96	122	77	86
Extracted ISTD d_3 *N MeFOSA*	%	104	102	111	88	98
Extracted ISTD d_5 *N EtFOSA*	%	111	108	112	97	106
Extracted ISTD d_7 *N MeFOSE*	%	126	120	123	121	120
Extracted ISTD d_9 *N EtFOSE*	%	140	141	137	139	136
Extracted ISTD d_3 *N MeFOSAA*	%	98	99	137	57	70
Extracted ISTD d_5 *N EtFOSAA*	%	121	113	151	67	85
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	<0.1	<0.1	0.2
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	0.2

PFAS in Soils Extended					
Our Reference		318571-6	318571-7	318571-8	318571-9
Your Reference	UNITS	AEC4-CCV5	AEC4-CCV6	AEC4-CCV7	AEC4-CCV8
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Concrete	Concrete	Concrete	Concrete
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023
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	0.6	<0.1	0.2
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.3	1.1	<0.1	0.2
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	0.2	0.3	<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	<0.2	<0.2	<0.2	<0.2
6:2 FTS	µg/kg	<0.2	0.7	0.1	1.9
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*	%	100	99	98	103
Surrogate $^{13}C_2$ *PFOA*	%	101	99	101	102
Extracted ISTD $^{13}C_3$ *PFBS*	%	74	70	72	72
Extracted ISTD $^{18}O_2$ *PFHxS*	%	80	73	75	77
Extracted ISTD $^{13}C_4$ *PFOS*	%	84	80	80	81
Extracted ISTD $^{13}C_4$ *PFBA*	%	61	55	57	58

PFAS in Soils Extended					
Our Reference	UNITS	318571-6	318571-7	318571-8	318571-9
Your Reference		AEC4-CCV5	AEC4-CCV6	AEC4-CCV7	AEC4-CCV8
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Concrete	Concrete	Concrete	Concrete
Extracted ISTD $^{13}C_3$ *PFPeA*	%	63	56	58	59
Extracted ISTD $^{13}C_2$ *PFHxA*	%	61	54	57	59
Extracted ISTD $^{13}C_4$ *PFHpA*	%	64	59	60	60
Extracted ISTD $^{13}C_4$ *PFOA*	%	69	64	64	66
Extracted ISTD $^{13}C_5$ *PFNA*	%	71	64	65	68
Extracted ISTD $^{13}C_2$ *PFDA*	%	77	73	71	74
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	93	79	80	86
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	98	89	87	95
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	105	98	93	100
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	42	32	37	41
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	47	38	42	45
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	58	53	50	65
Extracted ISTD $^{13}C_8$ *FOSA*	%	86	77	82	83
Extracted ISTD d_3 *N MeFOSA*	%	99	94	94	98
Extracted ISTD d_5 *N EtFOSA*	%	108	105	102	105
Extracted ISTD d_7 *N MeFOSE*	%	118	122	122	124
Extracted ISTD d_9 *N EtFOSE*	%	134	136	137	134
Extracted ISTD d_3 *N MeFOSAA*	%	70	61	66	74
Extracted ISTD d_5 *N EtFOSAA*	%	85	75	75	88
Total Positive PFHxS & PFOS	µg/kg	0.4	1.7	<0.1	0.5
Total Positive PFOS & PFOA	µg/kg	0.3	1.1	<0.1	0.2
Total Positive PFAS	µg/kg	0.6	2.7	0.1	2.3

Moisture						
Our Reference		318571-1	318571-2	318571-3	318571-4	318571-5
Your Reference	UNITS	AEC4-CCV1	QAQC1	AEC4-CCV2	AEC4-CCV3	AEC4-CCV4
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Date prepared	-	15/03/2023	15/03/2023	15/03/2023	15/03/2023	15/03/2023
Date analysed	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Moisture	%	4.6	3.3	1.8	5.2	2.2

Moisture					
Our Reference		318571-6	318571-7	318571-8	318571-9
Your Reference	UNITS	AEC4-CCV5	AEC4-CCV6	AEC4-CCV7	AEC4-CCV8
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Concrete	Concrete	Concrete	Concrete
Date prepared	-	15/03/2023	15/03/2023	15/03/2023	15/03/2023
Date analysed	-	16/03/2023	16/03/2023	16/03/2023	16/03/2023
Moisture	%	3.3	5.0	3.8	3.9

PFAS in ASLP Extended						
Our Reference		318571-1	318571-2	318571-3	318571-4	318571-5
Your Reference	UNITS	AEC4-CCV1	QAQC1	AEC4-CCV2	AEC4-CCV3	AEC4-CCV4
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
pH of final Leachate	pH units	11.1	11.4	11.1	11.8	11.8
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	101	104	96	100	100
Surrogate $^{13}C_2$ PFOA	%	110	101	106	103	100
Extracted ISTD $^{13}C_3$ *PFBS*	%	102	101	104	103	101
Extracted ISTD $^{18}O_2$ *PFHxS*	%	90	93	95	94	98
Extracted ISTD $^{13}C_4$ *PFOS*	%	98	95	96	101	102

PFAS in ASLP Extended						
Our Reference	UNITS	318571-1	318571-2	318571-3	318571-4	318571-5
Your Reference		AEC4-CCV1	QAQC1	AEC4-CCV2	AEC4-CCV3	AEC4-CCV4
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Concrete	Concrete	Concrete	Concrete	Concrete
Extracted ISTD $^{13}C_4$ *PFBA*	%	109	104	103	103	103
Extracted ISTD $^{13}C_3$ *PFPeA*	%	109	107	106	106	107
Extracted ISTD $^{13}C_2$ *PFHxA*	%	101	97	99	98	100
Extracted ISTD $^{13}C_4$ *PFHpA*	%	100	99	102	101	96
Extracted ISTD $^{13}C_4$ *PFOA*	%	98	102	98	103	106
Extracted ISTD $^{13}C_5$ *PFNA*	%	103	108	103	110	109
Extracted ISTD $^{13}C_2$ *PFDA*	%	91	98	94	111	104
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	90	95	83	102	104
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	82	77	73	98	95
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	57	38	60	85	103
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	119	107	109	112	111
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	117	119	121	127	123
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	131	135	132	130	131
Extracted ISTD $^{13}C_8$ *FOSA*	%	114	110	104	112	113
Extracted ISTD d_3 *N MeFOSA*	%	105	105	106	111	107
Extracted ISTD d_5 *N EtFOSA*	%	103	102	103	112	108
Extracted ISTD d_7 *N MeFOSE*	%	93	97	97	100	103
Extracted ISTD d_9 *N EtFOSE*	%	90	92	82	100	104
Extracted ISTD d_3 *N MeFOSAA*	%	114	120	116	116	115
Extracted ISTD d_5 *N EtFOSAA*	%	121	121	106	122	120
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01

PFAS in ASLP Extended					
Our Reference		318571-6	318571-7	318571-8	318571-9
Your Reference	UNITS	AEC4-CCV5	AEC4-CCV6	AEC4-CCV7	AEC4-CCV8
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Concrete	Concrete	Concrete	Concrete
Date prepared	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023
Date analysed	-	17/03/2023	17/03/2023	17/03/2023	17/03/2023
pH of final Leachate	pH units	11.8	11.8	11.9	11.8
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	0.03	0.02	<0.01	0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.05	0.02	<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	0.05	<0.01	<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	0.02	0.04	0.04
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	%	103	104	100	102
Surrogate $^{13}C_2$ PFOA	%	96	91	103	109
Extracted ISTD $^{13}C_3$ *PFBS*	%	96	98	104	102
Extracted ISTD $^{18}O_2$ *PFHxS*	%	93	95	91	90
Extracted ISTD $^{13}C_4$ *PFOS*	%	105	104	100	99

PFAS in ASLP Extended					
Our Reference	UNITS	318571-6	318571-7	318571-8	318571-9
Your Reference		AEC4-CCV5	AEC4-CCV6	AEC4-CCV7	AEC4-CCV8
Date Sampled		10/03/2023	10/03/2023	10/03/2023	10/03/2023
Type of sample		Concrete	Concrete	Concrete	Concrete
Extracted ISTD $^{13}C_4$ *PFBA*	%	104	102	104	103
Extracted ISTD $^{13}C_3$ *PFPeA*	%	100	101	107	103
Extracted ISTD $^{13}C_2$ *PFHxA*	%	106	105	100	101
Extracted ISTD $^{13}C_4$ *PFHpA*	%	108	105	101	99
Extracted ISTD $^{13}C_4$ *PFOA*	%	105	112	102	102
Extracted ISTD $^{13}C_5$ *PFNA*	%	111	115	103	105
Extracted ISTD $^{13}C_2$ *PFDA*	%	100	99	94	95
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	107	113	78	88
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	109	111	57	69
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	82	79	31	32
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	105	105	115	113
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	117	111	116	114
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	120	117	135	141
Extracted ISTD $^{13}C_8$ *FOSA*	%	114	113	111	121
Extracted ISTD d_3 *N MeFOSA*	%	104	106	108	110
Extracted ISTD d_5 *N EtFOSA*	%	107	107	109	106
Extracted ISTD d_7 *N MeFOSE*	%	97	98	96	104
Extracted ISTD d_9 *N EtFOSE*	%	108	107	93	98
Extracted ISTD d_3 *N MeFOSAA*	%	118	121	106	115
Extracted ISTD d_5 *N EtFOSAA*	%	112	113	106	117
Total Positive PFHxS & PFOS	µg/L	0.08	0.03	<0.01	0.02
Total Positive PFOS & PFOA	µg/L	0.05	0.02	<0.01	0.01
Total Positive PFAS	µg/L	0.13	0.05	0.04	0.08

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.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
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 5.4 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.

Method ID	Methodology Summary
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 5.4Table 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 Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			17/03/2023	9	17/03/2023	17/03/2023		17/03/2023	[NT]
Date analysed	-			17/03/2023	9	17/03/2023	17/03/2023		17/03/2023	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	95	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	93	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	9	0.2	0.2	0	97	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	99	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	9	0.2	0.8	120	99	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	75	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	95	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	95	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	0.1	0	96	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	96	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	96	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	9	<0.1	<0.1	0	99	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	9	<0.5	<0.5	0	93	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	9	<0.5	<0.5	0	95	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	9	<0.5	<0.5	0	97	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	9	<0.5	<0.5	0	117	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	9	<5	<5	0	96	[NT]
4:2 FTS	µg/kg	0.1	Org-029	<0.1	9	<0.2	<0.2	0	104	[NT]
6:2 FTS	µg/kg	0.1	Org-029	<0.1	9	1.9	2.3	19	101	[NT]
8:2 FTS	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	96	[NT]
10:2 FTS	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	140	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	9	<1	<1	0	101	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	9	<1	<1	0	100	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	9	<1	<1	0	97	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	9	<1	<1	0	92	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	9	<5	<5	0	99	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	101	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	9	<0.2	<0.2	0	95	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	97	9	103	99	4	102	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	104	9	102	100	2	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	90	9	72	75	4	89	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	92	9	77	79	3	91	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	95	9	81	82	1	93	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	93	9	58	58	0	92	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	92	9	59	59	0	94	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	89	9	59	57	3	89	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	92	9	60	61	2	89	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	94	9	66	67	2	94	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	97	9	68	68	0	95	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	107	9	74	75	1	107	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	124	9	86	83	4	116	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	131	9	95	91	4	129	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	145	9	100	97	3	146	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	91	9	41	40	2	90	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	101	9	45	44	2	92	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	124	9	65	60	8	119	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	104	9	83	86	4	99	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	99	9	98	97	1	95	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	103	9	105	106	1	98	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	102	9	124	126	2	97	[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	114	9	134	140	4	110	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	122	9	74	72	3	108	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	130	9	88	90	2	129	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	318571-9
Date prepared	-			17/03/2023	1	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Date analysed	-			17/03/2023	1	17/03/2023	17/03/2023		17/03/2023	17/03/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	97	95
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	97	103
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	95	108
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	101	116
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	98	100
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	89	104
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	89	89
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	89	96
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	97	94
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	93	90
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	102	96
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	108	101
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	99	112
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	99	119
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	97	109
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	126	112
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	1	<0.5	<0.5	0	103	106
4:2 FTS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	95	102
6:2 FTS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	93	91
8:2 FTS	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	107	105
10:2 FTS	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	136	73
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	96	95
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	101	104
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	89	87
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	121	107
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	1	<0.5	<0.5	0	120	117
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	98	88
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	100	88
Surrogate $^{13}C_8$ PFOS	%		Org-029A	98	1	101	100	1	99	100
Surrogate $^{13}C_2$ PFOA	%		Org-029A	91	1	110	106	4	113	108

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	318571-9
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	100	1	102	102	0	101	100
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	94	1	90	90	0	100	87
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	115	1	98	100	2	105	99
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	97	1	109	107	2	107	101
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	91	1	109	107	2	113	102
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	96	1	101	103	2	101	99
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	97	1	100	100	0	101	97
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	107	1	98	100	2	98	96
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	116	1	103	106	3	109	100
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	129	1	91	102	11	126	87
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	104	1	90	113	23	96	79
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	114	1	82	118	36	86	77
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	104	1	57	82	36	96	78
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	109	1	119	113	5	113	108
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	107	1	117	113	3	120	111
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	145	1	131	135	3	146	120
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	129	1	114	124	8	127	113
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	111	1	105	109	4	114	107
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	107	1	103	111	7	116	109
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	113	1	93	104	11	119	93

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	318571-9
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	133	1	90	106	16	111	94
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	143	1	114	122	7	135	104
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	140	1	121	127	5	148	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.

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:	Consulting Earth Scientists	Client Project Name/Number/Site etc (le report title):	CES170608-GPM
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:	Mob: 0439261637	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:	

Sample Information					Tests Required			Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	ASLP PFAS		Provide as much information about the sample as you can
1	AECA-CCV1	—	10/03/23	CONCRETE	X	X		
2	QAQC1	—			X	X		
3	QAQC2	—			PLEASE FORWARD TO ALS FOR PFAS and ASLP PFAS ANALYSIS			
3 4	AECA-CCV2	—			X	X		
4 5	AECA-CCV3				X	X		
5 6	AECA-CCV4				X	X		
6 7	AECA-CCV5				X	X		
7 8	AECA-CCV6				X	X		
8 9	AECA-CCV7				X	X		
9 10	AECA-CCV8				X	X	318571	

☐ *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	*Lab Use Only*	
Print Name:	VICTOR ARIAS	Print Name:	CEOH	Job number:	Cooling: Ice / Ice pack / None
Date & Time:	13/03/23 8:05am	Date & Time:	14.3.23 1100	Temperature:	Security seal: Intact / Broken / None
Signature:		Signature:		TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

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www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias

Sample Login Details

Your reference	CES170608-GPM
Envirolab Reference	318571
Date Sample Received	14/03/2023
Date Instructions Received	14/03/2023
Date Results Expected to be Reported	21/03/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	9 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	PFAS in Soils Extended	PFAS in ASLP Extended
AEC4-CCV1	✓	✓
QAQC1	✓	✓
AEC4-CCV2	✓	✓
AEC4-CCV3	✓	✓
AEC4-CCV4	✓	✓
AEC4-CCV5	✓	✓
AEC4-CCV6	✓	✓
AEC4-CCV7	✓	✓
AEC4-CCV8	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 318582

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	2 WATER
Date samples received	14/03/2023
Date completed instructions received	14/03/2023

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	17/03/2023
Date of Issue	16/03/2023

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Ashley Miller, Development Chemist

Authorised By

Nancy Zhang, Laboratory Manager

PFAS in Waters Trace Extended			
Our Reference		318582-1	318582-2
Your Reference	UNITS	BD	QAQC1
Date Sampled		10/03/2023	10/03/2023
Type of sample		WATER	WATER
Date prepared	-	15/03/2023	15/03/2023
Date analysed	-	15/03/2023	15/03/2023
Perfluorobutanesulfonic acid	µg/L	0.0070	0.0071
Perfluoropentanesulfonic acid	µg/L	0.008	0.009
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.035	0.034
Perfluoroheptanesulfonic acid	µg/L	<0.001	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	0.0067	0.0042
Perfluorodecanesulfonic acid	µg/L	<0.002	<0.002
Perfluorobutanoic acid	µg/L	0.039	0.040
Perfluoropentanoic acid	µg/L	0.097	0.098
Perfluorohexanoic acid	µg/L	0.078	0.082
Perfluoroheptanoic acid	µg/L	0.016	0.018
Perfluorooctanoic acid PFOA	µg/L	0.0081	0.0079
Perfluorononanoic acid	µg/L	0.003	0.002
Perfluorodecanoic acid	µg/L	<0.002	<0.002
Perfluoroundecanoic acid	µg/L	<0.002	<0.002
Perfluorododecanoic acid	µg/L	<0.005	<0.005
Perfluorotridecanoic acid	µg/L	<0.01	<0.01
Perfluorotetradecanoic acid	µg/L	<0.05	<0.05
4:2 FTS	µg/L	<0.001	<0.001
6:2 FTS	µg/L	<0.0004	<0.0004
8:2 FTS	µg/L	<0.0004	<0.0004
10:2 FTS	µg/L	<0.002	<0.002
Perfluorooctane sulfonamide	µg/L	<0.02	<0.02
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	<0.002	<0.002
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.002	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	95	96
Surrogate $^{13}C_2$ *PFOA*	%	72	72
Extracted ISTD $^{13}C_3$ *PFBS*	%	60	62
Extracted ISTD $^{18}O_2$ *PFHxS*	%	122	127
Extracted ISTD $^{13}C_4$ *PFOS*	%	89	89
Extracted ISTD $^{13}C_4$ *PFBA*	%	#	#

PFAS in Waters Trace Extended			
Our Reference		318582-1	318582-2
Your Reference	UNITS	BD	QAQC1
Date Sampled		10/03/2023	10/03/2023
Type of sample		WATER	WATER
Extracted ISTD $^{13}C_3$ *PFPeA*	%	81	79
Extracted ISTD $^{13}C_2$ *PFHxA*	%	81	80
Extracted ISTD $^{13}C_4$ *PFHpA*	%	114	113
Extracted ISTD $^{13}C_4$ *PFOA*	%	115	113
Extracted ISTD $^{13}C_5$ *PFNA*	%	103	108
Extracted ISTD $^{13}C_2$ *PFDA*	%	108	105
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	97	99
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	92	90
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	46	47
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	127	127
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	143	134
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	161	156
Extracted ISTD $^{13}C_8$ *FOSA*	%	32	42
Extracted ISTD d_3 *N MeFOSA*	%	102	95
Extracted ISTD d_5 *N EtFOSA*	%	135	136
Extracted ISTD d_7 *N MeFOSE*	%	139	155
Extracted ISTD d_9 *N EtFOSE*	%	118	120
Extracted ISTD d_3 *N MeFOSAA*	%	73	81
Extracted ISTD d_5 *N EtFOSAA*	%	112	105
Total Positive PFHxS & PFOS	µg/L	0.042	0.038
Total Positive PFOS & PFOA	µg/L	0.015	0.012
Total Positive PFAS	µg/L	0.30	0.30

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 5.4 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	318582-2
Date prepared	-			15/03/2023	1	15/03/2023	15/03/2023		15/03/2023	15/03/2023
Date analysed	-			15/03/2023	1	15/03/2023	15/03/2023		15/03/2023	15/03/2023
Perfluorobutanesulfonic acid	µg/L	0.0004	Org-029	<0.0004	1	0.0070	0.0078	11	108	101
Perfluoropentanesulfonic acid	µg/L	0.001	Org-029	<0.001	1	0.008	0.009	12	122	137
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.0002	Org-029	<0.0002	1	0.035	0.036	3	126	103
Perfluoroheptanesulfonic acid	µg/L	0.001	Org-029	<0.001	1	<0.001	<0.001	0	97	95
Perfluorooctanesulfonic acid PFOS	µg/L	0.0002	Org-029	<0.0002	1	0.0067	0.0073	9	105	105
Perfluorodecanesulfonic acid	µg/L	0.002	Org-029	<0.002	1	<0.002	<0.002	0	79	75
Perfluorobutanoic acid	µg/L	0.002	Org-029	<0.002	1	0.039	0.041	5	112	130
Perfluoropentanoic acid	µg/L	0.002	Org-029	<0.002	1	0.097	0.098	1	137	103
Perfluorohexanoic acid	µg/L	0.0004	Org-029	<0.0004	1	0.078	0.082	5	113	104
Perfluoroheptanoic acid	µg/L	0.0004	Org-029	<0.0004	1	0.016	0.017	6	109	97
Perfluorooctanoic acid PFOA	µg/L	0.0002	Org-029	<0.0002	1	0.0081	0.0078	4	98	95
Perfluorononanoic acid	µg/L	0.001	Org-029	<0.001	1	0.003	0.003	0	104	112
Perfluorodecanoic acid	µg/L	0.002	Org-029	<0.002	1	<0.002	<0.002	0	101	95
Perfluoroundecanoic acid	µg/L	0.002	Org-029	<0.002	1	<0.002	<0.002	0	100	89
Perfluorododecanoic acid	µg/L	0.005	Org-029	<0.005	1	<0.005	<0.005	0	109	110
Perfluorotridecanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	85	90
Perfluorotetradecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	122	139
4:2 FTS	µg/L	0.001	Org-029	<0.001	1	<0.001	<0.001	0	109	105
6:2 FTS	µg/L	0.0004	Org-029	<0.0004	1	<0.0004	<0.0004	0	108	124
8:2 FTS	µg/L	0.0004	Org-029	<0.0004	1	<0.0004	<0.0004	0	113	132
10:2 FTS	µg/L	0.002	Org-029	<0.002	1	<0.002	<0.002	0	117	97
Perfluorooctane sulfonamide	µg/L	0.01	Org-029	<0.01	1	<0.02	<0.02	0	122	134
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	98	97
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	89	89
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	115	121
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	92	104
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	1	<0.002	<0.002	0	101	104
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.002	Org-029	<0.002	1	<0.002	<0.002	0	118	129
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	104	1	95	97	2	98	97
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	81	1	72	73	1	78	74

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	318582-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	69	1	60	55	9	65	59
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	76	1	122	126	3	74	73
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	77	1	89	81	9	80	90
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	94	1	#	#		91	#
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	54	1	81	79	2	53	23
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	92	1	81	79	2	93	80
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	100	1	114	112	2	95	111
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	107	1	115	112	3	105	113
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	93	1	103	97	6	94	107
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	86	1	108	108	0	91	107
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	88	1	97	95	2	90	105
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	84	1	92	94	2	92	95
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	39	1	46	51	10	44	59
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	119	1	127	120	6	120	127
Extracted ISTD$^{13}C_2$ *6:2FTS*	%		Org-029	139	1	143	129	10	134	134
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	130	1	161	158	2	136	155
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	69	1	32	32	0	64	43
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	102	1	102	95	7	95	95
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	135	1	135	126	7	126	136
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	139	1	139	130	7	130	155

QUALITY CONTROL: PFAS in Waters Trace Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	318582-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	118	1	118	110	7	110	120
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	121	1	73	76	4	129	88
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	111	1	112	110	2	106	111

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

[Copyright and Confidential]

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National phone number 1300 424 344

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

Company:	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	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:	0439261637 Mob:	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:	

Sample information					Tests Required															Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS TRACE ANALYSIS															Provide as much information about the sample as you can
1	BD	—	10/6/23	WATER	X															
2	QAQC 1	—	"	"	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 540
Print Name:	VICTOR ARIAS	Print Name:	D-WHITE
Date & Time:	13/6/23 8:45am	Date & Time:	14/6/23 1100
Signature:		Signature:	

Lab Use Only	
Job number: 318582	Cooling: Ice / Ice pack / None
Temperature:	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
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SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias

Sample Login Details

Your reference	CES170608- GPM
Envirolab Reference	318582
Date Sample Received	14/03/2023
Date Instructions Received	14/03/2023
Date Results Expected to be Reported	17/03/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	2 WATER
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	10
Cooling Method	None
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	PFAS in Waters Trace Extended
BD	✓
QAQC1	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2308334**	Page	: 1 of 3
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	: 14-Mar-2023 16:00
Order number	: ----	Date Analysis Commenced	: 16-Mar-2023
C-O-C number	: ----	Issue Date	: 16-Mar-2023 12:10
Sampler	: VA		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Brendan Schrader	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.

- 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.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC2	QAQC4	----	----	----
			Sampling date / time	10-Mar-2023 00:00	10-Mar-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2308334-001	ES2308334-002	--------	--------	--------
				Result	Result	----	----	----
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	-	--	**Ch**	**-**	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	**No**	----	----	----
Sample weight (dry)	----	0.01	g	**896**	**723**	----	----	----
Synthetic Mineral Fibre	----	-	--	**No**	**Yes**	----	----	----
Organic Fibre	----	-	--	**No**	**No**	----	----	----
APPROVED IDENTIFIER:	----	-	--	**B.SCHRADER**	**B.SCHRADER**	----	----	----
EA200N: Asbestos Quantification (non-NATA)								
ø **Asbestos (Fines and Fibrous <7mm)**	1332-21-4	0.0004	g	**0.0067**	<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	**0.896**	**0.723**	----	----	----
ø **Fibrous Asbestos >7mm**	----	0.0004	g	<0.0004	<0.0004	----	----	----

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 - 10-Mar-2023 00:00	A soil sample containing two pieces of asbestos fibrous material approximately 5x3x1mm.
EA200: Description	QAQC4 - 10-Mar-2023 00:00	A soil sample containing one piece of synthetic mineral fibre matting.

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	: **ES2308334**	Page	: 1 of 3
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	: 14-Mar-2023
Order number	: ----	Date Analysis Commenced	: 16-Mar-2023
C-O-C number	: ----	Issue Date	: 16-Mar-2023
Sampler	: VA		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Brendan Schrader	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.

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

Laboratory Duplicate (DUP) Report

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

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

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

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

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2308334**	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	: 14-Mar-2023
Site	: ----	Issue Date	: 16-Mar-2023
Sampler	: VA	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **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
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)							
QAQC2, QAQC4	**10-Mar-2023**	**----**	----	----	**16-Mar-2023**	06-Sep-2023	✓
EA200N: Asbestos Quantification (non-NATA)							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200N)							
QAQC2, QAQC4	**10-Mar-2023**	**----**	----	----	**16-Mar-2023**	06-Sep-2023	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

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
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).

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

Perth
16-18
08

Melb
25 R
03

Ade
7a T
0

Bris
20a
0

Dar
Unit 20/119
08 8967 1201 | darwin@envirolab.com.au

Environmental Division
Sydney
Work Order Reference
ES2308334

Telephone : +61-2-8784 8555

Company:	Consulting Earth Scientists
Contact Person:	Victor Arias
Project Mgr:	Tristan Goodbody
Sampler:	VA
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073
Phone:	Mob: 0439761637
Email Results to:	victor.arias@consultingearth.com.au tristan.goodbody@consultingearth.com.au
Email Invoice to:	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

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Asbestos NEPM (AF/FA)	Comments: Provide as much information about the sample as you can
1	H13-VW1	0.4	10/03/23	Soil	X	
2	QAQC1	—				PLEASE FORWARD TO ALS FOR ASBESTOS NEPM ANALYSIS
(1)	QAQC2	—				
3	H13-VW2	0.5			X	
4	H13-VW3	0.1			X	
5	H13-VW4	0.2			X	
6	H13-VW5	0.2			X	
7	H13-VW6	0.4			X	
8	H13-VW7	0.1			X	
9	H13-VW8	0.2			X	318570
10	H13-VW9	0.2			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
Print Name:	VICTOR ARIAS
Date & Time:	13/03/23 5:45pm
Signature:	

Received by (Company):	ELS GEOH
Print Name:	
Date & Time:	14/3/23 11:00
Signature:	

Lab Use Only

Job number:	Cooling: Ice / Ice pack / None
Temperature: 14	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

R: D. White 14/2/23 1330
Rec: Jack 14/03/23 1600
Rec: ELS SYD

CHAIN OF CUSTODY FORM - Client

[Copyright and Confidential]

ENVIROLAB GROUP
National phone number 1300 424 344

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
02 9910 6200 | sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt, Myaree, WA 6154
08 9317 2505 | lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
03 9763 2500 | melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
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 8967 1201 | darwin@envirolab.com.au

Company:	Consulting Earth Scientists
Contact Person:	Victor Arias
Project Mgr:	Tristan Goodbody
Sampler:	VA
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073
Phone:	Mob: 0439761637
Email Results to:	victor.arias@consultingearth.com.au tristan.goodbody@consultingearth.com.au
Email Invoice to:	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	Asbestos NEPM (AF/FA)	Provide as much information about the sample as you can
11	MW3-VW10	0.4	10/03/23	Soil		
12	MW3-VW11	0.2				
13	MW3-VW12	0.1				
14	FG-VW1	0.3				
15	QAQC3					
(2) —	QAQC4	—			PLEASE FORWARD TO ALS FOR ASBESTOS NEPM ANALYSIS	
16	FG-VW2	0.1				
17	FG-VW3	0.2				
18	FG-VW4	0.7				
19	FG-VW5	0.7				
20	FG-VW6	0.5				

318570

☐ *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:	Cooling: Ice / Ice pack / None
Date & Time: 13/03/23 8:45am	Date & Time:	Temperature:	Security seal: Intact / Broken / None
Signature:	Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Relinquished: D. White ELS SYD 1330 14/3/23

Rec: Jack 14/03/23 16:00

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2308335**	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	: 14-Mar-2023 16:00
Order number	: ----	Date Analysis Commenced	: 15-Mar-2023
C-O-C number	: ----	Issue Date	: 22-Mar-2023 12:44
Sampler	: VA		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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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
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- 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.
- EN60: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.
- EN60-DI: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QAQC2 ASLP PH 7	----	----	----	----
				Sampling date / time	10-Mar-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2308335-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
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: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QAQC2 ASLP PH 7	----	----	----	----
				Sampling date / time	10-Mar-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2308335-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**98.8**	----	----	----	----
13C8-PFOA	----	0.02	%		**97.7**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2 ASLP PH 7	----	----	----	----
				Sampling date / time	10-Mar-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2308335-001	--------	--------	--------	--------
					Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**2.2**	----	----	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)									
Final pH	----	0.1	pH Unit		**11.8**	----	----	----	----
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		<0.0002	----	----	----	----
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	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2 ASLP PH 7	----	----	----	----
				Sampling date / time	10-Mar-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2308335-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		<0.0002	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**102**	----	----	----	----
13C8-PFOA	----	0.0002	%		**115**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: DI WATER LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2308335**	Page	: 1 of 8
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	: 14-Mar-2023
Order number	: ----	Date Analysis Commenced	: 15-Mar-2023
C-O-C number	: ----	Issue Date	: 22-Mar-2023
Sampler	: VA		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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: 4936378)									
ES2308164-005	Anonymous	EA055: Moisture Content	----	0.1	%	14.0	14.9	6.2	0% - 50%
ES2308422-004	Anonymous	EA055: Moisture Content	----	0.1	%	11.3	11.9	5.4	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 4931609)									
ES2308292-001	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	0.0045	0.0048	5.2	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
ES2308407-002	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: 4931609)									
ES2308292-001	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

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: 4931609) - continued									
ES2308292-001	Anonymous	EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	0.0	No Limit
ES2308407-002	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: 4931609)									
ES2308292-001	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
ES2308407-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	<0.0002	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory 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: 4931609)									
ES2308292-001	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
ES2308407-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4931609)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.4	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	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: 4931609)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	103	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	109	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	113	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	94.7	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4931609)								
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	111	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	100	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	111	65.1	134
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	107	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4931609)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	100	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	104	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	105	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: 4931609) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	0.00125 mg/kg	105	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 4934726)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	112	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	101	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	92.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	103	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	91.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4934726)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	117	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	121	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	113	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	113	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	109	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	112	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	115	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4934726)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	104	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	124	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	112	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	115	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	112	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	113	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4934726)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	112	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	106	64.0	140

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: 4934726) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	88.6	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: **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: 4931609)							
ES2308292-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	96.8	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	106	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	101	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	101	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	71.6	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	106	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 4931609)							
ES2308292-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	111	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	108	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	112	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	101	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	109	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	105	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	96.4	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	105	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	106	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	87.6	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	87.3	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4931609)							
ES2308292-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	111	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	111	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	99.2	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	113	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	106	65.1	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*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 4931609) - continued							
ES2308292-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	111	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	105	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 4931609)							
ES2308292-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	98.0	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	112	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	102	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	72.4	69.2	143

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2308335**	Page	: 1 of 5
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 14-Mar-2023
Site	: ----	Issue Date	: 22-Mar-2023
Sampler	: VA	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation* Date extracted	Due for extraction	Evaluation	*Analysis* Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055) QAQC2 - ASLP PH 7	**10-Mar-2023**	**----**	----	----	**17-Mar-2023**	24-Mar-2023	✓
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-DIa-P) QAQC2 - ASLP PH 7	**10-Mar-2023**	**15-Mar-2023**	06-Sep-2023	✓	**----**	----	----
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X) QAQC2 - ASLP PH 7	**10-Mar-2023**	**15-Mar-2023**	06-Sep-2023	✓	**17-Mar-2023**	24-Apr-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X) QAQC2 - ASLP PH 7	**10-Mar-2023**	**15-Mar-2023**	06-Sep-2023	✓	**17-Mar-2023**	24-Apr-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X) QAQC2 - ASLP PH 7	**10-Mar-2023**	**15-Mar-2023**	06-Sep-2023	✓	**17-Mar-2023**	24-Apr-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) QAQC2 - ASLP PH 7	**10-Mar-2023**	**15-Mar-2023**	06-Sep-2023	✓	**17-Mar-2023**	24-Apr-2023	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X) QAQC2 - ASLP PH 7	**10-Mar-2023**	**15-Mar-2023**	06-Sep-2023	✓	**17-Mar-2023**	24-Apr-2023	✓

Matrix: **WATER**

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

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)							
QAQC2 - ASLP PH 7	**15-Mar-2023**	**16-Mar-2023**	11-Sep-2023	✓	**17-Mar-2023**	11-Sep-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
QAQC2 - ASLP PH 7	**15-Mar-2023**	**16-Mar-2023**	11-Sep-2023	✓	**17-Mar-2023**	11-Sep-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
QAQC2 - ASLP PH 7	**15-Mar-2023**	**16-Mar-2023**	11-Sep-2023	✓	**17-Mar-2023**	11-Sep-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
QAQC2 - ASLP PH 7	**15-Mar-2023**	**16-Mar-2023**	11-Sep-2023	✓	**17-Mar-2023**	11-Sep-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
QAQC2 - ASLP PH 7	**15-Mar-2023**	**16-Mar-2023**	11-Sep-2023	✓	**17-Mar-2023**	11-Sep-2023	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	In-house: Analysis of 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
ASLP for Non & Semivolatile Analytes - Plastic Leaching Vessel	EN60a-P	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates.
Deionised Water Leach - Plastic Leaching Vessel	EN60-DIa-P	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	SOIL	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

[Copyright and Confidential]

ENVIROLAB GROUP
National phone number 1300 424 344
Sydney Lab - Envirolab Services

Environmental Division
Sydney
Work Order Reference
ES2308335

Telephone : + 61-2-8784 8555

08 8967 1201 | darwin@envirolab.com.au

Company:	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	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: 0439261637	Additional report format:	☐ Esdat ☐ Equis
Email Results to:	victor.arias@consultingearth.com.au tristan.goodbody@consultingearth.com.au	Lab Comments:	
Email Invoice to:	kay.lowe@consultingearth.com.au		

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	ASLP PFAS	Comments
1	AEC4-CCV1	—	10/03/23	CONCRETE	X	X	
2	QAQC1	—			X	X	
3	QAQC2	—			X	X	
4	AEC4-CCV2	—			X	X	
5	AEC4-CCV3				X	X	
6	AEC4-CCV4				X	X	
7	AEC4-CCV5				X	X	
8	AEC4-CCV6				X	X	
9	AEC4-CCV7				X	X	
10	AEC4-CCV8				X	X	

PLEASE FORWARD TO ALS FOR PFAS and ASLP PFAS ANALYSIS

318571

☐ *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 GEOTH
Print Name:	VICTOR ARIAS	Print Name:	
Date & Time:	13/03/23 6:45pm	Date & Time:	14.3.23 11:00
Signature:		Signature:	

Pkup 14/3/23 @ 1250

Rec: Jack 14/03/23 1600

Lab Use Only	
Job number:	Cooling: Ice / Ice pack / None
Temperature:	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

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 319378

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-11**
Number of Samples	11 Soil
Date samples received	23/03/2023
Date completed instructions received	23/03/2023

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	27/03/2023
Date of Issue	27/03/2023
Reissue Details	This report replaces R00 created on 27/03/2023 due to: Sample ID Amended (Client Request), report comment update.

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Asbestos Approved By
Analysed by Asbestos Approved Analyst: Stuart Chen
Authorised by Asbestos Approved Signatory: Lucy Zhu
Results Approved By
Lucy Zhu, Asbestos Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Asbestos ID - soils NEPM - ASB-001						
Our Reference		319378-1	319378-2	319378-3	319378-4	319378-5
Your Reference	UNITS	F9-VW7-2	CS108-VW1-2	F9-VW8-2	F9-VW10-2	F9-VW11-2
Date Sampled		23/03/2023	23/03/2023	23/03/2023	23/03/2023	23/03/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	27/03/2023	27/03/2023	27/03/2023	27/03/2023	27/03/2023
Sample mass tested	g	937.72	795.75	931.45	1,001.72	1,002.7
Sample Description	-	Grey coarse-grained soil & rocks	Grey 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	Chrysotile asbestos detected Amosite asbestos detected 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	2.1531	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	See Above	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	2.1568	–
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	0.2153	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		319378-6	319378-7	319378-8	319378-9	319378-10
Your Reference	UNITS	F9-VW3-2	QAQC1	H13-VW4-2	H13-VW9-2	H13-VW12-2
Date Sampled		23/03/2023	23/03/2023	23/03/2023	23/03/2023	23/03/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	27/03/2023	27/03/2023	27/03/2023	27/03/2023	27/03/2023
Sample mass tested	g	930.46	847.62	711.11	929.31	914.83
Sample Description	-	Grey coarse-grained soil & rocks	Grey 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 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	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*	-	Chrysotile	Chrysotile	Amosite	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	0.0030	0.0842	0.0025	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	0.0099	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001		
Our Reference		319378-11
Your Reference	UNITS	H13-VW2-2
Date Sampled		23/03/2023
Type of sample		Soil
Date analysed	-	27/03/2023
Sample mass tested	g	918.32
Sample Description	-	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
Trace Analysis	-	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected
ACM >7mm Estimation*	g	–
FA and AF Estimation*	g	–
ACM >7mm Estimation*	%(w/w)	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001

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.

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

Report Comments

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 319378-4; Chrysotile & Amosite asbestos identified in 2.6960g of fibrous matted material
Sample 319378-6; Chrysotile asbestos identified in 0.0030g of loose fibre bundles
Sample 319378-7; Chrysotile asbestos identified in 0.0842g of rope insulation
Sample 319378-8; Amosite asbestos identified in 0.0025g of loose fibre bundles

CHAIN OF CUSTODY - Client

22382

ENVIROLAB GROUP - National Phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 / melbourne@envirolab.com.au

Brisbane Lab - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Lab - Envirolab Services
7 Palmerton Road Windsor Gardens, SA 5087
Ph 0406 350 706 / adelaide@envirolab.com.au

Client: CBS	**Client Project Name / Number / Site etc (ie report title):** 35170 COS-GPM-1F
Contact Person: TRISTAN GOODBODY	**PO No.:**
Project Mgr: ~	**Envirolab Quote No. :**
Sampler: ~	**Date results required:**
Address: PYMBLE	**Or choose:** standard / same day / 1 day / 2 day / 3 day
	Note: Inform lab in advance if urgent turnaround is required - surcharges apply
Phone: **Mob:** 0413601751	**Lab comments:**
Fax:	
Email: tristan.goodbody@consultingearth.com.au	

Sample information | **Tests Required** | **Comments**

Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Asbestos NEPM													Provide as much information about the sample as you can
1	PG-VW7_2	–	23/3	ASBESTOS BAG	Y													
2	CS108-VW1_2	–			Y													
3	PG-VW8_2	–			Y													
4	PG-VW10_2	–			Y													
5	PG-VW11_2	–			Y													
6	PG-VW3_2	–			Y													
7	QBQC1	–			Y													
–	QBQC2	–			PLEASE FORWARD TO ALS FOR NEPM ASBESTOS ANALYSIS													
8	MW3-VW4_2	–			Y													500mL
9	MW3-VW9_2	–			Y													
10	MW3-VW12_2	–			Y													
11	MW3-VW2_2	–	↓	↓	Y													319578.

Relinquished by (company): CBS	**Received by (company):** ENSW
Print Name: TRISTAN GOODBODY	**Print Name:** CHICOM
Date & Time: 23/3/23	**Date & Time:** 23/3/23 1830
Signature:	**Signature:**

Lab use only:
Samples Received: Cool or Ambient (circle one)
Temperature Received at: 22 **(if applicable)**
Transported by: Hand delivered / courier

White - Lab copy / Blue - Client copy / Pink - Retain in Book

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Tristan Goodbody

Sample Login Details

Your reference	CES170608-GPM-11
Envirolab Reference	319378
Date Sample Received	23/03/2023
Date Instructions Received	23/03/2023
Date Results Expected to be Reported	31/03/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	11 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	22
Cooling Method	None
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	Asbestos ID - soils NEPM - ASB-001
F9-VW7-2	✓
CS108-VW1-2	✓
F9-VW8-2	✓
F9-VW10-2	✓
F9-VW11-2	✓
F9-VW3-2	✓
QAQC1	✓
A13-VW4-2	✓
A13-VW9-2	✓
A13-VW12-2	✓
A13-VW2-2	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2309832**	Page	: 1 of 3
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-LL	Date Samples Received	: 24-Mar-2023 14:20
Order number	: ----	Date Analysis Commenced	: 28-Mar-2023
C-O-C number	: 22382	Issue Date	: 29-Mar-2023 12:50
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
- Descriptive Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Alana Smylie	Team Leader - Asbestos	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.

- 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.

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Sample ID	**QAQC2**	----	----	----	----
			Sampling date / time	23-Mar-2023 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES2309832-001**	--------	--------	--------	--------
				Result	----	----	----	----
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	-	--	**Ch**	----	----	----	----
Synthetic Mineral Fibre	----	-	--	**No**	----	----	----	----
Organic Fibre	----	-	--	**No**	----	----	----	----
Sample weight (dry)	----	0.01	g	**1040**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	**A. SMYLIE**	----	----	----	----

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 - 23-Mar-2023 00:00	Soil sample containing one asbestos fibre bundle approximately 5x1x1mm.

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

QUALITY CONTROL REPORT

Work Order	: **ES2309832**	Page	: 1 of 3
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-LL	Date Samples Received	: 24-Mar-2023
Order number	: ----	Date Analysis Commenced	: 28-Mar-2023
C-O-C number	: 22382	Issue Date	: 29-Mar-2023
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*
Alana Smylie	Team Leader - Asbestos	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.

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

Laboratory Duplicate (DUP) Report

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

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

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

- **No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

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

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2309832**	Page	: 1 of 4
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM-LL	Date Samples Received	: 24-Mar-2023
Site	: ----	Issue Date	: 29-Mar-2023
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.**
- **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
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag (EA200)							
QAQC2	**23-Mar-2023**	**----**	----	----	**28-Mar-2023**	19-Sep-2023	✓

Quality Control Parameter Frequency Compliance

- **No Quality Control data available for this section.**

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
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

CHAIN OF CUSTODY - Client

22382

ENVIROLAB GROUP - National Phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab -
16-18 Hayd
Ph 08 9317

Melbourne
1A Dalmore
Ph 03 9763

Brisbane La
20a, 10-20 I
Ph 07 3266

Adelaide La
7 Palmerton
Ph 0406 350 706 / adelaide@envirolab.com.au

Telephone : +61-2-8784 8555

Environmental Division Sydney

Work Order Reference
ES2309832

Client: CBS	**Client Project Name / Number / Site etc (ie report title):** 35170C08-Grm-1t
Contact Person: TRISTAN GOODBODY	**PO No.:**
Project Mgr: "	**Envirolab Quote No. :**
Sampler: "	**Date results required:**
Address: PYMBLE	**Or choose:** standard / same day / 1 day / 2 day / 3 day
	Note: Inform lab in advance if urgent turnaround is required - surcharges apply
Phone: **Mob:** 0413601751	**Lab comments:**
Fax:	
Email: tristan.goodbody@consultingearth.com.au	

Sample information | **Tests Required** | **Comments**

Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Asbestos NEPM	Provide as much information about the sample as you can
1	FG-VW7_2	-	23/3	Asbestos Bag	x	
2	CS108-VW1_2	-			x	
3	FG-VW8_2	-			x	
4	FG-VW10_2	-			x	
5	FG-VW11_2	-			x	
6	FG-VW3_2	-			x	
7	QA QC 1	-			x	
(1) -	QA QC 2	-			Please forward to ALS for NEPM Asbestos analysis 500mL	
8	A13-VW4_2	-			x	
9	A13-VW9_2	-			x	
10	A13-VW12_2	-			x	
11	A13-VW2_2	-	↓	↓	x	319378.

Relinquished by (company): CBS / ENSW	**Received by (company):** ENSW	***Lab use only:***
Print Name: TRISTAN GOODBODY / EMMANUEL	**Print Name:** CHICOM	**Samples Received:** Cool or Ambient (circle one)
Date & Time: 23/3/23 / 24/3 1145	**Date & Time:** 23/3/23 1830	**Temperature Received at:** 22 (if applicable)
Signature:	**Signature:**	**Transported by:** Hand delivered / courier

Rec: Jack 24/03/23 1446

White - Lab copy / Blue - Client copy / Pink - Retain in Book

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
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CERTIFICATE OF ANALYSIS 321310

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	10 Soil
Date samples received	20/04/2023
Date completed instructions received	20/04/2023

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	28/04/2023
Date of Issue	02/05/2023

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Results Approved By
Diego Bigolin, Inorganics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Misc Inorg - Soil						
Our Reference		321310-1	321310-2	321310-3	321310-4	321310-5
Your Reference	UNITS	WSB-V1	QAQC1	WSB-V2	WSB-V3	WSB-V4
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Combustibility*	%	60	48	36	20	48
Total Sulfur in soil/solids	%w/w	0.30	0.31	0.32	0.12	0.24

Misc Inorg - Soil						
Our Reference		321310-6	321310-7	321310-8	321310-9	321310-10
Your Reference	UNITS	WSB-V5	WSB-V6	WSB-V7	WSB-V8	WSB-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Combustibility*	%	66	54	38	33	6.9
Total Sulfur in soil/solids	%w/w	0.13	0.30	0.28	0.32	0.04

Method ID	Methodology Summary
Inorg-092	LOI - Sample is dried, then ignited in a furnace.
INORG-137	Total Carbon Nitrogen Sulfur by high temperature catalytic combustion with IR detection.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			26/04/2023	1	26/04/2023	26/04/2023		26/04/2023	[NT]
Date analysed	-			27/04/2023	1	27/04/2023	27/04/2023		27/04/2023	[NT]
Combustibility*	%	0.1	Inorg-092	<0.1	1	60	[NT]		[NT]	[NT]
Total Sulfur in soil/solids	%w/w	0.01	INORG-137	<0.01	1	0.30	0.31	3	86	[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.

CHAIN OF CUSTODY FORM - Client

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ENVIROLAB GROUP
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Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
03 9763 2500 | melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
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08 7087 6800 | adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
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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
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	Combustible Content and % Sulfur		Provide as much information about the sample as you can
1	WSB-V1		18.04.23		X		
2	QAQC1		↓		X		
8B	QAQC2				PLEASE FORWARD TO ALS FOR COMBUSTIBLE AND SULFUR CONTENT		
3A	WSB-V2				X		
4B	WSB-V3				X		
5B	WSB-V4				X		
6 7	WSB-V5				X		
7 8	WSB-V6				X		
8 9	WSB-V7				X		
9 10	WSB-V8				X		
10 11	WSB-V9		↓		X		

send out →

☐ *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:	Sarah P
Date & Time:	19/04/23 10:10am	Date & Time:	20/04/23. 1130
Signature:		Signature:	

Lab Use Only

Job number: 321310	Cooling: Ice / Ice pack / None
Temperature: 10°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

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ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Tristan Goodbody

Sample Login Details

Your reference	CES170608 - GPM
Envirolab Reference	321310
Date Sample Received	20/04/2023
Date Instructions Received	20/04/2023
Date Results Expected to be Reported	26/04/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	10 Soil
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	10
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
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www.envirolab.com.au

Sample ID	Misc Inorg - Soil
WSB-V1	✓
QAQC1	✓
WSB-V2	✓
WSB-V3	✓
WSB-V4	✓
WSB-V5	✓
WSB-V6	✓
WSB-V7	✓
WSB-V8	✓
WSB-V9	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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customerservice@envirolab.com.au
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INTERIM REPORT 321311

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
Date samples received	20/04/2023
Date completed instructions received	20/04/2023

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	26/04/2023
Interim Report Date	26/04/2023

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PFAS in Soils Extended						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
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*	%	103	105	107	104	108
Surrogate $^{13}C_2$ *PFOA*	%	87	85	84	83	85
Extracted ISTD $^{13}C_3$ *PFBS*	%	98	103	93	87	102
Extracted ISTD $^{18}O_2$ *PFHxS*	%	89	95	85	80	95
Extracted ISTD $^{13}C_4$ *PFOS*	%	103	107	99	96	105
Extracted ISTD $^{13}C_4$ *PFBA*	%	88	101	94	79	96

PFAS in Soils Extended						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	97	110	97	85	102
Extracted ISTD $^{13}C_2$ *PFHxA*	%	98	119	100	87	109
Extracted ISTD $^{13}C_4$ *PFHpA*	%	92	107	91	81	95
Extracted ISTD $^{13}C_4$ *PFOA*	%	100	131	111	94	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	107	127	112	97	113
Extracted ISTD $^{13}C_2$ *PFDA*	%	92	115	103	86	97
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	112	132	109	100	112
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	103	127	99	94	107
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	91	111	99	84	94
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	104	132	98	87	101
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	117	167	111	99	115
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	95	154	91	83	91
Extracted ISTD $^{13}C_8$ *FOSA*	%	100	88	92	96	97
Extracted ISTD d_3 *N MeFOSA*	%	95	83	86	91	93
Extracted ISTD d_5 *N EtFOSA*	%	103	94	99	99	102
Extracted ISTD d_7 *N MeFOSE*	%	98	90	94	98	102
Extracted ISTD d_9 *N EtFOSE*	%	114	112	110	114	118
Extracted ISTD d_3 *N MeFOSAA*	%	93	156	106	73	100
Extracted ISTD d_5 *N EtFOSAA*	%	85	162	97	68	93
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		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
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	0.2	<0.1	0.2	<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	0.2	0.2	<0.1
Perfluorononanoic acid	µg/kg	0.1	<0.1	0.4	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	<0.1	<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*	%	104	105	104	104	106
Surrogate $^{13}C_2$ *PFOA*	%	81	91	85	82	84
Extracted ISTD $^{13}C_3$ *PFBS*	%	97	97	94	93	100
Extracted ISTD $^{18}O_2$ *PFHxS*	%	88	96	91	88	85
Extracted ISTD $^{13}C_4$ *PFOS*	%	107	107	103	99	104
Extracted ISTD $^{13}C_4$ *PFBA*	%	97	98	94	93	92

PFAS in Soils Extended						
Our Reference		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	100	102	100	98	97
Extracted ISTD $^{13}C_2$ *PFHxA*	%	106	108	105	98	98
Extracted ISTD $^{13}C_4$ *PFHpA*	%	96	96	95	93	96
Extracted ISTD $^{13}C_4$ *PFOA*	%	116	112	105	107	109
Extracted ISTD $^{13}C_5$ *PFNA*	%	112	123	109	108	106
Extracted ISTD $^{13}C_2$ *PFDA*	%	99	106	97	95	101
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	119	128	105	100	124
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	114	124	106	105	104
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	98	98	90	83	90
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	123	114	103	101	96
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	116	125	115	113	110
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	97	112	92	86	90
Extracted ISTD $^{13}C_8$ *FOSA*	%	93	89	96	89	93
Extracted ISTD d_3 *N MeFOSA*	%	90	89	88	88	86
Extracted ISTD d_5 *N EtFOSA*	%	100	95	100	100	97
Extracted ISTD d_7 *N MeFOSE*	%	101	94	105	93	87
Extracted ISTD d_9 *N EtFOSE*	%	120	114	113	115	115
Extracted ISTD d_3 *N MeFOSAA*	%	116	113	101	104	103
Extracted ISTD d_5 *N EtFOSAA*	%	103	128	99	90	94
Total Positive PFHxS & PFOS	µg/kg	0.2	<0.1	0.3	0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	0.2	<0.1	0.4	0.2	<0.1
Total Positive PFAS	µg/kg	0.3	<0.1	0.9	0.6	<0.1

PFAS in Soils Extended						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
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	0.3	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	<0.2	<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	0.3	<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	0.6	<0.1	0.4	<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*	%	106	106	103	103	104
Surrogate $^{13}C_2$ *PFOA*	%	88	83	80	82	85
Extracted ISTD $^{13}C_3$ *PFBS*	%	93	90	101	94	95
Extracted ISTD $^{18}O_2$ *PFHxS*	%	95	82	90	94	85
Extracted ISTD $^{13}C_4$ *PFOS*	%	100	97	102	103	100
Extracted ISTD $^{13}C_4$ *PFBA*	%	96	90	96	94	93

PFAS in Soils Extended						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	102	96	101	102	99
Extracted ISTD $^{13}C_2$ *PFHxA*	%	108	98	105	105	105
Extracted ISTD $^{13}C_4$ *PFHpA*	%	103	86	93	94	100
Extracted ISTD $^{13}C_4$ *PFOA*	%	114	105	115	115	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	121	107	112	116	118
Extracted ISTD $^{13}C_2$ *PFDA*	%	111	91	111	109	113
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	116	121	127	113	135
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	120	105	106	102	124
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	107	88	94	91	112
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	119	102	107	101	117
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	122	111	120	114	122
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	104	88	99	98	113
Extracted ISTD $^{13}C_8$ *FOSA*	%	95	89	95	96	92
Extracted ISTD d_3 *N MeFOSA*	%	89	82	92	88	86
Extracted ISTD d_5 *N EtFOSA*	%	102	98	103	101	97
Extracted ISTD d_7 *N MeFOSE*	%	94	97	102	95	90
Extracted ISTD d_9 *N EtFOSE*	%	125	110	126	114	114
Extracted ISTD d_3 *N MeFOSAA*	%	125	94	110	117	132
Extracted ISTD d_5 *N EtFOSAA*	%	124	101	107	105	127
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	<0.1	0.3	0.2
Total Positive PFOS & PFOA	µg/kg	<0.1	0.1	<0.1	0.3	0.2
Total Positive PFAS	µg/kg	<0.1	1.1	<0.1	1	0.2

PFAS in Soils Extended						
Our Reference		321311-16	321311-17	321311-18	321311-19	321311-20
Your Reference	UNITS	SS-V26	QAQC1	SS-V27	SS-V23	TB
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
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	0.3	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	<0.1	<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*	%	107	104	105	104	105
Surrogate $^{13}C_2$ *PFOA*	%	78	72	73	77	78
Extracted ISTD $^{13}C_3$ *PFBS*	%	91	89	90	92	96
Extracted ISTD $^{18}O_2$ *PFHxS*	%	81	86	87	87	89
Extracted ISTD $^{13}C_4$ *PFOS*	%	101	108	111	109	107
Extracted ISTD $^{13}C_4$ *PFBA*	%	86	84	92	90	97

PFAS in Soils Extended						
Our Reference		321311-16	321311-17	321311-18	321311-19	321311-20
Your Reference	UNITS	SS-V26	QAQC1	SS-V27	SS-V23	TB
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	100	93	98	93	99
Extracted ISTD $^{13}C_2$ *PFHxA*	%	111	117	119	112	109
Extracted ISTD $^{13}C_4$ *PFHpA*	%	99	96	92	98	102
Extracted ISTD $^{13}C_4$ *PFOA*	%	125	123	139	126	125
Extracted ISTD $^{13}C_5$ *PFNA*	%	116	129	133	127	132
Extracted ISTD $^{13}C_2$ *PFDA*	%	96	111	111	119	114
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	127	125	147	149	139
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	114	128	139	133	129
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	76	90	99	111	111
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	168	147	154	122	122
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	193	173	179	130	129
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	152	146	135	118	110
Extracted ISTD $^{13}C_8$ *FOSA*	%	55	65	83	89	93
Extracted ISTD d_3 *N MeFOSA*	%	57	67	78	88	91
Extracted ISTD d_5 *N EtFOSA*	%	72	82	90	100	103
Extracted ISTD d_7 *N MeFOSE*	%	61	68	81	93	100
Extracted ISTD d_9 *N EtFOSE*	%	100	111	115	122	123
Extracted ISTD d_3 *N MeFOSAA*	%	141	153	165	139	126
Extracted ISTD d_5 *N EtFOSAA*	%	143	157	158	136	116
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	0.4	0.2	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1	0.3	0.2	<0.1
Total Positive PFAS	µg/kg	<0.1	<0.1	0.4	0.2	<0.1

Misc Inorg - Soil						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-					
Date analysed	-					
Combustibility*	%					
Total Sulfur in soil/solids*	mg/kg					

Misc Inorg - Soil						
Our Reference		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-					
Date analysed	-					
Combustibility*	%					
Total Sulfur in soil/solids*	mg/kg					

Misc Inorg - Soil						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-					
Date analysed	-					
Combustibility*	%					
Total Sulfur in soil/solids*	mg/kg					

Misc Inorg - Soil				
Our Reference		321311-16	321311-18	321311-19
Your Reference	UNITS	SS-V26	SS-V27	SS-V23
Date Sampled		18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil
Date prepared	-			
Date analysed	-			
Combustibility*	%			
Total Sulfur in soil/solids*	mg/kg			

Moisture						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Moisture	%	9.2	4.1	12	10	3.4

Moisture						
Our Reference		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Moisture	%	6.2	2.1	9.3	10	5.2

Moisture						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Moisture	%	11	15	3.5	7.5	15

Moisture						
Our Reference		321311-16	321311-17	321311-18	321311-19	321311-20
Your Reference	UNITS	SS-V26	QAQC1	SS-V27	SS-V23	TB
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Moisture	%	13	11	7.7	12	0.8

PFAS in ASLP Extended						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
pH of final Leachate	pH units	7.8	7.2	7.3	7.0	7.2
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	96	100	100	100	98
Surrogate $^{13}C_2$ PFOA	%	108	108	107	106	107
Extracted ISTD $^{13}C_3$ *PFBS*	%	110	109	114	114	111
Extracted ISTD $^{18}O_2$ *PFHxS*	%	112	110	110	109	112
Extracted ISTD $^{13}C_4$ *PFOS*	%	111	109	109	108	108

PFAS in ASLP Extended						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	105	104	106	105	106
Extracted ISTD $^{13}C_3$ *PFPeA*	%	110	111	110	111	112
Extracted ISTD $^{13}C_2$ *PFHxA*	%	108	111	112	110	110
Extracted ISTD $^{13}C_4$ *PFHpA*	%	101	103	103	104	102
Extracted ISTD $^{13}C_4$ *PFOA*	%	116	115	114	116	116
Extracted ISTD $^{13}C_5$ *PFNA*	%	121	116	117	117	117
Extracted ISTD $^{13}C_2$ *PFDA*	%	115	116	114	115	116
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	115	117	112	112	116
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	111	116	113	114	116
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	84	92	85	92	89
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	108	108	108	106	108
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	119	114	121	121	118
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	132	120	132	134	130
Extracted ISTD $^{13}C_8$ *FOSA*	%	106	107	106	107	106
Extracted ISTD d_3 *N MeFOSA*	%	105	104	104	106	104
Extracted ISTD d_5 *N EtFOSA*	%	103	106	103	105	86
Extracted ISTD d_7 *N MeFOSE*	%	108	111	110	107	109
Extracted ISTD d_9 *N EtFOSE*	%	121	121	119	120	114
Extracted ISTD d_3 *N MeFOSAA*	%	124	122	122	124	122
Extracted ISTD d_5 *N EtFOSAA*	%	119	114	118	117	118
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01

PFAS in ASLP Extended						
Our Reference		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
pH of final Leachate	pH units	7.0	7.9	8.2	8.4	8.4
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	0.02	0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	102	99	101	98	100
Surrogate $^{13}C_2$ PFOA	%	106	105	106	106	107
Extracted ISTD $^{13}C_3$ *PFBS*	%	110	106	105	107	110
Extracted ISTD $^{18}O_2$ *PFHxS*	%	111	108	108	107	110
Extracted ISTD $^{13}C_4$ *PFOS*	%	103	105	104	104	106

PFAS in ASLP Extended						
Our Reference		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	106	105	106	103	105
Extracted ISTD $^{13}C_3$ *PFPeA*	%	111	110	109	106	110
Extracted ISTD $^{13}C_2$ *PFHxA*	%	110	106	108	104	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%	103	100	103	100	101
Extracted ISTD $^{13}C_4$ *PFOA*	%	116	114	116	112	111
Extracted ISTD $^{13}C_5$ *PFNA*	%	120	115	116	112	116
Extracted ISTD $^{13}C_2$ *PFDA*	%	114	112	110	111	112
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	114	113	113	111	108
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	115	109	113	107	110
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	86	90	92	86	86
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	105	103	101	104	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	119	117	120	114	120
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	130	128	132	127	133
Extracted ISTD $^{13}C_8$ *FOSA*	%	106	104	105	105	106
Extracted ISTD d_3 *N MeFOSA*	%	103	104	107	103	104
Extracted ISTD d_5 *N EtFOSA*	%	104	102	105	99	104
Extracted ISTD d_7 *N MeFOSE*	%	107	109	109	106	111
Extracted ISTD d_9 *N EtFOSE*	%	119	119	118	117	121
Extracted ISTD d_3 *N MeFOSAA*	%	123	119	122	116	120
Extracted ISTD d_5 *N EtFOSAA*	%	115	112	114	110	110
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	0.02	0.03	<0.01

PFAS in ASLP Extended						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
pH of final Leachate	pH units	7.6	7.0	8.4	9.2	8.8
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	0.07	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<0.01	0.03	<0.01	0.02	<0.01
8:2 FTS	µg/L	<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
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	99	100	102	99	98
Surrogate $^{13}C_2$ PFOA	%	104	106	106	104	107
Extracted ISTD $^{13}C_3$ *PFBS*	%	106	106	105	105	107
Extracted ISTD $^{18}O_2$ *PFHxS*	%	108	108	108	107	110
Extracted ISTD $^{13}C_4$ *PFOS*	%	106	107	104	107	105

PFAS in ASLP Extended						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	104	104	103	102	105
Extracted ISTD $^{13}C_3$ *PFPeA*	%	108	110	107	108	110
Extracted ISTD $^{13}C_2$ *PFHxA*	%	106	108	106	105	108
Extracted ISTD $^{13}C_4$ *PFHpA*	%	101	100	100	99	103
Extracted ISTD $^{13}C_4$ *PFOA*	%	112	113	111	113	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	114	116	113	116	115
Extracted ISTD $^{13}C_2$ *PFDA*	%	111	113	108	111	112
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	113	113	105	110	116
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	114	108	111	111	111
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	87	87	88	86	89
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	104	102	99	102	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	116	114	117	113	120
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	130	133	127	126	133
Extracted ISTD $^{13}C_8$ *FOSA*	%	105	106	105	106	109
Extracted ISTD d_3 *N MeFOSA*	%	103	104	103	102	105
Extracted ISTD d_5 *N EtFOSA*	%	102	100	103	103	103
Extracted ISTD d_7 *N MeFOSE*	%	104	107	109	111	109
Extracted ISTD d_9 *N EtFOSE*	%	117	116	115	120	118
Extracted ISTD d_3 *N MeFOSAA*	%	120	121	117	116	119
Extracted ISTD d_5 *N EtFOSAA*	%	115	111	105	109	112
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	0.09	<0.01	0.02	<0.01

PFAS in ASLP Extended					
Our Reference		321311-16	321311-17	321311-18	321311-19
Your Reference	UNITS	SS-V26	QAQC1	SS-V27	SS-V23
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023
pH of final Leachate	pH units	8.0	7.3	6.6	8.3
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	<0.01	<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	%	101	103	99	99
Surrogate $^{13}C_2$ PFOA	%	107	106	108	106
Extracted ISTD $^{13}C_3$ *PFBS*	%	107	104	105	109
Extracted ISTD $^{18}O_2$ *PFHxS*	%	107	108	105	108
Extracted ISTD $^{13}C_4$ *PFOS*	%	107	105	104	107

PFAS in ASLP Extended					
Our Reference		321311-16	321311-17	321311-18	321311-19
Your Reference	UNITS	SS-V26	QAQC1	SS-V27	SS-V23
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	103	101	98	103
Extracted ISTD $^{13}C_3$ *PFPeA*	%	108	108	104	108
Extracted ISTD $^{13}C_2$ *PFHxA*	%	105	108	104	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%	101	99	98	100
Extracted ISTD $^{13}C_4$ *PFOA*	%	112	112	109	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	119	116	115	114
Extracted ISTD $^{13}C_2$ *PFDA*	%	114	111	108	111
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	116	112	105	110
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	113	111	107	111
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	89	88	83	88
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	108	105	103	100
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	118	122	113	110
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	133	135	126	129
Extracted ISTD $^{13}C_8$ *FOSA*	%	106	107	105	107
Extracted ISTD d_3 *N MeFOSA*	%	102	100	97	103
Extracted ISTD d_5 *N EtFOSA*	%	101	102	99	104
Extracted ISTD d_7 *N MeFOSE*	%	109	107	106	107
Extracted ISTD d_9 *N EtFOSE*	%	114	118	112	115
Extracted ISTD d_3 *N MeFOSAA*	%	122	121	116	119
Extracted ISTD d_5 *N EtFOSAA*	%	119	120	106	110
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	<0.01	<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.
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.
INORG-137	Total Carbon Nitrogen Sulfur by high temperature catalytic combustion with IR detection.
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 5.4 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.

Method ID	Methodology Summary
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 5.4Table 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 Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	321311-2
Date prepared	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Date analysed	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	115	103
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	117	105
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	110	103
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	104	92
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	98	92
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	89	86
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	122	115
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	99	91
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	90	80
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	109	104
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	108	99
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	92	82
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	122	106
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	96	82
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	106	105
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	95	98
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	1	<5	<5	0	114	103
4:2 FTS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	120	116
6:2 FTS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	102	94
8:2 FTS	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	111	102
10:2 FTS	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	119	98
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	121	116
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	113	105
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	1	<1	<1	0	106	96
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	1	<1	<1	0	136	151
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	1	<5	<5	0	111	115
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	90	83
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	111	102
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	102	1	103	103	0	107	106
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	86	1	87	91	4	90	86

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	321311-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	94	1	98	97	1	91	94
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	92	1	89	90	1	89	91
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	105	1	103	105	2	104	105
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	97	1	88	94	7	96	96
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	99	1	97	100	3	102	105
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	107	1	98	102	4	104	113
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	102	1	92	102	10	97	102
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	114	1	100	104	4	106	121
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	120	1	107	110	3	111	123
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	95	1	92	103	11	96	123
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	110	1	112	130	15	112	137
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	116	1	103	108	5	109	108
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	104	1	91	100	9	99	107
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	112	1	104	100	4	112	129
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	124	1	117	115	2	113	152
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	100	1	95	99	4	97	147
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	95	1	100	97	3	91	83
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	91	1	95	91	4	88	77
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	102	1	103	104	1	98	91
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	98	1	98	105	7	97	81

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	321311-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	118	1	114	117	3	118	107
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	115	1	93	94	1	108	141
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	102	1	85	96	12	101	153

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	21/04/2023	21/04/2023		[NT]	[NT]
Date analysed	-			[NT]	11	21/04/2023	21/04/2023		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	[NT]	11	<5	<5	0	[NT]	[NT]
4:2 FTS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
6:2 FTS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
8:2 FTS	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
10:2 FTS	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	[NT]	11	<5	<5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	11	106	105	1	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	11	88	86	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]	11	93	96	3	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	11	95	93	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	11	100	102	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	11	96	94	2	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	11	102	101	1	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	11	108	109	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	11	103	99	4	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	11	114	116	2	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	11	121	123	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	11	111	119	7	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	11	116	136	16	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	11	120	133	10	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	11	107	116	8	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	11	119	124	4	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	11	122	132	8	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	11	104	116	11	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	11	95	94	1	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	11	89	88	1	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	11	102	100	2	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	11	94	93	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]	11	125	120	4	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	11	125	132	5	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	11	124	129	4	[NT]	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321311-2
Date prepared	-			24/04/2023	1	24/04/2023	24/04/2023		24/04/2023	24/04/2023
Date analysed	-			24/04/2023	1	24/04/2023	24/04/2023		24/04/2023	24/04/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	97	99
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	102	102
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	99	101
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	101	103
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	99	102
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	91	88
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	100	97
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	96	98
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	97	98
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	98	102
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	104	106
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	98	100
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	102	101
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	92	94
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	100	101
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	85	85
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	1	<0.5	<0.5	0	100	101
4:2 FTS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	100	101
6:2 FTS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	104	103
8:2 FTS	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	102	111
10:2 FTS	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	109	124
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	103	113
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	107	111
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	101	105
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	81	77
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	1	<0.5	<0.5	0	87	86
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	103	105
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	99	103
Surrogate $^{13}C_8$ PFOS	%		Org-029A	103	1	96	96	0	103	104
Surrogate $^{13}C_2$ PFOA	%		Org-029A	106	1	108	105	3	106	109

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321311-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	112	1	110	111	1	108	109
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	112	1	112	110	2	111	108
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	105	1	111	112	1	105	103
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	107	1	105	106	1	105	103
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	112	1	110	112	2	109	109
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	110	1	108	110	2	107	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	104	1	101	104	3	100	102
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	116	1	116	117	1	113	110
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	119	1	121	122	1	116	116
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	116	1	115	116	1	113	114
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	118	1	115	111	4	113	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	110	1	111	111	0	112	115
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	87	1	84	87	4	89	92
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	106	1	108	104	4	101	102
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	113	1	119	118	1	110	115
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	133	1	132	127	4	128	128
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	106	1	106	104	2	102	101
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	105	1	105	108	3	104	103
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	104	1	103	105	2	105	103
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	106	1	108	109	1	107	109

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321311-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	117	1	121	119	2	116	116
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	123	1	124	124	0	115	118
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	119	1	119	122	2	115	116

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	24/04/2023	24/04/2023		[NT]	[NT]
Date analysed	-			[NT]	11	24/04/2023	24/04/2023		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029A	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
4:2 FTS	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
6:2 FTS	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
8:2 FTS	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
10:2 FTS	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Surrogate $^{13}C_8$ PFOS	%		Org-029A	[NT]	11	99	106	7	[NT]	[NT]
Surrogate $^{13}C_2$ PFOA	%		Org-029A	[NT]	11	104	107	3	[NT]	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	[NT]	11	106	107	1	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	[NT]	11	108	110	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	[NT]	11	106	104	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	[NT]	11	104	105	1	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	[NT]	11	108	108	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	[NT]	11	106	108	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	[NT]	11	101	101	0	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	[NT]	11	112	111	1	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	[NT]	11	114	118	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	[NT]	11	111	111	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	[NT]	11	113	110	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	[NT]	11	114	111	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	[NT]	11	87	90	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	[NT]	11	104	104	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	[NT]	11	116	119	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	[NT]	11	130	130	0	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	[NT]	11	105	107	2	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	[NT]	11	103	103	0	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	[NT]	11	102	103	1	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	[NT]	11	104	109	5	[NT]	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	[NT]	11	117	118	1	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	[NT]	11	120	122	2	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	[NT]	11	115	113	2	[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

PFAS in Soil:
Matrix spike recovery for MeFOSE is outside global acceptance criteria (60-140%). However an acceptable recovery has been obtained for the LCS.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

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CERTIFICATE OF ANALYSIS 321311

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
Date samples received	20/04/2023
Date completed instructions received	20/04/2023

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

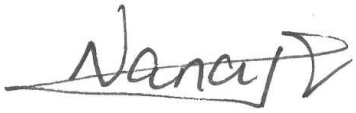
Date results requested by	28/04/2023
Date of Issue	02/05/2023

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Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Greta Petzold, Operation Manager

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in Soils Extended						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
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*	%	103	105	107	104	108
Surrogate $^{13}C_2$ *PFOA*	%	87	85	84	83	85
Extracted ISTD $^{13}C_3$ *PFBS*	%	98	103	93	87	102
Extracted ISTD $^{18}O_2$ *PFHxS*	%	89	95	85	80	95
Extracted ISTD $^{13}C_4$ *PFOS*	%	103	107	99	96	105
Extracted ISTD $^{13}C_4$ *PFBA*	%	88	101	94	79	96

PFAS in Soils Extended						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	97	110	97	85	102
Extracted ISTD $^{13}C_2$ *PFHxA*	%	98	119	100	87	109
Extracted ISTD $^{13}C_4$ *PFHpA*	%	92	107	91	81	95
Extracted ISTD $^{13}C_4$ *PFOA*	%	100	131	111	94	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	107	127	112	97	113
Extracted ISTD $^{13}C_2$ *PFDA*	%	92	115	103	86	97
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	112	132	109	100	112
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	103	127	99	94	107
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	91	111	99	84	94
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	104	132	98	87	101
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	117	167	111	99	115
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	95	154	91	83	91
Extracted ISTD $^{13}C_8$ *FOSA*	%	100	88	92	96	97
Extracted ISTD d_3 *N MeFOSA*	%	95	83	86	91	93
Extracted ISTD d_5 *N EtFOSA*	%	103	94	99	99	102
Extracted ISTD d_7 *N MeFOSE*	%	98	90	94	98	102
Extracted ISTD d_9 *N EtFOSE*	%	114	112	110	114	118
Extracted ISTD d_3 *N MeFOSAA*	%	93	156	106	73	100
Extracted ISTD d_5 *N EtFOSAA*	%	85	162	97	68	93
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		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
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	0.2	<0.1	0.2	<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	0.2	0.2	<0.1
Perfluorononanoic acid	µg/kg	0.1	<0.1	0.4	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	<0.1	<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*	%	104	105	104	104	106
Surrogate $^{13}C_2$ *PFOA*	%	81	91	85	82	84
Extracted ISTD $^{13}C_3$ *PFBS*	%	97	97	94	93	100
Extracted ISTD $^{18}O_2$ *PFHxS*	%	88	96	91	88	85
Extracted ISTD $^{13}C_4$ *PFOS*	%	107	107	103	99	104
Extracted ISTD $^{13}C_4$ *PFBA*	%	97	98	94	93	92

PFAS in Soils Extended						
Our Reference		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	100	102	100	98	97
Extracted ISTD $^{13}C_2$ *PFHxA*	%	106	108	105	98	98
Extracted ISTD $^{13}C_4$ *PFHpA*	%	96	96	95	93	96
Extracted ISTD $^{13}C_4$ *PFOA*	%	116	112	105	107	109
Extracted ISTD $^{13}C_5$ *PFNA*	%	112	123	109	108	106
Extracted ISTD $^{13}C_2$ *PFDA*	%	99	106	97	95	101
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	119	128	105	100	124
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	114	124	106	105	104
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	98	98	90	83	90
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	123	114	103	101	96
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	116	125	115	113	110
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	97	112	92	86	90
Extracted ISTD $^{13}C_8$ *FOSA*	%	93	89	96	89	93
Extracted ISTD d_3 *N MeFOSA*	%	90	89	88	88	86
Extracted ISTD d_5 *N EtFOSA*	%	100	95	100	100	97
Extracted ISTD d_7 *N MeFOSE*	%	101	94	105	93	87
Extracted ISTD d_9 *N EtFOSE*	%	120	114	113	115	115
Extracted ISTD d_3 *N MeFOSAA*	%	116	113	101	104	103
Extracted ISTD d_5 *N EtFOSAA*	%	103	128	99	90	94
Total Positive PFHxS & PFOS	µg/kg	0.2	<0.1	0.3	0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	0.2	<0.1	0.4	0.2	<0.1
Total Positive PFAS	µg/kg	0.3	<0.1	0.9	0.6	<0.1

PFAS in Soils Extended						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
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	0.3	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	<0.2	<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	0.3	<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	0.6	<0.1	0.4	<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*	%	106	106	103	103	104
Surrogate $^{13}C_2$ *PFOA*	%	88	83	80	82	85
Extracted ISTD $^{13}C_3$ *PFBS*	%	93	90	101	94	95
Extracted ISTD $^{18}O_2$ *PFHxS*	%	95	82	90	94	85
Extracted ISTD $^{13}C_4$ *PFOS*	%	100	97	102	103	100
Extracted ISTD $^{13}C_4$ *PFBA*	%	96	90	96	94	93

PFAS in Soils Extended						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	102	96	101	102	99
Extracted ISTD $^{13}C_2$ *PFHxA*	%	108	98	105	105	105
Extracted ISTD $^{13}C_4$ *PFHpA*	%	103	86	93	94	100
Extracted ISTD $^{13}C_4$ *PFOA*	%	114	105	115	115	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	121	107	112	116	118
Extracted ISTD $^{13}C_2$ *PFDA*	%	111	91	111	109	113
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	116	121	127	113	135
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	120	105	106	102	124
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	107	88	94	91	112
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	119	102	107	101	117
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	122	111	120	114	122
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	104	88	99	98	113
Extracted ISTD $^{13}C_8$ *FOSA*	%	95	89	95	96	92
Extracted ISTD d_3 *N MeFOSA*	%	89	82	92	88	86
Extracted ISTD d_5 *N EtFOSA*	%	102	98	103	101	97
Extracted ISTD d_7 *N MeFOSE*	%	94	97	102	95	90
Extracted ISTD d_9 *N EtFOSE*	%	125	110	126	114	114
Extracted ISTD d_3 *N MeFOSAA*	%	125	94	110	117	132
Extracted ISTD d_5 *N EtFOSAA*	%	124	101	107	105	127
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	<0.1	0.3	0.2
Total Positive PFOS & PFOA	µg/kg	<0.1	0.1	<0.1	0.3	0.2
Total Positive PFAS	µg/kg	<0.1	1.1	<0.1	1	0.2

PFAS in Soils Extended						
Our Reference		321311-16	321311-17	321311-18	321311-19	321311-20
Your Reference	UNITS	SS-V26	QAQC1	SS-V27	SS-V23	TB
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
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	0.3	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	<0.1	<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*	%	107	104	105	104	105
Surrogate $^{13}C_2$ *PFOA*	%	78	72	73	77	78
Extracted ISTD $^{13}C_3$ *PFBS*	%	91	89	90	92	96
Extracted ISTD $^{18}O_2$ *PFHxS*	%	81	86	87	87	89
Extracted ISTD $^{13}C_4$ *PFOS*	%	101	108	111	109	107
Extracted ISTD $^{13}C_4$ *PFBA*	%	86	84	92	90	97

PFAS in Soils Extended						
Our Reference		321311-16	321311-17	321311-18	321311-19	321311-20
Your Reference	UNITS	SS-V26	QAQC1	SS-V27	SS-V23	TB
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	100	93	98	93	99
Extracted ISTD $^{13}C_2$ *PFHxA*	%	111	117	119	112	109
Extracted ISTD $^{13}C_4$ *PFHpA*	%	99	96	92	98	102
Extracted ISTD $^{13}C_4$ *PFOA*	%	125	123	139	126	125
Extracted ISTD $^{13}C_5$ *PFNA*	%	116	129	133	127	132
Extracted ISTD $^{13}C_2$ *PFDA*	%	96	111	111	119	114
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	127	125	147	149	139
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	114	128	139	133	129
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	76	90	99	111	111
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	168	147	154	122	122
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	193	173	179	130	129
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	152	146	135	118	110
Extracted ISTD $^{13}C_8$ *FOSA*	%	55	65	83	89	93
Extracted ISTD d_3 *N MeFOSA*	%	57	67	78	88	91
Extracted ISTD d_5 *N EtFOSA*	%	72	82	90	100	103
Extracted ISTD d_7 *N MeFOSE*	%	61	68	81	93	100
Extracted ISTD d_9 *N EtFOSE*	%	100	111	115	122	123
Extracted ISTD d_3 *N MeFOSAA*	%	141	153	165	139	126
Extracted ISTD d_5 *N EtFOSAA*	%	143	157	158	136	116
Total Positive PFHxS & PFOS	µg/kg	<0.1	<0.1	0.4	0.2	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1	0.3	0.2	<0.1
Total Positive PFAS	µg/kg	<0.1	<0.1	0.4	0.2	<0.1

Misc Inorg - Soil						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Combustibility*	%	11	18	3.8	9.7	4.7
Total Sulfur in soil/solids	%w/w	0.04	0.05	0.04	0.05	0.04

Misc Inorg - Soil						
Our Reference		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Combustibility*	%	1.4	8.4	3.3	3.0	77
Total Sulfur in soil/solids	%w/w	0.03	0.04	0.04	0.04	0.07

Misc Inorg - Soil						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Combustibility*	%	32	5.9	5.5	2.4	17
Total Sulfur in soil/solids	%w/w	0.07	0.03	0.05	0.03	0.06

Misc Inorg - Soil				
Our Reference		321311-16	321311-18	321311-19
Your Reference	UNITS	SS-V26	SS-V27	SS-V23
Date Sampled		18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil
Date prepared	-	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023
Combustibility*	%	8.1	31	12
Total Sulfur in soil/solids	%w/w	0.05	0.07	0.05

Moisture						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Moisture	%	9.2	4.1	12	10	3.4

Moisture						
Our Reference		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Moisture	%	6.2	2.1	9.3	10	5.2

Moisture						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Moisture	%	11	15	3.5	7.5	15

Moisture						
Our Reference		321311-16	321311-17	321311-18	321311-19	321311-20
Your Reference	UNITS	SS-V26	QAQC1	SS-V27	SS-V23	TB
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Moisture	%	13	11	7.7	12	0.8

PFAS in ASLP Extended						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
pH of final Leachate	pH units	7.8	7.2	7.3	7.0	7.2
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	96	100	100	100	98
Surrogate $^{13}C_2$ PFOA	%	108	108	107	106	107
Extracted ISTD $^{13}C_3$ *PFBS*	%	110	109	114	114	111
Extracted ISTD $^{18}O_2$ *PFHxS*	%	112	110	110	109	112
Extracted ISTD $^{13}C_4$ *PFOS*	%	111	109	109	108	108

PFAS in ASLP Extended						
Our Reference		321311-1	321311-2	321311-3	321311-4	321311-5
Your Reference	UNITS	SS-V4	SS-V5	SS-V7	SS-V8	SS-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	105	104	106	105	106
Extracted ISTD $^{13}C_3$ *PFPeA*	%	110	111	110	111	112
Extracted ISTD $^{13}C_2$ *PFHxA*	%	108	111	112	110	110
Extracted ISTD $^{13}C_4$ *PFHpA*	%	101	103	103	104	102
Extracted ISTD $^{13}C_4$ *PFOA*	%	116	115	114	116	116
Extracted ISTD $^{13}C_5$ *PFNA*	%	121	116	117	117	117
Extracted ISTD $^{13}C_2$ *PFDA*	%	115	116	114	115	116
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	115	117	112	112	116
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	111	116	113	114	116
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	84	92	85	92	89
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	108	108	108	106	108
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	119	114	121	121	118
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	132	120	132	134	130
Extracted ISTD $^{13}C_8$ *FOSA*	%	106	107	106	107	106
Extracted ISTD d_3 *N MeFOSA*	%	105	104	104	106	104
Extracted ISTD d_5 *N EtFOSA*	%	103	106	103	105	86
Extracted ISTD d_7 *N MeFOSE*	%	108	111	110	107	109
Extracted ISTD d_9 *N EtFOSE*	%	121	121	119	120	114
Extracted ISTD d_3 *N MeFOSAA*	%	124	122	122	124	122
Extracted ISTD d_5 *N EtFOSAA*	%	119	114	118	117	118
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01

PFAS in ASLP Extended						
Our Reference		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
pH of final Leachate	pH units	7.0	7.9	8.2	8.4	8.4
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	0.02	0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	102	99	101	98	100
Surrogate $^{13}C_2$ PFOA	%	106	105	106	106	107
Extracted ISTD $^{13}C_3$ *PFBS*	%	110	106	105	107	110
Extracted ISTD $^{18}O_2$ *PFHxS*	%	111	108	108	107	110
Extracted ISTD $^{13}C_4$ *PFOS*	%	103	105	104	104	106

PFAS in ASLP Extended						
Our Reference		321311-6	321311-7	321311-8	321311-9	321311-10
Your Reference	UNITS	SS-V10	SS-V11	SS-V14	QAQC3	SS-V15
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	106	105	106	103	105
Extracted ISTD $^{13}C_3$ *PFPeA*	%	111	110	109	106	110
Extracted ISTD $^{13}C_2$ *PFHxA*	%	110	106	108	104	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%	103	100	103	100	101
Extracted ISTD $^{13}C_4$ *PFOA*	%	116	114	116	112	111
Extracted ISTD $^{13}C_5$ *PFNA*	%	120	115	116	112	116
Extracted ISTD $^{13}C_2$ *PFDA*	%	114	112	110	111	112
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	114	113	113	111	108
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	115	109	113	107	110
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	86	90	92	86	86
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	105	103	101	104	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	119	117	120	114	120
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	130	128	132	127	133
Extracted ISTD $^{13}C_8$ *FOSA*	%	106	104	105	105	106
Extracted ISTD d_3 *N MeFOSA*	%	103	104	107	103	104
Extracted ISTD d_5 *N EtFOSA*	%	104	102	105	99	104
Extracted ISTD d_7 *N MeFOSE*	%	107	109	109	106	111
Extracted ISTD d_9 *N EtFOSE*	%	119	119	118	117	121
Extracted ISTD d_3 *N MeFOSAA*	%	123	119	122	116	120
Extracted ISTD d_5 *N EtFOSAA*	%	115	112	114	110	110
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	0.02	0.03	<0.01

PFAS in ASLP Extended						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
pH of final Leachate	pH units	7.6	7.0	8.4	9.2	8.8
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	0.07	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<0.01	0.03	<0.01	0.02	<0.01
8:2 FTS	µg/L	<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
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	99	100	102	99	98
Surrogate $^{13}C_2$ PFOA	%	104	106	106	104	107
Extracted ISTD $^{13}C_3$ *PFBS*	%	106	106	105	105	107
Extracted ISTD $^{18}O_2$ *PFHxS*	%	108	108	108	107	110
Extracted ISTD $^{13}C_4$ *PFOS*	%	106	107	104	107	105

PFAS in ASLP Extended						
Our Reference		321311-11	321311-12	321311-13	321311-14	321311-15
Your Reference	UNITS	SS-V16	SS-V17	SS-V18	SS-V24	SS-V25
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	104	104	103	102	105
Extracted ISTD $^{13}C_3$ *PFPeA*	%	108	110	107	108	110
Extracted ISTD $^{13}C_2$ *PFHxA*	%	106	108	106	105	108
Extracted ISTD $^{13}C_4$ *PFHpA*	%	101	100	100	99	103
Extracted ISTD $^{13}C_4$ *PFOA*	%	112	113	111	113	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	114	116	113	116	115
Extracted ISTD $^{13}C_2$ *PFDA*	%	111	113	108	111	112
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	113	113	105	110	116
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	114	108	111	111	111
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	87	87	88	86	89
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	104	102	99	102	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	116	114	117	113	120
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	130	133	127	126	133
Extracted ISTD $^{13}C_8$ *FOSA*	%	105	106	105	106	109
Extracted ISTD d_3 *N MeFOSA*	%	103	104	103	102	105
Extracted ISTD d_5 *N EtFOSA*	%	102	100	103	103	103
Extracted ISTD d_7 *N MeFOSE*	%	104	107	109	111	109
Extracted ISTD d_9 *N EtFOSE*	%	117	116	115	120	118
Extracted ISTD d_3 *N MeFOSAA*	%	120	121	117	116	119
Extracted ISTD d_5 *N EtFOSAA*	%	115	111	105	109	112
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	0.09	<0.01	0.02	<0.01

PFAS in ASLP Extended					
Our Reference		321311-16	321311-17	321311-18	321311-19
Your Reference	UNITS	SS-V26	QAQC1	SS-V27	SS-V23
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023
pH of final Leachate	pH units	8.0	7.3	6.6	8.3
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	<0.01	<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	%	101	103	99	99
Surrogate $^{13}C_2$ PFOA	%	107	106	108	106
Extracted ISTD $^{13}C_3$ *PFBS*	%	107	104	105	109
Extracted ISTD $^{18}O_2$ *PFHxS*	%	107	108	105	108
Extracted ISTD $^{13}C_4$ *PFOS*	%	107	105	104	107

PFAS in ASLP Extended					
Our Reference		321311-16	321311-17	321311-18	321311-19
Your Reference	UNITS	SS-V26	QAQC1	SS-V27	SS-V23
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	103	101	98	103
Extracted ISTD $^{13}C_3$ *PFPeA*	%	108	108	104	108
Extracted ISTD $^{13}C_2$ *PFHxA*	%	105	108	104	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%	101	99	98	100
Extracted ISTD $^{13}C_4$ *PFOA*	%	112	112	109	112
Extracted ISTD $^{13}C_5$ *PFNA*	%	119	116	115	114
Extracted ISTD $^{13}C_2$ *PFDA*	%	114	111	108	111
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	116	112	105	110
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	113	111	107	111
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	89	88	83	88
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	108	105	103	100
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	118	122	113	110
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	133	135	126	129
Extracted ISTD $^{13}C_8$ *FOSA*	%	106	107	105	107
Extracted ISTD d_3 *N MeFOSA*	%	102	100	97	103
Extracted ISTD d_5 *N EtFOSA*	%	101	102	99	104
Extracted ISTD d_7 *N MeFOSE*	%	109	107	106	107
Extracted ISTD d_9 *N EtFOSE*	%	114	118	112	115
Extracted ISTD d_3 *N MeFOSAA*	%	122	121	116	119
Extracted ISTD d_5 *N EtFOSAA*	%	119	120	106	110
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	<0.01	<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.
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.
INORG-137	Total Carbon Nitrogen Sulfur by high temperature catalytic combustion with IR detection.
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 5.4 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.

Method ID	Methodology Summary
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 5.4Table 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 Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	321311-2
Date prepared	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Date analysed	-			21/04/2023	1	21/04/2023	21/04/2023		21/04/2023	21/04/2023
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	115	103
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	117	105
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	110	103
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	104	92
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	98	92
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	89	86
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	122	115
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	99	91
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	90	80
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	109	104
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	108	99
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	92	82
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	122	106
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	96	82
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	106	105
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	95	98
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	1	<5	<5	0	114	103
4:2 FTS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	120	116
6:2 FTS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	102	94
8:2 FTS	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	111	102
10:2 FTS	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	119	98
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	121	116
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	113	105
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	1	<1	<1	0	106	96
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	1	<1	<1	0	136	151
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	1	<5	<5	0	111	115
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	90	83
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	111	102
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	102	1	103	103	0	107	106
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	86	1	87	91	4	90	86

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	321311-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	94	1	98	97	1	91	94
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	92	1	89	90	1	89	91
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	105	1	103	105	2	104	105
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	97	1	88	94	7	96	96
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	99	1	97	100	3	102	105
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	107	1	98	102	4	104	113
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	102	1	92	102	10	97	102
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	114	1	100	104	4	106	121
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	120	1	107	110	3	111	123
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	95	1	92	103	11	96	123
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	110	1	112	130	15	112	137
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	116	1	103	108	5	109	108
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	104	1	91	100	9	99	107
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	112	1	104	100	4	112	129
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	124	1	117	115	2	113	152
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	100	1	95	99	4	97	147
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	95	1	100	97	3	91	83
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	91	1	95	91	4	88	77
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	102	1	103	104	1	98	91
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	98	1	98	105	7	97	81

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	321311-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	118	1	114	117	3	118	107
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	115	1	93	94	1	108	141
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	102	1	85	96	12	101	153

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	21/04/2023	21/04/2023		[NT]	[NT]
Date analysed	-			[NT]	11	21/04/2023	21/04/2023		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	[NT]	11	<5	<5	0	[NT]	[NT]
4:2 FTS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
6:2 FTS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
8:2 FTS	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
10:2 FTS	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	[NT]	11	<5	<5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	11	106	105	1	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	11	88	86	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]	11	93	96	3	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	11	95	93	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	11	100	102	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	11	96	94	2	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	11	102	101	1	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	11	108	109	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	11	103	99	4	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	11	114	116	2	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	11	121	123	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	11	111	119	7	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	11	116	136	16	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	11	120	133	10	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	11	107	116	8	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	11	119	124	4	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	11	122	132	8	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	11	104	116	11	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	11	95	94	1	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	11	89	88	1	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	11	102	100	2	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	11	94	93	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]	11	125	120	4	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	11	125	132	5	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	11	124	129	4	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			26/04/2023	1	26/04/2023	26/04/2023		26/04/2023	[NT]
Date analysed	-			27/04/2023	1	27/04/2023	27/04/2023		27/04/2023	[NT]
Combustibility*	%	0.1	Inorg-092	<0.1	1	11	[NT]		[NT]	[NT]
Total Sulfur in soil/solids	%w/w	0.01	INORG-137	<0.01	1	0.04	0.04	0	86	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	26/04/2023	26/04/2023		[NT]	[NT]
Date analysed	-			[NT]	11	27/04/2023	27/04/2023		[NT]	[NT]
Combustibility*	%	0.1	Inorg-092	[NT]	11	32	[NT]		[NT]	[NT]
Total Sulfur in soil/solids	%w/w	0.01	INORG-137	[NT]	11	0.07	0.07	0	[NT]	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321311-2
Date prepared	-			24/04/2023	1	24/04/2023	24/04/2023		24/04/2023	24/04/2023
Date analysed	-			24/04/2023	1	24/04/2023	24/04/2023		24/04/2023	24/04/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	97	99
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	102	102
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	99	101
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	101	103
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	99	102
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	91	88
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	100	97
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	96	98
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	97	98
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	98	102
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	104	106
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	98	100
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	102	101
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	92	94
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	100	101
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	85	85
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	1	<0.5	<0.5	0	100	101
4:2 FTS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	100	101
6:2 FTS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	104	103
8:2 FTS	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	102	111
10:2 FTS	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	109	124
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	103	113
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	107	111
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	101	105
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	81	77
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	1	<0.5	<0.5	0	87	86
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	103	105
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	99	103
Surrogate $^{13}C_8$ PFOS	%		Org-029A	103	1	96	96	0	103	104
Surrogate $^{13}C_2$ PFOA	%		Org-029A	106	1	108	105	3	106	109

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321311-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	112	1	110	111	1	108	109
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	112	1	112	110	2	111	108
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	105	1	111	112	1	105	103
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	107	1	105	106	1	105	103
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	112	1	110	112	2	109	109
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	110	1	108	110	2	107	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	104	1	101	104	3	100	102
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	116	1	116	117	1	113	110
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	119	1	121	122	1	116	116
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	116	1	115	116	1	113	114
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	118	1	115	111	4	113	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	110	1	111	111	0	112	115
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	87	1	84	87	4	89	92
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	106	1	108	104	4	101	102
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	113	1	119	118	1	110	115
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	133	1	132	127	4	128	128
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	106	1	106	104	2	102	101
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	105	1	105	108	3	104	103
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	104	1	103	105	2	105	103
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	106	1	108	109	1	107	109

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321311-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	117	1	121	119	2	116	116
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	123	1	124	124	0	115	118
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	119	1	119	122	2	115	116

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	24/04/2023	24/04/2023		[NT]	[NT]
Date analysed	-			[NT]	11	24/04/2023	24/04/2023		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029A	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
4:2 FTS	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
6:2 FTS	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
8:2 FTS	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
10:2 FTS	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Surrogate $^{13}C_8$ PFOS	%		Org-029A	[NT]	11	99	106	7	[NT]	[NT]
Surrogate $^{13}C_2$ PFOA	%		Org-029A	[NT]	11	104	107	3	[NT]	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	[NT]	11	106	107	1	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	[NT]	11	108	110	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	[NT]	11	106	104	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	[NT]	11	104	105	1	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	[NT]	11	108	108	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	[NT]	11	106	108	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	[NT]	11	101	101	0	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	[NT]	11	112	111	1	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	[NT]	11	114	118	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	[NT]	11	111	111	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	[NT]	11	113	110	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	[NT]	11	114	111	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	[NT]	11	87	90	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	[NT]	11	104	104	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	[NT]	11	116	119	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	[NT]	11	130	130	0	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	[NT]	11	105	107	2	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	[NT]	11	103	103	0	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	[NT]	11	102	103	1	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	[NT]	11	104	109	5	[NT]	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	[NT]	11	117	118	1	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	[NT]	11	120	122	2	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	[NT]	11	115	113	2	[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

PFAS in Soil:
Matrix spike recovery for MeFOSE is outside global acceptance criteria (60-140%). However an acceptable recovery has been obtained for the LCS.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

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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	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	ASLP PFAS	COMBUSTIBLE & SULFUR CONTENT														Provide as much information about the sample as you can
1	SS-V4	Surface	18.04.23	SOIL	X	X	X														
2	SS-V5				X	X	X														
3	SS-V7				X	X	X														
4	SS-V8				X	X	X														
5	SS-V9				X	X	X														
6	SS-V10				X	X	X														
7	SS-V11				X	X	X														
8	SS-V14				X	X	X														
9	QAQC3				X	X	X														
10	~~QAQC4~~ QAQC4				X	X	X														PLEASE FORWARD TO ALS FOR PFAS, PFAS ASLP, COMBUSTIBLE & SULFUR CONTENT
11	SSV-15				X	X	X														

send out ←

☐ 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:	Sarah P
Date & Time:	19/04/23 10:40am	Date & Time:	20/04/23, 1130
Signature:		Signature:	

Lab Use Only

Job number: 321311	Cooling: Ice / Icepack / None
Temperature: 10°C	Security seal: Intact / Broken / None
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			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	ASLP PFAS	CHROMIUM SULFUR CONTENT														Provide as much information about the sample as you can
11 12	SS-V16	surface	18.04.23	SOIL	X	X	X														
12 13	SS-V17	↓	↓	↓	X	X	X														
13 14	SS-V18				X	X	X														
14 15	SS-V24				X	X	X														
15 16	SS-V25				X	X	X														
16 17	SS-V26				X	X	X														
17 18	QAQC1				X	X															
send out SP ← 19	QAQC2				PLEASE FORWARD TO ALS FOR PFAS and PFAS ASLP																
18 20	SS-V27				X	X	X														
19 21	SS-V23				X	X	X														
20 22	TB	—	—	BLANK	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:	Sarah P
Date & Time:	19/04/23 10:40	Date & Time:	20/04/23, 1130
Signature:		Signature:	

Lab Use Only

Job number:	321311
Temperature:	10°C
Cooling:	Ice / Ice pack / None
Security seal:	Intact / Broken / None
TAT Req - SAME day / 1 / 2 (3) 4 / STD	

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias, Tristan Goodbody

Sample Login Details

Your reference	CES170608-GPM
Envirolab Reference	321311
Date Sample Received	20/04/2023
Date Instructions Received	20/04/2023
Date Results Expected to be Reported	26/04/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	20 Soil
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	10
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	PFAS in Soils Extended	Misc Inorg - Soil	PFAS in ASLP Extended
SS-V4	✓	✓	✓
SS-V5	✓	✓	✓
SS-V7	✓	✓	✓
SS-V8	✓	✓	✓
SS-V9	✓	✓	✓
SS-V10	✓	✓	✓
SS-V11	✓	✓	✓
SS-V14	✓	✓	✓
QAQC3	✓	✓	✓
SS-V15	✓	✓	✓
SS-V16	✓	✓	✓
SS-V17	✓	✓	✓
SS-V18	✓	✓	✓
SS-V24	✓	✓	✓
SS-V25	✓	✓	✓
SS-V26	✓	✓	✓
QAQC1	✓		✓
SS-V27	✓	✓	✓
SS-V23	✓	✓	✓
TB	✓		

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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 321312

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	17 Soil
Date samples received	20/04/2023
Date completed instructions received	20/04/2023

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

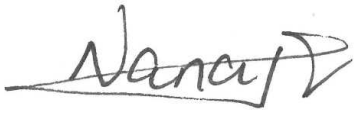
Date results requested by	26/04/2023
Date of Issue	26/04/2023

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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: Stuart Chen
Authorised by Asbestos Approved Signatory: Nyovan Moonean
Results Approved By
Nyovan Moonean, Asbestos Approved Identifier/Counter

Authorised By



Nancy Zhang, Laboratory Manager

Asbestos ID - soils NEPM - ASB-001						
Our Reference		321312-1	321312-2	321312-3	321312-4	321312-5
Your Reference	UNITS	WA-V1	QAQC1	WA-V2	WA-V3	WA-V4
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Sample mass tested	g	621.41	618.26	792.43	762.3	797.77
Sample Description	-	Grey coarse-grained soil and rocks	Grey coarse-grained soil and rocks	Grey coarse-grained soil and rocks	Orange coarse-grained soil and rocks	Red sandy 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	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		321312-6	321312-7	321312-8	321312-9	321312-10
Your Reference	UNITS	WA-V5	WA-V6	WA-V7	WA-V8	WA-V9
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Sample mass tested	g	876.58	706.41	744.43	823.46	872.72
Sample Description	-	Pink coarse-grained soil and rocks	Grey coarse-grained soil and rocks	Grey coarse-grained soil and rocks	Grey coarse-grained soil and rocks	Pink 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	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		321312-11	321312-12	321312-13	321312-14	321312-15
Your Reference	UNITS	WA-V10	WA-V11	WA-V12	WA-V13	WA-V14
Date Sampled		18/04/2023	18/04/2023	18/04/2023	18/04/2023	18/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/04/2023	24/04/2023	24/04/2023	24/04/2023	24/04/2023
Sample mass tested	g	779.2	945.79	1,023.15	805.6	736.26
Sample Description	-	Beige coarse-grained soil and rocks	Grey coarse-grained soil and rocks	Brown coarse-grained soil and rocks	Red coarse-grained soil and rocks	Beige 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	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		321312-16	321312-17
Your Reference	UNITS	WA-V15	WA-V16
Date Sampled		18/04/2023	18/04/2023
Type of sample		Soil	Soil
Date analysed	-	24/04/2023	24/04/2023
Sample mass tested	g	857.31	1,007.16
Sample Description	-	Yellow coarse-grained soil and rocks	Red 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
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

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.

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

Report Comments

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

[Copyright and Confidential]

ENVIROLAB GROUP
National phone number 1300 424 344

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
02 9910 6200 | sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt, Myaree, WA 6154
08 9317 2505 | lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
03 9763 2500 | melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
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 8967 1201 | darwin@envirolab.com.au

Company:	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	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: 0439761637	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:	

Sample Information					Tests Required		Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Asbestos NEPM (AF/FA)		Provide as much information about the sample as you can
1	WA-V1	Surface	16.04.23	Soil	X		
2	QAQC1	↓	↓	↓	X		
send out 5B	QA-QC2					PLEASE FORWARD TO ALS FOR AF/FA ANALYSIS	
3 A	WA-V2				X		
4 B	WA-V3				X		
5 C	WA-V4				X		
6 D	WA-V5				X		
7 E	WA-V6				X		
8 F	WA-V7				X		
9 G	WA-V8				X		
10 K	WA-V9	↓	↓	↓	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:	Sarah P
Date & Time:	19/04/23 10:40 am	Date & Time:	20/04/23, 1130
Signature:		Signature:	

Lab Use Only

Job number: 321312	Cooling: Ice / Ice pack / None
Temperature: 10 °C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

CHAIN OF CUSTODY FORM - Client

(Copyright and Confidential)

ENVIROLAB GROUP
National phone number 1300 424 344

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
02 9910 6200 | sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt, Myaree, WA 6154
08 9317 2505 | lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
03 9763 2500 | melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
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 8967 1201 | darwin@envirolab.com.au

Company:	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	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: 0439761637	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:	

Sample Information					Tests Required		Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Asbestos NEPM (AF/FA)		Provide as much information about the sample as you can
11 V5	WA-V10	Surface	18.04.23	SOIL	X		
12 V9	WA-V11	↓	↓	↓	X		
13 V4	WA-V12				X		
14 V3	WA-V13				X		
15 V6	WA-V14				X		
16 V7	WA-V15				X		
17 V8	WA-V16				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:	Sarah P
Date & Time:	19/04/23 10:00	Date & Time:	20/04/23, 1130
Signature:		Signature:	

Lab Use Only	
Job number: 321312	Cooling: Ice / Ice pack / None
Temperature: 10°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / (3) 4 / STD	

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias

Sample Login Details

Your reference	CES170608-GPM
Envirolab Reference	321312
Date Sample Received	20/04/2023
Date Instructions Received	20/04/2023
Date Results Expected to be Reported	26/04/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	17 Soil
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	10
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	Asbestos ID - soils NEPM - ASB-001
WA-V1	✓
QAQC1	✓
WA-V2	✓
WA-V3	✓
WA-V4	✓
WA-V5	✓
WA-V6	✓
WA-V7	✓
WA-V8	✓
WA-V9	✓
WA-V10	✓
WA-V11	✓
WA-V12	✓
WA-V13	✓
WA-V14	✓
WA-V15	✓
WA-V16	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

ACIRL Quality Testing Services Pty Ltd
ABN 66 003 451 876
Unit 3, 16 Donald Street
Lithgow, NSW, 2790, Australia
Tel: +61 2 6350 7400
Fax: +61 2 6352 3583

Analysis and Testing Report
ES2313243

Report To:	ALS Sydney
Address:	277-289 Woodpark Road, Smithfield New South Wales 2164
Report On:	ES2313243
Report No:	24007326-008
Report Status:	Final Report
Unique ID of Sample(s):	As per Results Report
Workorder Number:	LG23001904
Sampled By:	Client
Testing & Analysis Requirements:	Client Instructions
Date Reported:	28/04/2023
Reported By :	Daniel Shawcross Operations Manager

Coal testing materials were sampled and analysed in accordance with the following **Australian** Standards or equivalent:
AS1038.5 (1998) Methods For The Analysis And Testing Of Coal And Coke - Gross Specific Energy Of Coal And Coke

These reported results only relate to the items tested.

Analysis performed by : ACIRL Lithgow NSW NATA Accreditation No. 15784, Site No. 11436

ANALYSIS AND TESTING REPORT

ALS SYDNEY

ES No: ES2313243

Report No: 24007326-008

Date Reported: 28/04/2023

Sample Number	Sample Identification	Ash % (ad)
1	ES2313243 QAQC 4	96.6

ad - Air Dried Basis

NATA ACCREDITED TESTS

Lithgow **15784/11436**

HARD COAL TEST	ABBREVIATION	STANDARD /REFERENCE
Ash	A	AS1038.3 (2000)
Sample Preparation		AS4264.1 (2009)

ACIRL Quality Testing Services Pty Ltd
ABN 66 003 451 876
Unit 3, 16 Donald Street
Lithgow, NSW, 2790, Australia
Tel: +61 2 6350 7400
Fax: +61 2 6352 3583

Analysis and Testing Report
ES2313159

Report To:	ALS Sydney
Address:	277-289 Woodpark Road, Smithfield New South Wales 2164
Report On:	ES2313159
Report No:	24007326-009
Report Status:	Final Report
Unique ID of Sample(s):	As per Results Report
Workorder Number:	LG23001904
Sampled By:	Client
Testing & Analysis Requirements:	Client Instructions
Date Reported:	28/04/2023
Reported By :	Daniel Shawcross Operations Manager

Coal testing materials were sampled and analysed in accordance with the following **Australian** Standards or equivalent:
AS1038.5 (1998) Methods For The Analysis And Testing Of Coal And Coke - Gross Specific Energy Of Coal And Coke

These reported results only relate to the items tested.

Analysis performed by : ACIRL Lithgow NSW NATA Accreditation No. 15784, Site No. 11436

ANALYSIS AND TESTING REPORT

ALS SYDNEY

ES No: ES2313159

Report No: 24007326-009

Date Reported: 28/04/2023

Sample Number	Sample Identification	Ash % (ad)
1	ES2313159 QAQC 2	33.5

ad - Air Dried Basis

NATA ACCREDITED TESTS

Lithgow **15784/11436**

HARD COAL TEST	ABBREVIATION	STANDARD /REFERENCE
Ash	A	AS1038.3 (2000)
Sample Preparation		AS4264.1 (2009)

CERTIFICATE OF ANALYSIS

Work Order	: **ES2313159**	Page	: 1 of 2
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	: 20-Apr-2023 15:00
Order number	: ----	Date Analysis Commenced	: 28-Apr-2023
C-O-C number	: ----	Issue Date	: 02-May-2023 11:47
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

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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

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

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

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

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

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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	----	----	----	----
				Sampling date / time	18-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2313159-001	--------	--------	--------	--------	
				Result	----	----	----	----	
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%	**0.22**	**----**	**----**	**----**	**----**	

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) ED042T: Total Sulfur by LECO

QUALITY CONTROL REPORT

Work Order	: **ES2313159**	Page	: 1 of 3
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	: 20-Apr-2023
Order number	: ----	Date Analysis Commenced	: 28-Apr-2023
C-O-C number	: ----	Issue Date	: 02-May-2023
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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

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 (%)*
ED042T: Total Sulfur by LECO (QC Lot: 5017460)									
EM2306774-032	Anonymous	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.03	0.03	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
ED042T: Total Sulfur by LECO (QCLot: 5017460)								
ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.51 %	100	70.0	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

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

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2313159**	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	: 20-Apr-2023
Site	: ----	Issue Date	: 02-May-2023
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
ED042T: Total Sulfur by LECO						
Soil Glass Jar - Unpreserved						
QAQC2	28-Apr-2023	25-Apr-2023	**3**	----	----	----

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
ED042T: Total Sulfur by LECO							
Soil Glass Jar - Unpreserved (ED042T)							
QAQC2	**18-Apr-2023**	**28-Apr-2023**	25-Apr-2023	×	**02-May-2023**	25-Oct-2023	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Sulfur - Total as S (LECO)	ED042T	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Sulfur - Total as S (LECO)	ED042T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Sulfur - Total as S (LECO)	ED042T	1	2	**50.00**	**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
Sulfur - Total as S (LECO)	ED042T	SOIL	In house: Dried and pulverised sample is combusted in a high temperature furnace in the presence of strong oxidants / catalysts. The evolved S (as SO2) is measured by infra-red detector

Preparation Methods	Method	Matrix	Method Descriptions
Dry and Pulverise (up to 100g)	GEO30	SOIL	#

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
16-18 Hayden Cr
08 9317 2505 |

Melbourne Lab -
25 Research Driv
03 9763 2500 |

Adelaide Office
7a The Parade, N
08 7087 6800 |

Brisbane Office
20a, 10-20 Depot
07 3266 9532 |

Darwin Office - E
Unit 20/119 Reich
08 8967 1201 |

Environmental Division Sydney
Work Order Reference
ES2313159

Telephone : + 61-2-8784 8555

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	Combustible Content and % Sulfur																Provide as much information about the sample as you can
1	WSB-V1		18.04.23		X																
2	QAQC1				X																
8B (1)	QAQC2				PLEASE FORWARD TO ALS FOR COMBUSTIBLE AND SULFUR CONTENT																
3A	WSB-V2				X																
4B	WSB-V3				X																
5B	WSB-V4				X																
6 7	WSB-V5				X																
7B	WSB-V6				X																
8 9	WSB-V7				X																
9 10	WSB-V8				X																
10 11	WSB-V9				X																

send out →

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

				Lab Use Only	
Relinquished by (Company):	CES	Received by (Company):	ELS SYD	Job number: 321310	Cooling: Ice / Ice pack / None
Print Name:	VICTOR ARIAS	Print Name:	Sarah P	Temperature: 10°C	Security seal: Intact / Broken / None
Date & Time:	19/04/23 10:40am	Date & Time:	20/04/23. 1130	TAT Req - SAME day / 1 / 2 / (3) / 4 / STD	
Signature:		Signature:			

Relinquished by ELS SYD 20/4. 1230 pm

Rec: Jack 20/04/23 1500

TAT

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
16-18 Hayden Cr
08 9317 2505 |

Melbourne Lab -
25 Research Driv
03 9763 2500 |

Adelaide Office -
7a The Parade, N
08 7087 6800 |

Brisbane Office
20a, 10-20 Depot
07 3266 9532 |

Darwin Office - E
Unit 20/119 Reich
08 8967 1201 |

Telephone : +61-2-8784 8555

Environmental Division
Sydney
Work Order Reference
ES2313159

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:

Subcon / Forwarded / Split WO

Lab / Analysis: Brisbane - LECO sulfur

Relinquished By / Date:

Transmitted By / Method: Courier:

Received By / Internal Sheet

Tests Required: Lithgow - Ash %

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Combustible Content and % Sulfur	Comments
1	WSB-V1		18.04.23		X	Provide as much information about the sample as you can
2	QAQC1				X	
8B (1)	QAQC2				X	
3A	WSB-V2				X	
4B	WSB-V3				X	
5B	WSB-V4				X	
6 1	WSB-V5				X	
7B	WSB-V6				X	
8 9	WSB-V7				X	
9 10	WSB-V8				X	
10 11	WSB-V9				X	

send out →

PLEASE FORWARD TO ALS FOR COMBUSTIBLE AND SULFUR CONTENT

Ash % (ALS Lithgow)

LECO Sulfur (ALS Brisbane)

☐ *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: Sarah P	Job number: 321310	Cooling: Ice / Ice pack / None
Date & Time: 19/04/23 10:40am	Date & Time: 20/04/23. 1130	Temperature: 10°C	Security seal: Intact / Broken / None
Signature:	Signature:	TAT Req - SAME day / 1 / 2 / (3) 4 / STD	

Relinquished by ELS SYD 20/4. 1230

Rec: Jack 24/04/23 1500

Form 302_V007

Issue date: 21 April 2021

TAT

CERTIFICATE OF ANALYSIS

Work Order	: **ES2313243**	Page	: 1 of 8
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	Date Samples Received	: 21-Apr-2023 15:30
Order number	: ----	Date Analysis Commenced	: 24-Apr-2023
C-O-C number	: ----	Issue Date	: 04-May-2023 11:19
Sampler	: ----		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

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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*
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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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.
- 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.
- EN33: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC2	QAQC4	QAQC2	----	----
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2313243-001	ES2313243-002	ES2313243-003	--------	--------
				Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	----	12.3	10.6	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos Type	1332-21-4	-	--	-	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	No	----	----	----	----
Sample weight (dry)	----	0.01	g	635	----	----	----	----
Synthetic Mineral Fibre	----	-	--	No	----	----	----	----
Organic Fibre	----	-	--	No	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	B.SCHRADER	----	----	----	----
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	----	----	----	----
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	----	----	----	----
ø Asbestos Containing Material	1332-21-4	0.1	g	<0.1	----	----	----	----
ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)	<0.01	----	----	----	----
ø Weight Used for % Calculation	----	0.0001	kg	0.635	----	----	----	----
ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	----	----	----	----
ED042T: Total Sulfur by LECO								
Sulfur - Total as S (LECO)	----	0.01	%	----	0.01	----	----	----
EN33: TCLP Leach - Inorganics/PFAS (Plastic Vessel)								
Initial pH	----	0.1	pH Unit	----	8.5	5.6	----	----
After HCl pH	----	0.1	pH Unit	----	1.5	1.6	----	----
Extraction Fluid Number	----	1	-	----	1	1	----	----
Final pH	----	0.1	pH Unit	----	5.0	5.0	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	----	<0.0002	<0.0002	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	----	<0.0002	<0.0002	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	QAQC4	QAQC2	----	----
				Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2313243-001	ES2313243-002	ES2313243-003	--------	--------
					Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids - Continued									
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		----	<0.001	<0.001	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		----	**0.0002**	<0.0002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		----	**0.0006**	<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	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	QAQC4	QAQC2	----	----
				Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2313243-001	ES2313243-002	ES2313243-003	--------	--------
					Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg		----	<0.0005	<0.0005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		----	<0.0005	<0.0005	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		----	<0.0005	<0.0005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		----	<0.0005	<0.0005	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		----	**0.0008**	<0.0002	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		----	<0.0002	<0.0002	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		----	**0.0002**	<0.0002	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		----	**117**	**118**	----	----
13C8-PFOA	----	0.0002	%		----	**116**	**120**	----	----

Analytical Results

Sub-Matrix: TCLP LEACHATE (Matrix: WATER)				Sample ID	QAQC4	QAQC2	----	----	----
				Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2313243-002	ES2313243-003	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: TCLP LEACHATE (Matrix: WATER)				Sample ID	QAQC4	QAQC2	----	----	----
				Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2313243-002	ES2313243-003	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**114**	**105**	----	----	----
13C8-PFOA	----	0.02	%		**102**	**94.3**	----	----	----

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 - 18-Apr-2023 00:00	A soil sample.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: TCLP LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) ED042T: Total Sulfur by LECO

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

QUALITY CONTROL REPORT

Work Order	: **ES2313243**	Page	: 1 of 8
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	Date Samples Received	: 21-Apr-2023
Order number	: ----	Date Analysis Commenced	: 24-Apr-2023
C-O-C number	: ----	Issue Date	: 04-May-2023
Sampler	: ----		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

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: 5008084)									
ES2313243-003	QAQC2	EA055: Moisture Content	----	0.1	%	10.6	12.2	14.2	0% - 20%
ED042T: Total Sulfur by LECO (QC Lot: 5026725)									
EB2311913-001	Anonymous	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.63	0.64	0.0	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5010920)									
ES2312604-003	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
ES2313091-003	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	0.0006	0.0003	65.7	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: 5010920)									
ES2312604-003	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: 5010920) - continued									
ES2312604-003	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
ES2313091-003	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0008	<0.0002	124	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0006	0.0003	68.5	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0008	0.0004	64.7	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0017	0.0009	60.9	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	0.0011	0.0005	73.3	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0006	0.0002	83.5	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: 5010920)									
ES2312604-003	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
ES2313091-003	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

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: 5010920) - continued									
ES2313091-003	Anonymous	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: 5010920)									
ES2312604-003	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
ES2313091-003	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
ED042T: Total Sulfur by LECO (QCLot: 5026725)								
ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.51 %	100	70.0	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5010920)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	121	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.9	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	91.3	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.4	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.9	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5010920)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	108	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	121	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	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	77.9	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.9	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.1	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.1	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5010920)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	114	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	76.2	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	113	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	126	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.6	63.0	144

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: 5010920) - continued								
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: 5010920)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	118	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	119	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	127	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	112	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5014356)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	101	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	99.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	93.0	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	101	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	97.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5014356)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	99.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	116	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	126	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	121	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	112	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	117	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	112	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	127	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5014356)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	114	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	126	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	107	66.0	145

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: 5014356) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	118	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	97.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	83.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5014356)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	128	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	117	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	118	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	117	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: **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: 5010920)							
ES2312604-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	112	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	88.5	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	88.2	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	99.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	78.9	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	98.9	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5010920)							
ES2312604-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	96.2	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	118	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	108	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	121	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	115	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	93.2	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	81.7	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	112	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	115	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	118	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	73.7	69.0	133

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: 5010920)							
ES2312604-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	101	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	107	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	76.4	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	92.4	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	91.2	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	119	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	121	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5010920)							
ES2312604-003	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	114	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	123	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	75.9	69.2	143

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2313243**	Page	: 1 of 5
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: MR VICTOR ARIAS	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 21-Apr-2023
Site	: ----	Issue Date	: 04-May-2023
Sampler	: ----	No. of samples received	: 3
Order number	: ----	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **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

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

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
ED042T: Total Sulfur by LECO						
Soil Glass Jar - Unpreserved						
QAQC4	04-May-2023	25-Apr-2023	**9**	----	----	----

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)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
QAQC2	**18-Apr-2023**	**----**	----	----	**24-Apr-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EA055)							
QAQC4	**18-Apr-2023**	**----**	----	----	**24-Apr-2023**	02-May-2023	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)							
QAQC2	**18-Apr-2023**	**----**	----	----	**26-Apr-2023**	15-Oct-2023	✓
EA200N: Asbestos Quantification (non-NATA)							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200N)							
QAQC2	**18-Apr-2023**	**----**	----	----	**26-Apr-2023**	15-Oct-2023	✓
ED042T: Total Sulfur by LECO							
Soil Glass Jar - Unpreserved (ED042T)							
QAQC4	**18-Apr-2023**	**04-May-2023**	25-Apr-2023	×	**04-May-2023**	31-Oct-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
EN33: TCLP Leach - Inorganics/PFAS (Plastic Vessel)							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN33a-P)							
QAQC4, QAQC2	**18-Apr-2023**	**26-Apr-2023**	15-Oct-2023	✓	**----**	----	----
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QAQC4, QAQC2	**18-Apr-2023**	**26-Apr-2023**	15-Oct-2023	✓	**27-Apr-2023**	05-Jun-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
QAQC4, QAQC2	**18-Apr-2023**	**26-Apr-2023**	15-Oct-2023	✓	**27-Apr-2023**	05-Jun-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
QAQC4, QAQC2	**18-Apr-2023**	**26-Apr-2023**	15-Oct-2023	✓	**27-Apr-2023**	05-Jun-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QAQC4, QAQC2	**18-Apr-2023**	**26-Apr-2023**	15-Oct-2023	✓	**27-Apr-2023**	05-Jun-2023	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
QAQC4, QAQC2	**18-Apr-2023**	**26-Apr-2023**	15-Oct-2023	✓	**27-Apr-2023**	05-Jun-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
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
QAQC4, QAQC2	**26-Apr-2023**	**27-Apr-2023**	23-Oct-2023	✓	**28-Apr-2023**	23-Oct-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X)							
QAQC4, QAQC2	**26-Apr-2023**	**27-Apr-2023**	23-Oct-2023	✓	**28-Apr-2023**	23-Oct-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X)							
QAQC4, QAQC2	**26-Apr-2023**	**27-Apr-2023**	23-Oct-2023	✓	**28-Apr-2023**	23-Oct-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X)							
QAQC4, QAQC2	**26-Apr-2023**	**27-Apr-2023**	23-Oct-2023	✓	**28-Apr-2023**	23-Oct-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
QAQC4, QAQC2	**26-Apr-2023**	**27-Apr-2023**	23-Oct-2023	✓	**28-Apr-2023**	23-Oct-2023	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	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	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	2	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	2	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
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).
Sulfur - Total as S (LECO)	ED042T	SOIL	In house: Dried and pulverised sample is combusted in a high temperature furnace in the presence of strong oxidants / catalysts. The evolved S (as SO2) is measured by infra-red detector
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
TCLP for Non & Semivolatile Analytes - Plastic Leaching Vessel	EN33a-P	SOIL	In house QWI-EN/33 referenced to USEPA SW846-1311: The TCLP procedure is designed to determine the mobility of both organic and inorganic analytes present in wastes. The standard TCLP leach is for non-volatile and Semivolatile test parameters.
Dry and Pulverise (up to 100g)	GEO30	SOIL	#
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	SOIL	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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08 708

Brisbane
20a, 10-20
07 3266

Darwin Of
Unit 20/11
08 8967

Telephone : + 61-2-8784 8555

Environmental Division
Sydney
Work Order Reference
ES2313243

Company:	Consulting Earth Scientists
Contact Person:	Victor Arias
Project Mgr:	Tristan Goodbody
Sampler:	VA
Address:	Suite 3, Level 1 55, Grandview Street Pymble, NSW, 2073
Phone:	Mob: 0439761637
Email Results to:	victor.arias@consultingearth.com.au tristan.goodbody@consultingearth.com.au
Email Invoice to:	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	Asbestos NEPM (AF/FA)	Provide as much information about the sample as you can
1	WA-V1	Surface	18.04.23	Soil	X	
2	QAQC1					
send out (1) CP 3	QAQC2				X	PLEASE FORWARD TO ALS FOR AF/FA ANALYSIS
3 4	WA-V2				X	
4 5	WA-V3				X	
5 6	WA-V4				X	
6 7	WA-V5				X	
7 8	WA-V6				X	
8 9	WA-V7				X	
9 10	WA-V8				X	
10 11	WA-V9				X	

TAT

☐ *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	Received by (Company): ELS SYD
Print Name:	VICTOR ARIAS	Prog	Print Name: Sarah P
Date & Time:	19/04/23 10:40am	21/4/23	Date & Time: 20/04/23, 1130
Signature:			Signature:

Lab Use Only

Job number: 321312	Cooling: Ice / Ice pack / None
Temperature: 10°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 (3) / 4 / STD	

Rec Jack 21/04/23 1530

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Adelaide Office - Envirolab Services
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08 7087 6800 | adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
07 3266 9532 | brisbane@envirolab.com.au

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

Company:	CES - Consulting Earth Scientists
Contact Person:	Victor Arias
Project Mgr:	Tristan Goodbody
Sampler:	VA
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 Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	ASLP PFAS	COMBUSTIBLE & SULFUR CONTENT	Comments
1	SS-V4	Surface	18.04.23	SOIL	X	X	X	
2	SS-V5	↓	↓	↓	X	X	X	
3	SS-V7				X	X	X	
4	SS-V8				X	X	X	
5	SS-V9				X	X	X	
6	SS-V10				X	X	X	
7	SS-V11				X	X	X	
8	SS-V14				X	X	X	
9	QAQC3				X	X	X	
10	~~SP~~ QAQC4				X	X	X	
11	SSV-15				X	X	X	

send out ← (2)

PLEASE FORWARD TO ALS FOR PFAS, PFAS ASLP, COMBUSTIBLE & SULFUR CONTENT

☐ *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:	Sarah P
Date & Time:	19/04/23 10:40am	Date & Time:	20/04/23, 1130
Signature:		Signature:	

ELS	Phay	21/4/23	8

Lab Use Only

Job number: 321311	Cooling: Ice / Ice pack / None (5)
Temperature: 10°C	Security seal: Intact / Broken / None (5)
TAT Req - SAME day / 1 / 2 / (3) / 4 / STD	

Rec: Jack 21/04/23 1530

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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	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	ASLP PFAS	COMBUSTIBLE SULFUR CONTENT	Provide as much information about the sample as you can
11 B	SS-V16	surface	18.04.23	SOIL	X	X	X	
12 B	SS-V17				X	X	X	
13 A	SS-V18				X	X	X	
14 B	SS-V24				X	X	X	
15 6	SS-V25				X	X	X	
16 7	SS-V26				X	X	X	
17 18	QAQC1				X	X	X	
send out SP ← 19 (3)	QAQC2				PLEASE FORWARD TO ALS FOR PFAS and PFAS ASLP			
18 20	SS-V27				X	X	X	
19 21	SS-V23				X	X	X	
20 22	TB	—	—	BLANK	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:	Sarah P
Date & Time:	19/04/23 10:40	Date & Time:	20/04/23, 1130
Signature:		Signature:	

Lab Use Only

Job number: 321311	Cooling: Ice / Ice pack / None
Temperature: 10°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 (3) / 4 / STD	

Rec: Jack 21/04/23 1550

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07 3266

Darwin Of
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08 8967

Environmental Division
Sydney
Work Order Reference
ES2313243

Telephone : +61-2-8784 8555

Company:	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	Date results required:	Standard ☐ / Same Day ☐ / 1 day ☐ / 2 day ☐ / 3 day ☑ (Or choose:)
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:	Mob: 0439761637	Additional report format:	☐ Esdat ☐ Equis
Email Results to:	victor.arias@consultingearth.com.au tristan.goodbody@consultingearth.com.au	Lab Comments:	
Email Invoice to:	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	Asbestos NEPM (AF/FA)	Provide as much information about the sample as you can
1	WA-V1	Surface	18.04.23	Soil	X	
2	QAQC1				X	
CP3 (1)	QAQC2				PLEASE FORWARD TO ALS FOR AF/FA ANALYSIS	
3 4	WA-V2				X	
4 5	WA-V3				X	
5 6	WA-V4				X	
6 7	WA-V5				X	
7 8	WA-V6				X	
8 9	WA-V7				X	
9 10	WA-V8				X	
10 11	WA-V9				X	

send out

TAT

☐ 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	Received by (Company):	ELS SYD	Lab Use Only
Print Name:	VICTOR ARIAS	Proj	Print Name:	Sarah P	Job number: 321312 / Cooling: Ice / Ice pack / None
Date & Time:	19/04/23 10:40am	21/4/23	Date & Time:	20/04/23, 1130	Temperature: 10°C / Security seal: Intact / Broken / None
Signature:			Signature:		TAT Req - SAME day / 1 / 2 (3) / 4 / STD

Rec. Jack 21/04/23 1550

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Company:	CES - Consulting Earth Scientists
Contact Person:	Victor Arias
Project Mgr:	Tristan Goodbody
Sampler:	VA
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 Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	ASLP PFAS	COMBUSTIBLE CONTENT & SULFUR														Comments
1	SS-V4	Surface	18.04.23	SOIL	X	X	X												3 Days reach	as per Victor	21/4/23	Provide as much information about the sample as you can
2	SS-V5				X	X	X														
3	SS-V7				X	X	X														
4	SS-V8				X	X	X														
5	SS-V9				X	X	X														
6	SS-V10				X	X	X														
7	SS-V11				X	X	X														
8	SS-V14				X	X	X														
9	QAQC3				X	X	X														
10	QAQC4				X	X	X														
	SSV-15				X	X	X														

Sample information / Tests Required / Comments

send out ✓ sp ✓

PO ALS, PLEASE FORWARD TO ALS FOR PFAS, PFAS ASLP, COMBUSTIBLE & SULFUR CONTENT

Ash o/s ALS Lingow

☐ *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:	Sarah P
Date & Time:	19/04/23 10:40am	Date & Time:	20/04/23, 1130
Signature:		Signature:	

ELS Phay 21/4/23

Lab Use Only

Job number: 321311	Cooling: Ice / Ice pack / None
Temperature: 10°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

LECO S. (ALS Brisbane)

Rec: Jack 21/04/23 1530

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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			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	ASLP PFAS	COMBUSTION IC FOR FLUORINE CONTENT		Provide as much information about the sample as you can
11 12	SS-V16	Surface	18.04.23	SOIL	X	X	X		
12 13	SS-V17	↓	↓	↓	X	X	X		
13 14	SS-V18				X	X	X		
14 15	SS-V24				X	X	X		
15 16	SS-V25				X	X	X		
16 17	SS-V26				X	X	X		
17 18	QAQC1				X	X			
send out SP ← 19 (3)	QAQC2				PLEASE FORWARD TO ALS FOR PFAS and PFAS ASLP				
18 20	SS-V27				X	X	X		
19 21	SS-V23				X	X	X		
20 22	TB	—	—	BLANK	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:	Sarah P
Date & Time:	19/04/23 10:40	Date & Time:	20/04/23. 1130
Signature:		Signature:	

Lab Use Only

Job number: 321311	Cooling: Ice / Ice pack / None
Temperature: 10°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 (3) / 4 / STD	

Rec: Jack 21/04/23 1550

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CERTIFICATE OF ANALYSIS 321584

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 Soil
Date samples received	21/04/2023
Date completed instructions received	24/04/2023

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

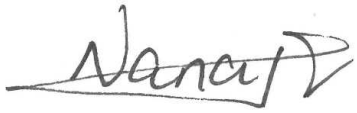
Date results requested by	28/04/2023
Date of Issue	02/05/2023
Reissue Details	This report replaces R00 created on 02/05/2023 due to: revised report with Total Sulphur reporting units amended as per client request.

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Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in Soils Extended						
Our Reference		321584-1	321584-2	321584-3	321584-4	321584-5
Your Reference	UNITS	SS-V1	QAQC1	SS-V2	SS-V3	SS-V12
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
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	0.3	0.3	<0.1	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	<0.1	<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	<1	<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	0.4	0.4	<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	<2	<2	<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	<2	<2	<1
N-Et perfluorooctanesulfonamid oethanol	µg/kg	<5	<5	<10	<10	<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*	%	98	100	99	97	98
Surrogate $^{13}C_2$ *PFOA*	%	106	105	102	111	118
Extracted ISTD $^{13}C_3$ *PFBS*	%	99	97	91	79	94
Extracted ISTD $^{18}O_2$ *PFHxS*	%	87	92	93	93	106
Extracted ISTD $^{13}C_4$ *PFOS*	%	98	100	80	72	101

PFAS in Soils Extended						
Our Reference		321584-1	321584-2	321584-3	321584-4	321584-5
Your Reference	UNITS	SS-V1	QAQC1	SS-V2	SS-V3	SS-V12
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	96	96	86	76	94
Extracted ISTD $^{13}C_3$ *PFPeA*	%	91	89	84	71	81
Extracted ISTD $^{13}C_2$ *PFHxA*	%	99	101	96	101	108
Extracted ISTD $^{13}C_4$ *PFHpA*	%	123	123	126	133	149
Extracted ISTD $^{13}C_4$ *PFOA*	%	99	103	90	83	102
Extracted ISTD $^{13}C_5$ *PFNA*	%	105	101	75	55	110
Extracted ISTD $^{13}C_2$ *PFDA*	%	109	103	43	31	105
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	111	112	78	61	118
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	119	122	65	47	112
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	114	113	55	47	109
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	87	94	107	112	101
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	96	94	142	121	100
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	124	119	85	52	114
Extracted ISTD $^{13}C_8$ *FOSA*	%	108	110	36	27	107
Extracted ISTD d_3 *N MeFOSA*	%	99	102	46	46	106
Extracted ISTD d_5 *N EtFOSA*	%	106	108	49	46	121
Extracted ISTD d_7 *N MeFOSE*	%	93	89	37	38	93
Extracted ISTD d_9 *N EtFOSE*	%	83	87	33	29	86
Extracted ISTD d_3 *N MeFOSAA*	%	147	145	86	48	150
Extracted ISTD d_5 *N EtFOSAA*	%	159	152	106	66	141
Total Positive PFHxS & PFOS	µg/kg	0.3	0.3	<0.1	0.2	<0.1
Total Positive PFOS & PFOA	µg/kg	0.3	0.3	<0.1	0.2	<0.1
Total Positive PFAS	µg/kg	1	0.9	<0.1	0.2	<0.1

PFAS in Soils Extended						
Our Reference		321584-6	321584-7	321584-8	321584-9	321584-10
Your Reference	UNITS	SS-V19	SS-V20	SS-V21	SS-V22	SS-V28
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
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	0.2
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	0.2	<0.1	0.2	0.9
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	0.9
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	1
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	0.6
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	0.3	0.2	<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*	%	102	98	94	102	100
Surrogate $^{13}C_2$ *PFOA*	%	104	110	105	107	111
Extracted ISTD $^{13}C_3$ *PFBS*	%	95	94	97	93	97
Extracted ISTD $^{18}O_2$ *PFHxS*	%	96	90	91	93	96
Extracted ISTD $^{13}C_4$ *PFOS*	%	97	99	100	92	96

PFAS in Soils Extended						
Our Reference		321584-6	321584-7	321584-8	321584-9	321584-10
Your Reference	UNITS	SS-V19	SS-V20	SS-V21	SS-V22	SS-V28
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	94	96	96	93	96
Extracted ISTD $^{13}C_3$ *PFPeA*	%	86	91	91	88	91
Extracted ISTD $^{13}C_2$ *PFHxA*	%	100	108	99	97	102
Extracted ISTD $^{13}C_4$ *PFHpA*	%	138	139	140	129	131
Extracted ISTD $^{13}C_4$ *PFOA*	%	103	105	109	99	107
Extracted ISTD $^{13}C_5$ *PFNA*	%	106	105	104	101	108
Extracted ISTD $^{13}C_2$ *PFDA*	%	113	106	108	104	106
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	112	116	119	101	110
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	117	112	126	116	115
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	109	104	113	115	116
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	99	94	95	89	96
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	98	98	106	88	112
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	125	122	143	115	137
Extracted ISTD $^{13}C_8$ *FOSA*	%	109	108	108	105	105
Extracted ISTD d_3 *N MeFOSA*	%	102	101	96	100	93
Extracted ISTD d_5 *N EtFOSA*	%	113	109	107	105	104
Extracted ISTD d_7 *N MeFOSE*	%	88	90	89	86	92
Extracted ISTD d_9 *N EtFOSE*	%	79	82	81	77	79
Extracted ISTD d_3 *N MeFOSAA*	%	138	142	176	149	173
Extracted ISTD d_5 *N EtFOSAA*	%	158	147	172	143	159
Total Positive PFHxS & PFOS	µg/kg	0.1	0.2	<0.1	0.2	1.2
Total Positive PFOS & PFOA	µg/kg	0.1	0.2	<0.1	0.2	0.9
Total Positive PFAS	µg/kg	0.6	0.4	<0.1	0.2	3.9

PFAS in Soils Extended			
Our Reference		321584-11	321584-12
Your Reference	UNITS	SS-V29	TB
Depth		Surface	Surface
Date Sampled		21/04/2023	21/04/2023
Type of sample		Soil	Soil
Date prepared	-	27/04/2023	27/04/2023
Date analysed	-	27/04/2023	27/04/2023
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.4	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	4.8	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.6	<0.2
Perfluorohexanoic acid	µg/kg	0.3	<0.1
Perfluoroheptanoic acid	µg/kg	0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	0.2	<0.1
Perfluorononanoic acid	µg/kg	0.4	<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*	%	93	95
Surrogate $^{13}C_2$ *PFOA*	%	108	114
Extracted ISTD $^{13}C_3$ *PFBS*	%	94	98
Extracted ISTD $^{18}O_2$ *PFHxS*	%	89	95
Extracted ISTD $^{13}C_4$ *PFOS*	%	97	107

PFAS in Soils Extended			
Our Reference		321584-11	321584-12
Your Reference	UNITS	SS-V29	TB
Depth		Surface	Surface
Date Sampled		21/04/2023	21/04/2023
Type of sample		Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	91	101
Extracted ISTD $^{13}C_3$ *PFPeA*	%	84	94
Extracted ISTD $^{13}C_2$ *PFHxA*	%	98	109
Extracted ISTD $^{13}C_4$ *PFHpA*	%	138	142
Extracted ISTD $^{13}C_4$ *PFOA*	%	103	102
Extracted ISTD $^{13}C_5$ *PFNA*	%	105	107
Extracted ISTD $^{13}C_2$ *PFDA*	%	112	105
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	105	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	119	112
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	107	118
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	95	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	117	91
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	152	118
Extracted ISTD $^{13}C_8$ *FOSA*	%	99	115
Extracted ISTD d_3 *N MeFOSA*	%	89	105
Extracted ISTD d_5 *N EtFOSA*	%	90	116
Extracted ISTD d_7 *N MeFOSE*	%	85	100
Extracted ISTD d_9 *N EtFOSE*	%	75	87
Extracted ISTD d_3 *N MeFOSAA*	%	192	140
Extracted ISTD d_5 *N EtFOSAA*	%	182	137
Total Positive PFHxS & PFOS	µg/kg	5.2	<0.1
Total Positive PFOS & PFOA	µg/kg	5.0	<0.1
Total Positive PFAS	µg/kg	6.9	<0.1

Moisture						
Our Reference		321584-1	321584-2	321584-3	321584-4	321584-5
Your Reference	UNITS	SS-V1	QAQC1	SS-V2	SS-V3	SS-V12
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Moisture	%	7.3	9.8	21	27	12

Moisture						
Our Reference		321584-6	321584-7	321584-8	321584-9	321584-10
Your Reference	UNITS	SS-V19	SS-V20	SS-V21	SS-V22	SS-V28
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/04/2023	26/04/2023	26/04/2023	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Moisture	%	12	7.4	13	11	22

Moisture			
Our Reference		321584-11	321584-12
Your Reference	UNITS	SS-V29	TB
Depth		Surface	Surface
Date Sampled		21/04/2023	21/04/2023
Type of sample		Soil	Soil
Date prepared	-	26/04/2023	26/04/2023
Date analysed	-	27/04/2023	27/04/2023
Moisture	%	24	0.6

PFAS in ASLP Extended						
Our Reference		321584-1	321584-2	321584-3	321584-4	321584-5
Your Reference	UNITS	SS-V1	QAQC1	SS-V2	SS-V3	SS-V12
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
pH of final Leachate	pH units	7.8	8.9	8.3	8.0	7.9
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	102	98	99	98	98
Surrogate $^{13}C_2$ PFOA	%	97	103	104	100	101
Extracted ISTD $^{13}C_3$ *PFBS*	%	100	99	102	100	100
Extracted ISTD $^{18}O_2$ *PFHxS*	%	100	99	99	95	97

PFAS in ASLP Extended						
Our Reference		321584-1	321584-2	321584-3	321584-4	321584-5
Your Reference	UNITS	SS-V1	QAQC1	SS-V2	SS-V3	SS-V12
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFOS*	%	95	99	96	96	98
Extracted ISTD $^{13}C_4$ *PFBA*	%	88	89	87	84	85
Extracted ISTD $^{13}C_3$ *PFPeA*	%	104	103	103	102	102
Extracted ISTD $^{13}C_2$ *PFHxA*	%	100	100	98	98	98
Extracted ISTD $^{13}C_4$ *PFHpA*	%	96	101	97	97	98
Extracted ISTD $^{13}C_4$ *PFOA*	%	108	105	104	106	106
Extracted ISTD $^{13}C_5$ *PFNA*	%	100	102	97	100	102
Extracted ISTD $^{13}C_2$ *PFDA*	%	104	110	105	106	107
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	115	117	111	116	117
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	106	108	103	108	104
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	79	82	81	85	82
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	104	105	100	101	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	107	104	104	104	105
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	131	125	125	130	125
Extracted ISTD $^{13}C_8$ *FOSA*	%	107	109	108	109	110
Extracted ISTD d_3 *N MeFOSA*	%	96	98	98	98	97
Extracted ISTD d_5 *N EtFOSA*	%	97	101	99	99	99
Extracted ISTD d_7 *N MeFOSE*	%	104	107	108	106	106
Extracted ISTD d_9 *N EtFOSE*	%	107	110	111	111	111
Extracted ISTD d_3 *N MeFOSAA*	%	105	106	104	107	105
Extracted ISTD d_5 *N EtFOSAA*	%	111	115	108	112	113
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01

PFAS in ASLP Extended						
Our Reference		321584-6	321584-7	321584-8	321584-9	321584-10
Your Reference	UNITS	SS-V19	SS-V20	SS-V21	SS-V22	SS-V28
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Date analysed	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
pH of final Leachate	pH units	9.4	9.5	8.9	8.7	8.5
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	100	99	102	98	96
Surrogate $^{13}C_2$ PFOA	%	99	100	101	101	99
Extracted ISTD $^{13}C_3$ *PFBS*	%	100	95	101	99	99
Extracted ISTD $^{18}O_2$ *PFHxS*	%	96	95	93	95	94

PFAS in ASLP Extended						
Our Reference		321584-6	321584-7	321584-8	321584-9	321584-10
Your Reference	UNITS	SS-V19	SS-V20	SS-V21	SS-V22	SS-V28
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFOS*	%	96	97	96	95	97
Extracted ISTD $^{13}C_4$ *PFBA*	%	85	84	86	86	85
Extracted ISTD $^{13}C_3$ *PFPeA*	%	102	100	98	98	100
Extracted ISTD $^{13}C_2$ *PFHxA*	%	97	96	96	96	93
Extracted ISTD $^{13}C_4$ *PFHpA*	%	98	97	95	97	96
Extracted ISTD $^{13}C_4$ *PFOA*	%	106	102	102	102	101
Extracted ISTD $^{13}C_5$ *PFNA*	%	100	98	97	99	100
Extracted ISTD $^{13}C_2$ *PFDA*	%	104	105	104	106	103
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	111	116	116	113	111
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	103	106	107	105	98
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	79	84	80	81	74
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	102	100	95	100	102
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	105	101	101	102	99
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	125	121	123	121	124
Extracted ISTD $^{13}C_8$ *FOSA*	%	106	104	104	106	104
Extracted ISTD d_3 *N MeFOSA*	%	98	100	96	99	96
Extracted ISTD d_5 *N EtFOSA*	%	97	100	96	99	97
Extracted ISTD d_7 *N MeFOSE*	%	104	100	99	103	99
Extracted ISTD d_9 *N EtFOSE*	%	106	105	98	101	98
Extracted ISTD d_3 *N MeFOSAA*	%	102	106	107	104	105
Extracted ISTD d_5 *N EtFOSAA*	%	110	110	111	109	111
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Total Positive PFAS	µg/L	0.01	<0.01	<0.01	<0.01	0.04

PFAS in ASLP Extended		
Our Reference		321584-11
Your Reference	UNITS	SS-V29
Depth		Surface
Date Sampled		21/04/2023
Type of sample		Soil
Date prepared	-	27/04/2023
Date analysed	-	27/04/2023
pH of final Leachate	pH units	8.4
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	0.09
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	%	101
Surrogate $^{13}C_2$ PFOA	%	100
Extracted ISTD $^{13}C_3$ *PFBS*	%	97
Extracted ISTD $^{18}O_2$ *PFHxS*	%	95

PFAS in ASLP Extended		
Our Reference		321584-11
Your Reference	UNITS	SS-V29
Depth		Surface
Date Sampled		21/04/2023
Type of sample		Soil
Extracted ISTD $^{13}C_4$ *PFOS*	%	93
Extracted ISTD $^{13}C_4$ *PFBA*	%	84
Extracted ISTD $^{13}C_3$ *PFPeA*	%	99
Extracted ISTD $^{13}C_2$ *PFHxA*	%	97
Extracted ISTD $^{13}C_4$ *PFHpA*	%	98
Extracted ISTD $^{13}C_4$ *PFOA*	%	100
Extracted ISTD $^{13}C_5$ *PFNA*	%	98
Extracted ISTD $^{13}C_2$ *PFDA*	%	105
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	102
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	76
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	106
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	101
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	120
Extracted ISTD $^{13}C_8$ *FOSA*	%	104
Extracted ISTD d_3 *N MeFOSA*	%	95
Extracted ISTD d_5 *N EtFOSA*	%	98
Extracted ISTD d_7 *N MeFOSE*	%	98
Extracted ISTD d_9 *N EtFOSE*	%	97
Extracted ISTD d_3 *N MeFOSAA*	%	104
Extracted ISTD d_5 *N EtFOSAA*	%	113
Total Positive PFHxS & PFOS	µg/L	0.09
Total Positive PFOS & PFOA	µg/L	0.09
Total Positive PFAS	µg/L	0.09

Misc Inorg - Soil						
Our Reference		321584-1	321584-2	321584-3	321584-4	321584-5
Your Reference	UNITS	SS-V1	QAQC1	SS-V2	SS-V3	SS-V12
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Combustibility*	%	6.4	10	9.7	49	6.2
Total Sulfur in soil/solids	%	0.079	0.075	0.048	0.21	0.050

Misc Inorg - Soil						
Our Reference		321584-6	321584-7	321584-8	321584-9	321584-10
Your Reference	UNITS	SS-V19	SS-V20	SS-V21	SS-V22	SS-V28
Depth		Surface	Surface	Surface	Surface	Surface
Date Sampled		21/04/2023	21/04/2023	21/04/2023	21/04/2023	21/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Combustibility*	%	8.5	9.0	21	8.6	12
Total Sulfur in soil/solids	%	0.053	0.063	0.11	0.041	0.085

Misc Inorg - Soil		
Our Reference		321584-11
Your Reference	UNITS	SS-V29
Depth		Surface
Date Sampled		21/04/2023
Type of sample		Soil
Date prepared	-	28/04/2023
Date analysed	-	28/04/2023
Combustibility*	%	22
Total Sulfur in soil/solids	%	0.17

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.
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.
INORG-137	Total Carbon Nitrogen Sulfur by high temperature catalytic combustion with IR detection.
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 5.4 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.

Method ID	Methodology Summary
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 5.4Table 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 Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	321584-2
Date prepared	-			27/04/2023	1	27/04/2023	27/04/2023		27/04/2023	27/04/2023
Date analysed	-			27/04/2023	1	27/04/2023	27/04/2023		27/04/2023	27/04/2023
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	91	91
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	101	98
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	105	109
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	109	111
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	1	0.3	0.2	40	98	97
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	86	95
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	95	95
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	111	113
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	114	111
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	85	81
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	98	99
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	1	0.1	<0.1	0	105	97
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	102	100
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	98	104
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	103	100
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	102	99
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	1	<5	<5	0	108	113
4:2 FTS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	102	108
6:2 FTS	µg/kg	0.1	Org-029	<0.1	1	0.4	0.4	0	103	102
8:2 FTS	µg/kg	0.2	Org-029	<0.2	1	0.2	<0.2	0	117	107
10:2 FTS	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	106	110
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	99	98
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	102	106
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	1	<1	<1	0	85	87
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	1	<1	<1	0	98	92
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	1	<5	<5	0	129	130
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	84	88
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	92	101
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	99	1	98	97	1	98	99
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	108	1	106	109	3	108	114

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	321584-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	108	1	99	96	3	102	95
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	98	1	87	90	3	101	93
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	105	1	98	97	1	101	96
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	102	1	96	95	1	102	93
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	94	1	91	91	0	96	88
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	103	1	99	104	5	99	95
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	136	1	123	119	3	122	114
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	104	1	99	98	1	100	92
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	105	1	105	107	2	101	102
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	107	1	109	101	8	103	104
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	113	1	111	103	7	113	96
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	117	1	119	121	2	106	111
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	106	1	114	111	3	111	103
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	98	1	87	86	1	103	92
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	97	1	96	94	2	99	98
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	118	1	124	122	2	115	124
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	114	1	108	105	3	106	97
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	105	1	99	98	1	104	94
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	111	1	106	106	0	108	100
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	93	1	93	88	6	96	89

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	321584-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	87	1	83	84	1	89	80
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	147	1	147	145	1	134	121
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	144	1	159	150	6	130	123

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	27/04/2023	27/04/2023		[NT]	[NT]
Date analysed	-			[NT]	11	27/04/2023	27/04/2023		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	[NT]	11	0.4	0.3	29	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	[NT]	11	4.8	4.6	4	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	[NT]	11	0.6	0.5	18	[NT]	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	[NT]	11	0.3	0.2	40	[NT]	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	[NT]	11	0.1	<0.1	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	[NT]	11	0.2	0.2	0	[NT]	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	[NT]	11	0.4	0.4	0	[NT]	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	[NT]	11	<5	<5	0	[NT]	[NT]
4:2 FTS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
6:2 FTS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
8:2 FTS	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
10:2 FTS	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	[NT]	11	<1	<1	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	[NT]	11	<5	<5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	11	93	103	10	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	11	108	110	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]	11	94	97	3	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	11	89	94	5	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	11	97	91	6	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	11	91	88	3	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	11	84	88	5	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	11	98	107	9	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	11	138	129	7	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	11	103	107	4	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	11	105	112	6	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	11	112	116	4	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	11	105	116	10	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	11	119	128	7	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	11	107	113	5	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	11	95	103	8	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	11	117	141	19	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	11	152	172	12	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	11	99	100	1	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	11	89	92	3	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	11	90	95	5	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	11	85	82	4	[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]	11	75	77	3	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	11	192	#		[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	11	182	#		[NT]	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321584-2
Date prepared	-			27/04/2023	1	27/04/2023	27/04/2023		27/04/2023	27/04/2023
Date analysed	-			27/04/2023	1	27/04/2023	27/04/2023		27/04/2023	27/04/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	101	98
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	110	108
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	108	108
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	111	110
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	102	104
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	98	100
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	108	106
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	104	101
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	104	101
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	108	104
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	103	99
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	108	108
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	103	100
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	99	91
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	102	101
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	92	93
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	1	<0.5	<0.5	0	111	108
4:2 FTS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	108	108
6:2 FTS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	104	104
8:2 FTS	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	108	103
10:2 FTS	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	102	100
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	113	109
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	115	110
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	115	112
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	81	74
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	1	<0.5	<0.5	0	95	93
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	115	110
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	108	105
Surrogate $^{13}C_8$ PFOS	%		Org-029A	98	1	102	97	5	100	102
Surrogate $^{13}C_2$ PFOA	%		Org-029A	103	1	97	99	2	100	102

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321584-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	98	1	100	103	3	95	95
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	99	1	100	98	2	93	92
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	96	1	95	99	4	95	92
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	103	1	88	88	0	92	79
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	106	1	104	105	1	96	94
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	98	1	100	100	0	93	92
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	98	1	96	98	2	89	88
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	104	1	108	107	1	93	96
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	98	1	100	101	1	88	89
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	107	1	104	108	4	99	101
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	115	1	115	115	0	94	95
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	103	1	106	105	1	95	92
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	78	1	79	83	5	76	77
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	100	1	104	101	3	89	86
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	105	1	107	104	3	94	92
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	125	1	131	121	8	111	109
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	106	1	107	109	2	84	85
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	97	1	96	98	2	92	94
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	98	1	97	100	3	89	90
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	104	1	104	104	0	96	100

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321584-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	108	1	107	112	5	99	101
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	104	1	105	107	2	97	97
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	112	1	111	113	2	105	101

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	27/04/2023	27/04/2023		[NT]	[NT]
Date analysed	-			[NT]	11	27/04/2023	27/04/2023		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	[NT]	11	0.09	0.08	12	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029A	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
4:2 FTS	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
6:2 FTS	µg/L	0.01	Org-029A	[NT]	11	<0.01	<0.01	0	[NT]	[NT]
8:2 FTS	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
10:2 FTS	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	[NT]	11	<0.05	<0.05	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	[NT]	11	<0.02	<0.02	0	[NT]	[NT]
Surrogate $^{13}C_8$ PFOS	%		Org-029A	[NT]	11	101	100	1	[NT]	[NT]
Surrogate $^{13}C_2$ PFOA	%		Org-029A	[NT]	11	100	97	3	[NT]	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	[NT]	11	97	93	4	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	[NT]	11	95	94	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	[NT]	11	93	92	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	[NT]	11	84	82	2	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	[NT]	11	99	96	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	[NT]	11	97	93	4	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	[NT]	11	98	93	5	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	[NT]	11	100	100	0	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	[NT]	11	98	97	1	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	[NT]	11	105	101	4	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	[NT]	11	114	110	4	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	[NT]	11	102	99	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	[NT]	11	76	74	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	[NT]	11	106	100	6	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	[NT]	11	101	99	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	[NT]	11	120	117	3	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	[NT]	11	104	101	3	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	[NT]	11	95	96	1	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	[NT]	11	98	97	1	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	[NT]	11	98	97	1	[NT]	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	[NT]	11	97	93	4	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	[NT]	11	104	106	2	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	[NT]	11	113	108	5	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			28/04/2023	1	28/04/2023	28/04/2023		28/04/2023	[NT]
Date analysed	-			28/04/2023	1	28/04/2023	28/04/2023		28/04/2023	[NT]
Combustibility*	%	0.1	Inorg-092	<0.1	1	6.4	[NT]		[NT]	[NT]
Total Sulfur in soil/solids	%	0.01	INORG-137	<0.01	1	0.079	0.097	20	80	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	28/04/2023	28/04/2023		[NT]	[NT]
Date analysed	-			[NT]	11	28/04/2023	28/04/2023		[NT]	[NT]
Combustibility*	%	0.1	Inorg-092	[NT]	11	22	[NT]		[NT]	[NT]
Total Sulfur in soil/solids	%	0.01	INORG-137	[NT]	11	0.17	0.19	11	[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

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

ENVIROLAB Empl

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ENVIROLAB GROUP
National phone number 1300 424 944

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
P 02 9910 6200 | E sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt, Myaree, WA 6154
P 08 9317 2505 | E lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
P 03 9763 2500 | E melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
P 08 7087 6800 | E adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
22a, 10-20 Depot St, Banyo, QLD 4014
P 07 3266 9532 | E brisbane@envirolab.com.au

Darwin Office - Envirolab Services
Unit 2/119 Reichardt Road, Winnellie, NT 0820
P 08 8967 1201 | E 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			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	PFAS ASLP	PFOS/PFOA_NEMP Method	Combustible Content and % Sulfur	Comments: Provide as much information about the sample as you can
1	SS-V1	Surface	7/04/23	Soil	X	X		X	
2	QAQC1	—			X	X		X	
~~3~~	QAQC2	—							PLEASE FORWARD TO AIS FOR PFAS, PFAS ASLP, Combustible content and %Sulfur
3 [illegible]	SS-V6	Surface			X	X		X	
4 [illegible]	SS-V3				X	X		X	
5 [illegible]	SS-V12				X	X		X	
6 [illegible]	SS-V19				X	X		X	
7 [illegible]	SS-V20				X	X		X	
8	SS-V21				X	X		X	
9	SS-V22				X	X		X	
10	SS-V28				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):	ENS SYD
Print Name:	Victor ARIAS	Print Name:	DC
Date & Time:	7/04/23 15:30	Date & Time:	21/4/23
Signature:		Signature:	

Lab Use Only

Job number:	321584
Temperature:	14
TAT Req: SAME day / 1 / 2 / 3 / 4 / STD	
Cooling: Ice / Ice pack / None	
Security seal: Intact / Broken / None	

ENVIROLAB

Job No: 321584
Date Received: ~~21/4/23~~ 21/04/23
Time Received: ~~1200~~ 17:45
Received By: DC
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

CHAIN OF CUSTODY FORM - Client

ENVIROLAB / ENVIROLAB GROUP / MPL

[Copyright and Confidential]

Company:	CES - Consulting Earth Scientists
Contact Person:	Victor Arias
Project Mgr:	Tristan Goodbody
Sampler:	VA
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 (to 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

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
ph 02 9910 6200 | e: sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt, Myaree, WA 6154
ph 08 9317 2305 | e: lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
ph 03 9763 2500 | e: melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
ph 08 7087 6200 | e: adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
28a, 10-20 Depot St, Banyo, QLD 4014
ph 07 3266 9532 | e: brisbane@envirolab.com.au

Darwin Office - Envirolab Services
Unit 20/119 Reichardt Road, Winnellie, NT 0820
ph 08 8367 1201 | e: darwin@envirolab.com.au

Sample Information

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample
11	SS-V29			
12	TB			

Tests Required

TPHs	PFAS ASLP	Asbestos (AF/FA) - NEMP	Sulphur Combustible	Moisture Content and %
X	X		X	
X				

Comments: Provide as much information about the sample as you can

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

Relinquished by (Company): CES — Received by:

Print Name: VICTOR ARIAS — Date & Time:

Date & Time: 21/04/23 15:30 — Signature:

Signature:

TAS 540
OL
21/4/23 17:15
OL

Lab Use Only

Job number: 321584

Temperature: 4.0°C

Cooling: Ice / Ice pack / None

Security: Intact / Broken / None

TAT Req - SAME day / 1 / (2) / 3 / 4 / STD

321584 21/4/23 @ 1715
~~24/4/23 @ 1000~~
OL

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias

Sample Login Details

Your reference	CES170608-GPM
Envirolab Reference	321584
Date Sample Received	21/04/2023
Date Instructions Received	24/04/2023
Date Results Expected to be Reported	28/04/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	12 Soil
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	14
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

TS may need extra days

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	PFAS in Soils Extended	PFAS in ASLP Extended	Misc Inorg - Soil
SS-V1-Surface	✓	✓	✓
QAQC1-Surface	✓	✓	✓
SS-V2-Surface	✓	✓	✓
SS-V3-Surface	✓	✓	✓
SS-V12-Surface	✓	✓	✓
SS-V19-Surface	✓	✓	✓
SS-V20-Surface	✓	✓	✓
SS-V21-Surface	✓	✓	✓
SS-V22-Surface	✓	✓	✓
SS-V28-Surface	✓	✓	✓
SS-V29-Surface	✓	✓	✓
TB-Surface	✓		

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

ACIRL Quality Testing Services Pty Ltd
ABN 66 003 451 876
Unit 3, 16 Donald Street
Lithgow, NSW, 2790, Australia
Tel: +61 2 6350 7400
Fax: +61 2 6352 3583

Analysis and Testing Report
ES2313443

Report To:	ALS Sydney
Address:	277-289 Woodpark Road, Smithfield New South Wales 2164
Report On:	ES2313443
Report No:	24007326-007
Report Status:	Final Report
Unique ID of Sample(s):	As per Results Report
Workorder Number:	LG23001904
Sampled By:	Client
Testing & Analysis Requirements:	Client Instructions
Date Reported:	28/04/2023
Reported By :	Daniel Shawcross Operations Manager

Coal testing materials were sampled and analysed in accordance with the following **Australian** Standards or equivalent:
AS1038.5 (1998) Methods For The Analysis And Testing Of Coal And Coke - Gross Specific Energy Of Coal And Coke

These reported results only relate to the items tested.

Analysis performed by : ACIRL Lithgow NSW NATA Accreditation No. 15784, Site No. 11436

ANALYSIS AND TESTING REPORT

ALS SYDNEY

ES No: ES2313443

Report No: 24007326-007

Date Reported: 28/04/2023

Sample Number	Sample Identification	Ash % (ad)
1	ES2313443 QAQC 2	92.1

ad - Air Dried Basis

NATA ACCREDITED TESTS

Lithgow **15784/11436**

HARD COAL TEST	ABBREVIATION	STANDARD /REFERENCE
Ash	A	AS1038.3 (2000)
Sample Preparation		AS4264.1 (2009)

CERTIFICATE OF ANALYSIS

Work Order	: **ES2313443**	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	: 24-Apr-2023 14:05
Order number	: ----	Date Analysis Commenced	: 26-Apr-2023
C-O-C number	: ----	Issue Date	: 04-May-2023 11:19
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*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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

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

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

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

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

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

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- 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.
- EN60-DI: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QAQC2	----	----	----	----
				Sampling date / time	21-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2313443-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
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: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QAQC2	----	----	----	----
				Sampling date / time	21-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2313443-001	--------	--------	--------	--------
					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		<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**97.7**	----	----	----	----
13C8-PFOA	----	0.02	%		**106**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	----	----	----	----
				Sampling date / time	21-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2313443-001	--------	--------	--------	--------
					Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**12.2**	----	----	----	----
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%		**0.06**	----	----	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)									
Final pH	----	0.1	pH Unit		**10.1**	----	----	----	----
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		**0.0003**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg		<0.0002	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg		<0.001	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	----	----	----	----
				Sampling date / time	21-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2313443-001	--------	--------	--------	--------
					Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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		**0.0003**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		**0.0003**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		**0.0003**	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**98.9**	----	----	----	----
13C8-PFOA	----	0.0002	%		**88.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: DI WATER LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) ED042T: Total Sulfur by LECO

QUALITY CONTROL REPORT

Work Order	: **ES2313443**	Page	: 1 of 8
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	: 24-Apr-2023
Order number	: ----	Date Analysis Commenced	: 26-Apr-2023
C-O-C number	: ----	Issue Date	: 04-May-2023
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*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

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 (%)*
ED042T: Total Sulfur by LECO (QC Lot: 5026725)									
EB2311913-001	Anonymous	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	0.63	0.64	0.0	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5010920)									
ES2312604-003	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
ES2313091-003	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	0.0006	0.0003	65.7	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: 5010920)									
ES2312604-003	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

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: 5010920) - continued									
ES2312604-003	Anonymous	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
ES2313091-003	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0008	<0.0002	124	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	0.0006	0.0003	68.5	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	0.0008	0.0004	64.7	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	0.0017	0.0009	60.9	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	0.0011	0.0005	73.3	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	0.0006	0.0002	83.5	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: 5010920)									
ES2312604-003	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
ES2313091-003	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: 5010920)									

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: 5010920) - continued									
ES2312604-003	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
ES2313091-003	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
ED042T: Total Sulfur by LECO (QCLot: 5026725)								
ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.51 %	100	70.0	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5010920)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	121	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	88.9	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	91.3	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	81.4	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.9	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5010920)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	108	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	121	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	118	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	101	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	77.9	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	76.9	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	84.1	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	78.1	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5010920)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	114	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	76.2	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	113	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	126	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.6	63.0	144

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: 5010920) - continued								
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: 5010920)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	118	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	119	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	127	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	112	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5014953)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	90.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	115	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	107	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	114	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5014953)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	113	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	115	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5014953)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	113	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	120	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	103	66.0	145

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: 5014953) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	124	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	98.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5014953)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	111	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	103	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	97.4	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	115	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: **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: 5010920)							
ES2312604-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	112	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	88.5	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	88.2	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	99.0	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	78.9	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	98.9	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5010920)							
ES2312604-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	96.2	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	118	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	108	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	121	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	115	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	93.2	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	81.7	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	112	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	115	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	118	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	73.7	69.0	133

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: 5010920)							
ES2312604-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	101	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	107	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	76.4	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	92.4	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	91.2	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	119	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	121	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5010920)							
ES2312604-003	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	114	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	123	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	75.9	69.2	143

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2313443**	Page	: 1 of 5
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 24-Apr-2023
Site	: ----	Issue Date	: 04-May-2023
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.**
- **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

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

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
ED042T: Total Sulfur by LECO						
Soil Glass Jar - Unpreserved						
QAQC2	04-May-2023	28-Apr-2023	**6**	----	----	----

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)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	14	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			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)							
QAQC2	**21-Apr-2023**	**----**	----	----	**26-Apr-2023**	05-May-2023	✓
ED042T: Total Sulfur by LECO							
Soil Glass Jar - Unpreserved (ED042T)							
QAQC2	**21-Apr-2023**	**04-May-2023**	28-Apr-2023	×	**04-May-2023**	31-Oct-2023	✓
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)							
QAQC2	**21-Apr-2023**	**26-Apr-2023**	18-Oct-2023	✓	**----**	----	----
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QAQC2	**21-Apr-2023**	**26-Apr-2023**	18-Oct-2023	✓	**27-Apr-2023**	05-Jun-2023	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X) QAQC2	**21-Apr-2023**	**26-Apr-2023**	18-Oct-2023	✓	**27-Apr-2023**	05-Jun-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X) QAQC2	**21-Apr-2023**	**26-Apr-2023**	18-Oct-2023	✓	**27-Apr-2023**	05-Jun-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X) QAQC2	**21-Apr-2023**	**26-Apr-2023**	18-Oct-2023	✓	**27-Apr-2023**	05-Jun-2023	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X) QAQC2	**21-Apr-2023**	**26-Apr-2023**	18-Oct-2023	✓	**27-Apr-2023**	05-Jun-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
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) QAQC2	**26-Apr-2023**	**27-Apr-2023**	23-Oct-2023	✓	**28-Apr-2023**	23-Oct-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) QAQC2	**26-Apr-2023**	**27-Apr-2023**	23-Oct-2023	✓	**28-Apr-2023**	23-Oct-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) QAQC2	**26-Apr-2023**	**27-Apr-2023**	23-Oct-2023	✓	**28-Apr-2023**	23-Oct-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) QAQC2	**26-Apr-2023**	**27-Apr-2023**	23-Oct-2023	✓	**28-Apr-2023**	23-Oct-2023	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) QAQC2	**26-Apr-2023**	**27-Apr-2023**	23-Oct-2023	✓	**28-Apr-2023**	23-Oct-2023	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	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	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfur - Total as S (LECO)	ED042T	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	14	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	14	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Sulfur - Total as S (LECO)	ED042T	SOIL	In house: Dried and pulverised sample is combusted in a high temperature furnace in the presence of strong oxidants / catalysts. The evolved S (as SO2) is measured by infra-red detector
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	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
Deionised Water Leach - Plastic Leaching Vessel	EN60-DIa-P	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
Dry and Pulverise (up to 100g)	GEO30	SOIL	#
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	SOIL	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

ENVIROLAB | ENVIROLAB | mpl

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Company:	CES - Consulting Earth Scientists
Contact Person:	Victor Arias
Project Mgr:	Tristan Goodbody
Sampler:	VA
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 numb

Sydney Lab - Envirol
12 Ashley St, Chatsw
02 9910 5200 |

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16-18 Hayden Crt, M
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07 3266 9532

Darwin Office
Unit 26/119 Re
08 8967 12

Environmental Division
Sydney
Work Order Reference
ES2313443

Telephone : +61-2-8784 8555

Sample information					Tests Required					Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	PFAS ASLP	%BASIC (AFFF) - NEMP Method	Combustible Content and % Sulfur		Provide as much information about the sample as you can
1	SS-V1	Surface	21/04/23	SOIL	X	X		X		
2	QAQC1	—	—	—	X	X		X		
3	QAQC2	—	—	—	X	X		X		
4	SS-V2	Surface			X	X		X		
5	SS-V3				X	X		X		
6	SS-V17				X	X		X		
7	SS-V19				X	X		X		
8	SS-V20				X	X		X		
9	SS-V21				X	X		X		
10	SS-V22				X	X		X		
	SS-V26				X	X		X		

(1) PLEASE FORWARD TO ALS FOR PFAS, PFAS ASLP, Combustible content and %S. Ifw

☐ 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 SYD
Print Name:	VICTOR ARIAS	Print Name:	DC
Date & Time:	21/04/23 15:30	Date & Time:	21/4/23
Signature:		Signature:	

Lab Use Only

Job number: 321584	Cooling: Ice / Ice pack / None
Temperature: 14	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

ENVIROLAB

12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 5200

Relinquished by
ES SYD
CM
24/4. 1230
CM

TAT

Job No: 321584
Date Received: ~~24/4/23~~ 21/04/23
Time Received: ~~1200~~ 1745.
Received By: DC
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Rec. Jad2 24/04/23 1405

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 321855

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	38 Soil
Date samples received	27/04/2023
Date completed instructions received	27/04/2023

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	01/05/2023
Date of Issue	02/05/2023
Reissue Details	This report replaces R00 created on 02/05/2023 due to: revised report with Total Sulphur reporting units amended as per client request.

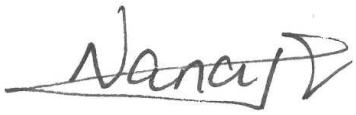
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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Nyovan Moonean, Stuart Chen
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Greta Petzold, Operation Manager
Lucy Zhu, Asbestos Supervisor
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

PFAS in Soils Extended						
Our Reference		321855-1	321855-2	321855-3	321855-4	321855-5
Your Reference	UNITS	SP7-V1	QAQC1	SP7-V2	SP7-V3	SP7-V4
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
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*	%	100	97	100	100	98
Surrogate $^{13}C_2$ *PFOA*	%	98	100	99	98	93
Extracted ISTD $^{13}C_3$ *PFBS*	%	93	94	92	93	96
Extracted ISTD $^{18}O_2$ *PFHxS*	%	90	93	91	91	95
Extracted ISTD $^{13}C_4$ *PFOS*	%	93	96	94	94	98
Extracted ISTD $^{13}C_4$ *PFBA*	%	96	97	98	96	98

PFAS in Soils Extended						
Our Reference		321855-1	321855-2	321855-3	321855-4	321855-5
Your Reference	UNITS	SP7-V1	QAQC1	SP7-V2	SP7-V3	SP7-V4
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	95	98	96	97	100
Extracted ISTD $^{13}C_2$ *PFHxA*	%	94	94	96	94	95
Extracted ISTD $^{13}C_4$ *PFHpA*	%	94	97	97	95	98
Extracted ISTD $^{13}C_4$ *PFOA*	%	95	97	99	98	102
Extracted ISTD $^{13}C_5$ *PFNA*	%	99	99	101	98	103
Extracted ISTD $^{13}C_2$ *PFDA*	%	98	96	96	97	103
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	106	107	104	104	107
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	104	101	102	102	106
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	105	98	94	102	105
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	101	102	107	105	109
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	98	104	107	99	103
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	106	110	114	109	113
Extracted ISTD $^{13}C_8$ *FOSA*	%	96	95	96	97	100
Extracted ISTD d_3 *N MeFOSA*	%	96	95	99	97	98
Extracted ISTD d_5 *N EtFOSA*	%	100	100	104	104	107
Extracted ISTD d_7 *N MeFOSE*	%	91	92	89	90	95
Extracted ISTD d_9 *N EtFOSE*	%	90	87	87	89	96
Extracted ISTD d_3 *N MeFOSAA*	%	108	114	117	114	110
Extracted ISTD d_5 *N EtFOSAA*	%	104	106	110	110	106
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		321855-6	321855-7	321855-8	321855-25	321855-26
Your Reference	UNITS	SP7-V5	SP7-V6	SP7-V8	SP3-V1	QAQC3
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
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	0.2	<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*	%	97	99	97	95	97
Surrogate $^{13}C_2$ *PFOA*	%	101	99	99	103	101
Extracted ISTD $^{13}C_3$ *PFBS*	%	97	96	96	97	91
Extracted ISTD $^{18}O_2$ *PFHxS*	%	91	93	95	98	88
Extracted ISTD $^{13}C_4$ *PFOS*	%	95	98	97	100	92
Extracted ISTD $^{13}C_4$ *PFBA*	%	96	99	98	100	94

PFAS in Soils Extended						
Our Reference		321855-6	321855-7	321855-8	321855-25	321855-26
Your Reference	UNITS	SP7-V5	SP7-V6	SP7-V8	SP3-V1	QAQC3
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	95	100	98	102	93
Extracted ISTD $^{13}C_2$ *PFHxA*	%	94	101	98	98	92
Extracted ISTD $^{13}C_4$ *PFHpA*	%	96	101	99	98	91
Extracted ISTD $^{13}C_4$ *PFOA*	%	96	104	100	100	94
Extracted ISTD $^{13}C_5$ *PFNA*	%	98	111	104	104	99
Extracted ISTD $^{13}C_2$ *PFDA*	%	97	109	100	103	99
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	101	118	115	111	106
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	99	118	103	110	98
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	91	109	100	111	102
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	102	113	107	105	99
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	103	126	106	106	102
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	104	156	117	110	108
Extracted ISTD $^{13}C_8$ *FOSA*	%	93	97	97	102	95
Extracted ISTD d_3 *N MeFOSA*	%	90	100	98	102	97
Extracted ISTD d_5 *N EtFOSA*	%	96	109	96	109	101
Extracted ISTD d_7 *N MeFOSE*	%	90	89	91	99	91
Extracted ISTD d_9 *N EtFOSE*	%	92	88	86	99	94
Extracted ISTD d_3 *N MeFOSAA*	%	112	147	126	122	114
Extracted ISTD d_5 *N EtFOSAA*	%	102	153	115	118	106
Total Positive PFHxS & PFOS	µg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	0.2	<0.1	<0.1	<0.1

PFAS in Soils Extended						
Our Reference		321855-27	321855-28	321855-29	321855-30	321855-31
Your Reference	UNITS	TB	SP3-V2	SP3-V3	SP3-V4	SP3-V5
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
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	0.2	0.3	<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	<0.2	<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	96	97	99	97
Surrogate $^{13}C_2$ *PFOA*	%	98	101	103	101	99
Extracted ISTD $^{13}C_3$ *PFBS*	%	98	98	100	90	94
Extracted ISTD $^{18}O_2$ *PFHxS*	%	98	96	96	88	94
Extracted ISTD $^{13}C_4$ *PFOS*	%	98	102	100	92	99
Extracted ISTD $^{13}C_4$ *PFBA*	%	100	98	101	93	98

PFAS in Soils Extended						
Our Reference		321855-27	321855-28	321855-29	321855-30	321855-31
Your Reference	UNITS	TB	SP3-V2	SP3-V3	SP3-V4	SP3-V5
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	104	103	102	95	100
Extracted ISTD $^{13}C_2$ *PFHxA*	%	98	99	101	92	97
Extracted ISTD $^{13}C_4$ *PFHpA*	%	103	100	99	91	97
Extracted ISTD $^{13}C_4$ *PFOA*	%	105	104	103	97	100
Extracted ISTD $^{13}C_5$ *PFNA*	%	109	109	110	97	102
Extracted ISTD $^{13}C_2$ *PFDA*	%	109	109	109	98	100
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	116	114	121	106	105
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	113	116	120	98	108
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	113	118	122	97	114
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	112	113	113	101	104
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	118	117	118	101	107
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	135	141	148	114	115
Extracted ISTD $^{13}C_8$ *FOSA*	%	103	101	102	95	102
Extracted ISTD d_3 *N MeFOSA*	%	105	101	102	94	105
Extracted ISTD d_5 *N EtFOSA*	%	112	108	112	95	97
Extracted ISTD d_7 *N MeFOSE*	%	101	96	96	92	98
Extracted ISTD d_9 *N EtFOSE*	%	99	102	102	98	105
Extracted ISTD d_3 *N MeFOSAA*	%	130	127	134	109	121
Extracted ISTD d_5 *N EtFOSAA*	%	123	129	130	103	110
Total Positive PFHxS & PFOS	µg/kg	<0.1	0.2	0.3	<0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	0.2	0.3	<0.1	<0.1
Total Positive PFAS	µg/kg	<0.1	0.2	0.3	<0.1	<0.1

PFAS in Soils Extended						
Our Reference		321855-32	321855-33	321855-34	321855-35	321855-36
Your Reference	UNITS	SP3-V6	SP3-V7	SP3-V8	SS-V13	SS-V6
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
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	0.2
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	0.4	<0.1	<0.1	0.6	0.6
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	0.3
Perfluorohexanoic acid	µg/kg	<0.1	<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	<0.1	<0.1	<0.1	<0.1	<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	<0.5
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	0.2	<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	97	94	97	100
Surrogate $^{13}C_2$ *PFOA*	%	99	101	102	100	97
Extracted ISTD $^{13}C_3$ *PFBS*	%	92	90	91	98	89
Extracted ISTD $^{18}O_2$ *PFHxS*	%	91	92	93	97	87
Extracted ISTD $^{13}C_4$ *PFOS*	%	94	95	96	101	86
Extracted ISTD $^{13}C_4$ *PFBA*	%	94	93	93	100	90

PFAS in Soils Extended						
Our Reference		321855-32	321855-33	321855-34	321855-35	321855-36
Your Reference	UNITS	SP3-V6	SP3-V7	SP3-V8	SS-V13	SS-V6
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	95	95	96	101	90
Extracted ISTD $^{13}C_2$ *PFHxA*	%	94	92	95	100	87
Extracted ISTD $^{13}C_4$ *PFHpA*	%	93	92	92	99	90
Extracted ISTD $^{13}C_4$ *PFOA*	%	97	96	96	105	89
Extracted ISTD $^{13}C_5$ *PFNA*	%	102	98	98	110	88
Extracted ISTD $^{13}C_2$ *PFDA*	%	103	100	97	109	88
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	107	101	108	119	100
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	107	100	106	120	94
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	108	98	109	121	102
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	104	101	103	107	90
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	108	98	98	117	89
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	125	111	115	137	92
Extracted ISTD $^{13}C_8$ *FOSA*	%	97	96	96	103	94
Extracted ISTD d_3 *N MeFOSA*	%	97	97	96	101	93
Extracted ISTD d_5 *N EtFOSA*	%	104	100	98	114	99
Extracted ISTD d_7 *N MeFOSE*	%	94	93	92	99	90
Extracted ISTD d_9 *N EtFOSE*	%	98	99	102	104	92
Extracted ISTD d_3 *N MeFOSAA*	%	113	107	110	126	79
Extracted ISTD d_5 *N EtFOSAA*	%	111	99	102	127	84
Total Positive PFHxS & PFOS	µg/kg	0.4	<0.1	<0.1	0.8	0.8
Total Positive PFOS & PFOA	µg/kg	0.4	<0.1	<0.1	0.6	0.6
Total Positive PFAS	µg/kg	0.5	<0.1	<0.1	1.2	1.4

PFAS in Soils Extended			
Our Reference		321855-37	321855-38
Your Reference	UNITS	QAQCA	SP7-V7
Date Sampled		27/04/2023	27/04/2023
Type of sample		Soil	Soil
Date prepared	-	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023
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	0.6	<0.1
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.3	<0.2
Perfluorohexanoic acid	µg/kg	0.2	<0.1
Perfluoroheptanoic acid	µg/kg	<0.1	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	<0.1
Perfluorononanoic acid	µg/kg	0.2	<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	0.2	<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*	%	100	98
Surrogate $^{13}C_2$ *PFOA*	%	102	100
Extracted ISTD $^{13}C_3$ *PFBS*	%	96	98
Extracted ISTD $^{18}O_2$ *PFHxS*	%	97	96
Extracted ISTD $^{13}C_4$ *PFOS*	%	93	94
Extracted ISTD $^{13}C_4$ *PFBA*	%	98	98

PFAS in Soils Extended			
Our Reference		321855-37	321855-38
Your Reference	UNITS	QAQCA	SP7-V7
Date Sampled		27/04/2023	27/04/2023
Type of sample		Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	97	99
Extracted ISTD $^{13}C_2$ *PFHxA*	%	97	97
Extracted ISTD $^{13}C_4$ *PFHpA*	%	99	98
Extracted ISTD $^{13}C_4$ *PFOA*	%	100	96
Extracted ISTD $^{13}C_5$ *PFNA*	%	97	96
Extracted ISTD $^{13}C_2$ *PFDA*	%	100	94
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	111	106
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	107	100
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	118	106
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	107	102
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	104	100
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	123	108
Extracted ISTD $^{13}C_8$ *FOSA*	%	101	102
Extracted ISTD d_3 *N MeFOSA*	%	97	97
Extracted ISTD d_5 *N EtFOSA*	%	106	97
Extracted ISTD d_7 *N MeFOSE*	%	90	94
Extracted ISTD d_9 *N EtFOSE*	%	91	92
Extracted ISTD d_3 *N MeFOSAA*	%	115	98
Extracted ISTD d_5 *N EtFOSAA*	%	114	100
Total Positive PFHxS & PFOS	µg/kg	0.8	<0.1
Total Positive PFOS & PFOA	µg/kg	0.6	<0.1
Total Positive PFAS	µg/kg	1.7	<0.1

Moisture						
Our Reference		321855-1	321855-2	321855-3	321855-4	321855-5
Your Reference	UNITS	SP7-V1	QAQC1	SP7-V2	SP7-V3	SP7-V4
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Moisture	%	7.0	10	13	12	9.7

Moisture						
Our Reference		321855-6	321855-7	321855-8	321855-25	321855-26
Your Reference	UNITS	SP7-V5	SP7-V6	SP7-V8	SP3-V1	QAQC3
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Moisture	%	11	7.1	5.0	2.1	9.2

Moisture						
Our Reference		321855-27	321855-28	321855-29	321855-30	321855-31
Your Reference	UNITS	TB	SP3-V2	SP3-V3	SP3-V4	SP3-V5
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Moisture	%	2.7	1.1	1.3	15	1.4

Moisture						
Our Reference		321855-32	321855-33	321855-34	321855-35	321855-36
Your Reference	UNITS	SP3-V6	SP3-V7	SP3-V8	SS-V13	SS-V6
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Moisture	%	8.9	12	3.2	3.5	13

Moisture			
Our Reference		321855-37	321855-38
Your Reference	UNITS	QAQCA	SP7-V7
Date Sampled		27/04/2023	27/04/2023
Type of sample		Soil	Soil
Date prepared	-	27/04/2023	27/04/2023
Date analysed	-	28/04/2023	28/04/2023
Moisture	%	8.0	7.2

Asbestos ID - soils NEPM - ASB-001						
Our Reference	UNITS	321855-1	321855-2	321855-3	321855-4	321855-5
Your Reference		SP7-V1	QAQC1	SP7-V2	SP7-V3	SP7-V4
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Sample mass tested	g	852.85	709.18	686.11	690.66	669.11
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Pink 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		321855-6	321855-7	321855-8	321855-9	321855-10
Your Reference	UNITS	SP7-V5	SP7-V6	SP7-V8	SP6-V1	SP6-V2
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Sample mass tested	g	835	775.22	749.47	829.2	598.63
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		321855-11	321855-12	321855-13	321855-14	321855-15
Your Reference	UNITS	SP6-V3	SP6-V4	SP6-V5	SP6-V6	SP6-V7
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Sample mass tested	g	629.27	649.46	746.26	673.96	683.91
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		321855-16	321855-17	321855-18	321855-19	321855-20
Your Reference	UNITS	SP6-V8	SP5-V1	SP5-V2	SP5-V3	SP5-V4
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Sample mass tested	g	694.67	671.56	829.88	812.84	805.18
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		321855-21	321855-22	321855-23	321855-24	321855-25
Your Reference	UNITS	SP5-V5	SP5-V6	SP5-V7	SP5-V8	SP3-V1
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Sample mass tested	g	785.12	864.55	783.88	718.27	805.81
Sample Description	-	Grey coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Red 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*	-	Chrysotile	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	0.0372	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	0.0047	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		321855-26	321855-28	321855-29	321855-30	321855-31
Your Reference	UNITS	QAQC3	SP3-V2	SP3-V3	SP3-V4	SP3-V5
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Sample mass tested	g	746.95	801.95	740.85	856.54	890.25
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Pink coarse-grained soil & rocks	Pink 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		321855-32	321855-33	321855-34	321855-38
Your Reference	UNITS	SP3-V6	SP3-V7	SP3-V8	SP7-V7
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Sample mass tested	g	686.88	792.12	767.59	751.74
Sample Description	-	Brown coarse-grained soil & rocks	Pink coarse-grained soil & rocks	Pink coarse-grained soil & rocks	Pink 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
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 ASLP Extended						
Our Reference		321855-1	321855-2	321855-3	321855-4	321855-5
Your Reference	UNITS	SP7-V1	QAQC1	SP7-V2	SP7-V3	SP7-V4
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
pH of final Leachate	pH units	7.6	7.8	7.8	7.8	7.4
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	97	101	100	102	100
Surrogate $^{13}C_2$ PFOA	%	85	86	84	84	82
Extracted ISTD $^{13}C_3$ *PFBS*	%	85	91	92	90	89
Extracted ISTD $^{18}O_2$ *PFHxS*	%	97	101	103	100	104
Extracted ISTD $^{13}C_4$ *PFOS*	%	104	100	101	99	100

PFAS in ASLP Extended						
Our Reference		321855-1	321855-2	321855-3	321855-4	321855-5
Your Reference	UNITS	SP7-V1	QAQC1	SP7-V2	SP7-V3	SP7-V4
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	89	93	94	93	93
Extracted ISTD $^{13}C_3$ *PFPeA*	%	83	87	90	88	89
Extracted ISTD $^{13}C_2$ *PFHxA*	%	101	102	99	95	100
Extracted ISTD $^{13}C_4$ *PFHpA*	%	97	100	103	104	98
Extracted ISTD $^{13}C_4$ *PFOA*	%	115	117	112	114	116
Extracted ISTD $^{13}C_5$ *PFNA*	%	118	117	115	120	115
Extracted ISTD $^{13}C_2$ *PFDA*	%	100	107	109	108	114
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	127	136	125	118	122
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	123	116	118	123	116
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	83	82	83	81	86
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	84	85	84	81	88
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	94	95	95	97	95
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	80	90	86	90	87
Extracted ISTD $^{13}C_8$ *FOSA*	%	93	94	95	92	92
Extracted ISTD d_3 *N MeFOSA*	%	97	96	96	96	93
Extracted ISTD d_5 *N EtFOSA*	%	105	104	103	98	102
Extracted ISTD d_7 *N MeFOSE*	%	91	93	99	98	95
Extracted ISTD d_9 *N EtFOSE*	%	107	109	103	108	110
Extracted ISTD d_3 *N MeFOSAA*	%	121	123	117	127	124
Extracted ISTD d_5 *N EtFOSAA*	%	100	110	107	113	117
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01

PFAS in ASLP Extended						
Our Reference		321855-6	321855-7	321855-8	321855-25	321855-26
Your Reference	UNITS	SP7-V5	SP7-V6	SP7-V8	SP3-V1	QAQC3
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
pH of final Leachate	pH units	7.4	7.0	7.4	7.6	7.8
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	97	100	104	100	102
Surrogate $^{13}C_2$ PFOA	%	85	83	79	83	83
Extracted ISTD $^{13}C_3$ *PFBS*	%	86	90	88	86	87
Extracted ISTD $^{18}O_2$ *PFHxS*	%	104	105	103	103	103
Extracted ISTD $^{13}C_4$ *PFOS*	%	98	97	96	96	96

PFAS in ASLP Extended						
Our Reference		321855-6	321855-7	321855-8	321855-25	321855-26
Your Reference	UNITS	SP7-V5	SP7-V6	SP7-V8	SP3-V1	QAQC3
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	92	92	94	93	93
Extracted ISTD $^{13}C_3$ *PFPeA*	%	91	89	91	89	88
Extracted ISTD $^{13}C_2$ *PFHxA*	%	100	101	102	101	101
Extracted ISTD $^{13}C_4$ *PFHpA*	%	96	101	95	96	100
Extracted ISTD $^{13}C_4$ *PFOA*	%	114	115	115	115	117
Extracted ISTD $^{13}C_5$ *PFNA*	%	127	122	124	123	125
Extracted ISTD $^{13}C_2$ *PFDA*	%	124	119	119	109	123
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	132	137	141	137	121
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	127	122	118	125	122
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	86	89	85	87	85
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	85	85	87	86	81
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	98	100	101	95	101
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	87	93	94	93	87
Extracted ISTD $^{13}C_8$ *FOSA*	%	92	91	92	92	92
Extracted ISTD d_3 *N MeFOSA*	%	98	97	95	98	99
Extracted ISTD d_5 *N EtFOSA*	%	100	101	99	100	102
Extracted ISTD d_7 *N MeFOSE*	%	102	103	104	100	105
Extracted ISTD d_9 *N EtFOSE*	%	116	112	111	103	110
Extracted ISTD d_3 *N MeFOSAA*	%	120	126	124	125	118
Extracted ISTD d_5 *N EtFOSAA*	%	117	114	107	113	106
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01

PFAS in ASLP Extended						
Our Reference		321855-28	321855-29	321855-30	321855-31	321855-32
Your Reference	UNITS	SP3-V2	SP3-V3	SP3-V4	SP3-V5	SP3-V6
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
pH of final Leachate	pH units	6.6	7.6	7.9	7.6	7.8
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	101	97	98	101	97
Surrogate $^{13}C_2$ PFOA	%	84	90	85	90	94
Extracted ISTD $^{13}C_3$ *PFBS*	%	89	92	97	95	96
Extracted ISTD $^{18}O_2$ *PFHxS*	%	109	103	108	112	110
Extracted ISTD $^{13}C_4$ *PFOS*	%	93	93	94	91	95

PFAS in ASLP Extended						
Our Reference		321855-28	321855-29	321855-30	321855-31	321855-32
Your Reference	UNITS	SP3-V2	SP3-V3	SP3-V4	SP3-V5	SP3-V6
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	88	93	96	97	96
Extracted ISTD $^{13}C_3$ *PFPeA*	%	92	96	97	99	101
Extracted ISTD $^{13}C_2$ *PFHxA*	%	97	99	99	103	96
Extracted ISTD $^{13}C_4$ *PFHpA*	%	94	99	99	102	98
Extracted ISTD $^{13}C_4$ *PFOA*	%	115	112	113	109	107
Extracted ISTD $^{13}C_5$ *PFNA*	%	121	124	125	120	123
Extracted ISTD $^{13}C_2$ *PFDA*	%	130	140	137	138	138
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	139	152	140	142	143
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	122	122	126	129	118
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	91	88	93	92	90
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	87	85	86	87	86
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	101	107	102	105	104
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	89	98	94	95	96
Extracted ISTD $^{13}C_8$ *FOSA*	%	83	92	95	94	96
Extracted ISTD d_3 *N MeFOSA*	%	97	99	100	101	101
Extracted ISTD d_5 *N EtFOSA*	%	99	104	104	104	104
Extracted ISTD d_7 *N MeFOSE*	%	108	103	108	103	105
Extracted ISTD d_9 *N EtFOSE*	%	106	111	108	107	108
Extracted ISTD d_3 *N MeFOSAA*	%	116	125	130	130	129
Extracted ISTD d_5 *N EtFOSAA*	%	107	118	115	115	120
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	0.02
Total Positive PFAS	µg/L	<0.01	<0.01	<0.01	<0.01	0.02

PFAS in ASLP Extended						
Our Reference		321855-33	321855-34	321855-35	321855-36	321855-37
Your Reference	UNITS	SP3-V7	SP3-V8	SS-V13	SS-V6	QAQCA
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
pH of final Leachate	pH units	8.7	7.6	8.5	8.5	8.8
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	102	95	97	98	99
Surrogate $^{13}C_2$ PFOA	%	90	102	102	91	97
Extracted ISTD $^{13}C_3$ *PFBS*	%	98	100	95	98	97
Extracted ISTD $^{18}O_2$ *PFHxS*	%	113	108	113	109	108
Extracted ISTD $^{13}C_4$ *PFOS*	%	91	96	95	94	92

PFAS in ASLP Extended						
Our Reference		321855-33	321855-34	321855-35	321855-36	321855-37
Your Reference	UNITS	SP3-V7	SP3-V8	SS-V13	SS-V6	QAQCA
Date Sampled		27/04/2023	27/04/2023	27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	100	99	98	101	99
Extracted ISTD $^{13}C_3$ *PFPeA*	%	103	109	107	111	106
Extracted ISTD $^{13}C_2$ *PFHxA*	%	99	99	107	99	103
Extracted ISTD $^{13}C_4$ *PFHpA*	%	95	99	104	103	103
Extracted ISTD $^{13}C_4$ *PFOA*	%	110	103	108	109	109
Extracted ISTD $^{13}C_5$ *PFNA*	%	120	119	119	121	119
Extracted ISTD $^{13}C_2$ *PFDA*	%	144	134	129	133	139
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	137	163	147	146	136
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	123	122	128	120	115
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	90	103	93	103	95
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	91	90	92	89	92
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	102	101	108	98	99
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	95	96	100	100	96
Extracted ISTD $^{13}C_8$ *FOSA*	%	94	96	100	98	95
Extracted ISTD d_3 *N MeFOSA*	%	95	106	102	103	101
Extracted ISTD d_5 *N EtFOSA*	%	99	106	106	102	102
Extracted ISTD d_7 *N MeFOSE*	%	98	109	98	104	107
Extracted ISTD d_9 *N EtFOSE*	%	106	108	110	104	106
Extracted ISTD d_3 *N MeFOSAA*	%	121	126	125	129	125
Extracted ISTD d_5 *N EtFOSAA*	%	120	118	124	129	124
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	0.01	<0.01	<0.01

PFAS in ASLP Extended		
Our Reference		321855-38
Your Reference	UNITS	SP7-V7
Date Sampled		27/04/2023
Type of sample		Soil
Date prepared	-	28/04/2023
Date analysed	-	28/04/2023
pH of final Leachate	pH units	6.0
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	%	102
Surrogate $^{13}C_2$ PFOA	%	98
Extracted ISTD $^{13}C_3$ *PFBS*	%	101
Extracted ISTD $^{18}O_2$ *PFHxS*	%	107
Extracted ISTD $^{13}C_4$ *PFOS*	%	91

PFAS in ASLP Extended		
Our Reference		321855-38
Your Reference	UNITS	SP7-V7
Date Sampled		27/04/2023
Type of sample		Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	102
Extracted ISTD $^{13}C_3$ *PFPeA*	%	111
Extracted ISTD $^{13}C_2$ *PFHxA*	%	103
Extracted ISTD $^{13}C_4$ *PFHpA*	%	104
Extracted ISTD $^{13}C_4$ *PFOA*	%	107
Extracted ISTD $^{13}C_5$ *PFNA*	%	125
Extracted ISTD $^{13}C_2$ *PFDA*	%	136
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	142
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	125
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	102
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	90
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	103
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	102
Extracted ISTD $^{13}C_8$ *FOSA*	%	101
Extracted ISTD d_3 *N MeFOSA*	%	103
Extracted ISTD d_5 *N EtFOSA*	%	104
Extracted ISTD d_7 *N MeFOSE*	%	104
Extracted ISTD d_9 *N EtFOSE*	%	103
Extracted ISTD d_3 *N MeFOSAA*	%	128
Extracted ISTD d_5 *N EtFOSAA*	%	122
Total Positive PFHxS & PFOS	µg/L	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01
Total Positive PFAS	µg/L	<0.01

Miscellaneous Inorg - soil				
Our Reference	UNITS	321855-35	321855-36	321855-37
Your Reference		SS-V13	SS-V6	QAQCA
Date Sampled		27/04/2023	27/04/2023	27/04/2023
Type of sample		Soil	Soil	Soil
Date prepared	-	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023
Combustibility*	%	5.9	7.7	5.9
Total Sulfur in soil/solids	%	0.053	0.045	0.055

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-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.
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.
INORG-137	Total Carbon Nitrogen Sulfur by high temperature catalytic combustion with IR detection.

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 5.4 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.
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 5.4Table 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 Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	321855-2
Date prepared	-			28/04/2023	1	28/04/2023	28/04/2023		28/04/2023	28/04/2023
Date analysed	-			28/04/2023	1	28/04/2023	28/04/2023		28/04/2023	28/04/2023
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	101	103
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	101	104
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	103	101
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	103	106
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	98	102
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	87	85
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	99	100
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	102	99
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	103	101
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	99	99
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	99	100
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	98	99
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	102	101
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	95	102
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	104	109
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	106	111
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	1	<5	<5	0	108	111
4:2 FTS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	104	104
6:2 FTS	µg/kg	0.1	Org-029	<0.1	1	0.1	0.1	0	102	103
8:2 FTS	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	103	108
10:2 FTS	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	111	115
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	101	107
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	105	106
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	1	<1	<1	0	103	106
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	1	<1	<1	0	117	124
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	1	<5	<5	0	110	119
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	107	109
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	102	100
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	100	1	100	99	1	96	100
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	100	1	98	96	2	100	98

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	321855-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	96	1	93	94	1	97	89
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	93	1	90	90	0	95	91
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	95	1	93	92	1	97	92
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	99	1	96	94	2	99	95
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	100	1	95	95	0	97	94
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	96	1	94	97	3	95	95
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	98	1	94	95	1	98	92
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	98	1	95	97	2	98	94
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	102	1	99	100	1	100	98
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	100	1	98	99	1	100	94
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	104	1	106	104	2	108	105
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	103	1	104	102	2	105	100
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	107	1	105	97	8	108	100
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	107	1	101	104	3	102	99
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	106	1	98	103	5	99	99
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	108	1	106	107	1	106	104
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	102	1	96	97	1	96	91
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	101	1	96	97	1	99	93
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	106	1	100	100	0	104	101
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	94	1	91	91	0	94	87

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	321855-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	91	1	90	89	1	98	86
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	113	1	108	110	2	104	100
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	105	1	104	106	2	103	102

QUALITY CONTROL: PFAS in Soils Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	321855-8
Date prepared	-			[NT]	7	28/04/2023	28/04/2023		28/04/2023	28/04/2023
Date analysed	-			[NT]	7	28/04/2023	28/04/2023		28/04/2023	28/04/2023
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	[NT]	7	<0.1	<0.1	0	94	100
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	[NT]	7	<0.1	<0.1	0	95	103
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	[NT]	7	<0.1	<0.1	0	96	103
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	[NT]	7	<0.1	<0.1	0	101	110
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	[NT]	7	0.2	<0.1	67	92	97
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	[NT]	7	<0.2	<0.2	0	84	87
Perfluorobutanoic acid	µg/kg	0.2	Org-029	[NT]	7	<0.2	<0.2	0	96	100
Perfluoropentanoic acid	µg/kg	0.2	Org-029	[NT]	7	<0.2	<0.2	0	94	98
Perfluorohexanoic acid	µg/kg	0.1	Org-029	[NT]	7	<0.1	<0.1	0	94	101
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	[NT]	7	<0.1	<0.1	0	96	98
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	[NT]	7	<0.1	<0.1	0	94	98
Perfluorononanoic acid	µg/kg	0.1	Org-029	[NT]	7	<0.1	<0.1	0	96	96
Perfluorodecanoic acid	µg/kg	0.5	Org-029	[NT]	7	<0.5	<0.5	0	96	100
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	[NT]	7	<0.5	<0.5	0	94	100
Perfluorododecanoic acid	µg/kg	0.5	Org-029	[NT]	7	<0.5	<0.5	0	101	109
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	[NT]	7	<0.5	<0.5	0	106	112
Perfluorotetradecanoic acid	µg/kg	5	Org-029	[NT]	7	<5	<5	0	101	109
4:2 FTS	µg/kg	0.1	Org-029	[NT]	7	<0.1	<0.1	0	99	99
6:2 FTS	µg/kg	0.1	Org-029	[NT]	7	<0.1	<0.1	0	95	101
8:2 FTS	µg/kg	0.2	Org-029	[NT]	7	<0.2	<0.2	0	102	104
10:2 FTS	µg/kg	0.2	Org-029	[NT]	7	<0.2	<0.2	0	102	107
Perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	7	<1	<1	0	98	103
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	7	<1	<1	0	100	107
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	[NT]	7	<1	<1	0	102	104
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	[NT]	7	<1	<1	0	94	124
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	[NT]	7	<5	<5	0	96	113
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	[NT]	7	<0.2	<0.2	0	103	103
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	[NT]	7	<0.2	<0.2	0	93	99
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	7	99	99	0	98	98
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	7	99	101	2	101	98

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	321855-8
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	[NT]	7	96	93	3	102	93
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	7	93	91	2	102	92
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	7	98	92	6	103	97
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	7	99	93	6	104	97
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	7	100	94	6	107	97
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	7	101	93	8	106	96
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	7	101	93	8	101	95
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	7	104	94	10	107	98
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	7	111	99	11	109	102
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	7	109	95	14	113	101
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	7	118	102	15	118	107
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	7	118	93	24	116	100
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	7	109	67	48	121	98
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	7	113	101	11	110	103
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	7	126	103	20	120	103
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	7	156	115	30	131	114
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	7	97	93	4	105	94
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	7	100	96	4	107	94
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	7	109	101	8	112	101
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	7	89	89	0	103	90

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	321855-8
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	[NT]	7	88	86	2	112	93
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	7	147	99	39	122	112
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	7	153	85	57	122	112

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	34	28/04/2023	28/04/2023		[NT]	[NT]
Date analysed	-			[NT]	34	28/04/2023	28/04/2023		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	[NT]	34	<0.2	<0.2	0	[NT]	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	[NT]	34	<0.2	<0.2	0	[NT]	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	[NT]	34	<0.2	<0.2	0	[NT]	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	[NT]	34	<0.5	<0.5	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	[NT]	34	<0.5	<0.5	0	[NT]	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	[NT]	34	<0.5	<0.5	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	[NT]	34	<0.5	<0.5	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	[NT]	34	<5	<5	0	[NT]	[NT]
4:2 FTS	µg/kg	0.1	Org-029	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
6:2 FTS	µg/kg	0.1	Org-029	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
8:2 FTS	µg/kg	0.2	Org-029	[NT]	34	<0.2	<0.2	0	[NT]	[NT]
10:2 FTS	µg/kg	0.2	Org-029	[NT]	34	<0.2	<0.2	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	34	<1	<1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	34	<1	<1	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	[NT]	34	<1	<1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	[NT]	34	<1	<1	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	[NT]	34	<5	<5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	[NT]	34	<0.2	<0.2	0	[NT]	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	[NT]	34	<0.2	<0.2	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	34	94	97	3	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	34	102	98	4	[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]	34	91	91	0	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	34	93	93	0	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	34	96	97	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	34	93	95	2	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	34	96	98	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	34	95	96	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	34	92	94	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	34	96	100	4	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	34	98	104	6	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	34	97	101	4	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	34	108	106	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	34	106	106	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	34	109	104	5	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	34	103	107	4	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	34	98	106	8	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	34	115	117	2	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	34	96	100	4	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	34	96	96	0	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	34	98	102	4	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	34	92	98	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]	34	102	103	1	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	34	110	107	3	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	34	102	104	2	[NT]	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321855-28
Date prepared	-			28/04/2023	7	28/04/2023	28/04/2023		28/04/2023	28/04/2023
Date analysed	-			28/04/2023	7	28/04/2023	28/04/2023		28/04/2023	28/04/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	108	111
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	110	103
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	110	99
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	97	83
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	106	107
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	79	64
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	110	118
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	115	114
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	108	111
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	110	123
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	107	105
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	89	90
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	97	83
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	96	76
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	7	<0.05	<0.05	0	108	93
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	7	<0.1	<0.1	0	90	91
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	7	<0.5	<0.5	0	116	116
4:2 FTS	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	114	112
6:2 FTS	µg/L	0.01	Org-029A	<0.01	7	<0.01	<0.01	0	108	108
8:2 FTS	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	125	133
10:2 FTS	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	136	135
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	7	<0.1	<0.1	0	118	122
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	7	<0.05	<0.05	0	100	99
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	7	<0.1	<0.1	0	97	98
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	7	<0.05	<0.05	0	121	101
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	7	<0.5	<0.5	0	105	100
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	90	101
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	7	<0.02	<0.02	0	108	133
Surrogate $^{13}C_8$ PFOS	%		Org-029A	100	7	100	99	1	101	99
Surrogate $^{13}C_2$ PFOA	%		Org-029A	87	7	83	84	1	93	82

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321855-28
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	89	7	90	89	1	86	88
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	97	7	105	106	1	93	107
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	102	7	97	99	2	97	92
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	95	7	92	92	0	93	85
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	86	7	89	91	2	82	87
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	102	7	101	100	1	91	97
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	97	7	101	97	4	95	95
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	110	7	115	115	0	103	111
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	116	7	122	123	1	110	117
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	106	7	119	120	1	101	121
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	114	7	137	140	2	116	138
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	110	7	122	121	1	104	108
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	81	7	89	87	2	80	77
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	82	7	85	84	1	91	98
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	89	7	100	104	4	98	111
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	85	7	93	90	3	89	90
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	94	7	91	87	4	88	80
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	94	7	97	98	1	95	92
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	100	7	101	97	4	97	97
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	97	7	103	99	4	93	104

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321855-28
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	101	7	112	108	4	107	109
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	112	7	126	126	0	105	111
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	107	7	114	116	2	108	107

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	321855-38
Date prepared	-			[NT]	37	28/04/2023	28/04/2023		28/04/2023	28/04/2023
Date analysed	-			[NT]	37	28/04/2023	28/04/2023		28/04/2023	28/04/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	[NT]	37	<0.01	<0.01	0	101	98
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	[NT]	37	<0.01	<0.01	0	100	103
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	[NT]	37	<0.01	<0.01	0	90	90
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	[NT]	37	<0.01	<0.01	0	88	89
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	[NT]	37	<0.01	0.01	0	107	100
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	[NT]	37	<0.02	<0.02	0	73	60
Perfluorobutanoic acid	µg/L	0.02	Org-029A	[NT]	37	<0.02	<0.02	0	105	100
Perfluoropentanoic acid	µg/L	0.02	Org-029A	[NT]	37	<0.02	<0.02	0	90	91
Perfluorohexanoic acid	µg/L	0.01	Org-029A	[NT]	37	<0.01	<0.01	0	107	102
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	[NT]	37	<0.01	<0.01	0	108	107
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	[NT]	37	<0.01	<0.01	0	112	108
Perfluorononanoic acid	µg/L	0.01	Org-029A	[NT]	37	<0.01	<0.01	0	92	97
Perfluorodecanoic acid	µg/L	0.02	Org-029A	[NT]	37	<0.02	<0.02	0	80	73
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	[NT]	37	<0.02	<0.02	0	82	68
Perfluorododecanoic acid	µg/L	0.05	Org-029A	[NT]	37	<0.05	<0.05	0	88	93
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	[NT]	37	<0.1	<0.1	0	89	96
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	[NT]	37	<0.5	<0.5	0	112	110
4:2 FTS	µg/L	0.01	Org-029A	[NT]	37	<0.01	<0.01	0	105	99
6:2 FTS	µg/L	0.01	Org-029A	[NT]	37	<0.01	<0.01	0	108	105
8:2 FTS	µg/L	0.02	Org-029A	[NT]	37	<0.02	<0.02	0	126	114
10:2 FTS	µg/L	0.02	Org-029A	[NT]	37	<0.02	<0.02	0	132	132
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	[NT]	37	<0.1	<0.1	0	109	105
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	[NT]	37	<0.05	<0.05	0	102	105
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	[NT]	37	<0.1	<0.1	0	105	98
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	[NT]	37	<0.05	<0.05	0	105	110
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	[NT]	37	<0.5	<0.5	0	104	103
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	[NT]	37	<0.02	<0.02	0	108	104
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	[NT]	37	<0.02	<0.02	0	124	121
Surrogate $^{13}C_8$ PFOS	%		Org-029A	[NT]	37	99	94	5	100	100
Surrogate $^{13}C_2$ PFOA	%		Org-029A	[NT]	37	97	103	6	105	99

QUALITY CONTROL: PFAS in ASLP Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	321855-38
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	[NT]	37	97	98	1	99	101
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	[NT]	37	108	114	5	110	110
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	[NT]	37	92	96	4	88	93
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	[NT]	37	99	97	2	98	102
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	[NT]	37	106	107	1	107	108
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	[NT]	37	103	106	3	101	101
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	[NT]	37	103	100	3	96	98
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	[NT]	37	109	102	7	97	102
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	[NT]	37	119	117	2	120	118
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	[NT]	37	139	130	7	119	132
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	[NT]	37	136	132	3	126	144
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	[NT]	37	115	120	4	118	118
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	[NT]	37	95	91	4	97	95
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	[NT]	37	92	91	1	96	98
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	[NT]	37	99	99	0	103	107
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	[NT]	37	96	98	2	93	109
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	[NT]	37	95	96	1	88	95
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	[NT]	37	101	103	2	100	98
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	[NT]	37	102	103	1	100	103
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	[NT]	37	107	103	4	106	105

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	321855-38
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	[NT]	37	106	102	4	97	102
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	[NT]	37	125	124	1	100	118
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	[NT]	37	124	117	6	112	123

QUALITY CONTROL: Miscellaneous Inorg - soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			01/05/2023	[NT]	[NT]	[NT]	[NT]	01/05/2023	[NT]
Date analysed	-			01/05/2023	[NT]	[NT]	[NT]	[NT]	01/05/2023	[NT]
Combustibility*	%	0.1	Inorg-092	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Total Sulfur in soil/solids	%	0.01	INORG-137	<0.01	[NT]	[NT]	[NT]	[NT]	80	[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).

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 321855-21; Chrysotile asbestos identified in 0.0372g of rope insulation

CHAIN OF CUSTODY FORM - Client

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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
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: 1 DAY TURNAROUND

Sample information					Tests Required															Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Combustible Content and % Sulfur	PFAS	PFAS ASLP	ASBESTOS NEPM (AF/FA Method)												Provide as much information about the sample as you can
1	SP7-V1		27.04.23	SOIL		X	X	X												
2	QAQC1					X	X	X												
Seidout	QAQC2				PLEASE FORWARD TO ALS (1 DAY) FOR PFAS, PFAS ASLP and ASBESTOS NEPM															
3	SP7-V2					X	X	X												
4	SP7-V3					X	X	X												
5	SP7-V4					X	X	X												
6	SP7-V5					X	X	X												
7	SP7-V6					X	X	X												
8	SP7-V8					X	X	X												
9	SP6-V1					X	X	X												
10	SP6-V2							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:	Sarah P
Date & Time:	27/04/23 15:30	Date & Time:	27/04/23, 1800
Signature:		Signature:	

Lab Use Only

Job number:	321855
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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Adelaide Office - Envirolab Services
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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
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: 1 DAY TURN AROUND

Sample Information					Tests Required															Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Combustible Content and % Sulfur	PFAS	PFAS ASLP	ASBESTOS NEPM (AF/FA mhw)												Provide as much information about the sample as you can
11	SP6-V3		22.04.23	Soil				X												
12	SP6-V4		↓	↓				X												
13	SP6-V5							X												
14	SP6-V6							X												
15	SP6-V7							X												
16	SP6-V8							X												
17	SP5-V1							X												
18	SP5 V2							X												
19	SP5 -V3							X												
20	SP5 -V4							X												
21	SP5 -V5							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):	ELSSYD
Print Name:	VICTOR ARIAS	Print Name:	Sarah P
Date & Time:	22/04/23 15:30	Date & Time:	27/04/23, 1800
Signature:		Signature:	

Lab Use Only

Job number:	321855
Temperature:	18°C
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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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:	1 DAY TURN AROUND
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	Combustible Content and % Sulfur	PFAS	PFAS ASLP	ASBESTOS NEPM (AF/FA Method)	Provide as much information about the sample as you can
22	SP5-V6							X	
23	SP5-V7							X	
24	SP5-V6							X	
25	SP3-V1					X	X	X	
26	QAQC3					X	X	X	
send dart	QAQC4					X	X	X	PLEASE FORWARD TO ALS (1 DAY) FOR PFAS, PFAS ASLP, ASBESTOS NEPM
27	TB					X	X	X	
28	SP3-V2					X	X	X	
29	SP3-V3					X	X	X	
30	SP3-V4					X	X	X	
31	SP3-V5					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:	Sarah P
Date & Time:	27/04/23 15:30	Date & Time:	27/04/23, 1800
Signature:		Signature:	

Lab Use Only

Job number:	321855
Temperature:	18°C
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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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: 1 DAY TURN AROUND	

Sample Information					Tests Required				Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Combustible Content and % Sulfur	PFAS	PFAS AHD	ASSESS TO ASSESS (PFHxA only)	Provide as much information about the sample as you can
32	SP3-V6					X	X	X	
33	SP3-V7					X	X	X	
34	SP3-V8					X	X	X	
35	SS-V13				X	X	X	X	
36	SS-V6				X	X	X		
37	QAQCA				X	X	X		
(extra) 38	SP7-V7								

☐ *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: 321855	Cooling: Ice / Ice pack / None
Date & Time: 22/6/23 15:30	Date & Time:	Temperature:	Security seal: Intact / Broken / None
Signature:	Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

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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

SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias, Tristan Goodbody

Sample Login Details

Your reference	CES170608-GPM
Envirolab Reference	321855
Date Sample Received	27/04/2023
Date Instructions Received	27/04/2023
Date Results Expected to be Reported	01/05/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	38 Soil
Turnaround Time Requested	1 day
Temperature on Receipt (°C)	18
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
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Sample ID	PFAS in Soils Extended	Asbestos ID - soils NEPM - ASB-001	PFAS in ASLP Extended	Combustibility*	Total Sulfur in soil/solids
SP7-V1	✓	✓	✓		
QAQC1	✓	✓	✓		
SP7-V2	✓	✓	✓		
SP7-V3	✓	✓	✓		
SP7-V4	✓	✓	✓		
SP7-V5	✓	✓	✓		
SP7-V6	✓	✓	✓		
SP7-V8	✓	✓	✓		
SP6-V1		✓			
SP6-V2		✓			
SP6-V3		✓			
SP6-V4		✓			
SP6-V5		✓			
SP6-V6		✓			
SP6-V7		✓			
SP6-V8		✓			
SP5-V1		✓			
SP5-V2		✓			
SP5-V3		✓			
SP5-V4		✓			
SP5-V5		✓			
SP5-V6		✓			
SP5-V7		✓			
SP5-V8		✓			
SP3-V1	✓	✓	✓		
QAQC3	✓	✓	✓		
TB	✓				
SP3-V2	✓	✓	✓		
SP3-V3	✓	✓	✓		
SP3-V4	✓	✓	✓		
SP3-V5	✓	✓	✓		
SP3-V6	✓	✓	✓		

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

Sample ID	PFAS in Soils Extended	Asbestos ID - soils NEPM - ASB-001	PFAS in ASLP Extended	Combustibility*	Total Sulfur in soil/solids
SP3-V7	✓	✓	✓		
SP3-V8	✓	✓	✓		
SS-V13	✓	✓	✓	✓	✓
SS-V6	✓	✓	✓	✓	✓
QAQCA	✓	✓	✓	✓	✓
SP7-V7	✓	✓	✓		

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2314037**	Page	: 1 of 8
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	: 28-Apr-2023 15:00
Order number	: ----	Date Analysis Commenced	: 29-Apr-2023
C-O-C number	: ----	Issue Date	: 02-May-2023 13:36
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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*
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- 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.
- 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.
- EN60-DI: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QAQC2	QAQC4	----	----	----
				Sampling date / time	27-Apr-2023 00:00	27-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2314037-001	ES2314037-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QAQC2	QAQC4	----	----	----
				Sampling date / time	27-Apr-2023 00:00	27-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2314037-001	ES2314037-002	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**102**	**105**	----	----	----
13C8-PFOA	----	0.02	%		**102**	**103**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC2	QAQC4	----	----	----
			Sampling date / time	27-Apr-2023 00:00	27-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2314037-001	ES2314037-002	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**10.9**	**2.8**	----	----	----
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	**722**	**815**	----	----	----
Synthetic Mineral Fibre	----	-	--	**No**	**No**	----	----	----
Organic Fibre	----	-	--	**No**	**No**	----	----	----
APPROVED IDENTIFIER:	----	-	--	**B.SCHRADER**	**B.SCHRADER**	----	----	----
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	**0.722**	**0.815**	----	----	----
ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	<0.0004	----	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**6.2**	**6.3**	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	QAQC4	----	----	----
				Sampling date / time	27-Apr-2023 00:00	27-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2314037-001	ES2314037-002	--------	--------	--------
					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	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg		<0.0005	<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	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC2	QAQC4	----	----	----
				Sampling date / time	27-Apr-2023 00:00	27-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2314037-001	ES2314037-002	--------	--------	--------
					Result	Result	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued									
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	<0.0002	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**91.0**	**90.0**	----	----	----
13C8-PFOA	----	0.0002	%		**114**	**114**	----	----	----

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 - 27-Apr-2023 00:00	A soil sample.
EA200: Description	QAQC4 - 27-Apr-2023 00:00	A soil sample.

Surrogate Control Limits

Sub-Matrix: DI WATER LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
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

QUALITY CONTROL REPORT

Work Order	: **ES2314037**	Page	: 1 of 8
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	: 28-Apr-2023
Order number	: ----	Date Analysis Commenced	: 29-Apr-2023
C-O-C number	: ----	Issue Date	: 02-May-2023
Sampler	: VA/TG		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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: 5019762)									
ES2313937-003	Anonymous	EA055: Moisture Content	----	0.1	%	5.1	5.4	4.9	0% - 20%
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5019593)									
ES2312044-004	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
ES2313468-001	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
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5019593)									
ES2312044-004	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0025	<0.0025	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: 5019593) - continued									
ES2312044-004	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0062	<0.0062	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.012	<0.012	0.0	No Limit
ES2313468-001	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
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5019593)									
ES2312044-004	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0062	<0.0062	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0062	<0.0062	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0062	<0.0062	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0062	<0.0062	0.0	No Limit
ES2313468-001	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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5019593)									

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: 5019593) - continued									
ES2312044-004	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0025	<0.0025	0.0	No Limit
ES2313468-001	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

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: 5019593)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	82.0	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.2	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.0	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	78.4	68.0	136
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5019593)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	84.3	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	92.0	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	99.6	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	103	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	92.0	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	91.6	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	100	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	88.0	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5019593)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	92.0	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.2	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	91.3	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	85.9	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	80.8	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	86.8	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5019593)								

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: 5019593) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	104	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	100	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	112	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	98.8	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5020600)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	85.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	96.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	91.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	93.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	86.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	91.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5020600)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	88.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	89.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	98.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	93.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	92.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.4	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5020600)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	84.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.3	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	95.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	86.8	57.6	145

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
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5020600) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	94.0	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	83.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5020600)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	91.4	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	102	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
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	107	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: **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: 5019593)							
ES2312044-004	Anonymous	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	84.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	92.0	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	100	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	88.0	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	112	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5019593)							
ES2312044-004	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	81.6	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	100	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	84.0	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	88.0	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	96.0	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	100	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.00125 mg/kg	92.0	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.00125 mg/kg	92.0	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	92.0	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.00125 mg/kg	80.0	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.00312 mg/kg	96.2	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5019593)							
ES2312044-004	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	80.0	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: 5019593) - continued							
ES2312044-004	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	94.6	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	91.3	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	94.6	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	84.9	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	80.0	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	88.0	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5019593)							
ES2312044-004	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	92.0	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	76.0	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	84.0	69.2	143

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2314037**	Page	: 1 of 5
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES170608-GPM	Date Samples Received	: 28-Apr-2023
Site	: ----	Issue Date	: 02-May-2023
Sampler	: VA/TG	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
	0				
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	11	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	0	11	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

Method / ***Container*** / Client Sample ID(s)	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EA055: Moisture Content (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
QAQC2, QAQC4	**27-Apr-2023**	**----**	----	----	**01-May-2023**	11-May-2023	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)							
QAQC2, QAQC4	**27-Apr-2023**	**----**	----	----	**02-May-2023**	24-Oct-2023	✓
EA200N: Asbestos Quantification (non-NATA)							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200N)							
QAQC2, QAQC4	**27-Apr-2023**	**----**	----	----	**02-May-2023**	24-Oct-2023	✓
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)							
QAQC2, QAQC4	**27-Apr-2023**	**29-Apr-2023**	24-Oct-2023	✓	**----**	----	----
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QAQC2, QAQC4	**27-Apr-2023**	**01-May-2023**	24-Oct-2023	✓	**02-May-2023**	10-Jun-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
QAQC2, QAQC4	**27-Apr-2023**	**01-May-2023**	24-Oct-2023	✓	**02-May-2023**	10-Jun-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
QAQC2, QAQC4	**27-Apr-2023**	**01-May-2023**	24-Oct-2023	✓	**02-May-2023**	10-Jun-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
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**27-Apr-2023**	**01-May-2023**	24-Oct-2023	✓	**02-May-2023**	10-Jun-2023	✓
EP231P: PFAS Sums								
HDPE Soil Jar (EP231X)								
QAQC2,	QAQC4	**27-Apr-2023**	**01-May-2023**	24-Oct-2023	✓	**02-May-2023**	10-Jun-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
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
QAQC2,	QAQC4	**29-Apr-2023**	**01-May-2023**	26-Oct-2023	✓	**02-May-2023**	26-Oct-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
QAQC2,	QAQC4	**29-Apr-2023**	**01-May-2023**	26-Oct-2023	✓	**02-May-2023**	26-Oct-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
QAQC2,	QAQC4	**29-Apr-2023**	**01-May-2023**	26-Oct-2023	✓	**02-May-2023**	26-Oct-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
QAQC2,	QAQC4	**29-Apr-2023**	**01-May-2023**	26-Oct-2023	✓	**02-May-2023**	26-Oct-2023	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
QAQC2,	QAQC4	**29-Apr-2023**	**01-May-2023**	26-Oct-2023	✓	**02-May-2023**	26-Oct-2023	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	11	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	11	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
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).
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	SOIL	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
Deionised Water Leach - Plastic Leaching Vessel	EN60-DIa-P	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	SOIL	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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ENVIROLAB GROUP
National phone number 1300 424 344

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
(02) 99

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16-18 H
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Melbourne Lab
25 Res
(03) 9

Adelaide Lab
7a The
(08) 7

Brisbane Lab
20a, 1
(07) 3

Darwin Lab
Unit 2
(08) 8

Environmental Division Sydney
Work Order Reference
ES2314037

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: 1 DAY TURNAROUND

Sample Information					Tests Required					Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Combustible Content and % Sulfur	PFAS	PFAS ASLP	ASBESTOS NEPM (AF/FA Method)		Provide as much information about the sample as you can
1	SP7-V1		27.04.23	SOIL		X	X	X		
2	QAQC1					X	X	X		
sendout	QAQC2				PLEASE FORWARD TO ALS (1 DAY) FOR PFAS, PFAS ASLP and ASBESTOS NEPM	X	X	X		
3	SP7-V3					X	X	X		
4	SP7-V3					X	X	X		
5	SP7-V4					X	X	X		
6	SP7-V5					X	X	X		
7	SP7-V6					X	X	X		
8	SP7-V8					X	X	X		
9	SP6-V1					X	X	X		
10	SP6-V2					X	X	X		

TAT

☐ *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:	27/04/23 15:30
Signature:	

Received by (Company):	ELS SYD
Print Name:	Sarah P
Date & Time:	27/04/23, 1800
Signature:	

Lab Use Only

Job number: 321855	Cooling: Ice / Ice pack / None
Temperature: 18°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Relinquished by ELS SYD
CM
28/4. 1200

Rec: Jack 28/04/23 1500

CHAIN OF CUSTODY FORM - Client

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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:	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:	1 DAY TURN AROUND
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	Combustible Content and % Sulfur	PFAS	PFAS ASLP	ASBESTOS NEPM (AF/FA Method)	Provide as much information about the sample as you can
22	SP5-V6							X	
23	SP5-V7							X	
24	SP5-V8							X	
25	SP3-V1					X	X	X	
26	QAQC3					X	X	X	
(2) sendart	QAQC4					PLEASE FORWARD TO ALS (1 DAY) FOR PFAS, PFAS ASLP, ASBESTOS NEPM			
27	TB					X	X	X	
28	SP3-V2					X	X	X	
29	SP3-V3					X	X	X	
30	SP3-V4					X	X	X	
31	SP3-V5					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:	Sarah P
Date & Time:	27/04/23 15:30	Date & Time:	27/04/23, 1800
Signature:		Signature:	

Lab Use Only

Job number: 321855	Cooling: Ice / Ice pack / None
Temperature: 18°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Relinquished by ELS SYD CW 28/4. 1200

Rec: Jack 28/04/23 1500

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 321970

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	31 Soil
Date samples received	28/04/2023
Date completed instructions received	28/04/2023

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	02/05/2023
Date of Issue	02/05/2023
Reissue Details	This report replaces R00 created on 02/05/2023 due to: Sample ID Amended (Client Request)

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Dragana Tomas, Senior Chemist
Greta Petzold, Operation Manager
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		321970-22	321970-23	321970-24	321970-25	321970-26
Your Reference	UNITS	T_V1B	QAQC9	T_V2B	T_V1W	T_V2W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
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	%	114	99	111	109	111

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		321970-27	321970-28	321970-30	321970-31
Your Reference	UNITS	T_V3W	T_V4W	TB	TS
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	[NA]
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	[NA]
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	100%
Toluene	mg/kg	<0.5	<0.5	<0.5	100%
Ethylbenzene	mg/kg	<1	<1	<1	100%
m+p-xylene	mg/kg	<2	<2	<2	101%
o-Xylene	mg/kg	<1	<1	<1	100%
Naphthalene	mg/kg	<1	<1	<1	[NA]
Total +ve Xylenes	mg/kg	<1	<1	<1	[NT]
Surrogate aaa-Trifluorotoluene	%	96	111	119	100

svTRH (C10-C40) in Soil						
Our Reference		321970-22	321970-23	321970-24	321970-25	321970-26
Your Reference	UNITS	T_V1B	QAQC9	T_V2B	T_V1W	T_V2W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
TRH C_{10} - C_{14}	mg/kg	58	62	88	<50	<50
TRH C_{15} - C_{28}	mg/kg	140	140	180	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	200	200	270	<50	<50
TRH >C_{10} -C_{16}	mg/kg	110	120	160	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	110	120	160	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	110	120	270	<50	<50
Surrogate o-Terphenyl	%	95	91	95	83	82

svTRH (C10-C40) in Soil			
Our Reference		321970-27	321970-28
Your Reference	UNITS	T_V3W	T_V4W
Date Sampled		28/04/2023	28/04/2023
Type of sample		Soil	Soil
Date extracted	-	28/04/2023	28/04/2023
Date analysed	-	29/04/2023	29/04/2023
TRH C_{10} - C_{14}	mg/kg	140	<50
TRH C_{15} - C_{28}	mg/kg	280	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100
Total +ve TRH (C10-C36)	mg/kg	430	<50
TRH >C_{10} -C_{16}	mg/kg	270	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	270	<50
TRH >C_{16} -C_{34}	mg/kg	150	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	420	<50
Surrogate o-Terphenyl	%	105	82

Moisture						
Our Reference		321970-1	321970-2	321970-3	321970-4	321970-5
Your Reference	UNITS	AEC4-V1B	QAQC5	AEC4-V2B	AEC4-V3B	AEC4-V4B
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Moisture	%	12	16	18	15	20

Moisture						
Our Reference		321970-6	321970-7	321970-8	321970-9	321970-10
Your Reference	UNITS	AEC4-V5B	AEC4-V6B	AEC4-V7B	AEC4-V8B	AEC4-V9B
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Moisture	%	16	17	11	13	7.9

Moisture						
Our Reference		321970-11	321970-12	321970-13	321970-14	321970-15
Your Reference	UNITS	AEC4-V1W	QAQC7	AEC4-V2W	AEC4-V3W	AEC4-V4W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Moisture	%	7.1	8.3	11	12	9.2

Moisture						
Our Reference		321970-16	321970-17	321970-18	321970-19	321970-20
Your Reference	UNITS	AEC4-V5W	AEC4-V6W	AEC4-V7W	AEC4-V8W	AEC4-V9W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Moisture	%	19	19	8.0	5.9	2.3

Moisture						
Our Reference		321970-21	321970-22	321970-23	321970-24	321970-25
Your Reference	UNITS	AEC4-V10W	T_V1B	QAQC9	T_V2B	T_V1W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Moisture	%	7.7	17	17	17	17

Moisture				
Our Reference		321970-26	321970-27	321970-28
Your Reference	UNITS	T_V2W	T_V3W	T_V4W
Date Sampled		28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil
Date prepared	-	28/04/2023	28/04/2023	28/04/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023
Moisture	%	16	17	16

PFAS in Soils Extended						
Our Reference		321970-1	321970-2	321970-3	321970-4	321970-5
Your Reference	UNITS	AEC4-V1B	QAQC5	AEC4-V2B	AEC4-V3B	AEC4-V4B
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
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	0.4	0.2	1.2	<0.1	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	4.3	<0.1	2.3
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	0.4	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.3	<0.2	0.9	<0.2	0.2
Perfluorohexanoic acid	µg/kg	0.4	0.2	1.0	<0.1	0.2
Perfluoroheptanoic acid	µg/kg	0.1	<0.1	0.4	<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*	%	93	96	96	98	97
Surrogate $^{13}C_2$ *PFOA*	%	100	99	102	102	94
Extracted ISTD $^{13}C_3$ *PFBS*	%	96	95	96	100	92
Extracted ISTD $^{18}O_2$ *PFHxS*	%	91	97	92	97	90
Extracted ISTD $^{13}C_4$ *PFOS*	%	99	96	94	96	93
Extracted ISTD $^{13}C_4$ *PFBA*	%	107	99	96	99	93

PFAS in Soils Extended						
Our Reference		321970-1	321970-2	321970-3	321970-4	321970-5
Your Reference	UNITS	AEC4-V1B	QAQC5	AEC4-V2B	AEC4-V3B	AEC4-V4B
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	102	98	99	99	94
Extracted ISTD $^{13}C_2$ *PFHxA*	%	99	97	95	99	92
Extracted ISTD $^{13}C_4$ *PFHpA*	%	90	92	92	94	89
Extracted ISTD $^{13}C_4$ *PFOA*	%	102	101	97	100	98
Extracted ISTD $^{13}C_5$ *PFNA*	%	95	93	91	97	93
Extracted ISTD $^{13}C_2$ *PFDA*	%	91	98	95	95	93
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	108	104	102	101	97
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	108	99	100	101	100
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	118	108	113	117	104
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	97	97	96	95	92
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	102	99	100	98	92
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	93	99	100	97	96
Extracted ISTD $^{13}C_8$ *FOSA*	%	102	99	96	99	94
Extracted ISTD d_3 *N MeFOSA*	%	96	92	90	93	91
Extracted ISTD d_5 *N EtFOSA*	%	95	91	90	87	92
Extracted ISTD d_7 *N MeFOSE*	%	98	90	93	96	91
Extracted ISTD d_9 *N EtFOSE*	%	104	97	96	97	93
Extracted ISTD d_3 *N MeFOSAA*	%	80	81	88	93	83
Extracted ISTD d_5 *N EtFOSAA*	%	89	89	94	97	87
Total Positive PFHxS & PFOS	µg/kg	0.4	0.2	5.5	<0.1	2.5
Total Positive PFOS & PFOA	µg/kg	<0.1	<0.1	4.4	<0.1	2.3
Total Positive PFAS	µg/kg	1.1	0.4	8.3	<0.1	2.9

PFAS in Soils Extended						
Our Reference		321970-6	321970-7	321970-8	321970-9	321970-10
Your Reference	UNITS	AEC4-V5B	AEC4-V6B	AEC4-V7B	AEC4-V8B	AEC4-V9B
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
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	0.4	0.2	<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	3.5	<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	0.9	<0.2	0.8	<0.2
Perfluoropentanoic acid	µg/kg	0.2	4.7	<0.2	5.7	0.4
Perfluorohexanoic acid	µg/kg	0.3	3.1	<0.1	2.5	0.3
Perfluoroheptanoic acid	µg/kg	<0.1	0.8	<0.1	1.4	<0.1
Perfluorooctanoic acid PFOA	µg/kg	<0.1	0.3	<0.1	0.5	<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	27	<0.1	3.5	<0.1
8:2 FTS	µg/kg	<0.2	<0.2	<0.2	1	<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	98	94	97	97
Surrogate $^{13}C_2$ *PFOA*	%	102	97	101	101	102
Extracted ISTD $^{13}C_3$ *PFBS*	%	94	94	95	97	99
Extracted ISTD $^{18}O_2$ *PFHxS*	%	89	90	91	93	97
Extracted ISTD $^{13}C_4$ *PFOS*	%	90	92	97	95	99
Extracted ISTD $^{13}C_4$ *PFBA*	%	88	96	96	96	98

PFAS in Soils Extended						
Our Reference		321970-6	321970-7	321970-8	321970-9	321970-10
Your Reference	UNITS	AEC4-V5B	AEC4-V6B	AEC4-V7B	AEC4-V8B	AEC4-V9B
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	90	96	96	95	99
Extracted ISTD $^{13}C_2$ *PFHxA*	%	89	95	99	97	100
Extracted ISTD $^{13}C_4$ *PFHpA*	%	85	90	91	92	95
Extracted ISTD $^{13}C_4$ *PFOA*	%	91	97	97	97	101
Extracted ISTD $^{13}C_5$ *PFNA*	%	85	93	93	94	96
Extracted ISTD $^{13}C_2$ *PFDA*	%	89	96	96	94	99
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	94	102	105	103	106
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	91	104	102	101	104
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	95	106	109	105	119
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	83	93	93	94	98
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	91	92	97	97	94
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	88	101	101	94	104
Extracted ISTD $^{13}C_8$ *FOSA*	%	96	95	96	97	101
Extracted ISTD d_3 *N MeFOSA*	%	89	89	92	92	95
Extracted ISTD d_5 *N EtFOSA*	%	88	87	89	92	93
Extracted ISTD d_7 *N MeFOSE*	%	87	90	89	90	97
Extracted ISTD d_9 *N EtFOSE*	%	95	90	90	95	98
Extracted ISTD d_3 *N MeFOSAA*	%	48	89	85	89	85
Extracted ISTD d_5 *N EtFOSAA*	%	56	90	89	90	91
Total Positive PFHxS & PFOS	µg/kg	0.4	3.7	<0.1	0.1	<0.1
Total Positive PFOS & PFOA	µg/kg	<0.1	3.9	<0.1	0.6	<0.1
Total Positive PFAS	µg/kg	0.9	41	<0.1	16	0.7

PFAS in Soils Extended						
Our Reference		321970-11	321970-12	321970-13	321970-14	321970-15
Your Reference	UNITS	AEC4-V1W	QAQC7	AEC4-V2W	AEC4-V3W	AEC4-V4W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
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	0.2	0.3	0.2	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	<0.1	<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*	%	97	98	99	100	99
Surrogate $^{13}C_2$ *PFOA*	%	101	98	97	100	102
Extracted ISTD $^{13}C_3$ *PFBS*	%	99	95	95	94	94
Extracted ISTD $^{18}O_2$ *PFHxS*	%	95	95	92	92	95
Extracted ISTD $^{13}C_4$ *PFOS*	%	99	96	95	94	92
Extracted ISTD $^{13}C_4$ *PFBA*	%	101	97	97	98	98

PFAS in Soils Extended						
Our Reference		321970-11	321970-12	321970-13	321970-14	321970-15
Your Reference	UNITS	AEC4-V1W	QAQC7	AEC4-V2W	AEC4-V3W	AEC4-V4W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	102	100	100	100	99
Extracted ISTD $^{13}C_2$ *PFHxA*	%	100	99	95	95	95
Extracted ISTD $^{13}C_4$ *PFHpA*	%	97	93	93	92	93
Extracted ISTD $^{13}C_4$ *PFOA*	%	102	99	101	98	96
Extracted ISTD $^{13}C_5$ *PFNA*	%	98	97	96	96	96
Extracted ISTD $^{13}C_2$ *PFDA*	%	102	99	96	95	95
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	105	105	99	100	100
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	103	105	102	98	100
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	113	121	104	90	100
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	100	95	97	96	101
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	100	100	102	99	96
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	112	102	101	102	99
Extracted ISTD $^{13}C_8$ *FOSA*	%	102	100	93	97	94
Extracted ISTD d_3 *N MeFOSA*	%	100	95	90	88	92
Extracted ISTD d_5 *N EtFOSA*	%	99	83	88	87	89
Extracted ISTD d_7 *N MeFOSE*	%	91	91	90	92	96
Extracted ISTD d_9 *N EtFOSE*	%	100	92	95	96	98
Extracted ISTD d_3 *N MeFOSAA*	%	97	93	97	99	96
Extracted ISTD d_5 *N EtFOSAA*	%	96	97	93	94	93
Total Positive PFHxS & PFOS	µg/kg	0.4	0.4	0.2	0.2	<0.1
Total Positive PFOS & PFOA	µg/kg	0.2	0.3	0.2	0.2	<0.1
Total Positive PFAS	µg/kg	0.4	0.4	0.2	0.2	<0.1

PFAS in Soils Extended						
Our Reference		321970-16	321970-17	321970-18	321970-19	321970-20
Your Reference	UNITS	AEC4-V5W	AEC4-V6W	AEC4-V7W	AEC4-V8W	AEC4-V9W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
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	0.2	<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	1.2
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	0.4	<0.2	<0.2
Perfluorohexanoic acid	µg/kg	0.2	<0.1	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	<0.1	<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	<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	97	97	98	100
Surrogate $^{13}C_2$ *PFOA*	%	100	101	101	105	100
Extracted ISTD $^{13}C_3$ *PFBS*	%	93	96	94	101	98
Extracted ISTD $^{18}O_2$ *PFHxS*	%	93	93	93	102	95
Extracted ISTD $^{13}C_4$ *PFOS*	%	91	95	95	99	93
Extracted ISTD $^{13}C_4$ *PFBA*	%	92	94	95	102	97

PFAS in Soils Extended						
Our Reference		321970-16	321970-17	321970-18	321970-19	321970-20
Your Reference	UNITS	AEC4-V5W	AEC4-V6W	AEC4-V7W	AEC4-V8W	AEC4-V9W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	94	96	99	104	98
Extracted ISTD $^{13}C_2$ *PFHxA*	%	93	95	97	100	97
Extracted ISTD $^{13}C_4$ *PFHpA*	%	89	92	93	99	93
Extracted ISTD $^{13}C_4$ *PFOA*	%	91	95	98	98	97
Extracted ISTD $^{13}C_5$ *PFNA*	%	91	96	97	101	99
Extracted ISTD $^{13}C_2$ *PFDA*	%	93	95	97	100	98
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	97	96	99	105	100
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	97	103	100	101	103
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	99	103	101	105	106
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	92	96	99	104	93
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	95	99	106	103	98
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	98	97	99	104	101
Extracted ISTD $^{13}C_8$ *FOSA*	%	94	94	95	100	95
Extracted ISTD d_3 *N MeFOSA*	%	87	88	88	97	93
Extracted ISTD d_5 *N EtFOSA*	%	87	84	89	95	90
Extracted ISTD d_7 *N MeFOSE*	%	91	89	90	97	91
Extracted ISTD d_9 *N EtFOSE*	%	98	97	98	101	96
Extracted ISTD d_3 *N MeFOSAA*	%	65	84	77	100	99
Extracted ISTD d_5 *N EtFOSAA*	%	68	83	78	100	95
Total Positive PFHxS & PFOS	µg/kg	0.1	<0.1	<0.1	0.2	1.2
Total Positive PFOS & PFOA	µg/kg	0.1	<0.1	<0.1	<0.1	1.3
Total Positive PFAS	µg/kg	0.3	<0.1	0.7	0.3	1.5

PFAS in Soils Extended			
Our Reference		321970-21	321970-29
Your Reference	UNITS	AEC4-V10W	TB_PFAS
Date Sampled		28/04/2023	28/04/2023
Type of sample		Soil	Soil
Date prepared	-	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023
Perfluorobutanesulfonic acid	µg/kg	<0.1	<0.1
Perfluoropentanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.3	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	5.3	<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	0.2	<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*	%	98	102
Surrogate $^{13}C_2$ *PFOA*	%	104	101
Extracted ISTD $^{13}C_3$ *PFBS*	%	99	97
Extracted ISTD $^{18}O_2$ *PFHxS*	%	99	99
Extracted ISTD $^{13}C_4$ *PFOS*	%	96	96
Extracted ISTD $^{13}C_4$ *PFBA*	%	101	102

PFAS in Soils Extended			
Our Reference		321970-21	321970-29
Your Reference	UNITS	AEC4-V10W	TB_PFAS
Date Sampled		28/04/2023	28/04/2023
Type of sample		Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	103	104
Extracted ISTD $^{13}C_2$ *PFHxA*	%	99	102
Extracted ISTD $^{13}C_4$ *PFHpA*	%	96	100
Extracted ISTD $^{13}C_4$ *PFOA*	%	98	101
Extracted ISTD $^{13}C_5$ *PFNA*	%	99	102
Extracted ISTD $^{13}C_2$ *PFDA*	%	100	103
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	102	102
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	105	105
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	104	106
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	101	105
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	104	103
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	108	109
Extracted ISTD $^{13}C_8$ *FOSA*	%	97	99
Extracted ISTD d_3 *N MeFOSA*	%	91	96
Extracted ISTD d_5 *N EtFOSA*	%	91	92
Extracted ISTD d_7 *N MeFOSE*	%	90	96
Extracted ISTD d_9 *N EtFOSE*	%	98	100
Extracted ISTD d_3 *N MeFOSAA*	%	101	107
Extracted ISTD d_5 *N EtFOSAA*	%	99	103
Total Positive PFHxS & PFOS	µg/kg	5.6	<0.1
Total Positive PFOS & PFOA	µg/kg	5.3	<0.1
Total Positive PFAS	µg/kg	5.8	<0.1

PFAS in ASLP Extended						
Our Reference		321970-1	321970-2	321970-3	321970-4	321970-5
Your Reference	UNITS	AEC4-V1B	QAQC5	AEC4-V2B	AEC4-V3B	AEC4-V4B
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
pH of final Leachate	pH units	6.4	6.0	5.8	5.6	6.0
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	0.04	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	0.11	<0.01	0.08
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	0.03	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	0.01	0.04	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	102	101	97	97	100
Surrogate $^{13}C_2$ PFOA	%	114	110	113	112	106
Extracted ISTD $^{13}C_3$ *PFBS*	%	109	107	105	111	113
Extracted ISTD $^{18}O_2$ *PFHxS*	%	102	100	98	97	100
Extracted ISTD $^{13}C_4$ *PFOS*	%	103	106	106	108	105

PFAS in ASLP Extended						
Our Reference		321970-1	321970-2	321970-3	321970-4	321970-5
Your Reference	UNITS	AEC4-V1B	QAQC5	AEC4-V2B	AEC4-V3B	AEC4-V4B
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	111	113	110	113	110
Extracted ISTD $^{13}C_3$ *PFPeA*	%	108	104	108	102	104
Extracted ISTD $^{13}C_2$ *PFHxA*	%	105	106	106	102	111
Extracted ISTD $^{13}C_4$ *PFHpA*	%	122	120	120	123	121
Extracted ISTD $^{13}C_4$ *PFOA*	%	103	108	104	101	103
Extracted ISTD $^{13}C_5$ *PFNA*	%	110	106	106	102	105
Extracted ISTD $^{13}C_2$ *PFDA*	%	107	113	108	101	100
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	112	109	98	113	108
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	101	107	106	114	110
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	88	99	92	94	95
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	100	96	93	99	97
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	87	95	89	86	88
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	97	100	97	96	100
Extracted ISTD $^{13}C_8$ *FOSA*	%	118	122	122	119	122
Extracted ISTD d_3 *N MeFOSA*	%	107	108	109	106	109
Extracted ISTD d_5 *N EtFOSA*	%	112	110	115	110	117
Extracted ISTD d_7 *N MeFOSE*	%	105	105	101	106	104
Extracted ISTD d_9 *N EtFOSE*	%	89	91	87	88	93
Extracted ISTD d_3 *N MeFOSAA*	%	125	132	132	134	126
Extracted ISTD d_5 *N EtFOSAA*	%	124	119	122	132	128
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	0.16	<0.01	0.08
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	0.11	<0.01	0.08
Total Positive PFAS	µg/L	<0.01	0.01	0.24	<0.01	0.08

PFAS in ASLP Extended						
Our Reference		321970-6	321970-7	321970-8	321970-9	321970-10
Your Reference	UNITS	AEC4-V5B	AEC4-V6B	AEC4-V7B	AEC4-V8B	AEC4-V9B
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
pH of final Leachate	pH units	5.7	5.8	5.1	5.8	5.4
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.02	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<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
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	0.03	<0.02	0.04	<0.02
Perfluoropentanoic acid	µg/L	<0.02	0.22	<0.02	0.32	<0.02
Perfluorohexanoic acid	µg/L	0.01	0.14	<0.01	0.13	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	0.03	<0.01	0.06	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	0.02	<0.01	0.02	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<0.01	1.2	<0.01	0.15	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	0.03	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	102	101	100	96	101
Surrogate $^{13}C_2$ PFOA	%	109	106	116	112	118
Extracted ISTD $^{13}C_3$ *PFBS*	%	108	107	107	106	104
Extracted ISTD $^{18}O_2$ *PFHxS*	%	95	112	105	105	101
Extracted ISTD $^{13}C_4$ *PFOS*	%	102	103	102	104	103

PFAS in ASLP Extended						
Our Reference		321970-6	321970-7	321970-8	321970-9	321970-10
Your Reference	UNITS	AEC4-V5B	AEC4-V6B	AEC4-V7B	AEC4-V8B	AEC4-V9B
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	110	111	109	107	109
Extracted ISTD $^{13}C_3$ *PFPeA*	%	104	101	101	100	102
Extracted ISTD $^{13}C_2$ *PFHxA*	%	103	107	105	110	104
Extracted ISTD $^{13}C_4$ *PFHpA*	%	123	124	124	118	120
Extracted ISTD $^{13}C_4$ *PFOA*	%	101	105	102	100	98
Extracted ISTD $^{13}C_5$ *PFNA*	%	100	105	103	106	102
Extracted ISTD $^{13}C_2$ *PFDA*	%	100	98	113	103	108
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	110	117	109	101	106
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	99	107	107	98	101
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	90	97	81	90	91
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	96	91	94	95	98
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	87	101	91	89	89
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	90	98	102	97	93
Extracted ISTD $^{13}C_8$ *FOSA*	%	119	121	115	117	118
Extracted ISTD d_3 *N MeFOSA*	%	103	106	104	104	107
Extracted ISTD d_5 *N EtFOSA*	%	109	112	110	112	112
Extracted ISTD d_7 *N MeFOSE*	%	106	99	101	105	97
Extracted ISTD d_9 *N EtFOSE*	%	95	94	92	92	91
Extracted ISTD d_3 *N MeFOSAA*	%	117	117	123	119	122
Extracted ISTD d_5 *N EtFOSAA*	%	118	126	126	111	123
Total Positive PFHxS & PFOS	µg/L	0.02	0.13	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	<0.01	0.15	<0.01	0.02	<0.01
Total Positive PFAS	µg/L	0.03	1.8	<0.01	0.74	<0.01

PFAS in ASLP Extended						
Our Reference		321970-11	321970-12	321970-13	321970-14	321970-15
Your Reference	UNITS	AEC4-V1W	QAQC7	AEC4-V2W	AEC4-V3W	AEC4-V4W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
pH of final Leachate	pH units	6.1	6.2	6.8	6.5	6.2
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	98	99	98	96	96
Surrogate $^{13}C_2$ PFOA	%	112	110	109	107	110
Extracted ISTD $^{13}C_3$ *PFBS*	%	103	109	107	107	108
Extracted ISTD $^{18}O_2$ *PFHxS*	%	100	108	97	98	109
Extracted ISTD $^{13}C_4$ *PFOS*	%	106	105	103	106	107

PFAS in ASLP Extended						
Our Reference		321970-11	321970-12	321970-13	321970-14	321970-15
Your Reference	UNITS	AEC4-V1W	QAQC7	AEC4-V2W	AEC4-V3W	AEC4-V4W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	110	109	106	107	108
Extracted ISTD $^{13}C_3$ *PFPeA*	%	102	104	98	99	104
Extracted ISTD $^{13}C_2$ *PFHxA*	%	111	106	103	105	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%	123	119	117	119	124
Extracted ISTD $^{13}C_4$ *PFOA*	%	105	101	101	101	102
Extracted ISTD $^{13}C_5$ *PFNA*	%	105	105	103	100	98
Extracted ISTD $^{13}C_2$ *PFDA*	%	98	104	104	101	105
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	102	106	106	100	102
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	100	102	99	102	100
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	85	86	79	86	88
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	93	93	95	91	92
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	79	86	89	88	85
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	94	94	95	100	98
Extracted ISTD $^{13}C_8$ *FOSA*	%	122	118	116	117	117
Extracted ISTD d_3 *N MeFOSA*	%	107	100	99	103	108
Extracted ISTD d_5 *N EtFOSA*	%	113	109	107	110	112
Extracted ISTD d_7 *N MeFOSE*	%	100	100	98	103	100
Extracted ISTD d_9 *N EtFOSE*	%	93	86	90	92	86
Extracted ISTD d_3 *N MeFOSAA*	%	123	118	123	129	121
Extracted ISTD d_5 *N EtFOSAA*	%	126	120	133	133	109
Total Positive PFHxS & PFOS	µg/L	0.01	0.01	<0.01	<0.01	<0.01
Total Positive PFOS & PFOA	µg/L	0.01	0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	0.01	0.01	<0.01	<0.01	<0.01

PFAS in ASLP Extended						
Our Reference		321970-16	321970-17	321970-18	321970-19	321970-20
Your Reference	UNITS	AEC4-V5W	AEC4-V6W	AEC4-V7W	AEC4-V8W	AEC4-V9W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
Date analysed	-	01/05/2023	01/05/2023	01/05/2023	01/05/2023	01/05/2023
pH of final Leachate	pH units	5.7	5.5	5.5	5.6	5.6
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<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
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	0.03
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	0.03	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	0.02	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<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
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	99	96	99	100	101
Surrogate $^{13}C_2$ PFOA	%	112	112	113	114	109
Extracted ISTD $^{13}C_3$ *PFBS*	%	106	105	105	105	106
Extracted ISTD $^{18}O_2$ *PFHxS*	%	101	101	97	97	99
Extracted ISTD $^{13}C_4$ *PFOS*	%	104	108	103	107	105

PFAS in ASLP Extended						
Our Reference		321970-16	321970-17	321970-18	321970-19	321970-20
Your Reference	UNITS	AEC4-V5W	AEC4-V6W	AEC4-V7W	AEC4-V8W	AEC4-V9W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	107	107	106	106	107
Extracted ISTD $^{13}C_3$ *PFPeA*	%	101	102	103	101	103
Extracted ISTD $^{13}C_2$ *PFHxA*	%	103	111	99	101	104
Extracted ISTD $^{13}C_4$ *PFHpA*	%	125	123	120	119	116
Extracted ISTD $^{13}C_4$ *PFOA*	%	105	105	100	103	105
Extracted ISTD $^{13}C_5$ *PFNA*	%	101	102	102	99	101
Extracted ISTD $^{13}C_2$ *PFDA*	%	99	102	95	98	95
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	97	105	91	107	105
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	99	104	107	99	102
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	76	87	87	84	83
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	94	96	92	89	94
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	87	89	85	85	91
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	94	97	97	93	95
Extracted ISTD $^{13}C_8$ *FOSA*	%	114	117	116	114	115
Extracted ISTD d_3 *N MeFOSA*	%	99	101	104	103	103
Extracted ISTD d_5 *N EtFOSA*	%	102	110	112	108	110
Extracted ISTD d_7 *N MeFOSE*	%	98	95	95	100	99
Extracted ISTD d_9 *N EtFOSE*	%	88	92	91	93	94
Extracted ISTD d_3 *N MeFOSAA*	%	125	126	120	120	127
Extracted ISTD d_5 *N EtFOSAA*	%	128	127	122	121	111
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01	0.03
Total Positive PFOS & PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	0.03
Total Positive PFAS	µg/L	<0.01	<0.01	0.04	<0.01	0.05

PFAS in ASLP Extended		
Our Reference		321970-21
Your Reference	UNITS	AEC4-V10W
Date Sampled		28/04/2023
Type of sample		Soil
Date prepared	-	01/05/2023
Date analysed	-	01/05/2023
pH of final Leachate	pH units	5.6
Perfluorobutanesulfonic acid	µg/L	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.02
Perfluoroheptanesulfonic acid	µg/L	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.25
Perfluorodecanesulfonic acid	µg/L	<0.02
Perfluorobutanoic acid	µg/L	<0.02
Perfluoropentanoic acid	µg/L	<0.02
Perfluorohexanoic acid	µg/L	0.02
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	%	105
Surrogate $^{13}C_2$ PFOA	%	103
Extracted ISTD $^{13}C_3$ *PFBS*	%	101
Extracted ISTD $^{18}O_2$ *PFHxS*	%	96
Extracted ISTD $^{13}C_4$ *PFOS*	%	100

PFAS in ASLP Extended		
Our Reference	UNITS	321970-21
Your Reference		AEC4-V10W
Date Sampled		28/04/2023
Type of sample		Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	106
Extracted ISTD $^{13}C_3$ *PFPeA*	%	104
Extracted ISTD $^{13}C_2$ *PFHxA*	%	104
Extracted ISTD $^{13}C_4$ *PFHpA*	%	123
Extracted ISTD $^{13}C_4$ *PFOA*	%	104
Extracted ISTD $^{13}C_5$ *PFNA*	%	107
Extracted ISTD $^{13}C_2$ *PFDA*	%	95
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	100
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	99
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	86
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	91
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	86
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	93
Extracted ISTD $^{13}C_8$ *FOSA*	%	117
Extracted ISTD d_3 *N MeFOSA*	%	107
Extracted ISTD d_5 *N EtFOSA*	%	117
Extracted ISTD d_7 *N MeFOSE*	%	102
Extracted ISTD d_9 *N EtFOSE*	%	93
Extracted ISTD d_3 *N MeFOSAA*	%	121
Extracted ISTD d_5 *N EtFOSAA*	%	121
Total Positive PFHxS & PFOS	µg/L	0.27
Total Positive PFOS & PFOA	µg/L	0.25
Total Positive PFAS	µg/L	0.28

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.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
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-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 5.4 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.
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 5.4Table 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: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	[NT]
Date extracted	-			28/04/2023	[NT]	[NT]	[NT]	[NT]	28/04/2023	[NT]
Date analysed	-			01/05/2023	[NT]	[NT]	[NT]	[NT]	01/05/2023	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	117	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	117	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	126	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	113	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	114	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	121	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	112	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	[NT]
Date extracted	-			28/04/2023	[NT]	[NT]	[NT]	[NT]	28/04/2023	[NT]
Date analysed	-			28/04/2023	[NT]	[NT]	[NT]	[NT]	28/04/2023	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	125	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	117	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	125	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	117	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
Surrogate o-Terphenyl	%		Org-020	87	[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-1	321970-2
Date prepared	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Date analysed	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	96	101
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	100	102
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	1	0.4	0.3	29	97	100
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	101	103
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	98	98
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	79	93
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	98	100
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	1	0.3	<0.2	40	94	98
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	1	0.4	0.2	67	97	93
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	1	0.1	<0.1	0	95	98
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	94	102
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	99	101
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	101	103
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	93	98
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	102	105
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	1	<0.5	<0.5	0	94	98
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	1	<5	<5	0	106	107
4:2 FTS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	100	113
6:2 FTS	µg/kg	0.1	Org-029	<0.1	1	<0.1	<0.1	0	106	111
8:2 FTS	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	96	102
10:2 FTS	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	89	109
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	104	106
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	1	<1	<1	0	104	108
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	1	<1	<1	0	108	104
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	1	<1	<1	0	98	98
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	1	<5	<5	0	101	100
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	104	107
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	1	<0.2	<0.2	0	100	97
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	97	1	93	94	1	97	99
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	102	1	100	100	0	99	105

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	321970-2
Extracted ISTD $^{13}C_3$ PFBS	%		Org-029	101	1	96	98	2	101	91
Extracted ISTD $^{18}O_2$ PFHxS	%		Org-029	100	1	91	95	4	100	92
Extracted ISTD $^{13}C_4$ PFOS	%		Org-029	101	1	99	97	2	99	93
Extracted ISTD $^{13}C_4$ PFBA	%		Org-029	104	1	107	99	8	103	95
Extracted ISTD $^{13}C_3$ PFPeA	%		Org-029	108	1	102	100	2	105	95
Extracted ISTD $^{13}C_2$ PFHxA	%		Org-029	105	1	99	99	0	103	96
Extracted ISTD $^{13}C_4$ PFHpA	%		Org-029	103	1	90	95	5	100	89
Extracted ISTD $^{13}C_4$ PFOA	%		Org-029	106	1	102	102	0	105	92
Extracted ISTD $^{13}C_5$ PFNA	%		Org-029	104	1	95	95	0	103	91
Extracted ISTD $^{13}C_2$ PFDA	%		Org-029	106	1	91	97	6	102	93
Extracted ISTD $^{13}C_2$ PFUnDA	%		Org-029	108	1	108	104	4	111	95
Extracted ISTD $^{13}C_2$ PFDoDA	%		Org-029	109	1	108	105	3	108	97
Extracted ISTD $^{13}C_2$ PFTeDA	%		Org-029	121	1	118	118	0	118	107
Extracted ISTD $^{13}C_2$ 4:2FTS	%		Org-029	105	1	97	100	3	113	89
Extracted ISTD $^{13}C_2$ 6:2FTS	%		Org-029	106	1	102	100	2	104	92
Extracted ISTD $^{13}C_2$ 8:2FTS	%		Org-029	127	1	93	98	5	128	95
Extracted ISTD $^{13}C_8$ FOSA	%		Org-029	100	1	102	96	6	98	94
Extracted ISTD d_3 N MeFOSA	%		Org-029	100	1	96	93	3	97	90
Extracted ISTD d_5 N EtFOSA	%		Org-029	101	1	95	82	15	96	89
Extracted ISTD d_7 N MeFOSE	%		Org-029	99	1	98	91	7	97	91

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	321970-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	99	1	104	92	12	100	96
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	110	1	80	82	2	100	86
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	109	1	89	86	3	105	89

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	321970-21
Date prepared	-			[NT]	11	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Date analysed	-			[NT]	11	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	100	102
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	102	103
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	[NT]	11	0.1	0.1	0	102	108
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	101	105
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	[NT]	11	0.2	0.3	40	100	114
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	85	88
Perfluorobutanoic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	100	101
Perfluoropentanoic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	101	101
Perfluorohexanoic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	101	105
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	101	100
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	100	102
Perfluorononanoic acid	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	100	99
Perfluorodecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	98	103
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	97	100
Perfluorododecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	105	107
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	[NT]	11	<0.5	<0.5	0	99	102
Perfluorotetradecanoic acid	µg/kg	5	Org-029	[NT]	11	<5	<5	0	105	107
4:2 FTS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	110	108
6:2 FTS	µg/kg	0.1	Org-029	[NT]	11	<0.1	<0.1	0	99	104
8:2 FTS	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	102	110
10:2 FTS	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	101	118
Perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	105	103
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	109	113
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	[NT]	11	<1	<1	0	107	106
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	[NT]	11	<1	<1	0	95	105
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	[NT]	11	<5	<5	0	99	109
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	108	106
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	[NT]	11	<0.2	<0.2	0	100	103
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	11	97	98	1	99	99
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	11	101	102	1	104	102

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	321970-21
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	[NT]	11	99	100	1	102	94
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	11	95	96	1	100	95
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	11	99	97	2	98	93
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	11	101	100	1	103	98
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	11	102	100	2	107	98
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	11	100	101	1	102	95
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	11	97	96	1	102	95
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	11	102	101	1	103	94
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	11	98	98	0	105	97
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	11	102	100	2	108	97
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	11	105	106	1	111	97
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	11	103	107	4	107	102
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	11	113	121	7	121	102
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	11	100	96	4	102	95
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	11	100	99	1	108	96
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	11	112	107	5	119	98
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	11	102	102	0	99	92
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	11	100	97	3	95	89
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	11	99	95	4	90	92
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	11	91	92	1	95	87

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	321970-21
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	[NT]	11	100	94	6	102	91
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	11	97	94	3	104	94
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	11	96	101	5	105	93

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	20	01/05/2023	01/05/2023		[NT]	[NT]
Date analysed	-			[NT]	20	01/05/2023	01/05/2023		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	[NT]	20	1.2	1.5	22	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	[NT]	20	<0.2	<0.2	0	[NT]	[NT]
Perfluorobutanoic acid	µg/kg	0.2	Org-029	[NT]	20	<0.2	<0.2	0	[NT]	[NT]
Perfluoropentanoic acid	µg/kg	0.2	Org-029	[NT]	20	<0.2	<0.2	0	[NT]	[NT]
Perfluorohexanoic acid	µg/kg	0.1	Org-029	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	[NT]	20	0.1	0.1	0	[NT]	[NT]
Perfluorononanoic acid	µg/kg	0.1	Org-029	[NT]	20	0.2	0.2	0	[NT]	[NT]
Perfluorodecanoic acid	µg/kg	0.5	Org-029	[NT]	20	<0.5	<0.5	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	[NT]	20	<0.5	<0.5	0	[NT]	[NT]
Perfluorododecanoic acid	µg/kg	0.5	Org-029	[NT]	20	<0.5	<0.5	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	[NT]	20	<0.5	<0.5	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/kg	5	Org-029	[NT]	20	<5	<5	0	[NT]	[NT]
4:2 FTS	µg/kg	0.1	Org-029	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
6:2 FTS	µg/kg	0.1	Org-029	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
8:2 FTS	µg/kg	0.2	Org-029	[NT]	20	<0.2	<0.2	0	[NT]	[NT]
10:2 FTS	µg/kg	0.2	Org-029	[NT]	20	<0.2	<0.2	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	20	<1	<1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	[NT]	20	<1	<1	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	[NT]	20	<1	<1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	[NT]	20	<1	<1	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	[NT]	20	<5	<5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	[NT]	20	<0.2	<0.2	0	[NT]	[NT]
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	[NT]	20	<0.2	<0.2	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	20	100	98	2	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	20	100	103	3	[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]	20	98	95	3	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	20	95	94	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	20	93	96	3	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	20	97	97	0	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	20	98	98	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	20	97	96	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	20	93	92	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	20	97	97	0	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	20	99	97	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	20	98	98	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	20	100	96	4	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	20	103	101	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	20	106	101	5	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	20	93	93	0	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	20	98	95	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	20	101	107	6	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	20	95	95	0	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	20	93	90	3	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	20	90	88	2	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	20	91	89	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 d_9 *N EtFOSE*	%		Org-029	[NT]	20	96	94	2	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	20	99	99	0	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	20	95	96	1	[NT]	[NT]

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321970-2
Date prepared	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Date analysed	-			01/05/2023	1	01/05/2023	01/05/2023		01/05/2023	01/05/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	94	93
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	107	99
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	1	<0.01	0.01	0	106	99
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	107	108
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	98	101
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	104	100
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	99	96
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	109	106
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	114	112
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	88	89
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	105	103
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	109	113
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	102	99
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	105	110
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	114	104
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	120	110
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	1	<0.5	<0.5	0	119	111
4:2 FTS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	97	97
6:2 FTS	µg/L	0.01	Org-029A	<0.01	1	<0.01	<0.01	0	111	110
8:2 FTS	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	111	110
10:2 FTS	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	128	114
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	104	104
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	112	109
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	1	<0.1	<0.1	0	91	95
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	1	<0.05	<0.05	0	107	111
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	1	<0.5	<0.5	0	124	126
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	98	107
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	1	<0.02	<0.02	0	103	99
Surrogate $^{13}C_8$ PFOS	%		Org-029A	98	1	102	95	7	94	100
Surrogate $^{13}C_2$ PFOA	%		Org-029A	112	1	114	105	8	111	112

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321970-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	107	1	109	110	1	108	108
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	109	1	102	100	2	104	106
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	109	1	103	109	6	107	102
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	104	1	111	110	1	107	109
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	105	1	108	101	7	108	103
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	107	1	105	105	0	102	100
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	124	1	122	114	7	125	124
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	103	1	103	106	3	99	99
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	103	1	110	109	1	104	97
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	111	1	107	106	1	105	108
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	129	1	112	117	4	116	109
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	122	1	101	103	2	108	109
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	107	1	88	92	4	101	90
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	100	1	100	97	3	114	109
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	90	1	87	89	2	98	97
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	100	1	97	94	3	107	107
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	123	1	118	122	3	115	112
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	111	1	107	108	1	110	105
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	128	1	112	116	4	122	108
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	111	1	105	104	1	107	98

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	321970-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	89	1	89	91	2	90	88
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	137	1	125	121	3	121	107
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	123	1	124	122	2	120	121

QUALITY CONTROL: PFAS in ASLP Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	321970-21
Date prepared	-			[NT]	20	01/05/2023	01/05/2023		[NT]	01/05/2023
Date analysed	-			[NT]	20	01/05/2023	01/05/2023		[NT]	01/05/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	[NT]	20	<0.01	<0.01	0	[NT]	98
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	[NT]	20	<0.01	<0.01	0	[NT]	111
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	[NT]	20	<0.01	<0.01	0	[NT]	111
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	[NT]	20	<0.01	<0.01	0	[NT]	109
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	[NT]	20	0.03	0.03	0	[NT]	104
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	[NT]	20	<0.02	<0.02	0	[NT]	100
Perfluorobutanoic acid	µg/L	0.02	Org-029A	[NT]	20	<0.02	<0.02	0	[NT]	97
Perfluoropentanoic acid	µg/L	0.02	Org-029A	[NT]	20	<0.02	<0.02	0	[NT]	109
Perfluorohexanoic acid	µg/L	0.01	Org-029A	[NT]	20	<0.01	<0.01	0	[NT]	109
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	[NT]	20	<0.01	<0.01	0	[NT]	89
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	[NT]	20	<0.01	<0.01	0	[NT]	100
Perfluorononanoic acid	µg/L	0.01	Org-029A	[NT]	20	0.01	0.01	0	[NT]	107
Perfluorodecanoic acid	µg/L	0.02	Org-029A	[NT]	20	<0.02	<0.02	0	[NT]	116
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	[NT]	20	<0.02	<0.02	0	[NT]	118
Perfluorododecanoic acid	µg/L	0.05	Org-029A	[NT]	20	<0.05	<0.05	0	[NT]	116
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	[NT]	20	<0.1	<0.1	0	[NT]	104
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	[NT]	20	<0.5	<0.5	0	[NT]	115
4:2 FTS	µg/L	0.01	Org-029A	[NT]	20	<0.01	<0.01	0	[NT]	99
6:2 FTS	µg/L	0.01	Org-029A	[NT]	20	<0.01	<0.01	0	[NT]	119
8:2 FTS	µg/L	0.02	Org-029A	[NT]	20	<0.02	<0.02	0	[NT]	111
10:2 FTS	µg/L	0.02	Org-029A	[NT]	20	<0.02	<0.02	0	[NT]	102
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	[NT]	20	<0.1	<0.1	0	[NT]	111
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	[NT]	20	<0.05	<0.05	0	[NT]	107
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	[NT]	20	<0.1	<0.1	0	[NT]	89
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	[NT]	20	<0.05	<0.05	0	[NT]	98
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	[NT]	20	<0.5	<0.5	0	[NT]	128
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	[NT]	20	<0.02	<0.02	0	[NT]	94
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	[NT]	20	<0.02	<0.02	0	[NT]	103
Surrogate $^{13}C_8$ PFOS	%		Org-029A	[NT]	20	101	97	4	[NT]	97
Surrogate $^{13}C_2$ PFOA	%		Org-029A	[NT]	20	109	104	5	[NT]	108

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	321970-21
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	[NT]	20	106	104	2	[NT]	100
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	[NT]	20	99	103	4	[NT]	97
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	[NT]	20	105	106	1	[NT]	100
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	[NT]	20	107	107	0	[NT]	105
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	[NT]	20	103	97	6	[NT]	97
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	[NT]	20	104	99	5	[NT]	103
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	[NT]	20	116	123	6	[NT]	119
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	[NT]	20	105	101	4	[NT]	99
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	[NT]	20	101	103	2	[NT]	102
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	[NT]	20	95	101	6	[NT]	86
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	[NT]	20	105	110	5	[NT]	101
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	[NT]	20	102	109	7	[NT]	97
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	[NT]	20	83	84	1	[NT]	69
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	[NT]	20	94	92	2	[NT]	107
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	[NT]	20	91	90	1	[NT]	91
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	[NT]	20	95	95	0	[NT]	106
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	[NT]	20	115	116	1	[NT]	104
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	[NT]	20	103	108	5	[NT]	100
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	[NT]	20	110	113	3	[NT]	102
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	[NT]	20	99	96	3	[NT]	101

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	321970-21
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	[NT]	20	94	96	2	[NT]	86
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	[NT]	20	127	127	0	[NT]	119
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	[NT]	20	111	114	3	[NT]	111

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.

CHAIN OF CUSTODY FORM - Client

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Company:	CES - Consulting Earth Scientists			Client Project Name/Number/Site etc (te report title):	CES170608-GPM
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:		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: 1 DAY TURN AROUND	

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	PFAS ASLP	Asbestos (AF/FA) _NEMP Method	Combustible Content and % Sulfur	Comments
1	AEC4-V1B		26.04.23	SOIL	X	X			
2	QAQC5		↓	↓	X	X			
3	QAQC6		↓	↓	PLEASE FORWARD TO ALS FOR PFAS and PFAS ASLP (1 DAY)				
3	AEC4-V2B		↓	↓	X	X			
4	AEC4-V3B		↓	↓	X	X			
5	AEC4-V4B		↓	↓	X	X			
6	AEC4-V5B		↓	↓	X	X			
7	AEC4-V6B		↓	↓	X	X			
8	AEC4-V7B		↓	↓	X	X			
9	AEC4-V8B		↓	↓	X	X			
10	AEC4-V9B		↓	↓	X	X			

Provide as much information about the sample as you can

☐ 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
Print Name:	VICTOR ARIAS	Print Name:	ths
Date & Time:	26.04.23 15:30	Date & Time:	28/4/23 1730
Signature:		Signature:	

Lab Use Only

Job number:	321970
Temperature:	4
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
National phone number 1300 424 344

Sydney Lab - Envirolab Services
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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 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	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: 1 DAY TURN AROUND	

Sample information					Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	PFAS ASLP	Asbestos (AF/FA) _NEMP Method	Combustible Content and % Sulfur														
11	AECA-V1W		28.04.23	SOIL	X	X																
12	QAQC 7		↓	↓	X	X																
—	QAQC8				PLEASE FORWARD TO ALS FOR PFAS and PFAS ASLP (1 DAY)																	
13	AECA-V2W				X	X																
14	AECA-V3W				X	X																
15	AECA-V4W				X	X																
16	AECA-V5W				X	X																
17	AECA-V6W				X	X																
18	AECA-V7W				X	X																
19	AECA-V8W				X	X																
20	AECA-V9-W		↓	↓	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):	Lab Use Only
Print Name:	VICTOR ARIAS	Print Name:	Job number: 321970 / Cooling: Ice / Ice pack / None
Date & Time:	28.04.23 15:30	Date & Time: Aug 28/4/23	Temperature: / Security seal: Intact / Broken / None
Signature:		Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD

CHAIN OF CUSTODY FORM - Client

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National phone number 1300 424 344

Sydney Lab - Envirolab Services
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Ph: 02 9910 6200 | Email: sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt, Myaree, WA 6154
Ph: 08 9317 2505 | Email: lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
Ph: 03 9763 2500 | Email: melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph: 08 7087 6800 | Email: adelaide@envirolab.com.au

Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph: 07 3266 9532 | Email: brisbane@envirolab.com.au

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

Company:	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	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		
Phone:	Mob: 0439761637	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:	1 DAY TURN AROUND

Sample Information					Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Asbestos NEPM (AF/FA)	PFAS	PFAS ASLP	TRH	BTEX													Provide as much information about the sample as you can
21	AECA-V10W		28.04.23	SOIL		X	X															
22	T-V1B							X	X													
23	DAQC9							X	X													
24	T-V2B							X	X													
25	T-V1W							X	X													
26	T-V2W							X	X													
27	T-V3W							X	X													
28	T-V4W							X	X													
29	TB-PFAS					X																
30	TB								X													
31	TS								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):	Lab Use Only
Print Name:	VICTOR ARIAS	Print Name:	Job number: 321970 / Cooling: Ice / Ice pack / None
Date & Time:	28.04.23 15:30	Date & Time: 28/4/23	Temperature: / Security seal: Intact / Broken / None
Signature:		Signature:	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Victor Arias

Sample Login Details

Your reference	CES170608-GPM
Envirolab Reference	321970
Date Sample Received	28/04/2023
Date Instructions Received	28/04/2023
Date Results Expected to be Reported	01/05/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	31 Soil
Turnaround Time Requested	1 day
Temperature on Receipt (°C)	4
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PFAS in Soils Extended	PFAS in ASLP Extended
AECA-V1B			✓	✓
QAQC5			✓	✓
AECA-V2B			✓	✓
AECA-V3B			✓	✓
AECA-V4B			✓	✓
AECA-V5B			✓	✓
AECA-V6B			✓	✓
AECA-V7B			✓	✓
AECA-V8B			✓	✓
AECA-V9B			✓	✓
AECA-V1W			✓	✓
QAQC7			✓	✓
AECA-V2W			✓	✓
AECA-V3W			✓	✓
AECA-V4W			✓	✓
AECA-V5W			✓	✓
AECA-V6W			✓	✓
AECA-V7W			✓	✓
AECA-V8W			✓	✓
AECA-V9W			✓	✓
AECA-V10W			✓	✓
T_V1B	✓	✓		
QAQC9	✓	✓		
T_V2B	✓	✓		
T_V1W	✓	✓		
T_V2W	✓	✓		
T_V3W	✓	✓		
T_V4W	✓	✓		
TB_PFAS			✓	
TB	✓			
TS	✓			

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Envirolab Services Pty Ltd
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www.envirolab.com.au

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 321970-A

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	additional analysis
Date samples received	28/04/2023
Date completed instructions received	16/05/2023

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	17/05/2023
Date of Issue	17/05/2023

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Kyle Gavrily, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

PAHs in Soil						
Our Reference	UNITS	321970-A-22	321970-A-24	321970-A-25	321970-A-26	321970-A-27
Your Reference		T_V1B	T_V2B	T_V1W	T_V2W	T_V3W
Date Sampled		28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Date analysed	-	16/05/2023	16/05/2023	16/05/2023	16/05/2023	16/05/2023
Naphthalene	mg/kg	<0.2	<0.5	<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	0.2	0.3	<0.1	<0.1	0.2
Phenanthrene	mg/kg	0.6	0.5	<0.1	<0.1	0.2
Anthracene	mg/kg	<0.2	<0.2	<0.1	<0.1	<0.2
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<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	<0.05	<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	0.80	0.80	<0.05	<0.05	0.4
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	%	85	88	92	88	84

PAHs in Soil		
Our Reference		321970-A-28
Your Reference	UNITS	T_V4W
Date Sampled		28/04/2023
Type of sample		Soil
Date extracted	-	16/05/2023
Date analysed	-	16/05/2023
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	91

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.

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-14	[NT]
Date extracted	-			16/05/2023	22	16/05/2023	16/05/2023		16/05/2023	[NT]
Date analysed	-			16/05/2023	22	16/05/2023	16/05/2023		16/05/2023	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	22	<0.2	<0.2	0	101	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	22	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	22	<0.1	<0.1	0	103	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	22	0.2	0.1	67	99	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	22	0.6	0.2	100	110	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	22	<0.2	<0.2	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	22	<0.1	<0.1	0	102	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	22	<0.1	<0.1	0	101	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	22	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	22	<0.1	<0.1	0	85	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	22	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	22	<0.05	<0.05	0	102	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	22	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	22	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	22	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	92	22	85	88	3	90	[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

PAHs in Soil - The PQL has been raised due to interferences from analytes (other than those being tested) in sample/s 321970-a-22,22d,24,27.

Ming To

From: Greta Petzold
Sent: Tuesday, 16 May 2023 5:20 PM
To: Tristan Goodbody; Samplereceipt
Cc: Victor Arias; Simon Song
Subject: RE: Results for Registration 321970 CES170608-GPM

Ref: 321970-A
TAT: 1 day
Due: 17/05/2023
MT.

Hi Tristan,

No worries, we'll get that organised for you.

@Samplereceipt, A- job please

Kind Regards,

Greta Petzold | Operations Manager | Envirolab Services

Great Science. Great Service.

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200
E GPetzold@envirolab.com.au | W www.envirolab.com.au

Follow us on: LinkedIn | Facebook | Twitter

Samples will be analysed per our T&C's.

From: Tristan Goodbody <tristan.goodbody@consultingearth.com.au>
Sent: Tuesday, May 16, 2023 5:04 PM
To: Greta Petzold <GPetzold@envirolab.com.au>
Cc: Victor Arias <victor.arias@consultingearth.com.au>; Simon Song <SSong@envirolab.com.au>
Subject: RE: Results for Registration 321970 CES170608-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.

Hi Greta,

Can I please order PAH analysis on the following samples from this laboratory report:

T_V1B	22
T_V2B	24
T_V1W	25
T_V2W	26
T_V3W	27
T_V4W	28

Analysis results to be delivered by COB tomorrow 17/05?

Thanks,

Tristan Goodbody
Associate Environmental Engineer
Certified Environmental Practitioner – Site Contamination Specialist

CERTIFICATE OF ANALYSIS

Work Order	: **ES2314153**	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	: CES 170608-GPM	Date Samples Received	: 01-May-2023 15:25
Order number	: ----	Date Analysis Commenced	: 02-May-2023
C-O-C number	: ----	Issue Date	: 04-May-2023 11:26
Sampler	: ----		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- 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.
- EN60-DI: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC6	QAQC8	----	----	----
			Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2314153-001	ES2314153-002	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**14.1**	**8.4**	----	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**5.0**	**7.3**	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	**0.0003**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QAQC6	QAQC8	----	----	----
				Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2314153-001	ES2314153-002	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
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	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg		<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.0002	mg/kg		<0.0002	**0.0003**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg		<0.0002	**0.0003**	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg		<0.0002	**0.0003**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.0002	%		**82.5**	**88.0**	----	----	----
13C8-PFOA	----	0.0002	%		**99.5**	**104**	----	----	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2314153**	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	: CES 170608-GPM	Date Samples Received	: 01-May-2023
Order number	: ----	Date Analysis Commenced	: 02-May-2023
C-O-C number	: ----	Issue Date	: 04-May-2023
Sampler	: ----		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 2		
No. of samples analysed	: 2		

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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 Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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 (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5022461)									
ES2313746-001	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
ES2313845-001	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	0.0005	0.0005	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: 5022461)									
ES2313746-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0006	0.0006	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	0.0003	0.0003	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

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: 5022461) - continued									
ES2313845-001	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
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5022461)									
ES2313746-001	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
ES2313845-001	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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5022461)									
ES2313746-001	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

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: 5022461) - continued									
ES2313746-001	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
ES2313845-001	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

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: 5022461)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.6	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	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: 5022461)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	84.1	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	96.4	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.8	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	99.0	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5022461)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	99.4	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.7	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	99.2	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	97.3	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.6	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5022461)								

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: 5022461) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	95.6	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	109	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	98.0	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	91.2	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**

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: 5022461)							
ES2313746-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	90.4	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	92.8	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	95.2	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	98.8	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	81.2	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	103	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5022461)							
ES2313746-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	85.7	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	100	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	96.8	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	101	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	108	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	106	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	90.4	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	102	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	99.2	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5022461)							
ES2313746-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	98.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	100	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	86.5	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	92.0	68.7	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*
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5022461) - continued							
ES2313746-001	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	90.2	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	98.8	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	100	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5022461)							
ES2313746-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	102	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	103	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	112	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	83.2	69.2	143

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2314153**	Page	: 1 of 4
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES 170608-GPM	Date Samples Received	: 01-May-2023
Site	: ----	Issue Date	: 04-May-2023
Sampler	: ----	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **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, QAQC8	**28-Apr-2023**	**----**	----	----	**02-May-2023**	12-May-2023	✓
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)							
QAQC6, QAQC8	**28-Apr-2023**	**02-May-2023**	25-Oct-2023	✓	**----**	----	----
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QAQC6, QAQC8	**28-Apr-2023**	**03-May-2023**	25-Oct-2023	✓	**04-May-2023**	12-Jun-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
QAQC6, QAQC8	**28-Apr-2023**	**03-May-2023**	25-Oct-2023	✓	**04-May-2023**	12-Jun-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
QAQC6, QAQC8	**28-Apr-2023**	**03-May-2023**	25-Oct-2023	✓	**04-May-2023**	12-Jun-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QAQC6, QAQC8	**28-Apr-2023**	**03-May-2023**	25-Oct-2023	✓	**04-May-2023**	12-Jun-2023	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
QAQC6, QAQC8	**28-Apr-2023**	**03-May-2023**	25-Oct-2023	✓	**04-May-2023**	12-Jun-2023	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**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
Deionised Water Leach - Plastic Leaching Vessel	EN60-DIa-P	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
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.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2314153**	Page	: 1 of 7
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	: CES 170608-GPM	Date Samples Received	: 01-May-2023 15:25
Order number	: ----	Date Analysis Commenced	: 02-May-2023
C-O-C number	: ----	Issue Date	: 08-May-2023 17:07
Sampler	: ----		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- 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.
- EN60-DI: Where leachable PFAS analysis is requested, centrifugation rather than pressure filtration is used as the default approach for removal of particulates, in line with AS 4439.3.

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QAQC6	QAQC8	----	----	----
				Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2314153-001	ES2314153-002	--------	--------	--------
					Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		<0.01	**0.02**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: DI WATER LEACHATE (Matrix: WATER)				Sample ID	QAQC6	QAQC8	----	----	----
				Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2314153-001	ES2314153-002	--------	--------	--------
					Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	<0.05	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	**0.02**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	**0.02**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	**0.02**	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**99.2**	**102**	----	----	----
13C8-PFOA	----	0.02	%		**96.8**	**97.6**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC6	QAQC8	----	----	----
			Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2314153-001	ES2314153-002	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	**14.1**	**8.4**	----	----	----
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)								
Final pH	----	0.1	pH Unit	**5.0**	**7.3**	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	**0.0003**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	<0.001	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	<0.0002	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	<0.0002	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QAQC6	QAQC8	----	----	----
			Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2314153-001	ES2314153-002	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
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	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.0005	mg/kg	<0.0005	<0.0005	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.0002	mg/kg	<0.0002	**0.0003**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.0002	mg/kg	<0.0002	**0.0003**	----	----	----
Sum of PFAS (WA DER List)	----	0.0002	mg/kg	<0.0002	**0.0003**	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.0002	%	**82.5**	**88.0**	----	----	----
13C8-PFOA	----	0.0002	%	**99.5**	**104**	----	----	----

Surrogate Control Limits

Sub-Matrix: DI WATER LEACHATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2314153**	Page	: 1 of 10
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	: CES 170608-GPM	Date Samples Received	: 01-May-2023
Order number	: ----	Date Analysis Commenced	: 02-May-2023
C-O-C number	: ----	Issue Date	: 08-May-2023
Sampler	: ----		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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 (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5022461)									
ES2313746-001	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
ES2313845-001	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	0.0005	0.0005	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: 5022461)									
ES2313746-001	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.0002	mg/kg	0.0006	0.0006	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	0.0003	0.0003	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

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: 5022461) - continued									
ES2313845-001	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
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 5022461)									
ES2313746-001	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
ES2313845-001	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
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5022461)									
ES2313746-001	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

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: 5022461) - continued									
ES2313746-001	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
ES2313845-001	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

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: 5031918)									
ES2314521-003	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: 5031918)									
ES2314521-003	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: 5031918)									
ES2314521-003	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

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: 5031918) - continued									
ES2314521-003	Anonymous	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: 5031918)									
ES2314521-003	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: 5031918)									
ES2314521-003	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: **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: 5022461)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.0002	mg/kg	<0.0002	0.00125 mg/kg	97.2	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.6	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.0002	mg/kg	<0.0002	0.00125 mg/kg	90.8	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	104	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	85.2	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: 5022461)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.001	mg/kg	<0.001	0.00625 mg/kg	84.1	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	96.4	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	107	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	110	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.0	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	94.8	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.0002	mg/kg	<0.0002	0.00125 mg/kg	105	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.0002	mg/kg	<0.0002	0.00125 mg/kg	112	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	99.0	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5022461)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	95.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0005	mg/kg	<0.0005	0.00312 mg/kg	99.4	71.6	129
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	82.7	69.8	131
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0005	mg/kg	<0.0005	0.00312 mg/kg	99.2	68.7	130
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0005	mg/kg	<0.0005	0.00312 mg/kg	97.3	65.1	134
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.0002	mg/kg	<0.0002	0.00125 mg/kg	93.6	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.0002	mg/kg	<0.0002	0.00125 mg/kg	96.8	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5022461)								

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: 5022461) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.0005	mg/kg	<0.0005	0.00125 mg/kg	95.6	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	109	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	98.0	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	91.2	69.2	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5031918)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	82.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	98.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	99.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	97.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	85.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5031918)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	89.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	80.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	114	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	99.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	93.4	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	83.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	95.1	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5031918)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	107	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	87.7	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	99.0	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	89.4	57.6	145

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
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5031918) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	116	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5031918)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	82.0	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	109	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	102	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	78.4	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: **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: 5022461)							
ES2313746-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.00125 mg/kg	90.4	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.00125 mg/kg	92.8	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.00125 mg/kg	95.2	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.00125 mg/kg	98.8	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.00125 mg/kg	81.2	68.0	136
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.00125 mg/kg	103	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5022461)							
ES2313746-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.00625 mg/kg	85.7	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.00125 mg/kg	100	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.00125 mg/kg	96.8	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.00125 mg/kg	101	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.00125 mg/kg	108	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.00125 mg/kg	106	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	90.4	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.00125 mg/kg	102	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	99.2	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5022461)							
ES2313746-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.00125 mg/kg	98.0	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: 5022461) - continued							
ES2313746-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.00312 mg/kg	100	71.6	129
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.00312 mg/kg	86.5	69.8	131
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.00312 mg/kg	92.0	68.7	130
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.00312 mg/kg	90.2	65.1	134
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.00125 mg/kg	98.8	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.00125 mg/kg	100	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5022461)							
ES2313746-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.00125 mg/kg	102	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.00125 mg/kg	103	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.00125 mg/kg	112	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.00125 mg/kg	83.2	69.2	143

Sub-Matrix: **WATER**

				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: 5031918)							
ES2314521-003	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	98.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	95.8	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	97.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	93.8	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.4	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	88.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5031918)							
ES2314521-003	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	85.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	112	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	101	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	103	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	93.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	107	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	97.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	104	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	90.8	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	104	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	97.9	71.0	132

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: 5031918)							
ES2314521-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	116	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	91.2	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	79.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	94.1	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	85.4	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	127	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	126	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5031918)							
ES2314521-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	94.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	115	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	107	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	77.8	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2314153**	Page	: 1 of 5
Amendment	: **1**		
Client	: **CONSULTING EARTH SCIENTISTS**	Laboratory	: Environmental Division Sydney
Contact	: TRISTAN GOODBODY	Telephone	: +61-2-8784 8555
Project	: CES 170608-GPM	Date Samples Received	: 01-May-2023
Site	: ----	Issue Date	: 08-May-2023
Sampler	: ----	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC 1	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	1	12	8.33	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 (Dried @ 105-110°C)							
HDPE Soil Jar (EA055)							
QAQC6, QAQC8	**28-Apr-2023**	**----**	----	**----**	**02-May-2023**	12-May-2023	✓
EN60-DI: Bottle Leaching Procedure - Inorganics/PFAS (Plastic Vessel)							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN60-Dla-P)							
QAQC6, QAQC8	**28-Apr-2023**	**02-May-2023**	25-Oct-2023	✓	**----**	----	**----**
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QAQC6, QAQC8	**28-Apr-2023**	**03-May-2023**	25-Oct-2023	✓	**04-May-2023**	12-Jun-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE Soil Jar (EP231X)							
QAQC6, QAQC8	**28-Apr-2023**	**03-May-2023**	25-Oct-2023	✓	**04-May-2023**	12-Jun-2023	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE Soil Jar (EP231X)							
QAQC6, QAQC8	**28-Apr-2023**	**03-May-2023**	25-Oct-2023	✓	**04-May-2023**	12-Jun-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE Soil Jar (EP231X)							
QAQC6, QAQC8	**28-Apr-2023**	**03-May-2023**	25-Oct-2023	✓	**04-May-2023**	12-Jun-2023	✓
EP231P: PFAS Sums							
HDPE Soil Jar (EP231X)							
QAQC6, QAQC8	**28-Apr-2023**	**03-May-2023**	25-Oct-2023	✓	**04-May-2023**	12-Jun-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*

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)								
QAQC6,	QAQC8	**02-May-2023**	**06-May-2023**	29-Oct-2023	✓	**08-May-2023**	29-Oct-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
QAQC6,	QAQC8	**02-May-2023**	**06-May-2023**	29-Oct-2023	✓	**08-May-2023**	29-Oct-2023	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
QAQC6,	QAQC8	**02-May-2023**	**06-May-2023**	29-Oct-2023	✓	**08-May-2023**	29-Oct-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
QAQC6,	QAQC8	**02-May-2023**	**06-May-2023**	29-Oct-2023	✓	**08-May-2023**	29-Oct-2023	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
QAQC6,	QAQC8	**02-May-2023**	**06-May-2023**	29-Oct-2023	✓	**08-May-2023**	29-Oct-2023	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	12	**8.33**	**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*
Deionised Water Leach - Plastic Leaching Vessel	EN60-DIa-P	SOIL	In house QWI-EN/60 referenced to AS4439.3 Preparation of Leachates
QuECheRS Extraction of Solids	ORG71	SOIL	In house: Sequential extractions with Acetonitrile/Methanol by shaking. Extraction efficiency aided by the addition of salts under acidic conditions. Where relevant, interferences from co-extracted organics are removed with dispersive clean-up media (dSPE). The extract is either diluted or concentrated and exchanged into the analytical solvent.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	SOIL	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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08 7087 6

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07 3266 9

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08 8967 12

Environmental Division
Sydney
Work Order Reference
ES2314153

Telephone : + 61-2-8784 8555

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			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: 1 DAY TURN AROUND	

Sample information					Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	PFAS ASLP	Asbestos (AF/FA) - NEMP Method	Combustible Content and % Sulfur														Provide as much information about the sample as you can
1	AEC4-V1B		26.04.23	SOIL	X	X																
2	QAQC5		↓	↓	X	X																
3	QAQC6		↓	↓	X	X																PLEASE FORWARD TO ALS FOR PFAS and PFAS ASLP (1 DAY)
4	AEC4-V2B		↓	↓	X	X																
5	AEC4-V3B		↓	↓	X	X																
6	AEC4-V4B		↓	↓	X	X																
7	AEC4-V5B		↓	↓	X	X																
8	AEC4-V6B		↓	↓	X	X																
9	AEC4-V7B		↓	↓	X	X																
10	AEC4-V8B		↓	↓	X	X																
11	AEC4-V9B		↓	↓	X	X																

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

				Lab Use Only	
Relinquished by (Company):	CES	Received by (Company):	ELS		
Print Name:	VICTOR ARIAS	Print Name:	Thq	Job number: 321970	Cooling: Ice / Ice pack / None
Date & Time:	26.04.23 15:30	Date & Time:	28/4/23 1730	Temperature: 4	Security seal: Intact / Broken / None
Signature:		Signature:		TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Relinquished by ELS Jkd
C Mackenzie
1/5 · 1200
CM

Rec: Jack 01/05/23 1525

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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	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:	1 DAY TURN AROUND

Sample information					Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	PFAS ASLP	Asbestos (AF/FA) _NEMP Method	Combustible Content and % Sulfur														Provide as much information about the sample as you can
11	AECA-V1W		28.04.23	SOIL	X	X																
12	QAQC 7		↓	↓	X	X																
(2) —	QAQC8				PLEASE FORWARD TO ALS FOR PFAS and PFAS ASLP (1 DAY)																	
13	AECA-V2W				X	X																
14	AECA-V3W				X	X																
15	AECA-V4W				X	X																
16	AECA-V5W				X	X																
17	AECA-V6W				X	X																
18	AECA-V7W				X	X																
19	AECA-V8W				X	X																
20	AECA-V9-W		↓	↓	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):	
Print Name:	VICTOR ARIAS	Print Name:	
Date & Time:	28.04.23 15:30	Date & Time:	Ang 28/4/23
Signature:		Signature:	

Lab Use Only	
Job number: 321970	Cooling: Ice / Ice pack / None
Temperature:	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Relinquished by EL: SYD
CMcKenna.
1/5. 1200

Rec: Jack 01/05/23 1525

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ph 02 9910 6200 fax 02 9910 6201
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CERTIFICATE OF ANALYSIS 322273

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	27 Soil
Date samples received	03/05/2023
Date completed instructions received	03/05/2023

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	05/05/2023
Date of Issue	05/05/2023

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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Nyovan Moonean
Authorised by Asbestos Approved Signatory: Nyovan Moonean

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Diego Bigolin, Inorganics Supervisor
Greta Petzold, Operation Manager
Nyovan Moonean, Asbestos Approved Identifier/Counter
Phalak Inthakesone, Organics Development Manager, Sydney

Authorised By



Nancy Zhang, Laboratory Manager

Miscellaneous Inorg - soil						
Our Reference		322273-1	322273-2	322273-3	322273-4	322273-5
Your Reference	UNITS	WSB-V1-2	QAQC1	WSB-V2-2	WSB-V3-2	WSB-V4-2
Date Sampled		03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Date analysed	-	04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Combustibility*	%	4.1	2.8	8.4	3.2	6.9
Total Sulfur in soil/solids	%	0.050	0.040	0.040	0.040	0.050

Miscellaneous Inorg - soil						
Our Reference		322273-6	322273-7	322273-8	322273-9	322273-10
Your Reference	UNITS	WSB-V5-2	WSB-V6-2	WSB-V7-2	WSB-V8-2	WSB-V9-2
Date Sampled		03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Date analysed	-	04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Combustibility*	%	3.0	14	3.5	4.2	9.1
Total Sulfur in soil/solids	%	0.040	0.050	0.040	0.040	0.060

Miscellaneous Inorg - soil						
Our Reference		322273-13	322273-14	322273-15	322273-16	322273-17
Your Reference	UNITS	SS-V3-2B	SS-V3-2W1	SS-V3-2W2	SS-V3-2W3	SS-V3-2W4
Date Sampled		03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Date analysed	-	04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Combustibility*	%	2.0	7.9	3.0	2.2	0.7
Total Sulfur in soil/solids	%	0.050	0.060	0.060	0.050	0.040

Miscellaneous Inorg - soil				
Our Reference		322273-18	322273-19	322273-20
Your Reference	UNITS	SS-V15-2	SS-V16-2	SS-V27-2
Date Sampled		03/05/2023	03/05/2023	03/05/2023
Type of sample		Soil	Soil	Soil
Date prepared	-	04/05/2023	04/05/2023	04/05/2023
Date analysed	-	04/05/2023	04/05/2023	04/05/2023
Combustibility*	%	4.6	5.8	2.9
Total Sulfur in soil/solids	%	0.25	0.050	0.050

Asbestos ID - soils NEPM - ASB-001			
Our Reference		322273-11	322273-12
Your Reference	UNITS	SP5-V5-2	QAQC3
Date Sampled		03/05/2023	03/05/2023
Type of sample		Soil	Soil
Date analysed	-	04/05/2023	04/05/2023
Sample mass tested	g	520.1	526.97
Sample Description	-	Beige clayey soil & rocks	Beige clayey 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		322273-21	322273-22	322273-23	322273-24	322273-25
Your Reference	UNITS	AEC4-V10W-2	QAQC4	AEC4-V6B-2B	AEC4-V6B-2W1	AEC4-V6B-2W2
Date Sampled		03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Date analysed	-	04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
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	0.7	0.7	<0.1	0.3	<0.1
Perfluoroheptanesulfonic acid	µg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorooctanesulfonic acid PFOS	µg/kg	2.4	2.5	0.8	4.9	1.4
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2	<0.2	0.8	<0.2
Perfluoropentanoic acid	µg/kg	<0.2	<0.2	0.5	2	0.8
Perfluorohexanoic acid	µg/kg	0.1	0.1	0.2	1.2	0.3
Perfluoroheptanoic acid	µg/kg	<0.1	0.1	0.2	0.4	0.3
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	0.2	1.2	0.4
8:2 FTS	µg/kg	<0.2	<0.2	0.2	<0.2	0.4
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*	%	101	98	96	102	96
Surrogate $^{13}C_2$ *PFOA*	%	95	93	98	90	91
Extracted ISTD $^{13}C_3$ *PFBS*	%	92	89	85	87	84
Extracted ISTD $^{18}O_2$ *PFHxS*	%	90	92	82	81	81
Extracted ISTD $^{13}C_4$ *PFOS*	%	93	99	97	88	88
Extracted ISTD $^{13}C_4$ *PFBA*	%	93	93	89	87	89

PFAS in Soils Extended						
Our Reference		322273-21	322273-22	322273-23	322273-24	322273-25
Your Reference	UNITS	AEC4-V10W-2	QAQC4	AEC4-V6B-2B	AEC4-V6B-2W1	AEC4-V6B-2W2
Date Sampled		03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	86	88	83	83	81
Extracted ISTD $^{13}C_2$ *PFHxA*	%	96	94	94	91	91
Extracted ISTD $^{13}C_4$ *PFHpA*	%	98	93	88	90	92
Extracted ISTD $^{13}C_4$ *PFOA*	%	94	97	89	93	87
Extracted ISTD $^{13}C_5$ *PFNA*	%	99	98	93	85	82
Extracted ISTD $^{13}C_2$ *PFDA*	%	101	97	92	85	83
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	101	101	105	90	96
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	99	104	103	94	93
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	102	107	94	100	80
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	75	72	69	73	84
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	83	79	79	77	73
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	80	79	75	71	71
Extracted ISTD $^{13}C_8$ *FOSA*	%	97	94	93	90	94
Extracted ISTD d_3 *N MeFOSA*	%	94	98	94	88	89
Extracted ISTD d_5 *N EtFOSA*	%	102	101	98	94	92
Extracted ISTD d_7 *N MeFOSE*	%	93	90	80	81	90
Extracted ISTD d_9 *N EtFOSE*	%	102	99	95	91	97
Extracted ISTD d_3 *N MeFOSAA*	%	103	98	97	84	93
Extracted ISTD d_5 *N EtFOSAA*	%	91	92	90	80	74
Total Positive PFHxS & PFOS	µg/kg	3.1	3.2	0.8	5.2	1.4
Total Positive PFOS & PFOA	µg/kg	2.4	2.5	0.8	5.0	1.6
Total Positive PFAS	µg/kg	3.2	3.5	2.2	11	3.9

PFAS in Soils Extended			
Our Reference		322273-26	322273-27
Your Reference	UNITS	AEC4-V6B-2W3	AEC4-V6B-2W4
Date Sampled		03/05/2023	03/05/2023
Type of sample		Soil	Soil
Date prepared	-	04/05/2023	04/05/2023
Date analysed	-	04/05/2023	04/05/2023
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	1	0.4
Perfluorodecanesulfonic acid	µg/kg	<0.2	<0.2
Perfluorobutanoic acid	µg/kg	<0.2	<0.2
Perfluoropentanoic acid	µg/kg	0.3	0.3
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	0.2	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*	%	102	106
Surrogate $^{13}C_2$ *PFOA*	%	95	97
Extracted ISTD $^{13}C_3$ *PFBS*	%	96	88
Extracted ISTD $^{18}O_2$ *PFHxS*	%	95	95
Extracted ISTD $^{13}C_4$ *PFOS*	%	83	86
Extracted ISTD $^{13}C_4$ *PFBA*	%	95	92

PFAS in Soils Extended			
Our Reference		322273-26	322273-27
Your Reference	UNITS	AEC4-V6B-2W3	AEC4-V6B-2W4
Date Sampled		03/05/2023	03/05/2023
Type of sample		Soil	Soil
Extracted ISTD $^{13}C_3$ *PFPeA*	%	95	87
Extracted ISTD $^{13}C_2$ *PFHxA*	%	90	78
Extracted ISTD $^{13}C_4$ *PFHpA*	%	88	87
Extracted ISTD $^{13}C_4$ *PFOA*	%	93	94
Extracted ISTD $^{13}C_5$ *PFNA*	%	91	96
Extracted ISTD $^{13}C_2$ *PFDA*	%	78	86
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	94	91
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	96	98
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	102	100
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	81	73
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	74	81
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	76	75
Extracted ISTD $^{13}C_8$ *FOSA*	%	96	95
Extracted ISTD d_3 *N MeFOSA*	%	93	88
Extracted ISTD d_5 *N EtFOSA*	%	91	90
Extracted ISTD d_7 *N MeFOSE*	%	92	90
Extracted ISTD d_9 *N EtFOSE*	%	96	94
Extracted ISTD d_3 *N MeFOSAA*	%	86	95
Extracted ISTD d_5 *N EtFOSAA*	%	94	92
Total Positive PFHxS & PFOS	µg/kg	1	0.4
Total Positive PFOS & PFOA	µg/kg	1	0.4
Total Positive PFAS	µg/kg	1.5	0.9

Moisture						
Our Reference		322273-21	322273-22	322273-23	322273-24	322273-25
Your Reference	UNITS	AEC4-V10W-2	QAQC4	AEC4-V6B-2B	AEC4-V6B-2W1	AEC4-V6B-2W2
Date Sampled		03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
Date analysed	-	04/05/2023	04/05/2023	04/05/2023	04/05/2023	04/05/2023
Moisture	%	4.9	4.6	14	17	16

Moisture			
Our Reference		322273-26	322273-27
Your Reference	UNITS	AEC4-V6B-2W3	AEC4-V6B-2W4
Date Sampled		03/05/2023	03/05/2023
Type of sample		Soil	Soil
Date prepared	-	03/05/2023	03/05/2023
Date analysed	-	04/05/2023	04/05/2023
Moisture	%	18	13

PFAS in ASLP Extended						
Our Reference		322273-21	322273-22	322273-23	322273-24	322273-25
Your Reference	UNITS	AEC4-V10W-2	QAQC4	AEC4-V6B-2B	AEC4-V6B-2W1	AEC4-V6B-2W2
Date Sampled		03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
Date analysed	-	03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
pH of final Leachate	pH units	6.7	6.6	6.9	6.8	6.3
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.03	0.03	<0.01	0.02	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.07	0.08	0.03	0.19	0.03
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	0.04	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	0.03	0.08	0.04
Perfluorohexanoic acid	µg/L	<0.01	<0.01	0.01	0.06	0.02
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	0.01	0.02	0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<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
6:2 FTS	µg/L	<0.01	<0.01	<0.01	0.06	0.01
8:2 FTS	µg/L	<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
Perfluorooctane sulfonamide	µg/L	<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
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	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	100	100	103	99	99
Surrogate $^{13}C_2$ PFOA	%	101	99	108	101	100
Extracted ISTD $^{13}C_3$ *PFBS*	%	103	107	102	101	104
Extracted ISTD $^{18}O_2$ *PFHxS*	%	105	105	106	104	103
Extracted ISTD $^{13}C_4$ *PFOS*	%	100	99	104	105	104

PFAS in ASLP Extended						
Our Reference		322273-21	322273-22	322273-23	322273-24	322273-25
Your Reference	UNITS	AEC4-V10W-2	QAQC4	AEC4-V6B-2B	AEC4-V6B-2W1	AEC4-V6B-2W2
Date Sampled		03/05/2023	03/05/2023	03/05/2023	03/05/2023	03/05/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	108	110	103	108	106
Extracted ISTD $^{13}C_3$ *PFPeA*	%	109	109	106	107	105
Extracted ISTD $^{13}C_2$ *PFHxA*	%	112	112	100	100	99
Extracted ISTD $^{13}C_4$ *PFHpA*	%	107	108	104	104	103
Extracted ISTD $^{13}C_4$ *PFOA*	%	107	111	106	112	110
Extracted ISTD $^{13}C_5$ *PFNA*	%	110	110	105	104	102
Extracted ISTD $^{13}C_2$ *PFDA*	%	108	115	106	108	105
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	111	112	116	117	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	105	108	107	113	102
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	91	90	86	91	70
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	104	105	105	102	98
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	108	110	107	112	104
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	109	119	120	116	118
Extracted ISTD $^{13}C_8$ *FOSA*	%	113	114	110	113	110
Extracted ISTD d_3 *N MeFOSA*	%	108	107	107	107	99
Extracted ISTD d_5 *N EtFOSA*	%	109	109	105	108	101
Extracted ISTD d_7 *N MeFOSE*	%	105	105	102	109	103
Extracted ISTD d_9 *N EtFOSE*	%	107	107	108	107	105
Extracted ISTD d_3 *N MeFOSAA*	%	125	125	107	112	109
Extracted ISTD d_5 *N EtFOSAA*	%	132	143	116	114	113
Total Positive PFHxS & PFOS	µg/L	0.11	0.11	0.03	0.21	0.03
Total Positive PFOS & PFOA	µg/L	0.07	0.08	0.03	0.19	0.03
Total Positive PFAS	µg/L	0.11	0.11	0.08	0.46	0.11

PFAS in ASLP Extended			
Our Reference		322273-26	322273-27
Your Reference	UNITS	AEC4-V6B-2W3	AEC4-V6B-2W4
Date Sampled		03/05/2023	03/05/2023
Type of sample		Soil	Soil
Date prepared	-	03/05/2023	03/05/2023
Date analysed	-	03/05/2023	03/05/2023
pH of final Leachate	pH units	6.0	5.6
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	0.02	<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	%	97	96
Surrogate $^{13}C_2$ PFOA	%	102	105
Extracted ISTD $^{13}C_3$ *PFBS*	%	105	104
Extracted ISTD $^{18}O_2$ *PFHxS*	%	106	104
Extracted ISTD $^{13}C_4$ *PFOS*	%	105	108

PFAS in ASLP Extended			
Our Reference		322273-26	322273-27
Your Reference	UNITS	AEC4-V6B-2W3	AEC4-V6B-2W4
Date Sampled		03/05/2023	03/05/2023
Type of sample		Soil	Soil
Extracted ISTD $^{13}C_4$ *PFBA*	%	107	102
Extracted ISTD $^{13}C_3$ *PFPeA*	%	107	106
Extracted ISTD $^{13}C_2$ *PFHxA*	%	99	103
Extracted ISTD $^{13}C_4$ *PFHpA*	%	103	107
Extracted ISTD $^{13}C_4$ *PFOA*	%	110	107
Extracted ISTD $^{13}C_5$ *PFNA*	%	102	104
Extracted ISTD $^{13}C_2$ *PFDA*	%	107	108
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	113	114
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	109	109
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	86	88
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	99	112
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	110	107
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	106	120
Extracted ISTD $^{13}C_8$ *FOSA*	%	112	113
Extracted ISTD d_3 *N MeFOSA*	%	106	105
Extracted ISTD d_5 *N EtFOSA*	%	103	108
Extracted ISTD d_7 *N MeFOSE*	%	108	108
Extracted ISTD d_9 *N EtFOSE*	%	108	104
Extracted ISTD d_3 *N MeFOSAA*	%	110	113
Extracted ISTD d_5 *N EtFOSAA*	%	116	117
Total Positive PFHxS & PFOS	µg/L	0.02	<0.01
Total Positive PFOS & PFOA	µg/L	0.02	<0.01
Total Positive PFAS	µg/L	0.02	<0.01

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-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.
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.
INORG-137	Total Carbon Nitrogen Sulfur by high temperature catalytic combustion with IR detection.

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 5.4 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.
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 5.4Table 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: Miscellaneous Inorg - soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			04/05/2023	1	04/05/2023	04/05/2023		04/05/2023	[NT]
Date analysed	-			04/05/2023	1	04/05/2023	04/05/2023		04/05/2023	[NT]
Combustibility*	%	0.1	Inorg-092	<0.1	1	4.1	[NT]		[NT]	[NT]
Total Sulfur in soil/solids	%	0.01	INORG-137	<0.01	1	0.050	0.040	22	97	[NT]

QUALITY CONTROL: Miscellaneous Inorg - soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	13	04/05/2023	04/05/2023		[NT]	[NT]
Date analysed	-			[NT]	13	04/05/2023	04/05/2023		[NT]	[NT]
Combustibility*	%	0.1	Inorg-092	[NT]	13	2.0	[NT]		[NT]	[NT]
Total Sulfur in soil/solids	%	0.01	INORG-137	[NT]	13	0.050	0.040	22	[NT]	[NT]

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	322273-22
Date prepared	-			04/05/2023	21	04/05/2023	04/05/2023		04/05/2023	04/05/2023
Date analysed	-			04/05/2023	21	04/05/2023	04/05/2023		04/05/2023	04/05/2023
Perfluorobutanesulfonic acid	µg/kg	0.1	Org-029	<0.1	21	<0.1	<0.1	0	104	100
Perfluoropentanesulfonic acid	µg/kg	0.1	Org-029	<0.1	21	<0.1	<0.1	0	109	107
Perfluorohexanesulfonic acid - PFHxS	µg/kg	0.1	Org-029	<0.1	21	0.7	0.6	15	111	107
Perfluoroheptanesulfonic acid	µg/kg	0.1	Org-029	<0.1	21	<0.1	<0.1	0	105	99
Perfluorooctanesulfonic acid PFOS	µg/kg	0.1	Org-029	<0.1	21	2.4	1.8	29	97	76
Perfluorodecanesulfonic acid	µg/kg	0.2	Org-029	<0.2	21	<0.2	<0.2	0	82	95
Perfluorobutanoic acid	µg/kg	0.2	Org-029	<0.2	21	<0.2	<0.2	0	106	107
Perfluoropentanoic acid	µg/kg	0.2	Org-029	<0.2	21	<0.2	<0.2	0	107	107
Perfluorohexanoic acid	µg/kg	0.1	Org-029	<0.1	21	0.1	0.1	0	99	98
Perfluoroheptanoic acid	µg/kg	0.1	Org-029	<0.1	21	<0.1	<0.1	0	103	106
Perfluorooctanoic acid PFOA	µg/kg	0.1	Org-029	<0.1	21	<0.1	<0.1	0	103	99
Perfluorononanoic acid	µg/kg	0.1	Org-029	<0.1	21	<0.1	<0.1	0	99	108
Perfluorodecanoic acid	µg/kg	0.5	Org-029	<0.5	21	<0.5	<0.5	0	99	99
Perfluoroundecanoic acid	µg/kg	0.5	Org-029	<0.5	21	<0.5	<0.5	0	89	95
Perfluorododecanoic acid	µg/kg	0.5	Org-029	<0.5	21	<0.5	<0.5	0	100	101
Perfluorotridecanoic acid	µg/kg	0.5	Org-029	<0.5	21	<0.5	<0.5	0	94	89
Perfluorotetradecanoic acid	µg/kg	5	Org-029	<5	21	<5	<5	0	112	115
4:2 FTS	µg/kg	0.1	Org-029	<0.1	21	<0.1	<0.1	0	117	117
6:2 FTS	µg/kg	0.1	Org-029	<0.1	21	<0.1	<0.1	0	106	106
8:2 FTS	µg/kg	0.2	Org-029	<0.2	21	<0.2	<0.2	0	111	108
10:2 FTS	µg/kg	0.2	Org-029	<0.2	21	<0.2	<0.2	0	117	103
Perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	21	<1	<1	0	108	112
N-Methyl perfluorooctane sulfonamide	µg/kg	1	Org-029	<1	21	<1	<1	0	105	108
N-Ethyl perfluorooctanesulfon amide	µg/kg	1	Org-029	<1	21	<1	<1	0	98	99
N-Me perfluorooctanesulfonamid oethanol	µg/kg	1	Org-029	<1	21	<1	<1	0	117	110
N-Et perfluorooctanesulfonamid oethanol	µg/kg	5	Org-029	<5	21	<5	<5	0	112	113
MePerfluorooctanesulf- amid oacetic acid	µg/kg	0.2	Org-029	<0.2	21	<0.2	<0.2	0	94	102
EtPerfluorooctanesulf amid oacetic acid	µg/kg	0.2	Org-029	<0.2	21	<0.2	<0.2	0	98	107
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	101	21	101	98	3	98	98
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	96	21	95	94	1	87	94

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	322273-22
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	92	21	92	92	0	88	90
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	98	21	90	88	2	89	91
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	100	21	93	97	4	99	96
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	95	21	93	94	1	94	91
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	94	21	86	85	1	88	83
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	100	21	96	98	2	96	95
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	101	21	98	94	4	96	96
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	98	21	94	97	3	101	97
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	105	21	99	98	1	99	91
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	105	21	101	98	3	106	100
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	109	21	101	107	6	116	98
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	111	21	99	107	8	107	108
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	111	21	102	95	7	108	100
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	82	21	75	73	3	83	78
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	94	21	83	83	0	97	87
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	91	21	80	88	10	93	93
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	101	21	97	98	1	93	92
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	99	21	94	96	2	98	94
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	106	21	102	102	0	105	100
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	98	21	93	95	2	95	93

QUALITY CONTROL: PFAS in Soils Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	322273-22
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	104	21	102	95	7	103	98
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	116	21	103	103	0	108	94
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	102	21	91	92	1	102	87

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	322273-22
Date prepared	-			03/05/2023	21	03/05/2023	03/05/2023		03/05/2023	03/05/2023
Date analysed	-			03/05/2023	21	03/05/2023	03/05/2023		03/05/2023	03/05/2023
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029A	<0.01	21	<0.01	<0.01	0	108	106
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029A	<0.01	21	<0.01	<0.01	0	107	108
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029A	<0.01	21	0.03	0.03	0	105	102
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029A	<0.01	21	<0.01	<0.01	0	101	102
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029A	<0.01	21	0.07	0.06	15	105	103
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029A	<0.02	21	<0.02	<0.02	0	90	88
Perfluorobutanoic acid	µg/L	0.02	Org-029A	<0.02	21	<0.02	<0.02	0	105	103
Perfluoropentanoic acid	µg/L	0.02	Org-029A	<0.02	21	<0.02	<0.02	0	102	103
Perfluorohexanoic acid	µg/L	0.01	Org-029A	<0.01	21	<0.01	<0.01	0	103	106
Perfluoroheptanoic acid	µg/L	0.01	Org-029A	<0.01	21	<0.01	<0.01	0	105	106
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029A	<0.01	21	<0.01	<0.01	0	108	108
Perfluorononanoic acid	µg/L	0.01	Org-029A	<0.01	21	<0.01	<0.01	0	111	108
Perfluorodecanoic acid	µg/L	0.02	Org-029A	<0.02	21	<0.02	<0.02	0	106	107
Perfluoroundecanoic acid	µg/L	0.02	Org-029A	<0.02	21	<0.02	<0.02	0	101	98
Perfluorododecanoic acid	µg/L	0.05	Org-029A	<0.05	21	<0.05	<0.05	0	107	105
Perfluorotridecanoic acid	µg/L	0.1	Org-029A	<0.1	21	<0.1	<0.1	0	98	95
Perfluorotetradecanoic acid	µg/L	0.5	Org-029A	<0.5	21	<0.5	<0.5	0	105	105
4:2 FTS	µg/L	0.01	Org-029A	<0.01	21	<0.01	<0.01	0	105	103
6:2 FTS	µg/L	0.01	Org-029A	<0.01	21	<0.01	<0.01	0	111	107
8:2 FTS	µg/L	0.02	Org-029A	<0.02	21	<0.02	<0.02	0	112	108
10:2 FTS	µg/L	0.02	Org-029A	<0.02	21	<0.02	<0.02	0	113	106
Perfluorooctane sulfonamide	µg/L	0.1	Org-029A	<0.1	21	<0.1	<0.1	0	111	109
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029A	<0.05	21	<0.05	<0.05	0	117	115
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029A	<0.1	21	<0.1	<0.1	0	108	107
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029A	<0.05	21	<0.05	<0.05	0	85	88
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029A	<0.5	21	<0.5	<0.5	0	102	102
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029A	<0.02	21	<0.02	<0.02	0	112	109
EtPerfluorooctanesulf-amid oacetic acid	µg/L	0.02	Org-029A	<0.02	21	<0.02	<0.02	0	110	114
Surrogate $^{13}C_8$ PFOS	%		Org-029A	98	21	100	98	2	98	102
Surrogate $^{13}C_2$ PFOA	%		Org-029A	102	21	101	106	5	106	101

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	322273-22
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029A	105	21	103	101	2	101	101
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029A	105	21	105	102	3	104	104
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029A	103	21	100	100	0	98	99
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029A	110	21	108	107	1	106	108
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029A	112	21	109	110	1	109	107
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029A	112	21	112	110	2	109	108
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029A	105	21	107	105	2	105	104
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029A	109	21	107	104	3	103	104
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029A	111	21	110	105	5	107	109
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029A	111	21	108	104	4	109	108
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029A	112	21	111	106	5	104	109
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029A	103	21	105	106	1	97	103
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029A	86	21	91	75	19	80	89
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029A	110	21	104	103	1	106	105
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029A	110	21	108	108	0	99	101
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029A	118	21	109	106	3	108	111
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029A	116	21	113	110	3	104	106
Extracted ISTD d_3 *N MeFOSA*	%		Org-029A	104	21	108	102	6	102	104
Extracted ISTD d_5 *N EtFOSA*	%		Org-029A	106	21	109	102	7	104	107
Extracted ISTD d_7 *N MeFOSE*	%		Org-029A	106	21	105	99	6	100	101

QUALITY CONTROL: PFAS in ASLP Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	322273-22
Extracted ISTD d_9 *N EtFOSE*	%		Org-029A	107	21	107	99	8	102	105
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029A	128	21	125	122	2	121	125
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029A	144	21	132	132	0	121	119

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

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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Company:	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	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: 0439761637	Additional report format:	☐ Esdat ☐ Equis
Email Results to:	victor.arias@consultingearth.com.au tristan.goodbody@consultingearth.com.au	Lab Comments:	1 DAY TURN AROUND
Email Invoice to:	kay.lowe@consultingearth.com.au		

Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Asbestos NEPM (AF/FA)	Combustible content and %sulfur	Comments
1	WSB-V1-2		03/05/23	Soil		X	
2	QARC1					X	
s/o	QAQC2					X	PLEASE FORWARD TO ALS FOR COMBUSTIBLE CONTENT AND % SULFUR (1 DAY)
3	WSB-V2-2					X	
4	WSB-V3-2					X	
5	WSB-V4-2					X	
6	WSB-V5-2					X	
7	WSB-V6-2					X	
8	WSB-V7-2					X	
9	WSB-V8-2					X	
10	WSB-V9-2					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):	ELS SYD
Print Name:	VICTOR ARIAS	Print Name:	Sarah P
Date & Time:	03/05/23 17:50	Date & Time:	03/05/23, 1800
Signature:		Signature:	

Lab Use Only

Job number: 322273	Cooling: Ice / Ice pack / None
Temperature: ~~18~~ 10°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

CHAIN OF CUSTODY FORM - Client

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Company:	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	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: 0439761637	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:	1 DAY TURN AROUND

Sample Information					Tests Required																Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Asbestos NEPM (AF/FA)	MOISTURE CONTENT AND SOIL CLASS															Provide as much information about the sample as you can
11	SP5-V5-2		03/05/23	SOIL	X	X															
12	QAQC3				X																
13	SS-V3-2B					X															
14	SS-V3-2W1					X															
15	SS-V3-2W2					X															
16	SS-V3-2W3					X															
17	SS-V3-2W4					X															
18	SS-V15-2					X															
19	SS-V16-2					X															
20	SS-V27-2					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:	Sarah P
Date & Time:	03/05/23 17:50	Date & Time:	03/05/23, 1800
Signature:		Signature:	

Lab Use Only

Job number: 322273	Cooling: Ice / Ice pack / None
Temperature: 10°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
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
16-18 Hayden Crt, Myaree, WA 6154
08 9317 2505 | lab@mpl.com.au

Melbourne Lab - Envirolab Services
26 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 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		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: 1 DAY TURNAROUND	

Sample Information					Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	ASLP PFAS																Provide as much information about the sample as you can
21	AEC4-V10W-2		02/05/23	SOIL	X	X																
22	QAQC4		↓	↓	X	X																
23	AEC4-V6B-2B				X	X																
24	AEC4-V6B-2W1				X	X																
25	AEC4-V6B-2W2				X	X																
26	AEC4-V6B-2W3				X	X																
27	AEC4-V6B-2W4				X	X																
Extra → 28	~~AEC4-V10W-2~~																					

☐ *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:	Sarah P
Date & Time:	03/05/23 17:50	Date & Time:	03/05/23, 1800
Signature:		Signature:	

Lab Use Only	
Job number:	322273
Temperature:	10°C
TAT Req - SAME day / (1) / 2 / 3 / 4 / STD	Cooling: Ice / Ice pack / None Security seal: Intact / Broken / (None)

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Consulting Earth Scientists Pty Ltd
Attention	Tristan Goodbody

Sample Login Details

Your reference	CES170608-GPM
Envirolab Reference	322273
Date Sample Received	03/05/2023
Date Instructions Received	03/05/2023
Date Results Expected to be Reported	04/05/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	27 Soil
Turnaround Time Requested	1 day
Temperature on Receipt (°C)	10
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	Combustibility*	Total Sulfur in soil/solids	Asbestos ID - soils NEPM - ASB-001	PFAS in Soils Extended	PFAS in ASLP Extended
WSB-V1-2	✓	✓			
QAQC1	✓	✓			
WSB-V2-2	✓	✓			
WSB-V3-2	✓	✓			
WSB-V4-2	✓	✓			
WSB-V5-2	✓	✓			
WSB-V6-2	✓	✓			
WSB-V7-2	✓	✓			
WSB-V8-2	✓	✓			
WSB-V9-2	✓	✓			
SP5-V5-2			✓		
QAQC3			✓		
SS-V3-2B	✓	✓			
SS-V3-2W1	✓	✓			
SS-V3-2W2	✓	✓			
SS-V3-2W3	✓	✓			
SS-V3-2W4	✓	✓			
SS-V15-2	✓	✓			
SS-V16-2	✓	✓			
SS-V27-2	✓	✓			
AEC4-V10W-2				✓	✓
QAQC4				✓	✓
AEC4-V6B-2B				✓	✓
AEC4-V6B-2W1				✓	✓
AEC4-V6B-2W2				✓	✓
AEC4-V6B-2W3				✓	✓
AEC4-V6B-2W4				✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2314801**	Page	: 1 of 2
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-May-2023 16:10
Order number	: ----	Date Analysis Commenced	: 12-May-2023
C-O-C number	: ----	Issue Date	: 16-May-2023 17:39
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

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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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

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

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

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

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

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

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)				Sample ID	QAQC2	----	----	----	----
				Sampling date / time	03-May-2023 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES2314801-001**	---------	---------	---------	---------	
				Result	----	----	----	----	
ED042T: Total Sulfur by LECO									
Sulfur - Total as S (LECO)	----	0.01	%	<0.01	**----**	**----**	**----**	**----**	

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) ED042T: Total Sulfur by LECO

QUALITY CONTROL REPORT

Work Order	: **ES2314801**	Page	: 1 of 3
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-May-2023
Order number	: ----	Date Analysis Commenced	: 12-May-2023
C-O-C number	: ----	Issue Date	: 16-May-2023
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*
Kim McCabe	Senior Inorganic Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

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 (%)*
ED042T: Total Sulfur by LECO (QC Lot: 5044413)									
ES2314801-001	QAQC2	ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<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: **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
ED042T: Total Sulfur by LECO (QCLot: 5044413)								
ED042T: Sulfur - Total as S (LECO)	----	0.01	%	<0.01	0.51 %	101	70.0	130

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

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

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2314801**	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	: 04-May-2023
Site	: ----	Issue Date	: 16-May-2023
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.**
- **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
ED042T: Total Sulfur by LECO						
Soil Glass Jar - Unpreserved						
QAQC2	12-May-2023	10-May-2023	**2**	----	----	----

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
ED042T: Total Sulfur by LECO							
Soil Glass Jar - Unpreserved (ED042T)							
QAQC2	**03-May-2023**	**12-May-2023**	10-May-2023	×	**12-May-2023**	08-Nov-2023	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Sulfur - Total as S (LECO)	ED042T	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Sulfur - Total as S (LECO)	ED042T	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Sulfur - Total as S (LECO)	ED042T	1	10	**10.00**	**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
Sulfur - Total as S (LECO)	ED042T	SOIL	In house: Dried and pulverised sample is combusted in a high temperature furnace in the presence of strong oxidants / catalysts. The evolved S (as SO2) is measured by infra-red detector

Preparation Methods	Method	Matrix	Method Descriptions
Dry and Pulverise (up to 100g)	GEO30	SOIL	#

CHAIN OF CUSTODY FORM - Client

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ENVIROLAB GROUP
National phone number 1300 424 344

Sydney L
12 Ashley
02 991

Perth La
16-18 Ha
08 93

Melbou
25 Rese
03 97

Adelaid
7a The
08 7

Brisba
20a, 1
07 3

Environmental Division
Sydney
Work Order Reference
ES2314801

Telephone : + 61-2-8784 8555

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

Company:	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	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: 0439761637	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:	1 DAY TURN AROUND

Sample Information					Tests Required			Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Asbestos NEPM (AF/FA)	COMBUSTIBLE CONTENT AND %SULFUR		Provide as much information about the sample as you can
1	WSB-V1-2		03/05/23	SOIL		X		
2	QAQC1					X		
s/o	QAQC2					X	PLEASE FORWARD TO ALS FOR COMBUSTIBLE CONTENT AND % SULFUR (1 DAY)	
3	WSB-V2-2					X		
4	WSB-V3-2					X		
5	WSB-V4-2					X		
6	WSB-V5-2					X		
7	WSB-V6-2					X		
8	WSB-V7-2					X		
9	WSB-V8-2					X		
10	WSB-V9-2					X		

(1)

TAT

☐ *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 STD
Print Name:	VICTOR ARIAS	Print Name:	Sarah P
Date & Time:	03/05/23 17:50	Date & Time:	03/05/23, 1800
Signature:		Signature:	

Lab Use Only

Job number: 322273	Cooling: Ice / Ice pack / None
Temperature: ~~18~~ 10°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Relinquished by ELS (sic)
CM - 4/5 · 1230 CM

Rec: Jack 04/05/23 1910

CHAIN OF CUSTODY FORM - Client

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ENVIROLAB GROUP
National phone number 1300 424 344

Sydney L
12 Ashley
02 991

Perth La
16-18 Ha
08 93

Melbou
25 Rese
03 97

Adelaid
7a The
08 7

Brisba
20a, 1
07 3

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

Environmental Division
Sydney
Work Order Reference
ES2314801

Telephone : + 61-2-8784 8555

Company:	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	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: 0439761637	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:	1 DAY TURN AROUND

Sample Information					Tests Required			Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	Asbestos NEPM (AF/FA)	COMBUSTIBLE CONTENT AND %SULFUR		Provide as much information about the sample as you can
1	WSB-V1-2		03/05/23	soil		X		
2	QAQC1					X		
s/o	QAQC2					X		PLEASE FORWARD TO ALS FOR COMBUSTIBLE CONTENT AND % SULFUR (1 DAY)
3	WSB-V2-2					X		
4	WSB-V3-2					X		
5	WSB-V4-2					X		
6	WSB-V5-2					X		
7	WSB-V6-2					X		Ash % (Lithgow)
8	WSB-V7-2					X		
9	WSB-V8-2					X		
10	WSB-V9-2					X		LECO S (Brisbane)

☐ *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:	Sarah P
Date & Time:	03/05/23 17:50	Date & Time:	03/05/23, 1800
Signature:		Signature:	

Lab Use Only		
Job number:	322273	Cooling: Ice / Ice pack / None
Temperature:	10°C	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD		

Relinquished by ELS SYD
CM - 4/5 · 1230

Rec: Jack 04/05/23 1610

ACIRL Quality Testing Services Pty Ltd
ABN 66 003 451 876
Unit 3, 16 Donald Street
Lithgow, NSW, 2790, Australia
Tel: +61 2 6350 7400
Fax: +61 2 6352 3583

Analysis and Testing Report
ES2314801

Report To:	ALS Sydney
Address:	277-289 Woodpark Road, Smithfield New South Wales 2164
Report On:	ES2314801
Report No:	24007326-010
Report Status:	Final Report
Date Sampled:	
Unique ID of Sample(s):	
Workorder Number:	LG23002229
Sampled By:	Client
Testing & Analysis Requirements:	Client Instructions
Date Reported:	16/05/2023
Reported By :	Daniel Shawcross Operations Manager

Coal testing materials were sampled and analysed in accordance with the following **Australian** Standards or equivalent:

AS1038.3 (2000) Coal And Coke - Analysis And Testing - Proximate Analysis Of Higher Rank Coal

Analysis performed by : ACIRL Lithgow NSW NATA Accreditation No. 15784, Site No. 11436

NATA Accredited for compliance with ISO 17025 - Testing
Accreditation Number 15784

right solutions.
right partner.

ANALYSIS AND TESTING REPORT

ALS SYDNEY

ES No: ES2314801
Report No: 24007326-010
Date Reported: 16/05/2023

Sample Number	Sample Identification	Ash (ad) (%)
1	ES2314801	95.4

ad - Air Dried Basis

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
16-18 Hay
08 9317

Melbourn
25 Researc
03 9763

Adelaide O
7a The Para
08 7087 6

Brisbane O
20a, 10-20 D
07 3266 9

Darwin Offic
Unit 20/119 F
08 8967 12

Environmental Division
Sydney
Work Order Reference
ES2314153

Telephone : + 61-2-8784 8555

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			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: 1 DAY TURN AROUND	

Sample information					Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	PFAS ASLP	Asbestos (AF/FA) - NEMP Method	Combustible Content and % Sulfur														Provide as much information about the sample as you can
1	AEC4-V1B		26.04.23	SOIL	X	X																
2	QAQC5		↓	↓	X	X																
3	QAQC6		↓	↓	X	X																PLEASE FORWARD TO ALS FOR PFAS and PFAS ASLP (1 DAY)
4	AEC4-V2B		↓	↓	X	X																
5	AEC4-V3B		↓	↓	X	X																
6	AEC4-V4B		↓	↓	X	X																
7	AEC4-V5B		↓	↓	X	X																
8	AEC4-V6B		↓	↓	X	X																
9	AEC4-V7B		↓	↓	X	X																
10	AEC4-V8B		↓	↓	X	X																
11	AEC4-V9B		↓	↓	X	X																

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

				Lab Use Only	
Relinquished by (Company):	CES	Received by (Company):	ELS		
Print Name:	VICTOR ARIAS	Print Name:	Thq	Job number: 321970	Cooling: Ice / Ice pack / None
Date & Time:	26.04.23 15:30	Date & Time:	28/4/23 1730	Temperature: 4	Security seal: Intact / Broken / None
Signature:		Signature:		TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Relinquished by ELS Jkd
C Mackenzie
1/5 · 1200
CM

Rec: Jack 01/05/23 1525

CHAIN OF CUSTODY FORM - Client

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ENVIROLAB GROUP
National phone number 1300 424 344

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Perth Lab - MPL Laboratories
16-18 Hayden Crt, Myaree, WA 6154
08 9317 2505 | lab@mpl.com.au

Melbourne Lab - Envirolab Services
25 Research Drive, Croydon South, VIC 3136
03 9763 2500 | melbourne@envirolab.com.au

Adelaide Office - Envirolab Services
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 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	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:	1 DAY TURN AROUND

Sample information					Tests Required																	Comments
Envirolab Sample ID (Lab use only)	Client Sample ID or Information	Depth	Date Sampled	Type of Sample	PFAS	PFAS ASLP	Asbestos (AF/FA) _NEMP Method	Combustible Content and % Sulfur														Provide as much information about the sample as you can
11	AECA-V1W		28.04.23	SOIL	X	X																
12	QAQC 7		↓	↓	X	X																
(2) —	QAQC8				PLEASE FORWARD TO ALS FOR PFAS and PFAS ASLP (1 DAY)																	
13	AECA-V2W				X	X																
14	AECA-V3W				X	X																
15	AECA-V4W				X	X																
16	AECA-V5W				X	X																
17	AECA-V6W				X	X																
18	AECA-V7W				X	X																
19	AECA-V8W				X	X																
20	AECA-V9-W		↓	↓	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):	
Print Name:	VICTOR ARIAS	Print Name:	
Date & Time:	28.04.23 15:30	Date & Time:	Ang 28/4/23
Signature:		Signature:	

Lab Use Only	
Job number: 321970	Cooling: Ice / Ice pack / None
Temperature:	Security seal: Intact / Broken / None
TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

Relinquished by EL: SYD
CMcKenna.
1/5. 1200

Rec: Jack 01/05/23 1525

Appendix M

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site - H13		
Date Commenced: 10 March 2023					**CES Personnel:** V. Arias		
Date Completed: 10 March 2023							
Sample Location	H13-V1B	H13-V2B	H13-V3B	H13-V4B	H13-V5B	H13-V6B	H13-V7B
Depth	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Soil Description	Clayey Sand, fine to medium, grey with red mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey with red mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey with red mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey with red mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey with red mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey with red mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey with red mottling, clay is of low plasticity
Mass of 10L Soil (g)	11,000	11,300	11,120	12,000	13,000	11,200	11,000
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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site - H13		
Date Commenced: 10 March 2023					**CES Personnel:** V. Arias		
Date Completed: 10 March 2023							
Sample Location	H13-V8B	H13-W1	H13-W2	H13-W3	H13-W4	H13-W5	H13-W6
Depth	0.6	0.4	0.5	0.1	0.2	0.2	0.4
Soil Description	Clayey Sand, fine to medium, grey with red mottling, clay is of low plasticity	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse
Mass of 10L Soil (g)	11,800	10,350	10,800	11,800	11,100	10,500	10,600
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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site - H13		
Date Commenced: 10 March 2023					**CES Personnel:** V. Arias		
Date Completed: 10 March 2023							
Sample Location	H13-W7	H13-W8	H13-W9	H13-W10	H13-W11	H13-W12	
Depth	0.1	0.2	0.2	0.4	0.2	0.1	
Soil Description	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is coarse	
Mass of 10L Soil (g)	11,700	10,600	11,400	10,800	11,200	10,900	
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**	
Bonded ACM Observed	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	
Suspected Fibrous Asbestos Observed	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	
Additional Comments							

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site - F9		
Date Commenced: 10 March 2023					**CES Personnel:** V. Arias		
Date Completed: 10 March 2023							
Sample Location	F9-V1B	F9-V2B	F9-V3B	F9-V4B	F9-V5B	F9-V6B	F9-V7B
Depth	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Soil Description	Clayey Sand, fine to medium, grey with yellow/orange mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey with yellow/orange mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey with yellow/orange mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey with yellow/orange mottling, clay is of low plasticity	FILL- Clayey sand with bricks, medium, grey/yellow	Clayey Sand, fine to medium, grey with yellow/orange mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey with yellow/orange mottling, clay is of low plasticity
Mass of 10L Soil (g)	12,700	11,800	11,000	11,500	12,000	11,800	12,300
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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site - F9		
Date Commenced: 10 March 2023					**CES Personnel:** V. Arias		
Date Completed: 10 March 2023							
Sample Location	F9-V8B	F9-VW1	F9-VW2	F9-VW3	F9-VW4	F9-VW5	F9-VW6
Depth	0.7	0.3	0.1	0.2	0.7	0.5	0.2
Soil Description	FILL- Clayey sand with bricks, medium, grey with yellow mottling	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.	FILL- Gravely sand with bricks, medium, dark brown to grey. Gravel is fine to coarse.	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.
Mass of 10L Soil (g)	12,200	10,400	11,100	10,600	10,200	11,900	9,900
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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site - F9		
Date Commenced: 10 March 2023					**CES Personnel:** V. Arias		
Date Completed: 10 March 2023							
Sample Location	F9-VW7	F9-VW8	F9-VW9	F9-VW10	F9-VW11	F9-VW12	F9-VW13
Depth	0.2	0.2	0.5	0.7	0.2	0.3	0.1
Soil Description	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.	FILL- Gravely sand with bricks, medium, dark brown to grey. Gravel is fine to coarse.	FILL- Gravely sand with bricks, medium, dark brown to grey. Gravel is fine to coarse.	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.
Mass of 10L Soil (g)	10,400	10,400	11,100	10,600	10,200	11,900	11,200
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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Super Battery Site - F9 & CS108		
Date Commenced: 10 March 2023					**CES Personnel:** V. Arias		
Date Completed: 10 March 2023							
Sample Location	F9-VW14	CS108-V1B	CS108-VW1	CS108-VW2			
Depth	0.5	0.5	0.4	0.3			
Soil Description	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.	Clayey Sand, fine to medium, grey with yellow mottling, clay is of low plasticity	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.	FILL- Gravelly Sand, fine, dark brown to grey. Gravel is fine to coarse.			
Mass of 10L Soil (g)	10,600	9,300	11,700	10,500			
Assessment Method	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**			
Mass of Bonded ACM (g)	N/A	N/A	N/A	N/A			
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**			
Mass of Suspected Fibrous Asbestos (g)	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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Coal Stack		
Date Commenced: 23 March 2023					**CES Personnel:** T. Goodbody		
Date Completed: 23 March 2023							
Sample Location	H13-VW4-2	H13-VW-9	H13-VW-12-2	H13-VW2-2			
Depth							
Soil Description	FILL- Gravelly Sand, fine, dark brown. Gravel is fine to coarse, angular, concrete	FILL- Gravelly Sand, fine, dark brown to grey. Gravell is coarse.Concrte fragments observed.	FILL- Gravelly Sand, fine, dark brown to grey. Gravell is coarse.Concrte fragments observed.	FILL- Gravelly Sand, fine, dark brown to grey. Gravell is coarse.Concrte fragments observed.			
Mass of 10L Soil (g)	16,500	16,500	16,500	16,500			
Assessment Method	**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**			
Mass of Bonded ACM (g)	-	-	-	-			
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**			
Mass of Suspected Fibrous Asbestos (g)	-	-	-	-			
Additional Comments							

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Coal Stack		
Date Commenced: 23 March 2023					**CES Personnel:**T.Goodbody		
Date Completed: 23 March 2023							
Sample Location	F9-VW7-2	CS108-VW1-2	F9-VW8-2	F9-VW10-2	F9-VW11-2	F9-VW3-2	
Depth							
Soil Description	FILL- Gravelly Sand, fine, dark grey. Gravel is fine to coarse, angular, concrete, trace R.M.	FILL- Gravelly Sand, fine, dark grey. Gravell is fine to coarse, angular, concrete, trace R.M.	FILL- Gravelly Sand, fine, dark grey. Gravell is fine to coarse, angular, concrete, trace R.M.	FILL- Gravelly Sand, fine, dark grey. Gravell is fine to coarse, angular, concrete, trace R.M.	FILL- Gravelly Sand, fine, dark grey. Gravell is fine to coarse, angular, concrete, trace R.M.	FILL- Gravelly Sand, fine, dark grey. Gravell is fine to coarse, angular, concrete, trace R.M.	
Mass of 10L Soil (g)	16,500	16,500	16,500	16,500	16,500	16,500	
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	
Bonded ACM Observed	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	
Suspected Fibrous Asbestos Observed	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	
Additional Comments							

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Western Area		
Date Commenced: 18 April 2023					**CES Personnel:** V. Arias		
Date Completed: 18 April 2023							
Sample Location	WA-V1	WA-V2	WA-V3	WA-V4	WA-V5	WA-V6	WA-V7
Depth							
Soil Description	Clayey Sand, fine to medium, grey, clay is of low plasticity	Clayey Sand, fine to medium, red with grey mottling, clay is of low plasticity	FILL-Clayey Sand with coal traces, fine to medium, red with grey mottling, clay is of low plasticity	Clayey Sand, fine to medium, dark red with grey mottling, clay is of low plasticity	Clayey Sand, fine to medium, red with grey mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey, clay is of medium plasticity	Clayey Sand, fine to medium, red with grey mottling, clay is of low plasticity
Mass of 10L Soil (g)	16,500	16,500	16,500	16,500	16,500	16,500	16,500
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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Western Area		
Date Commenced: 18 April 2023					**CES Personnel:** V. Arias		
Date Completed: 18 April 2023							
Sample Location	WA-V8	WA-V9	WA-V10	WA-V11	WA-V12	WA-V13	WA-V14
Depth							
Soil Description	Clayey Sand, fine to medium, red with grey mottling, clay is of low plasticity	Clayey Sand, fine to medium, red with grey mottling, clay is of low plasticity	Clayey Sand, fine to medium, red with grey mottling, clay is of low plasticity	Clayey Sand, fine to medium, red with grey mottling, clay is of low plasticity	Clayey Sand, fine to medium, grey, clay is of low plasticity	Clayey Sand, fine to medium, red with grey mottling, clay is of low plasticity	Clayey Sand, fine to medium, red with grey mottling, clay is of low plasticity
Mass of 10L Soil (g)	16,500	16,500	16,500	16,500	16,500	16,500	16,500
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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Western Area		
Date Commenced: 18 April 2023					**CES Personnel:** V. Arias		
Date Completed: 18 April 2023							
Sample Location	WA-V15	WA-V16					
Depth							
Soil Description	Clayey Sand, fine to medium, yellow with grey mottling, clay is of low plasticity	Clayey Sand, fine to medium, red with grey mottling, clay is of low plasticity					
Mass of 10L Soil (g)	16,500	16,500					
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							

Asbestos Containing Materials (ACM) and Fibrous Asbestos (FA) Field Screen Section 11.3.2 ASC NEPM Schedule B2

CONSULTING EARTH SCIENTISTS

Project: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Stockpiles Footprint		
Date Commenced: 27 April 2023					**CES Personnel:** V. Arias		
Date Completed: 27 April 2023							
Sample Location	SP3-V1	SP3-V2	SP3-V3	SP3-V4	SP3-V5	SP3-V6	SP3-V7
Depth							
Soil Description	FILL- Gravelly Sand, fine, dark brown. Gravel is fine to coarse, angular.	FILL- Gravelly Sand, fine, dark brown. Gravel is fine to coarse, angular.	FILL- Gravelly Sand, fine, dark brown. Gravel is fine to coarse, angular.	FILL - Gravelly, Clayey Sand, fine to medium, red, clay is of low plasticity. Gravel is fine to coarse, angular.	FILL - Gravelly, Clayey Sand, fine to medium, red, clay is of low plasticity. Gravel is fine to coarse, angular.	FILL- Gravelly Sand, fine, dark brown. Gravel is fine to coarse, angular.	FILL - Gravelly, Clayey Sand, fine to medium, red, clay is of low plasticity. Gravel is fine to coarse, angular.
Mass of 10L Soil (g)	16,500	16,500	16,500	16,500	16,500	16,500	16,500
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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Stockpiles Footprint		
Date Commenced: 27 April 2023					**CES Personnel:** V. Arias		
Date Completed: 27 April 2023							
Sample Location	SP3-V8	SP5-V1	SP5-V2	SP5-V3	SP5-V4	SP5-V5	SP5-V6
Depth							
Soil Description	FILL - Gravelly, Clayey Sand, fine to medium, red, clay is of low plasticity. Gravel is fine to coarse, angular.	Clayey Sand, fine to medium, orange/red, clay is of low plasticity	Clayey Sand, fine to medium, orange/red, clay is of low plasticity	Clayey Sand, fine to medium, orange/red, clay is of low plasticity	Clayey Sand, fine to medium, orange/red with grey mottling, clay is of low plasticity	FILL- Clayey Sand with coal traces, fine to medium, orange/red, clay is of low plasticity	Clayey Sand, fine to medium, orange/red, clay is of low plasticity
Mass of 10L Soil (g)	16,500	16,500	16,500	16,500	16,500	16,500	16,500
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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Stockpiles Footprint		
Date Commenced: 27 April 2023					**CES Personnel:** V. Arias		
Date Completed: 27 April 2023							
Sample Location	SP5-V7	SP5-V8	SP6-V1	SP6-V2	SP6-V3	SP6-V4	SP6-V5
Depth							
Soil Description	Clayey Sand, fine to medium, red with grey mottling, clay is of low plasticity	Clayey Sand, fine to medium, orange/red, clay is of low plasticity	Clayey Sand, fine to medium, orange/red, clay is of low plasticity	Clayey Sand, fine to medium, orange/red, clay is of low plasticity	Clayey Sand, fine to medium, brown, grey, clay is of low plasticity	Clayey Sand, fine to medium, brown, clay is of low plasticity	Clayey Sand, fine to medium, brown, clay is of low plasticity
Mass of 10L Soil (g)	16,500	16,500	16,500	16,500	16,500	16,500	16,500
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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Stockpiles Footprint		
Date Commenced: 27 April 2023					**CES Personnel:** V. Arias		
Date Completed: 27 April 2023							
Sample Location	SP6-V6	SP6-V7	SP6-V8	SP7-V1	SP7-V2	SP7-V3	SP7-V4
Depth							
Soil Description	Clayey Sand, fine to medium, brown, clay is of low plasticity	Clayey Sand, fine to medium, brown, clay is of low plasticity	Clayey Sand, fine to medium, brown, clay is of low plasticity	Clayey Sand, fine to medium, orange/red, clay is of low plasticity	Clayey Sand, fine to medium, orange/red, clay is of low plasticity	FILL-Clayey Sand with coal traces, fine to medium, orange/red with grey mottling, clay is of low plasticity	FILL-Clayey Sand with coal traces, fine to medium, orange/red with grey mottling, clay is of low plasticity
Mass of 10L Soil (g)	16,500	16,500	16,500	16,500	16,500	16,500	16,500
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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Stockpiles Footprint		
Date Commenced: 27 April 2023					**CES Personnel:** V. Arias		
Date Completed: 27 April 2023							
Sample Location	SP7-V5	SP7-V6	SP7-V7	SP7-V8			
Depth							
Soil Description	Clayey Sand, fine to medium, orange/red, clay is of low plasticity	Clayey Sand, fine to medium, brown, clay is of low plasticity	FILL-Clayey Sand with coal traces, fine to medium, orange/red with grey mottling, clay is of low plasticity	Clayey Sand, fine to medium, brown, clay is of low plasticity			
Mass of 10L Soil (g)	16,500	16,500	16,500	16,500			
Assessment Method	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**			
Mass of Bonded ACM (g)	N/A	N/A	N/A	N/A			
Suspected Fibrous Asbestos Observed	Yes/**No**	Yes/**No**	Yes/**No**	Yes/**No**			
Mass of Suspected Fibrous Asbestos (g)	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: Waratah Super Battery Remediation					**Project I.D:** CES170608-GPM		
Project Manager: T. Goodbody					**Location:** Stockpiles Footprint		
Date Commenced: 3 May 2023					**CES Personnel:** V. Arias		
Date Completed: 3 May 2023							
Sample Location	SP5-V5-2						
Depth							
Soil Description	Clayey Sand, fine to medium, orange/red with grey mottling, clay is of low plasticity						
Mass of 10L Soil (g)	19,000						
Assessment Method	7 mm sieve/**Visual**						
Bonded ACM Observed	Yes/**No**						
Mass of Bonded ACM (g)	N/A						
Suspected Fibrous Asbestos Observed	Yes/**No**						
Mass of Suspected Fibrous Asbestos (g)	N/A						
Additional Comments							

Appendix N

ASBESTOS MATERIALS SURVEY REPORT

MUNMORAH POWER STATION

CMA CONTRACTING PTY LTD



PROPERTY RISK AUSTRALIA

PRA INSPECTION BODY ACCREDITATION

Accreditation	NATA Accreditation Number 20447.
Inspection Body	Accredited for compliance with ISO/IEC 17020

PRA CONTACT DETAILS

Company Name:	Property Risk Australia Pty Ltd
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STATEMENT OF LIMITATIONS

This report has been prepared by Property Risk Australia Pty Ltd (PRA) for the benefit of CMA Contracting Pty Ltd (hereafter the 'Client') in accordance with the agreement/contract between PRA and the Client. The works carried out in preparing this report have been performed in accordance with the proposal, scope of works, general terms and conditions and special terms and conditions, agreed in consultation with the Client.

This report has been prepared with information available at the time of report preparation and within the time and budgetary constraints imposed by the Client. PRA does not accept responsibility for inaccurate or incomplete information provided by the Client or third parties, nor for updates or changes to information made after the preparation of this report.

This report is solely for the use of the Client and has not been prepared for use by any other person or third party. This report must only be presented in full and may not be used by any person or third party, other than the Client, unless agreed to in writing by PRA. This will allow PRA to ensure that the intended use or interpretation of the report is fit for purpose and agreed to by the Client. PRA accepts no responsibility for damages arising from use of this report or supplementary information.

DOCUMENT QUALITY CONTROL

Report Title:	Asbestos Survey Report
Site Address:	Munmorah Power Station, Station Road, Munmorah Power Station, Colongra NSW
Client Name:	CMA Contracting Pty Ltd
Job Number:	PRJ001239
Revision Number	V1
Revision Date	12 December 2022
Status	Final

Revision Number	Report by	Position	Date
V0a	Liam Naughton	Consultant	12 December 2022
Authorised by	**Reviewed by**	**Position**	**Date**
V1	Nigel Johnson	Occupational Hygienist	12 December 2022

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EXECUTIVE SUMMARY

Introduction and Background

This report presents the findings of an Asbestos Materials Survey conducted by Property Risk Australia Pty Ltd (PRA) in relation to the Tunnel as part of the Munmorah Power Station located at Station Road, Munmorah Power Station, Colongra NSW 2262. This report has been prepared to assist CMA Contracting Pty Ltd in fulfilling its obligations under the *Work Health and Safety Regulation NSW 2017* (NSW) to have an up-to-date Asbestos Register.

Methodology

PRA undertook an on-site survey, risk assessment and the preparation of an asbestos register and report.

Asbestos materials

Table 1: Asbestos Items per Risk Rating Summary

Low	Moderate	High
84	0	0

Eighty four (84) asbestos-containing materials (ACM) were identified on site, refer to the Asbestos Register **in Appendix A**.

All ACM should be managed in accordance with the site Asbestos Management Plan (AMP), the recommendations provided and Codes of Practice. If no AMP exists then a site-specific AMP should be developed.

Naturally Occurring Asbestos

The site is not mapped and has very little to no potential of containing Naturally Occurring Asbestos (NOA) (Heads of Asbestos Coordination Authorities, 2015).

1 INTRODUCTION

This report presents the findings of a Asbestos Materials Survey conducted by Property Risk Australia Pty Ltd (PRA) on behalf of CMA Contracting Pty Ltd in relation to the Tunnel part of the Munmorah Power Station located at Station Road, Munmorah Power Station, Colongra NSW .

2 LEGISLATIVE CONTEXT

This report has been prepared to assist CMA Contracting Pty Ltd in fulfilling its legislative obligations to ensure that asbestos-containing materials (ACM) have been identified by a licensed asbestos assessor or competent person and documented within an up-to-date asbestos register prior to demolition works. If ACM are identified or assumed to be present, then an Asbestos Management Plan must be developed.

The Client must keep this Register and Report at the workplace and make it available for the use of workers, people intending to conduct business at the workplace and to health and safety representatives. The Register must be updated at least every five years or earlier if material status or condition changes, prior to any demolition or refurbishment works, if further materials are identified, or the site AMP is reviewed.

This report has been prepared in accordance with the following NSW Legislation and Codes of Practice:

- *Work Health and Safety Act 2011*;
- *Work Health and Safety Regulation 2017*;
- Code of Practice*: How to manage and control asbestos in the workplace* (SafeWork NSW, dated August 2019); and
- Code of Practice*:* How to safely remove asbestos (SafeWork NSW, dated August 2019).

Refer to **Section 7** for Legislation, Codes of Practice, Australian Standards and Industry Guidelines.

3 SITE DESCRIPTION

A summary of the buildings on site during the survey, are provided in **Table 2**.

Table 2: Site Details

Building Name	Year Built (circa)	No. Levels:	Area (approximate sqm)
Munmorah Power Station Tunnel	1961	1	~1,000m^2

4 METHODOLOGY

4.1 Documentation Review

The following existing documentation was provided by The Client for this site:

- 294219 CES170608-GPM-E

The location of the site was also compared to the *Naturally Occurring Asbestos in NSW Map* (NSW Department of Industry 2017), to indicate whether sub-surface geology was likely to contain naturally occurring asbestos.

4.2 Site Survey and Sampling

A site survey was undertaken on the 6 December 2022 by Liam Naughton. Surveying and sampling if necessary was undertaken in accordance with PRA's NATA accredited QSE-2M and QSE-3M in-house procedures. The following was undertaken during the survey:

- Inspect reasonably accessible areas to identify and take representative samples for suspected asbestos materials;
- Identify any inaccessible areas of the site, and any restricted access areas where suspected materials are likely to be present;
- Identify assumed materials – these are visually similar materials in the same vicinity as a suspected and sampled material, that will be assumed to have the same sample result. This representative sampling method is used to limit sampling disturbance;
- Record the location, extent, condition, friability and the potential risk of fibre release for the asbestos material type (material assessment);
- Record factors surrounding materials that may increase risk of exposure including accessibility / work activities; and
- Present the findings in a Register.

Standard sampling asbestos surveys (management compliance) are restricted to reasonably accessible areas and are non-invasive and non-destructive. This report is not intended for use or referral for the purposes of demolition or major refurbishment. A Destructive Asbestos Materials Survey must be undertaken prior to any demolition or major refurbishment work.

4.2.1 *Sample Collection and Analysis*

All asbestos bulk sampling is carried out in accordance with the requirements of the NSW *Code of Practice: How to Manage and Control Asbestos in The Workplace* (SafeWork NSW, 2019) and PRA's procedures. Samples are collected by competent consultants, placed in plastic sealed clip-lock bags, labelled (job-site-sample location), and transported under Chain of Custody to PRA's NATA accredited laboratory facility.

The samples were analysed using PRA's in-house test method ASB-2 and in accordance with Australian Standard (AS) 4964-2004 *Method for the qualitative identification of asbestos in bulk samples*. Refer to **Appendix C** for Laboratory Certificate of Analysis.

4.3 Report Preparation

The purpose of this report is to communicate the findings of the documentation review, site survey and bulk sample analysis into an Asbestos Register, refer to **Appendix A**. An assessment of the potential risk of exposure to persons from ACM is provided and each item in the register has been allocated a risk rating (refer to **Appendix B** for risk assessment criteria). This risk based approach has been used to prioritise the management of asbestos on-site.

5 RESULTS

5.1 Findings of Documentation Review

5.1.1 *Existing Documentation*

PRA reviewed the following existing documentation provided by The Client for this site:

- 294219 CES170608-GPM-E.

5.1.2 *Naturally Occurring Asbestos*

In 2015, NSW was mapped into regions of 'low', 'medium' and 'high' potential of naturally occurring asbestos (NOA) being present within rock, sediment or soil to a depth of approximately 10 metres (m) below ground level, based on their geological units. Most of NSW (more than 99%) was not mapped because these areas geologically have 'very little to no' potential for NOA.

The site is outside a mapped area and has very little to no potential of containing NOA. The verification of the presence or absence of NOA on the site is outside of the scope of this survey.

5.2 Asbestos Register

A detailed Asbestos Register for the site is provided in **Appendix A**. Each item in the Asbestos Register has been allocated a risk rating as defined in **Appendix B**.

Asbestos Register (friable and non-friable) includes samples where asbestos was detected during analysis. These are denoted 'Yes' for 'Asbestos Detected', or 'Assume Yes' in the case of similar materials that were not sampled.

In some cases, where visually identified products are very likely to contain asbestos, but a hazard prevents sampling (e.g. confined space, fall from height, electrocution etc) the 'Assume Yes' may also be used without a sample.

Materials with No Asbestos Detected includes samples where asbestos was not detected during analysis. These are denoted 'No' for 'Asbestos Detected', or 'Assume No' in the case of similar materials that were not sampled.

General recommendations are given in **Section 6**. Specific recommendations, if required, are given in the Asbestos Register.

Inaccessible Areas outlines areas excluded from surveying due to inaccessibility and restricted access areas present within the site. Management compliance surveys are essentially non-destructive and this type of survey does not extend to searching for concealed ACM within the structural fabric of the building, in cavity walls, within concrete encased structural beams, below floorboards, behind ACM, above solid plaster ceilings or any other locations which, to access, would cause damage to fixtures, fittings, carpets, floor coverings or decorative finishes.

Specific non-accessed areas and restrictions are detailed in **Table 3**.

Table 3: Inaccessible Areas

Inaccessible Areas	Location
Hazard restrictions	
Height restricted areas	Throughout site
Inside confined spaces	Throughout site
Live mechanical plant and equipment	Throughout site
Live electrical plant and equipment	Throughout site
Under ground floor concrete i.e. sub surface soils	Throughout site

All areas where access was not possible must be presumed to contain asbestos until proven otherwise.

Refer to **Section 6** for recommendations relating to inaccessible areas.

5.3 Site Plans

Site plans have been drawn up by PRA and have been annotated with locations of ACM. Refer to **Appendix A**.

6 RECOMMENDATIONS

Asbestos materials must be removed, prior to demolition, in accordance Chapter 8 – Asbestos of the *WHS Regulation* and the *Code of Practice: How to Safely Remove Asbestos* (SafeWork NSW, 2016). This is to ensure that workers are not exposed to airborne contaminants that exceed the exposure standards for asbestos (Safe Work Australia, 2013a).

Asbestos materials must be removed by licensed removal contractor (Class A Asbestos Removal Licence for friable materials and Class B for non-friable materials). The licensed removal contractor must:

- Obtain the asbestos register;
- Prepare and obtain approval from SafeWork NSW for an Asbestos Removal Control Plan (ARCP);
- Notify SafeWork NSW, at least five business days before commencement;
- Ensure removal workers have been appropriately trained and certified for the licence class, provided with information about the health risks of licensed asbestos removal work and trained in site specific risks and the ARCP;
- Inform the person with management or control of a workplace of the intended asbestos removal work, who will inform all persons at the workplace prior to commencement;
- Ensure workers are provided with appropriate PPE (respirable protection);
- Ensure the asbestos removalist supervisor is readily available or present when the work is being carried out;
- Display signs and labels in the asbestos work area;
- Limit access to the asbestos work area;
- Ensure appropriate decontamination facilities are in place;
- Ensure waste contamination and disposal procedures are in place for asbestos and contaminated personal protective equipment (PPE);
- Ensure asbestos fibre air monitoring is conducted during removal, by a Licensed Asbestos Assessor (friable) or competent person (non-friable);
- Ensure visual clearance inspections are conducted and clearance certificates are issued by a Licensed Asbestos Assessor (friable) or competent person (non-friable). The Clearance Certificate must be in writing and state the person 'found no visible asbestos residue from asbestos removal work in the area, or in the vicinity of the area, where the work was carried out' and in relation to air monitoring 'the airborne asbestos fibre level was less than 0.01 asbestos fibres/millilitre (mL)';
- If additional materials are suspected to contain asbestos, and have not been identified within the register, works should cease to enable a Licensed Asbestos Assessor or competent person to determine whether the material contains asbestos via sample analysis.

6.1 Asbestos Management (remaining in-situ)

The following recommendations are provided for the site and all ACM, regardless of their risk rating:

- The ACM should be labelled and managed in accordance with the site AMP;
- The asbestos register must be updated at least every five years, or earlier if required by changes to a materials' status or condition, if further materials are identified, or the AMP is revised;
- Prior to any demolition or major refurbishment work, a Destructive Asbestos Survey must be undertaken to determine the presence of further materials within inaccessible areas and if required, for excluded materials; and

- ACM should be removed prior to any demolition or major refurbishment works that may disturb them in accordance with the *Code of Practice: How to Safely Remove Asbestos* (SafeWork NSW, 2019).

Specific recommendations for some materials are also made within the asbestos register.

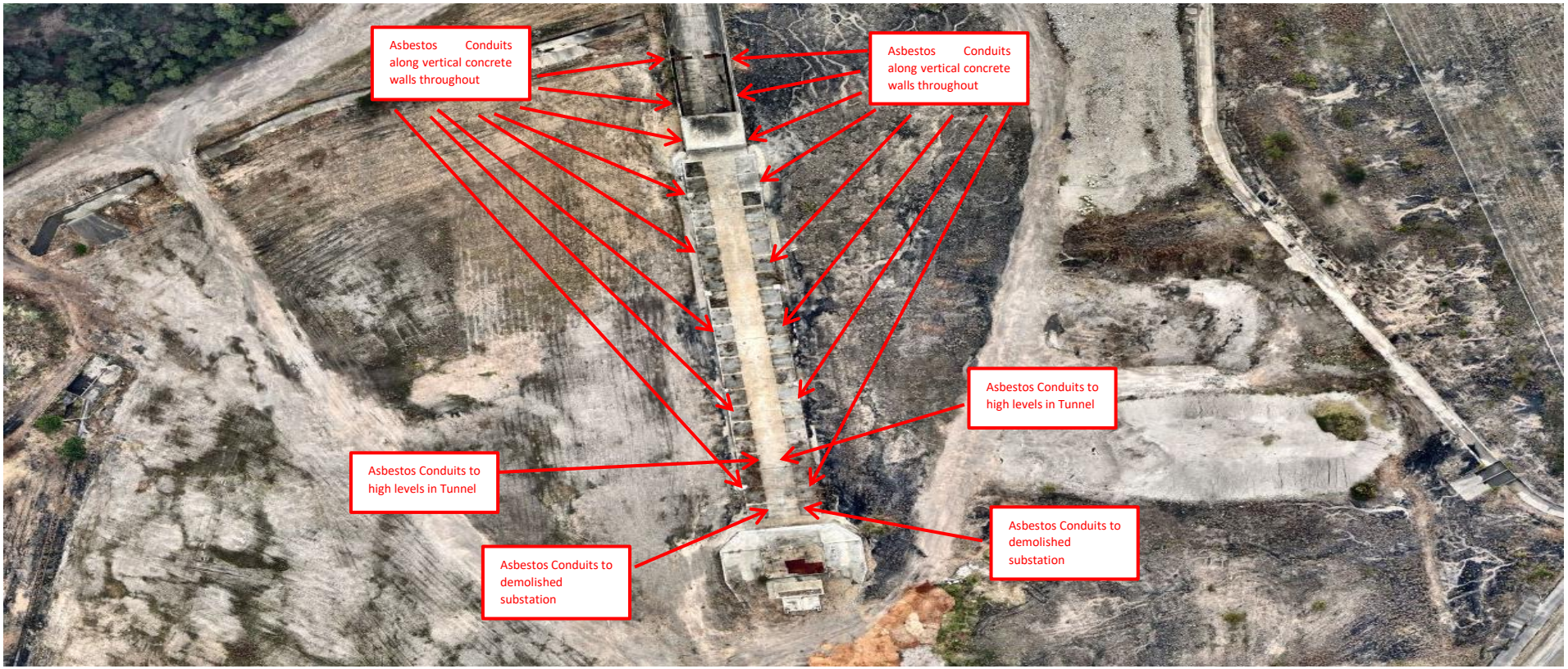
7 LEGISLATION AND INDUSTRY GUIDELINES

The following Legislation, codes of practice, guidelines and standards are considered to form an integral part or are relevant to the preparation of this report:

- Work Health and Safety Act NSW 2011;
- Work Health and Safety Regulation NSW 2017;
- Code of Practice: How to manage and control asbestos in the workplace (SafeWork NSW, dated August 2019);
- Code of Practice: How to safely remove asbestos (SafeWork NSW, dated August 2019);
- Workplace Exposure Standards for Airborne Contaminants (Safe Work Australia, December 2019;
- Code of Practice: Demolition Work (SafeWork NSW, dated August 2019);
- AS 2601 - 2001 ''Australian Standard™ The Demolition of Structures, Section 1.6'';
- Health and Safety Laboratory UK – HSG 264 Asbestos The Survey Guide 2012;
- Health and Safety Laboratory UK - Methods for the Determination of Hazardous Substances (MDHS) 100 Surveying, sampling and assessment of asbestos-containing materials 2001;
- Department of Industry (2017). Naturally Occurring Asbestos in NSW Map. Available from: https://trade.maps.arcgis.com/apps/PublicInformation/index.html?appid=87434b6ec7dd4aba8cb664d8e646fb06. Accessed on 7 July 2017; and
- Heads of Asbestos Coordination Authorities (2015). Mapping of Naturally Occurring Asbestos in NSW – Known and Potential for Occurrence. Prepared by the Heads of Asbestos Coordination Authorities in July 2015.

APPENDIX A ASBESTOS REGISTER

Ground Level



Munmorah Power Station Tunnel	
ACM locations (approximate)	
Non/Limited Access Area	

Source: Nearmaps, accessed 9 December 2022

Ground Level Register

Materials with Asbestos Detected

Sample No.: PRJ001239-visual inspection	Asb Detected:	Assume Yes	Extent:	~84 units

External, ground level, Munmorah Power Station Tunnel, throughout, western side, vertical concrete walls, moulded fibre cement conduits.



Friability:	Non-Friable
Product Type:	Low
Material Condition:	Good
Surface Treatment	Low
Work Activities:	High
Risk Rating:	Low

Recommendations: ACM should be removed prior to any demolition works or works that may disturb them in accordance with the Code of Practice: How to Safely Remove Asbestos (SafeWork NSW 2019).

Sample No.: PRJ001239-visual inspection	Asb Detected:	Assume Yes	Extent:	~84 units

External, ground level, Munmorah Power Station Tunnel, throughout, eastern side, vertical concrete walls, moulded fibre cement conduits.



Friability:	Non-Friable
Product Type:	Low
Material Condition:	Good
Surface Treatment	Low
Work Activities:	High
Risk Rating:	Low

Recommendations: ACM should be removed prior to any demolition works or works that may disturb them in accordance with the Code of Practice: How to Safely Remove Asbestos (SafeWork NSW 2019).

Sample No.: PRJ001239-visual inspection	Asb Detected:	Assume Yes	Extent:	~84 units

External, ground level, Munmorah Power Station Tunnel, throughout, eastern side, group of conduits, vertical concrete walls, moulded fibre cement conduits.



Friability:	Non-Friable
Product Type:	Low
Material Condition:	Good
Surface Treatment	Low
Work Activities:	High
Risk Rating:	Low

Recommendations: ACM should be removed prior to any demolition works or works that may disturb them in accordance with the Code of Practice: How to Safely Remove Asbestos (SafeWork NSW 2019).

Sample No.: PRJ001239-visual inspection	Asb Detected:	Assume Yes	Extent:	~84 units

External, ground level, Munmorah Power Station Tunnel, throughout, eastern side, group of conduits, vertical concrete walls, moulded fibre cement conduits.



Friability:	Non-Friable
Product Type:	Low
Material Condition:	Good
Surface Treatment	Low
Work Activities:	High
Risk Rating:	Low

Recommendations: ACM should be removed prior to any demolition works or works that may disturb them in accordance with the Code of Practice: How to Safely Remove Asbestos (SafeWork NSW 2019).

Sample No.: PRJ001239-visual inspection	Asb Detected:	Assume Yes	Extent:	~84 units

External, ground level, Munmorah Power Station Tunnel, at high levels on south side, group of conduits, vertical concrete walls, moulded fibre cement conduits.



Friability:	Non-Friable
Product Type:	Low
Material Condition:	Good
Surface Treatment	Low
Work Activities:	High
Risk Rating:	Low

Recommendations: ACM should be removed prior to any demolition works or works that may disturb them in accordance with the Code of Practice: How to Safely Remove Asbestos (SafeWork NSW 2019).

Sample No.: PRJ001239-visual inspection	Asb Detected:	Assume Yes	Extent:	~84 units

External, ground level, Munmorah Power Station Tunnel, at high levels on south side, group of conduits, vertical concrete walls, moulded fibre cement conduits.



Friability:	Non-Friable
Product Type:	Low
Material Condition:	Good
Surface Treatment	Low
Work Activities:	High
Risk Rating:	Low

Recommendations: ACM should be removed prior to any demolition works or works that may disturb them in accordance with the Code of Practice: How to Safely Remove Asbestos (SafeWork NSW 2019).

Sample No.: PRJ001239 - visual inspection	Asb Detected:	Assume Yes	Extent:	~84 units

External, ground level, Munmorah Power Station Tunnel, south side, demolished substation, moulded fibre cement conduits.



Friability:	Non-Friable
Product Type:	Low
Material Condition:	Good
Surface Treatment	Low
Work Activities:	High
Risk Rating:	Low

Recommendations: ACM should be removed prior to any demolition works or works that may disturb them in accordance with the Code of Practice: How to Safely Remove Asbestos (SafeWork NSW 2019).

Sample No.: PRJ001239 - visual inspection	Asb Detected:	Assume Yes	Extent:	Throughout

External, ground level, Munmorah Power Station Tunnel, south side, adjacent demolished substation, fibre cement debris.



Friability:	Non-Friable
Product Type:	Low
Material Condition:	Fair
Surface Treatment	Low
Work Activities:	Low
Risk Rating:	Low

Recommendations: ACM should be removed prior to any demolition works or works that may disturb them in accordance with the Code of Practice: How to Safely Remove Asbestos (SafeWork NSW 2019).

Materials with No Asbestos Detected



Sample No.: 294219-1 (Consulting Earth Scientists Pty Ltd)	
Asb Detected:	No
Location:	External

External, ground level, Munmorah Power Station Tunnel, throughout, expansion joints, bituminous material.

APPENDIX B RISK ASSESSMENT METHODOLOGY

RISK ASSESSMENT

PRA uses the following material and location risk assessments for each of the materials identified within the asbestos register. The algorithm determines the risk of asbestos fibres being released from the material based on material assessment and accessibility. A risk score is assigned to the material assessment and accessibility as listed in **Table A** for each asbestos material listed in the register.

Table A: Asbestos Risk Assessment Criteria

Risk of Fibre Release		Risk Score	Description
Material Assessment	**1. Product Type** (risk of fibre release due to type of material i.e. friability)	**1 = Low**	The material type is not prone to fibre release due to the presence of resins or asbestos-reinforced composites (e.g. mastic, vinyl floor tiles, asbestos cement).
		5 = Moderate	The material type can release fibres upon impact (e.g. AIB, LDB, millboard, gaskets, ropes and woven textiles, asbestos paper and felt).
		15 = High	The material type is highly likely to release fibres upon impact (e.g. friable insulation such as loose fill, lagging etc.).
	2. Material Condition (risk of fibre release due to current condition of material)	**1 = Good**	No sign of damage or deterioration.
		5 = Fair	Minor damage or deterioration (e.g. few scratches/marks, broken edges, significate breakage and many small areas of damaged revealing loose asbestos fibres
		15 = Poor	Significant damage or deterioration of materials, sprays and thermal insulation. Visible asbestos debris.
	3. Surface Treatment (risk of fibre release due to ventilation and air exchange surrounding the material)	**1 = Low**	Composite materials containing asbestos; reinforced plastic, resins, vinyl tiles.
		5 = Moderate	Enclosed sprays and lagging, AIB/low-density insulation board (with exposed face painted or encapsulated), asbestos cement sheets Unsealed AIB, or encapsulated lagging and spray
		15 = High	Unsealed AIB/low density insulation board and sprays
Accessibility	**4. Work Activities** (risk of fibre release due to impacts from usual work activities conducted on or nearby the material)	**1 = Low Impact**	Work activities usually undertaken in the area surrounding the material are unlikely to cause damage to the material.
		5 = Moderate Impact	Work activities usually undertaken in the area surrounding the material may cause damage to the material.
		15 = High Impact	Work activities usually undertaken in the area surrounding the material are likely to result in further damage or deterioration of the material.

Risk of Exposure to Asbestos Fibres

The overall risk of exposure to asbestos fibres from each material is determined by the sum of the Material Assessment and Location Assessment as given below:

Risk of Exposure to Asbestos Fibres = Material Assessment + Accessibility

The total risk score then compared to **Table B** to determine a risk rating of low, moderate or high.

Table B: Asbestos Risk Assessment Criteria

Risk Score	Risk Rating	Description
1 – 19	**Low**	Materials that pose a low health risk to workers and the public. For example, materials that are in good condition, located in areas that are not subject to work activities that may impact upon them and are of a material type that does not readily release fibres upon minor disturbance.
20-48	**Moderate**	Materials that pose a moderate health risk to workers or the public in their current condition.
>48	**High**	Materials that pose an immediate or elevated risk to workers or the public in their current condition.

Recommendations for each risk rating recorded in the asbestos register are provided in **Table C**. Specific recommendations for some materials are also made within the asbestos register.

Table C: Recommendations based on Risk Rating

Risk Score	Risk Rating	Description
1 – 19	**Low**	No access restrictions. Remedial works are currently not required for the material, unless specifically detailed in the asbestos register.
20-48	**Moderate**	Access to the material should be restricted. **Within six months**, remedial works are recommended and followed by ongoing regular review of the material should it remain in-situ. Any specific recommendations made in the asbestos register should be followed.
>48	**High**	Access to the material should be restricted. **As soon as practicable**, remedial works are recommended and followed by ongoing regular review of the material should it remain in-situ. Any specific recommendations made in the asbestos register should be followed.

The following recommendations are provided for all materials, regardless of their risk rating:

- All materials must be managed in accordance with a site-specific Asbestos Management Plan (AMP) or Hazardous Material Management Plan (HMMP);
- The asbestos register must be updated at least every five years or earlier if required by changes to a materials' status or condition, further materials are identified or the AMP is revised;
- Any asbestos remedial works must be carried out in accordance with the relevant legislation; and where required by appropriately licensed contractors for the removal, air monitoring and clearance works.
- Prior to any renovation or demolition work, a Destructive Asbestos Survey Report should be prepared to determine the presence of further materials within inaccessible areas and if required, for excluded materials.

APPENDIX C LABORATORY CERTIFICATE OF ANALYSIS

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 294219

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-E**
Number of Samples	1 material
Date samples received	28/04/2022
Date completed instructions received	28/04/2022

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	03/05/2022
Date of Issue	03/05/2022

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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
Lucy Zhu, Asbestos Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Asbestos ID - materials		
Our Reference		294219-1
Your Reference	UNITS	Expansion Joint
Date Sampled		27/04/2022
Type of sample		material
Date analysed	-	03/05/2022
Mass / Dimension of Sample	-	130x70x10mm
Sample Description	-	Black fibrous bituminous material
Asbestos ID in materials	-	No asbestos detected Organic fibres detected
Trace Analysis	-	No asbestos detected

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.

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